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## 10. Appendix

### Sri Lanka existing road/railway infrastructure-Colombo and sub urban area.

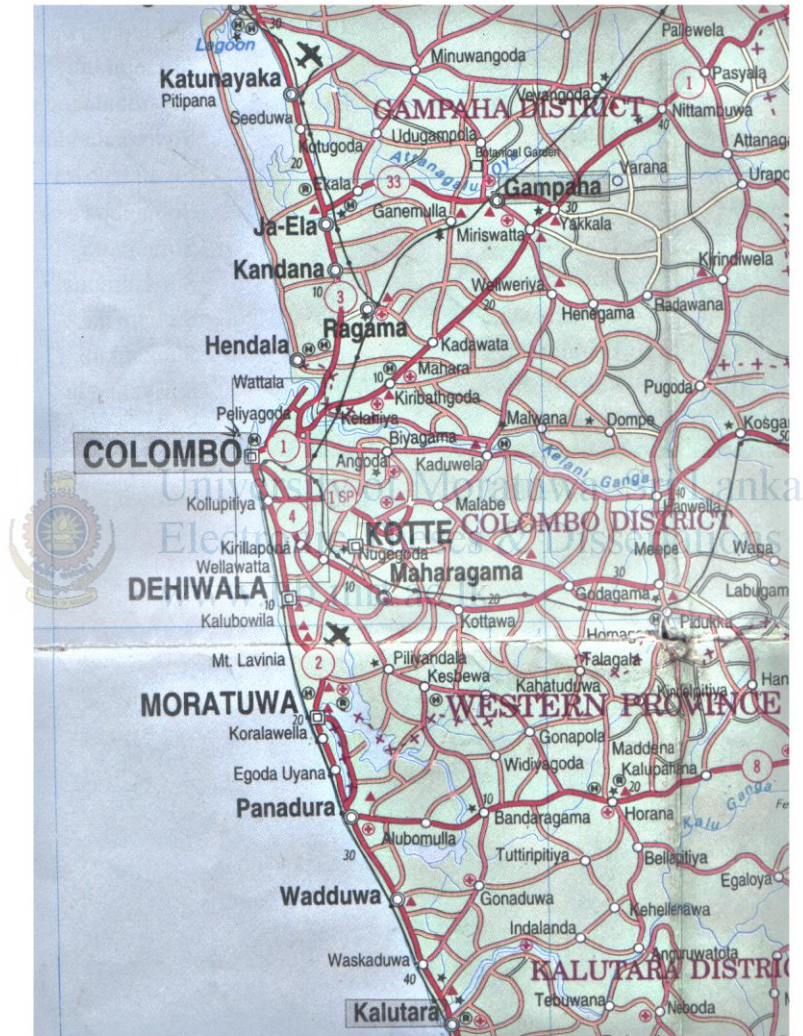


Figure A-1 Existing Road and Rail Infrastructure – Colombo and sub urban area

**Comparison of Specification for Sulfur in Diesel Fuel (%S by weight) with some other Asian countries.**

Country	1998	1999	2000	2001
Brunei	0.25	0.25	0.25	0.25
Indonesia	0.5	0.5	0.5	
Malaysia	0.5	0.5	0.3	
Myanmar	0.5	0.5	0.5	
Philippines	0.5	0.5	0.5	0.2
Singapore	0.3	0.05	0.05	0.05
Thailand	0.25	0.05	0.05	0.07
Vietnam	0.5	0.5	0.5	
Sri Lanka	1.1	1.1	1.1	1.1

Source: Adopted from Jayaweera, Vehicle Inspection and Maintenance Policies and Programme- Sri Lanka

Table A-1 Comparison of Specification for Sulfur in Diesel Fuel (%S by weight)

**Vehicle operating cost (financial) at different speeds**

	Cost (Rs)/km/hr			
	10	20	30	40
Motor Cycle	18.20	3.20	2.40	2.10
Van	18.20	11.80	9.80	9.30
Large bus	20.80	15.20	13.40	12.70
Medium truck	26.30	18.70	16.20	15

Source: Economic feasibility study of Southern highway, 1996

Table A-2 Vehicle operating cost

**Proposed list of projects for Colombo Metropolitan Region 1999-2010**

Proposed Project	Estimated Cost (Rs mn.)	Responsible Agency	Remarks
Rehabilitation of rail track	15,000	SLR	Project by stages identified Funding processed for some stages
Development and signaling system	1,500	SLR	-
Reflecting and replacement of rail stock	2,600	SLR	
Northern Expressway with in CMR + Outer Circular highway	14,005	RDA	-
Improvement of stations	10	SLR	-
Tribal track to Ragama	100	SLR	-
Double track to Negambo + Kaluthara	1,600	SLR	
New rail line (Dematagoda-Rathmalana)	1,505	SLR	-
Electrification of railway	-	SLR	
Ragama, Kottawa, Orugodawatte, Rathmalana transport centers	120	SLR	

Source: Urban Development Authority, 1998

Table A-3 Estimated costs for railway development

# Research Project on developing a conceptual plan for road infrastructure usage management with the use of ICT/a strategic approach

## Questionnaire to collect information about user and expert views.

Please answer the questions below. You may skip any question that you do not like to answer. Circle or shade the appropriate box where applicable.

