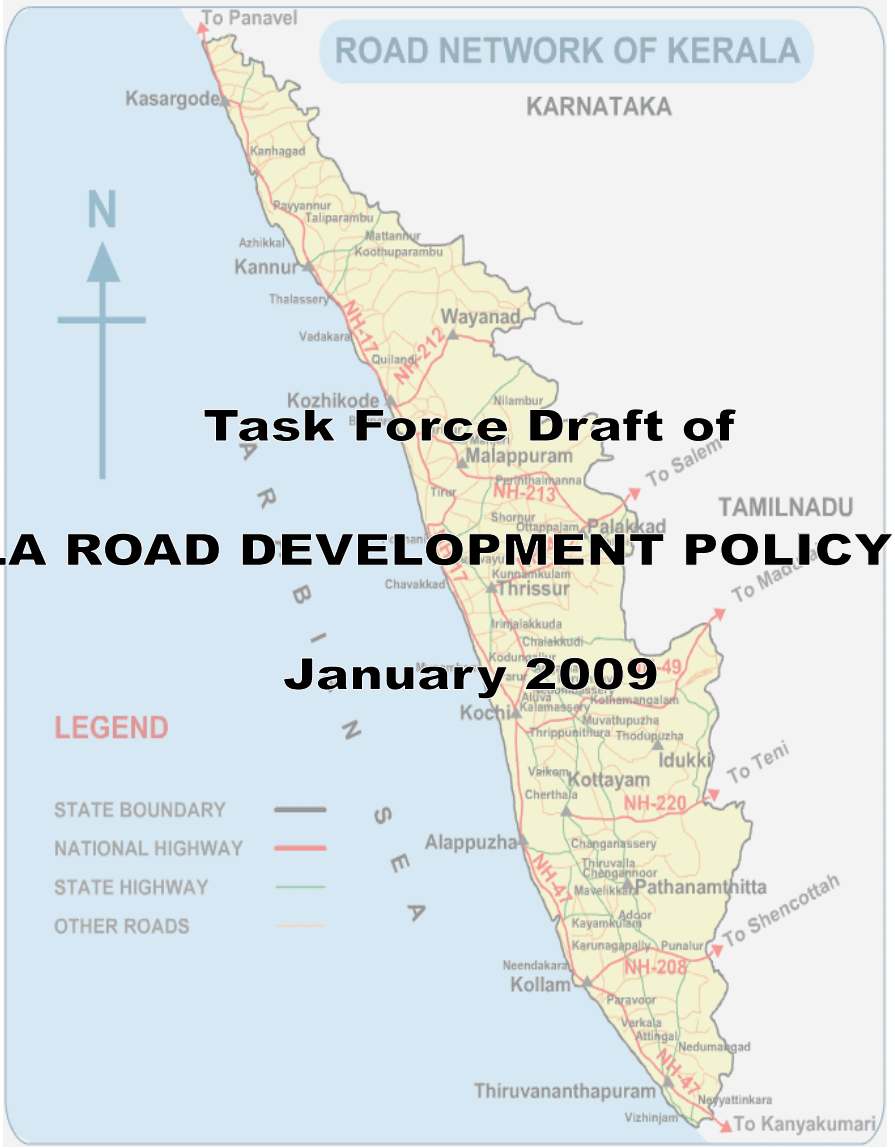
GOVERNMENT OF KERALA
Public Works Department
Thiruvananthapuram



Task Force Draft of

KERALA ROAD DEVELOPMENT POLICY 2009-21

January 2009

Contents

Abbreviations

BOT	-	Build Operate and Transfer
GIS	-	Geographic Information System
HAD	-	Highway Development Authority
IRC	-	Indian Road Congress
ISAP	-	Institutional Strengthening Action Plan
IWT	-	Inland Water Transport
KHRI	-	Kerala Highway Research Institute
KRFB	-	Kerala Road Fund Board
KSEB	-	Kerala State Electricity Board
KSTP	-	Kerala State Transport Project
KSUDP	-	Kerala Sustainable Urban Development Project
MDR	-	Major District Roads
MORTH	-	Ministry of Road Transport and Highways
NH	-	National Highways
NHAI	-	National Highway Authority of India
PWD	-	Public Works Department
PWD (R & B)	-	Public Works Department (Roads & Bridges)
R & R	-	Resettlement and Rehabilitation
RBDCK	-	Roads and Bridges Development Corporation of Kerala
RMMS	-	Road Maintenance and Management System
SH	-	State Highways
VOC	-	Vehicle Operating Costs

1 PREFACE

Provision of adequate infrastructure is a prerequisite for sustained growth of economy and inherent to such growth is the need to ensure cost-effective movement of people and goods. An efficient road infrastructure is therefore an essential requirement. Over the successive five year plans, investment in road infrastructure has been increasing progressively in the state. Kerala has developed an extensive road network which provides connectivity to all settlements. This is an achievement few other states in the country can lay claim to.

Government of Kerala has formulated a State Road Sector Policy[1] which sets out the strategic direction to guide decision-making by various agencies involved in the planning, implementation and management of the road transport sector in the state. In addition, the following supportive actions have also been initiated:

- The Kerala Tolls Act (1983) has been enacted with a view to recover road use cost.
- The Kerala Road Fund Act was enacted in November 2001, establishing the Kerala Road Fund administered by a Road Fund Board.
- Enacted the Road Safety Authority Act in 2007 and the Road Safety Authority has since been established.
- The Roads and Bridges Development Corporation of Kerala (RBDCK) was created to corporatize some traditional PWD functions.
- Enacted the Kerala Highway Protection Act (1999) in order to protect highway corridors from encroachments, regulate ribbon developments and prevent undesirable land use practices;
- Several key road sector studies, such as, Strategic Options Study to identify road and bridge projects amenable for private financing, a study on road maintenance planning, and several road safety studies, have been completed.
- Completed a comprehensive Institutional Development Study and prepared an Institutional Strengthening Acton Plan (ISAP) for the PWD. The ISAP recommendations are being implemented in a time-bound manner and about 80 percent of these have been achieved.
- Kerala State Transport Project (KSTP) was launched in June 2002 to improve 1600km of State Road network and 77km of Inland Water Transport (IWT) with the World Bank assistance of US$ 255 million.