### 1 User Background

- 1.1 Current residence city:  
 1.2 Age:  
 1.3 Occupation:  
 1.4 Highest education level:

O/L	A/L	Undergraduate/Professional	Graduate	Above graduate
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- 1.5 You are currently:

Retired	Employed/Self employed	Academic/Professional Studying	Schooling	Staying at home
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### 2 Users travel behaviour to Colombo city.

- 2.1 Frequency of travel to Colombo:

Daily/All week days	Few times a week	Weekly	Few times a month	Monthly	Rarely/Once	Never
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- 2.2 Why do you travel to Colombo?

Official	Business/Entertainment	Study purposes	Residence	Other
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- 2.3 Mode(s) use for the above:

Bus	Train	Bus and train	Private vehicle	Other
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- 2.4 Your Driving pattern?

Daily/All week days	Frequently	Some times	Very rarely	I have never drive
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- 2.5 If you have drive, have/do you drive in Colombo  Yes  No city?

- 2.6 Have you used railway for travelling to  Yes  No Colombo?

### 3 The problem in users point of view.

- 3.1 Your view about Colombo traffic congestion:

Extremely	Very	Congested	Some	Neutral	Rarely	No
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Congested	congested		times congested		congested	congestion
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3.2 What do you think about the railway service?

Extremely Unsatisfied	Un satisfied	Neutral	Fairly satisfied	Satisfied	Extremely satisfied
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3.3 List reasons for the above:

3.4 What do you think about current traffic and travel related information availability?

a) At home

Readily available	Available	Neutral	Some information available	Not available
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b) Before leaving home

Readily available	Available	Neutral	Some information available	Not available
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a) During the travel

Readily available	Available	Neutral	Some information available	Not available
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#### 4 Views to overcome the situation

4.1 Do you think a proper plan is necessary to manage the Colombo city traffic congestion in future?

Yes	No
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4.2 What do you suggest to reduce the road Congestion?

4.3 What do you suggest to address the security aspects in Car Parks?

4.4 What do you suggest to improve the followings in rail service?

a) Availability

b) Accessibility

c) Efficiency



d) Comfort

e) Safety

4.5 Your pattern of listening to the radio:

All day	Few time a day	Morning	When travelling	Very rarely
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4.6 Your pattern of watching the TV:

All day	Few time a day	Morning	Evening/Night	Very rarely
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4.7 Do you use a mobile phone?

Yes	No
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4.8 If yes, do you use



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Yes	No
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 SMS?

4.9 If yes, Frequency of using SMS:

More than 10 in a day	Less than 10 in a day	Few in a week	Few in a month	Very rarely
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4.10 Do you have access to the

Yes	No
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Internet?

4.11 Frequency of using the Internet?

Several times in a day	Once in a day	Few times in a week	Few times in a month	Very rarely
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## 5 Use of Fare cards/Stored value cards

5.1 Have you used an ATM card, Credit card or pre-paid Telephone

Yes	No
-----	----

 card?

5.2 Do you know what is a fare card (also called as stored value card, smart)?

Yes	No
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*If answer is No, please read the brief explanation about fair cards at the end of*

questions.

5.3 Do you think we can use fair cards/stored value cards when travelling in Sri Lanka in future?

Yes	No
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## 6 Views on the suggested strategy

*Please read the problem and suggested strategy at the end of questions.*

6.1 What do you think about this strategy/plan?

6.2 Would you be like to have this kind of strategy to be implemented in Sri Lanka?

Yes	No response	No
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6.3 What improvements you would like to suggest in this plan?

6.4 Your view about anything related to this subject area:



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End of questions.

### **Brief Explanations:**

Fair Cards/Stored value cards/Cash cards:

Fair card is a plastic card size of an ATM/Credit card or a Telephone card that can store a value generally called prepaid value. It can be used for paying at obtaining tickets when travelling in trains and buses. The main advantage of using this card is that the user does not need to carry changed money or coins. When the card value reach zero it can be topped up with a new prepaid value. If the cardholder needs a refunding for unused amount in the card it can be done at selected places.