At the national level, the Ministry of Road Transport and Highways (MoRTH) has prepared a National Road Development Plan[2] for the period 2001-21. As a follow-up, all states are expected to formulate road development plans for their respective states. Though Kerala has an approved road sector policy in place, there is a continuing need to evolve a practical and updated action plan for road development, keeping in view the demands of a growing economy and the changing needs of the community.

Government of Kerala has once again taken the initiative to formulate a State Road Development Policy for the period 2009-21 and a Task Force consisting of the following members was constituted through a GO (Rt) No.1718/08/PWD dated Thiruvananthapuram, 15/10/2008 to draft the state road development policy.

[1] Vide GO (MS) No. 5/06/PWD dated 18.1.2006
[2] 'Road Development Plan – Vision 2021', Ministry of Road Transport and Highways, Government of India.

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This Kerala Road Development Policy is being formulated to enable the government to prioritize and execute programs and projects which are consistent with the road sector policy. This document outlines the road development targets to be achieved by the year 2021.This policy seeks to outline the short term (2009-2011) and medium term (2011-21) targets for development of state roads that are in the domain of the Kerala Public Works Department.

2 STATE ROADS IN KERALA

Current total length of roads within the state as indicated in Table 1 is reported to be 162,149 kms. Agencies maintaining roads in the State include PWD, Local self-government, Irrigation Department, KSEB and Railways. Important state roads such as the NH, SH and MDRs which amount to 25,548 kms are managed by the PWD. On an average, PWD has been adding about 500 kms of roads (3 percent of PWD road length) each year. Road density in the State is 417 Km/100 Sq.Km. and it is far ahead of national average of 100.39 Km/100 Sq.Km. The length of road per lakh population is 509.23 Km and it is also higher than the national average of 321.3 Km.

Table 1. Agency wise Distribution of State Roads in 2007

Sl. No.	Name of Agency	Length (KM)	Percentage
1	Panchayats	113,284	69.86
2	PWD (R&B) State Highways : 4,650 km MDRs : 19,374 km	24,024	14.82
3	Municipalities	9,042	5.58
4	Corporations	6,734	4.15
5	Forests	4,215	2.60
6	Irrigation	2,898	1.79
7	PWD (NH)	1,524	0.94
8	Railway, KSEB	428	0.26
	Total	162,149	100.00

Source: State Economic Review 2007, Kerala State Planning Board, www.keralaplanningboard.org
Chief Engineer (R&B), Thiruvananthapuram

3 NEED FOR A ROAD DEVELOPMENT POLICY

PWD roads constitute about 16% of the total road network in the state but carries nearly 80 percent of the road traffic within the state. With road traffic growing at around 10 percent every year, the pressure on the PWD road network is considerable.

Even though Kerala has succeeded in providing adequate length of roads, the overall quality of PWD roads is much below the prescribed standard set forth by the Indian Road Congress (IRC). Due to this the State has been incurring significant economic loss through increased vehicle operating cost and accidents. A road development plan is required for the progressive development of the state road network so that it meets the anticipated passenger and freight travel demand in the years ahead.

With initiatives being taken to develop and improve sea and air ports in the state, there is an increasing need for seamless inter modal connectivity. Gaps in inter modal connectivity need to be filled. As on March 2007, there were 2179 bridges and 51422 culverts on PWD roads. Of them 148 bridges and 1519 culverts need reconstruction or rehabilitation. Apart from these infrastructure deficiencies, the PWD has the following issues to contend with. However, on most of these actions have already been initiated by the Government and the PWD:

- Inadequate funds availability
- Outdated standards and specifications
- Unscientific method of planning development and prioritizing maintenance works due to absence of a functional road, pavement, bridge management system.
- Inadequacies in project preparatory process
- Outmoded project implementation procedures
- Inadequate quality assurance capabilities
- Lengthy land acquisition procedures
- Inadequate contractor capabilities
- Huge backlog of roads due for maintenance
- Mediocre technology in construction methods
- Problems of co-ordination with other departments such as KSEB, KWA, TELECOM
- Inadequate capabilities for monitoring and controlling assets.
- Inadequate institutional and human resource

All these aspects need to be addressed in the action plan to ensure that a good quality road network is delivered at the end of the plan period. This road development plan therefore addresses all aspects of road design, construction, maintenance, implementation, management of highway resources, land acquisition, resettlement and rehabilitation of project affected persons, institutional strengthening and capacity building among Engineers, Consultants and Contractors.

4 ROAD DEVELOPMENT POLICY OBJECTIVES

The objectives of the Road Development Policy are to:

- Develop a sustainable road network which would meet the traffic requirement of the future.
- Maintain the road network at a desirable serviceability level all through the life of the road.
- Mobilise market resources along with increased generation of internal resources for joint development of road projects (Construction / Maintenance) with private participation;
- Adopt better standards and specifications in design and construction of roads

- Enhance quality of road network with a view to reduce the transportation, Vehicle Operating Costs (VOC) and maintenance costs
- Professionally manage highways assets and resources;
- Ensure road safety and mitigate ribbon development;
- Mitigate negative environmental impacts and provide safeguards
- Acquire land with better Resettlement and Rehabilitation policies;
- Adopt innovative and improved methods of road construction and maintenance,
- Provide quicker access to essential services, thereby improving the quality of life in rural areas.
- Improve the functional capability of roads (Speed, Safety)
- Improve Inter modal Connectivity (Water – Air – Road)
- Improve Industrial Connectivity
- Improve access to Major and Minor Pilgrim and Tourist Centers
- Improve Urban links and access Roads to Highways
- Improvement of quality of construction through Quality Control Mechanism

5 ROAD DEVELOPMENT POLICY

For effective road development, decisions and actions need to be taken across a series of inter-related aspects. The proposed road development policy therefore outlines the objectives and the actions to be taken under each aspect. These include planning development and maintenance works, funding and resource mobilization, project implementation, land acquisition, management and control of assets, institutional requirements, information dissemination and transparency.

5.1 ROAD DEVELOPMENT

Works which essentially require capital investments are classified as development (or plan) works. PWD handles two types of development works. One is concerned with improvements to existing roads while the other relates to new developments. The action plan required for each of these two components is as follows:

5.1.1 Improving Existing Roads

Kerala PWD manages eight National Highways totaling 1524 Kms, all of which is progressively being widened to two/four lane width by the MORTH/NHAI. These NH currently carry between 20,000 to 60,000 vehicles per day. Considering the prevailing growth of traffic, these NH will require to be widened to four lane widths within the next 5 to 8 years.

Action 1: In cooperation with the NHAI/MoRTH, the PWD (NH) shall develop and improve the NH network in the state.

Kerala PWD also has 4650 kms of State Highways of which about 90 percent is of single or intermediate lane width. SHs currently carry between 6000 to 12000 vehicles per day and are already due for widening and strengthening. The need to improve, upgrade and rehabilitate the PWD road network is now an immediate necessity.

Government of Kerala initiated the Kerala State Transport Project (KSTP) in June 2002 to improve 1600km of state road network and 77km of Inland Water Transport (IWT). The project has four main components : (a) Upgrading and widening of about 600 km length high priority state

highways and a pilot IWT component for improving of about 77 km canal for the revival of the IWT system in Kerala (b) periodic maintenance of 1000 km State roads; (c) reforming Road and IWT associated institutions and strengthening their capacities by implementing the Institutional Strengthening Action Plan (ISAP) and (d) Road safety action plan and improvement of black spots and awareness. In a total outlay of Rs. 1612.8 crores the State Government contribution is Rs. 388.8 crores and the World Bank assistance is Rs. 1224 crores.

An amount of Rs 2420 crores was earmarked in the State's Tenth plan for road development. Of this, Rs 2270 crores was for PWD (R&B) and Rs. 150 crores for PWD (NH). The State's Eleventh Plan reiterates the need for continuing the state road improvement program as is evident from the stated development strategies and has allocated Rs. 1619 crores for the purpose:

- Priority to maintenance, rehabilitation and up gradation of existing road infrastructure
- Induction of modern and cost effective construction techniques into government standards;
- Establishment of GIS based Road Information Management System (RIMS) and
- Financial Management System for effective management of road assets.
- Implementation of effective contract administration through improved contracting methods.
- Introducing transparency and stake holder participation in road development
- Introducing a system consisting of providing technical designs by the contractors, performance contracts, and third party quality assurance systems.
- Encouraging private sector participation such as on a Build Operate Transfer (BOT) basis;
- Capacity building within PWD through proper human resource management and training

Action 2: In keeping with the Eleventh Plan strategies and the road development requirements, the following shall be achieved over the period 2009-21:

a) All state highways shall be designed and converted into two lane carriageway with paved shoulders and the pavement shall be strengthened appropriately.
b) Based on needs, about 10 percent of the State Highways shall be further upgraded into 4 lane divided carriageway.
c) All MDRs shall be improved to have a single lane carriageway with hard shoulders and the pavement shall be strengthened appropriately.
d) Based on needs, about 10 percent of the MDRs shall be further upgraded into two lane carriageway with hard shoulders.
e) IRC standards and MoRTH specifications shall be adopted for the design and implementation of these road improvement projects. Appropriate measures for regulating direct access from roadside properties shall be incorporated in the designs.
f) Standard right of way shall be acquired as part of this program.
g) Preparation of projects for prioritizing and phasing the road improvement shall be initiated immediately and completed by 2011.
h) Implementation of projects shall be initiated as and when the projects are approved and completed by 2021.

It is estimated that the outlay required for achieving the above road improvement targets is Rs. 40,000 crores as indicated in Table 2 below.

Table 2: Phasing and Cost of Improving Existing Roads

Component	Total		2009-11		2011-21	
	Kms	Cost*	kms	Cost*	kms	Cost*
Two laning of SH	3000	18,000	500	3,000	2500	15,000
Four laning of SH	400	2,000	50	250	350	1,750
Improvements to MDR	18000	18,000	2,000	2,000	16,000	16,000
Two laning of MDR	1000	2,000	100	200	900	1,800
Total	22400	40,000	2,650	5,450	19,750	34,550

* in Rs. Crores inclusive of LA costs

5.1.2 Urban Links

Improvement and maintenance of SH and MDR which pass through city corporations and town municipalities continue to be the responsibility of PWD. With increasing congestion and hazards being experienced on these urban links, significant funds are needed to improve these road sections. Since widening of existing urban links generates serious problems for land acquisition, alternate route/bypass/road construction along new alignment is becoming cost effective.