The problem:

Increasing Colombo traffic congestion is a major problem facing many of us. Specially during peak time this situation causes many problems such as wasting of time and fuel and increased vehicle running cost. With considering current active vehicle growth rate, which is 6% per year, and also future expressway building projects, in future there can be uncontrollable traffic congestions that can be arisen in Colombo.

Suggested strategy:

This is a set of activities that need to be carried out to manage the uncontrollable traffic congestion in Colombo that can be arisen in the future. The objective here will be by motivating users to use train service than to public and private vehicular transport in Colombo and suburbs so that road usage can be controlled. Some key points are listed below in this aspect.

- Railway system to be up-lifted to an efficient and satisfactory level.

- Increase the accessibility to railway stations via public transport services to a sufficient level.
- Colombo city metro bus service linking stations will cater the user need of going around the city.
- Implement a park and ride concept that drivers can park their vehicle at any station remotely and use efficient rail rides. The security is a key issue here to be addressed using Information and Communication Technologies (ICT).
- Fair card system will increase the travel efficiencies and facilitate interchanges between buses and trains. Cost issues to be addressed in this aspect.
- A system to be set-up with the use of ICT in order to delivery important traffic and travel related information in an effective manner.



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### Analysis of usability of different media for travel information delivery

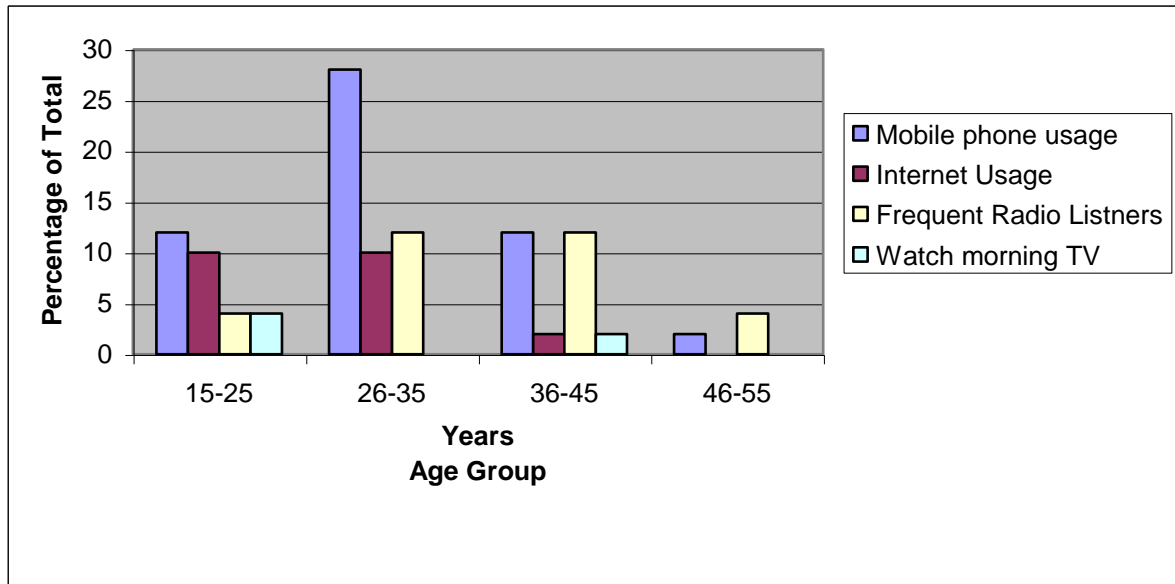


Figure A-3 Analysis of usability of different media for travel information delivery



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### Economic and Competitiveness Indicators in selected countries (Year 2000-2001)

Description	Rank			
	India	Sri Lanka	Singapore	USA
Growth competitiveness	57	61	4	2
Network readiness	54	62	8	1
Information and Communication Technology Index	66	59	18	1
Environmental Sustainability	93	52	63	11
GDP per capita (PPP)	2464	3634	23250	34888

Source: World Economic Forum, 2002

Table A-4 Analysis of usability of different media for travel information delivery

### Average daily traffic in radial roads linking Colombo

Radial Road	1996	1999	2001
Peliyagoda – Puttlam Road	27 910	30 692	38709
Colombo – Galle Road	23 122	24101	32424
Colombo – Kandy Road	28 060	29 936	32 432
Colombo – Ratnapura Road	17 203	33 377	39 403
Kollupitiya – Sri J'pura Road	24 035	25 873	32 424
Colombo – Horana Road	13 112	21 540	28 650
Wellampitiya- Kaduwela Road	12 144	14 908	21 482

Source: Traffic and Planning Division, RDA

Table A-5 Average daily traffic in radial roads linking Colombo



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