Kerala currently has about 15 urban agglomerations which have a population of over 1 lakh. By providing bypasses to all these areas, the intercity traffic could be conveniently siphoned out of the urban areas and the urban links could therefore be decongested.

Action 3: To address the problems encountered on urban links, the following shall be achieved by 2021.

a) Bypasses shall be provided to all urban agglomerations with a population of over 1 lakh.
b) Project preparation works shall be initiated for all the 15 locations and completed by 2011
c) Project shall be implemented and completed by 2021.

The outlay required for provision of bypasses to urban agglomerations is Rs. 750 crores as indicated in Table 3.

Table 3: Phasing and Cost of Providing Bypass Roads

Component	Total		2009-11		2011-21	
	Nos	Cost*	Nos	Cost*	Nos	Cost*
Bypasses to urban areas	15	750	5	250	10	500

*in Rs. Crores inclusive of LA costs

5.1.3 New Road Corridors

The coastal and midland region of the state contains nearly 76 percent of the state's population and contributes to a similar share of the gross state domestic product. With numerous contiguous settlements along the major road corridors in this region, intercity travel is being constrained by urban traffic congestion and hazards encountered on the urban links. When considering the prevailing high rate of growth of traffic on these roads, traffic volumes are expected to exceed the available road capacity in a matter of few years. A major initiative is necessary to plan and provide an alternative road transport corridor for the common public to enable them to make comfortable, economic and safe journey along the length of the state along the length and breadth of the state.

Recognizing the constraints in land availability, state of the art facility should be provided with minimum land acquisition. It should also enable vertical expansion by provision of elevated corridors within the existing land width as and when the ground facilities get saturated.

Development of new urban centers, land use planning and control should be an integral part of this program so that ribbon development is prevented and access to the new road corridor is properly planned and regulated.

To facilitate eco-tourism and open up more tourist destinations in the hill districts of the state, better connectivity and accessibility needs to be provided along the length of the hill region. Similarly, the available roads along the coast need to be upgraded to allow for better access to coastal settlements and also possibly decongest the NH along this route.

To network the north-south road transport corridor, the hill corridor and the coastal road, appropriate cross connections should be identified and provided.

Action 4: Initiation and implementation of the following new road projects shall be undertaken over the period 2009-21.

a) Development of the North-South road transport corridor. This has the potential for private sector participation. Extent of private participation needs to be ascertained by a techno-economic feasibility study and this shall be initiated immediately

b) Development of missing links and improvement of existing roads along the Hill Highway

c) Development of Coastal Roads

d) Project preparation work for identification and prioritization of new roads shall be initiated immediately and completed by 2011

e) New roads shall be implemented and completed by 2021

The outlay required for the development of new roads estimated at Rs. 12,400 crores as indicated in Table 4.

Table 4. Phasing and Cost of providing new roads

Component	Total		2009-11		2011-21	
	Kms	Cost*	kms	Cost*	kms	Cost*
Development of the N-S road transport corridor	600	10,000	-	-	600	10,000
Development of missing links along Hill Highway	300	1,500	50	250	250	1,250
Development of missing links along the Coastal Road	300	900	50	150	250	750
Total cost of new road corridors	1,200	12,400	100	400	1,500	12,000

*in Rs. Crores inclusive of LA costs

5.2 ROAD MAINTENANCE

With 28203 kms of roads to be maintained by the PWD, there is considerable effort needed to keep these roads at a desirable serviceability level for the road users. A need based maintenance program has to be prepared and supported by adequate fund allocation, these need to be implemented on a schedule. The PWD is in the process of establishing a Road Maintenance and

Management System (RMMS). Once this is functional, it should be utilized to plan the annual maintenance works.

Action 5: The following shall be the road maintenance action programs:

a) All PWD roads shall be maintained as per IRC standards.
b) Maintenance plans and programs shall be formulated on the basis of RMMS
c) Priority shall be given to make the RMMS fully functional by 2010
d) Backlog of maintenance works shall be brought down to zero by the year 2021
e) Performance based maintenance contract shall be adopted as a preferred procedure for road maintenance programs

The outlay required for the maintenance of PWD roads is estimated at Rs. 12,400 crores as indicated in Table 5.

Table 5. Phasing and cost of road maintenance

Component	Total		2009-11		2011-21	
	Kms	Cost*	kms	Cost*	kms	Cost*
Maintenance of SHs	4,200	2,100	-	-	4,200	2,100
Maintenance of MDRs	19,000	3,800	-	-	19,000	3,800
Total	23,200	5,900			23,200	5,900

*in Rs. Crores

5.3 FUNDING

Having stated the physical targets for road development and maintenance which constitute the core functions of PWD, it is now necessary to address the issues of fund requirement and its mobilization.

5.3.1 Fund Requirement

Considering the action plans envisaged for the period 2009-21, about Rs. 53,150 crores is the fund requirement in the immediate and medium term as summarized in Table 6. There is an imminent need to explore all potential sources to mobilize funds required for implementing this road development plan.

Table 6. Fund requirement and phasing

Component	Fund Requirement (Rs. Crores)		
	Total	2009-11	2011-21
Improvement to existing roads (Ref Table 1)	40,000	5,450	34,550
Bypasses to urban agglomerations (Ref Table 2)	750	250	500
New road corridors (Ref Table 3)	12,400	400	12,000
Total	53,150	6,100	47,050
Average Annual Requirement		3,050	4,705

5.3.2 Mobilization of Funds

Considering the magnitude of fund required for implementing the action programs, innovative and alternative means of mobilizing resources is needed. A review of the available instruments for resource mobilisation indicates that Government of Kerala has enacted proactive legislations and taken several steps in the recent past to introduce innovative financing arrangements for road

infrastructure projects which are independent of the budgetary allocations. However these instruments have not been fully utilized to mobilise resources required for the development and maintenance of the vast network of roads in the state.

5.3.2.1 Financing the improvement of existing roads

Amongst the various instruments that have been enacted, the Kerala Road Fund Act is perhaps the most promising and innovative as it has an institutional arrangement to mobilize resources for the development and maintenance of roads in the state on a sustained basis. However the act in its present form only provides for mobilisation of finances for investment in new infrastructure projects, such as providing access to tunnels, bridges etc. In order to make this a more encompassing instrument for fund mobilization, the act needs to be suitably amended and restructured. The major amendments suggested are to:

a) Enhance the functional responsibility to include development and maintenance of road activities.
b) Enhance the institutional setup and human resource to ensure that KRF is professionally managed like any financial institution.
c) Enhance membership of the KRF Board to include all stake holders
d) KRF Board should be authorized to mobilize funds from market borrowings.

Action 6: The Government shall amend the KRF Act to enable KRF to function and operate as an autonomous financial institution.

Considering that this road development plan requires an outlay of around Rs. 54,000 crores in the next 12 year plan period, the Government of Kerala must consider the mobilisation of resources from other potential sources. The following are some of the potential sources available for mobilizing additional funds but are relatively untapped.

5.3.2.1.1 User pay charges on upgraded highways: The RFA and the Tolls Act 1976 both provide for imposition of tolls on the users of roads and bridges. A list of orders imposing tolls is maintained at <http//wwwpwd.kerala.gov.in/notify.htm>. There is a potential to mobilize over Rs. 100 crores per annum if tolls are introduced on the improved network of SH.

5.3.2.1.2 Vehicle Registration Charges: Currently 10 percent of the total MV registration fee amounting to Rs. 30 crore is allocated to the KRF each year. At present this is a major source of revenue for KRF. Government should consider enhancing enhancing the MV registration fee allocation from 10 percent to 20 percent and augment KRF resources by another Rs. 30 crores per annum.

5.3.2.1.3 Development revenue sharing: The Highway Protection Act is a recent legislation intended to control encroachments and ribbon development. Its provisions can also be used for the mobilisation of resources by treating the land abutting the highway as an economic zone. It is a known fact that the development of the highway results in enhancement of land values. Currently, owners and developers do not share this benefit with the road authorities/ State. However the development of the land for other than agricultural use results in an extra burden on the road authorities/state to provide additional infrastructure in terms of service roads, junctions, parking facilities to meet the requirements of the new development. It is recommended that a 10 percent of revenue earned by the state from land registrations, land ownership transfers, fee charged from the land use change granted by the concerned development authorities/local bodies be

allocated to the KRF. In addition to the above, fines and penalties levied to protect the road assets under HPA and fees collected for providing access to the highway should also become the revenue of the KRF. It is estimated that about Rs. 150 crores per annum could be mobilized for KRF through this process.

5.3.2.1.4 Fuel cess: The Government should make every endeavor to ensure it gets an equitable share of the national fuel tax levy and allocate it to the KRF. About Rs. 30 crore is currently being transferred from the Centre to the State. To supplement this, a state cess on fuel at the rate of Rs. 1.50 per litre could be levied to mobilize Rs. 200 crores per annum.

5.3.2.1.5 Traffic fines and Access charges: The entire revenue earned from fines and other traffic violations estimated at around Rs.20 crores should be allocated to the KRF.

5.3.2.1.6 Levy for utilities and services within the right-of-way: A one time levy of rental charge for a period of 5 years should be considered for allowing utilities and services to be located within the right-of-way. There is a potential to mobilize Rs. 40 crores annually for renting out utility space along the state highways

5.3.2.1.7 Luxury Motor vehicles with engine capacity of over 1500 cc occupy more road space and emit more green house gases. To deter proliferation of such vehicles for private usage, a one time deterrent fee of Rs. 1000 could be charged at the time of vehicle registration. This is likely to generate about Rs. 10 crore per annum.

Based on the above analysis, it is estimated that there is a potential to generate an additional revenue of about Rs. 550 crores per annum for the KRF as indicated in the Table 7 below.

Table 7. Potential sources of revenue generation

Sl. No.	Additional Source of revenue	Amount Rs. Crores/year
1	User fees (Toll)	100
2	10 % Additional allocation from MV Registration fee	30
3	Development Revenue Sharing	150
4	State Cess on fuel	200
5	Traffic fines	20
6	Charges for locating Utility and services within ROW	40
7	Other sources	10
Total		550

If the annual revenue of KRF is enhanced to Rs. 550 crores per annum as suggested, this amount could be used to leverage borrowings from the market to the extent of Rs. 1500 crores. The Government should encourage KRF to associate with infrastructure funding agencies such as LIC, HUDCO, ADB, JBIC and IBRD to source additional funds for development and maintenance of road infrastructure in the state.

Action 7: With quite a few potential sources available for mobilizing additional resources, the Government shall enact necessary legislation to tap these sources and facilitate the implementation of the road development plan. At the same time, the Government shall

put in place a procedure that ensures automatic transfer of these funds from the consolidated fund of the Government of Kerala to the KRF.

The Task Force feels confident that with the suggested revenue mobilization and amendments to the KRF Act, the gap between the annual revenue and expenditure required for the improvement of existing roads can be minimized and the road improvement programs can be executed within the plan period.

5.3.2.2 Financing new roads

With the ongoing road and infrastructure development in the country, several models of partnerships amongst various stake holders have emerged and have been tried out. Private sector should be encouraged to play a greater part in highway development and maintenance in the future through various forms of turnkey projects and user pays projects – such as BOT/Annuity projects. However, the underlying feature of all PPP lies in the mobilisation of resources and the state's ability to make available land for development.

Action 8: Design and development of the north-south transport corridor has the potential for private sector participation. The Government shall initiate a techno-economic feasibility study to identify the corridor alignment and the financial viability of the project and understand the extent of private participation that would be possible and the conditions under which this would be acceptable to both the Government and the private sector The government will ensure that any such private sector projects will be just and fair for the road users whilst allowing the investors to have an economically viable project..

5.3.2.3 Financing maintenance of roads

Funds required for the maintenance of roads remains a matter of concern as the current annual budget allocation to PWD under this head is insufficient when compared to the requirement. The Task Force is of the view that Government fund allocation needs to be enhanced sufficiently to take care of the maintenance requirement.

Action 9: Government shall ensure that sufficient funds are allocated in the budget for road maintenance.

5.4 LAND ACQUISITION

To reduce the time frame required for acquiring land, a fast track process for land acquisition has been approved by the Government wherein the land is acquired through a process of negotiated settlement. This also incorporates a revised Resettlement and Rehabilitation Policy which has been approved by the Government. All road development programs to be implemented under this program should adopt the fast track land acquisition process.

Action 10: All road development projects undertaken as part of this road development policy shall adopt the fast track land acquisition process and the Government shall notify these accordingly.

5.5 PROJECT IMPLEMENTATION

Effective project implementation has been constrained by inadequacies in procurement procedures, project management capabilities, quality control mechanisms and contractor capabilities. Existing procedures need to be modified/updated and disseminated among the PWD engineers and Contractors to enable effective implementation of the road development plan.

5.5.1 Procurement

Standard Bid Documents and Prequalification documents have been recently revised and updated by the PWD. These have also been incorporated into the revised PWD manuals and procedures which are awaiting government approval. Electronic procurement system using the electronic media should be adopted to enable wider circulation of the procurement announcements and hence greater participation.

Action 11: The Government shall accord approval to the revised PWD manual so that the revised bid documents and procurement processes could be adopted as soon as possible and electronic procurement shall become the norm

5.5.2 Project Management

With the increasing trend towards outsourcing project implementation through works contracts, the PWD engineers have to acquire greater skills in managing projects. Well established methodologies and procedures are available to monitor, audit, evaluate and report the performance of contracts and contractors. PWD engineers need to be trained to handle these project management tasks more professionally.

Action 12: PWD shall identify appropriate institutions which can provide training on project management techniques to the engineering staff and the training programs shall be initiated immediately.

5.5.3 Quality Control

Recognizing the need for ensuring quality in project preparation, project implementation and maintenance stages of project life cycle, a quality control mechanism needs to be institutionalized. The Institutional Strengthening Action Plan (ISAP) under the KSTP has developed a program to constitute a Quality Control Cell in PWD. This Cell is expected to routinely monitor the quality of project implementation. In addition there is a need to have an independent quality audit to report on the quality of works at periodic intervals.

5.5.3.1 Periodic Quality Audit

An established institute should be authorized to conduct independent quality audit at periodic intervals. Since the KHRI has an established testing and quality control laboratory, they could be made to periodically conduct quality audits and report directly to the Government. However, since KHRI is currently a unit of PWD, it is necessary that the KHRI be made autonomous and upgraded to the standards of CSIR laboratories.

Action 13: The KHRI shall be made autonomous and upgraded to the standards of CSIR laboratories and subsequently shall be authorized to provide the Quality Audit of road works under implementation.

5.5.3.2 Accreditation of Contractors

Inadequate technical capacity amongst Contractors has been a major factor for delay in completion and substandard quality of works. Since PWD is updating its procurement procedures, standards and specifications, it is all the more essential that the Contractors being selected for execution of road works are capable of delivering as per requirements.

Action 14: The minimum eligibility criteria for Contractors to register with the PWD for undertaking road development and maintenance works would be to provide proof of their having undergone a training program which certifies their familiarity with the IRC and MoRTH standards and specifications.

5.5.4 Construction Practices

The present practice of stacking materials along roadsides and utilizing part of the right of way for preparing and mixing materials for road construction should be avoided as this is hazardous and inconvenient to the road users. Use of centralized plants and off site work area should become the norm and should be a contractual requirement.

Action 15: Adoption of mechanized construction procedures supplemented with finished work measurement should become the standard procedure for approval and payments.

5.6 ASSET MANAGEMENT AND CONTROL

Managing and controlling road assets have hitherto been given little importance. Public assets need to be monitored and managed to ensure that they do not get misused or its value gets reduced. To ensure this, there is a need to have a proper database which provides real-time information about the current status of the road asset. In addition there should be a monitoring and control system in PWD to manage the road assets.

5.6.1 Asset Inventory and MIS

PWD has already initiated the process for establishing the RMMS. This should be used for planning and prioritizing the 5 year road development and maintenance programs as well as the annual plans.

Action 16: The following shall be achieved as part of the Asset Management functions:

a) Priority shall be given to fully establish and operate the RMMS within the next 12 months. Towards this, all the necessary data shall be collected and compiled for the

entire PWD road network and associated planning software tools shall be acquired and operationalized.

b) *Using the RMMS, PWD's planning wing shall prepare the prioritized list of missing links and the program of implementation in the short term and these should be implemented by 2021.*

c) *Land use planning should be used as a tool to regulate and control traffic generation so that intersections, access roads, parking lots, road widening requirements, ribbon development etc could be managed more effectively.*

d) *Standard right of way (ROW) shall be acquired and established as part of this road development program*

5.6.2 Monitoring and Control

The Highway Protection Act is a legislation intended to control encroachments and ribbon development. It needs to be made more effective by framing rules and defining the powers of the enforcing officers.

Action 17: The Government shall frame the rules for the Highway Protection Act and shall ensure effective enforcement by providing support to the Highway Authority in terms of manpower and funds for the removal of encroachments, regulate and control access and to co-ordinate activities with other agencies.

Vehicle overloading damages the road pavement, shortens the life of the road pavement and increases the maintenance cost of roads. Multi-axle vehicles cause much less damage to roads than the common two-axle trucks. There is a need to enforce axle load limits and monitor the freight vehicles for overloading.

Action 18: Use of low axle weight but heavy haul multi-axle trucks which are more fuel-efficient shall be monitored and enforced by the Highway Authority.

5.7 TRAINING AND EDUCATION

A Core Skills Training Programme which includes Leadership Skills, Communication Skills, Project Management, IT Awareness, Quality Management, Planning, Environmental and Social Awareness and Safety should be developed and imparted amongst all the PWD technical staff.

Professional development of employees should be promoted to maintain and enhance organisational expertise. Training needs assessments should be undertaken and programmes developed to ensure training is appropriate and executed efficiently. Training may be undertaken internally or externally and should include courses on design, maintenance works, construction technology, asset management, safety, cost estimating, financial management, construction materials, environment and social aspects, contract management, legislation and rules.

The present arrangement of outsourcing training functions to the Institute of Management in Government (IMG) and the KHRI has some inadequacies. The major factor is that there are no faculty members in these training institutes who have expertise and practical experience in the respective areas. Hence it is necessary to develop KHRI as a training institute with permanent faculty positions created. Till this mechanism is worked out the action plan shall be to entrust the training requirements to the Department of Civil Engineering, College of Engineering Thiruvananthpuram and the National Institute of Technology, Calicut.

Action 19: The education and training needs identified under the ISAP of KSTP shall be implemented on a priority basis and a training needs assessment in the context of this road development policy requirements shall be initiated.

5.8 INSTITUTIONAL RESTRUCTURING

Road planning, construction, development and maintenance is the core functions of PWD. Over the years PWD has been entrusted with numerous other responsibilities. Working procedures and practices have become multifarious resulting in low levels of productivity in their core functions. Recognising these constraints, a number of programmes have been initiated with international assistance to improve the organisational productivity and efficiency of PWD.

However looking at the scale of operations and the extent of works involved in the coming years, this Task Force is of the view that the road development functions of PWD must be de-linked from the other activities to effectively deliver the targets set out in this plan. Towards this, a Highway Development Authority (HDA) should be established within the framework of the PWD with suitable empowerment to autonomously plan and implement the road development plan. The KSTP is at present operating along these lines and this could probably be upgraded into the HDA. The regular PWD could be vested with the implementation of road maintenance programs and all other adhoc road works assigned by the government.

Action 20: An autonomous Highway Development Authority shall be established within the PWD to implement the road development plan.

KHRI needs to be made autonomous and strengthened to enable them handle the following additional functions.

- Training: PWD technical staff and Contractor staff needs to be trained on the new procedures, standards and specifications being adopted by PWD. KHRI would have to strengthen their training capabilities by getting appropriate resource persons. They would also require constructing adequate buildings within their campus for conducting such residential courses on a continuing basis.
- Quality Audit: KHRI would also have to act as the independent quality audit agency for and on behalf of PWD. Necessary technical persons and equipments would have to be procured for the purpose.

Action 21: The KHRI shall be made autonomous and adequately strengthened to handle additional functions such as organizing and conducting education and training programs and undertaking quality audits on a continuing basis.

5.9 STAKEHOLDER PARTICIPATION AND TRANSPARENCY

A road development program of the magnitude outlined in this policy, should involve all stakeholders and users to ensure that the program has their support and ownership. A variety of forum may need to be constituted to enable such participation. Some of these are discussed in the following section.

A group should be established to include key government authorities and industry representatives to formulate and work out programs for developing and enhancing the construction industry.

Consultation mechanisms, such as workshops, should be organised to increase awareness of contract requirements and pre-qualification processes for contractors on topics including environmental and social aspects, quality and safety.

Local Self Government bodies, transport operators, road user groups, government departments, and all other interested organizations should be consulted to ensure all relevant factors are taken into consideration during the process of planning and implementation.

All tariffs, investment criteria, and bidding procedures, development plans, physical and fiscal progress, acts, rules and regulations, etc. should be published and made available for public access and view through electronic media.

Action 22: The HDA shall ensure that the projects and programs are taken through a process of public consultation and such information is available for public access through electronic media.

6 EXPECTED BENEFITS

The implementation of the road development policy will usher in a wide range of benefits. Some of the major benefits anticipated are:

- With the possible expenditure of upto Rs. 4,000 crores per annum over the next 12 years, road building materials and equipments industry is likely to generate of over 1 lakh jobs per year.
- Improved roads will reduce vehicle operating costs of all road users.
- Improved road infrastructure would facilitate development of lands for residential, commercial and semipublic uses which is required for accommodating the anticipated urban growth in Kerala.

7 FOLLOWUP ACTIONS

Implementation of the road development policy is expected to bring in much greater benefits to the state and its people than the investment being made. These need to be harnessed and channelised in a manner that it results in a sustainable environment. To enable this, the Government should initiate the following:

- Update the State Urbanization Policy
- Formulate a State Urban Transport Policy

Consequent to the acceptance and adoption of this state road development policy, the services of a Task Force should be obtained to monitor the implementation of road policy, ensure that the policy objectives and targets are achieved and advice the Government accordingly. Other tasks that could be assigned to the Task Force would be:

a) Develop a model concessionaire document for public-private partnership for the development of new road corridors in the state.
b) Develop the terms of reference for feasibility study and its modus operandi for PPP projects.

c) Develop an action plan for strengthening the KHRI with respect to infrastructure and human resource required for enhancing their training programs, contractor accreditation and quality audit function
d) Evolve the maintenance policy for improved highways.

SUMMARY OF ACTIONS TO BE TAKEN

Action 1: In cooperation with the NHAI/MoRTH, the PWD (NH) shall develop and improve the NH network in the state.

Action 2: In keeping with the Eleventh Plan strategies and the road development requirements, the following shall be achieved over the period 2009-21:

a) *All state highways shall be designed and converted into two lane carriageway with paved shoulders and the pavement shall be strengthened appropriately.*
b) *Based on needs, about 10 percent of the State Highways shall be further upgraded into 4 lane divided carriageway.*
c) *All MDRs shall be improved to have a single lane carriageway with hard shoulders and the pavement shall be strengthened appropriately.*
d) *Based on needs, about 10 percent of the MDRs shall be further upgraded into two lane carriageway with hard shoulders.*
e) *IRC standards and MoRTH specifications shall be adopted for the design and implementation of these road improvement projects. Appropriate measures for regulating direct access from roadside properties shall be incorporated in the designs.*
f) *Standard right of way shall be acquired as part of this program.*
g) *Preparation of projects for prioritizing and phasing the road improvement shall be initiated immediately and completed by 2011.*
h) *Implementation of projects shall be initiated as and when the projects are approved and completed by 2021.*

Action 3: To address the problems encountered on urban links, the following shall be achieved by 2021.

a) *Bypasses shall be provided to all urban agglomerations with a population of over 1 lakh.*
b) *Where ever bypasses are provided, the existing urban links shall be transferred to the Urban Local Body for their subsequent improvement and maintenance*.
c) *Project preparation works shall be initiated for all the 15 locations and completed by 2011*
d) *Project shall be implemented and completed by 2021.*

Action 4: Initiation and implementation of the following new road projects shall be undertaken over the period 2009-21.

f) *Development of the North-South road transport corridor. This has the potential for private sector participation. Extent of private participation needs to be ascertained by a techno-economic feasibility study and this shall be initiated immediately*
g) *Development of missing links and improvement of existing roads along the Hill Highway*
h) *Development of Coastal Roads*
i) *Project preparation work for identification and prioritization of new roads shall be initiated immediately and completed by 2011*
j) *New roads shall be implemented and completed by 2021*

Action 5: The following shall be the road maintenance action programs:

a) *All PWD roads shall be maintained as per IRC standards.*
b) *Maintenance plans and programs shall be formulated on the basis of RMMS*
c) *Priority shall be given to make the RMMS fully functional by 2010*

d) Backlog of maintenance works shall be brought down to zero by the year 2021
e) Performance based maintenance contract shall be adopted as a preferred procedure for road maintenance programs

Action 6: The Government shall amend the KRF Act to enable KRF to function and operate as an autonomous financial institution.

Action 7: With quite a few potential sources available for mobilizing additional resources, the Government shall enact necessary legislation to tap these sources and facilitate the implementation of the road development plan. At the same time, the Government shall put in place a procedure that ensures automatic transfer of these funds from the consolidated fund of the Government of Kerala to the KRF.

Action 8: Design and development of the north-south transport corridor has the potential for private sector participation. The Government shall initiate a techno-economic feasibility study to identify the corridor alignment and the financial viability of the project and understand the extent of private participation that would be possible and the conditions under which this would be acceptable to both the Government and the private sector The government will ensure that any such private sector projects will be just and fair for the road users whilst allowing the investors to have an economically viable project..

Action 9: Government shall ensure that sufficient funds are allocated in the budget for road maintenance.

Action 10: All road development projects undertaken as part of this road development policy shall adopt the fast track land acquisition process and the Government shall notify these accordingly.

Action 11: The Government shall accord approval to the revised PWD manual so that the revised bid documents and procurement processes could be adopted as soon as possible and electronic procurement shall become the norm

Action 12: PWD shall identify appropriate institutions which can provide training on project management techniques to the engineering staff and the training programs shall be initiated immediately.

Action 13: The KHRI shall be made autonomous and upgraded to the standards of CSIR laboratories and subsequently shall be authorized to provide the Quality Audit of road works under implementation.

Action 14: The minimum eligibility criteria for Contractors to register with the PWD for undertaking road development and maintenance works would be to provide proof of their having undergone a training program which certifies their familiarity with the IRC and MoRTH standards and specifications.

Action 15: Adoption of mechanized construction procedures supplemented with finished work measurement should become the standard procedure for approval and payments.

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entire PWD road network and associated planning software tools shall be acquired and operationalized.

b) *Using the RMMS, PWD's planning wing shall prepare the prioritized list of missing links and the program of implementation in the short term and these should be implemented by 2021.*
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Action 18: Use of low axle weight but heavy haul multi-axle trucks which are more fuel-efficient shall be monitored and enforced by the Highway Authority.

Action 19: The education and training needs identified under the ISAP of KSTP shall be implemented on a priority basis and a training needs assessment in the context of these road development policy requirements shall be initiated.

Action 20: An autonomous Highway Development Authority shall be established within the PWD to implement the road development plan.

Action 21: The KHRI shall be made autonomous and adequately strengthened to handle additional functions such as organizing and conducting education and training programs and undertaking quality audits on a continuing basis.

Action 22: The HDA shall ensure that the projects and programs are taken through a process of public consultation and such information is available for public access through electronic media.