

**Consultancy Studies for Induction of
Eco-Friendly Buses in Cities of Punjab**

PC-II

(RS. 50 million)

October 2022

PC-II FORM

1	Name of the Project	Consultancy Studies for Induction of Eco-Friendly Buses in Cities of Punjab
2	Authorities responsible for	
	i) Sponsoring	Transport Department, Government of Punjab
	ii) Execution	Punjab Transport Company (PTC), Government of Punjab
3	Detail of Survey/ Feasibility	
<p>1. General description, aims, objectives and coverage</p>	<p align="center"><u>BACKGROUND / ISSUES</u></p> <p>Rapid and unplanned urbanization is a major problem faced by city planners across Punjab, of which transport is one of the sectors heavily influenced. Due to lack of an efficient public transport system in cities, the reliance on private transport has increased significantly, placing an economic burden on the under privileged. Due to limited road capacity, this has also led to chronic traffic congestion, increasing daily trip times reducing accessibility to work, recreational and educational trips. The absence of an efficient and reliable public transport network has led to the emergence of sizable number of illegal modes of transport e.g., motorcycle rickshaws. The overall increase in motor vehicles has also increased tail pipe emissions, which are significant contributors to Green House Gases, especially in urban areas.</p> <p>To address these issues, cities should be developed in a sustainable manner, keeping urban mobility and transport demand at the fore front. To contribute in achieving this goal, studies for cities are required to assess the transport demand, development of a long-term transport plan and recommend strategies to address these issues.</p> <p align="center">OBJECTIVES</p> <p>To assess the demand of public transport, the specification of buses and estimate the number of buses required, PTC plans to conduct consultancy studies for cities of Rawalpindi, Gujranwala, Gujrat, Sargodha & Sialkot. The objective of the study is to provide a clear picture of the scale of services required for sustainable development of the urban transport sector for the cities in an eco-friendly manner.</p>	
<p>2. Justification of the Project</p>	<p>There is a dire need to meet the mobility demand of the cities of Punjab with more environment friendly mode of public transport. The modal shift towards eco-friendly</p>	

	<p>public transport from private vehicles will greatly lower the tail-pipe emissions in urban areas and result in improvement of environment of the province.</p> <p>The absence of adequate public transport network has led to the following problems in cities of Punjab:</p> <ol style="list-style-type: none"> 1. Rise of private vehicle ownership, leading to traffic congestion, 2. Prolonged travel times, 3. Degradation of the environment, including noise and air pollution, 4. Emergence of illegal modes of transport e.g., motorcycle rickshaws, 5. Lack of accessibility to work, education and recreational facilities.
3. Implementation Period	The study is expected to be completed within 10 months from the date of award.
4. Year-wise Cost Estimates	The estimated cost for project is PKR 50 million.
5. Manpower Requirement	The human resource requirements are detailed in Annexure III.
6. Financial Plan	The estimated cost of the project is PKR 50 million. Details are attached as Annexure -II.
7. Expected Outcome	Outcomes are detailed in Annexure I.

Prepared by _____

Name, Designation & Phone#

Reviewed by_____

Name, Designation & Phone#

Checked by _____

Name, Designation & Phone #

Approved by_____

Name, Designation & Phone#

ANNEXURE – I: TERMS OF REFERENCE

CONSULTANCY STUDIES FOR INDUCTION OF ECO-FRIENDLY BUSES FOR CITIES OF PUNJAB

Scope of Work

The duties of the consultant must include, but not limited to the following:

1. BACKGROUND:

Punjab is the most populous province of Pakistan. The province's rapid growth has resulted in an increase in mobility demand for daily commute for work, education & recreational purpose within its cities. This, coupled with increasing vehicle ownership, has caused transport related problems like traffic congestion, degradation of the environment, emergence of para-transit vehicles, road accidents etc. in urban areas. These problems are not limited to major cities of the provinces but are now witnessed in developing cities as well.

Rawalpindi

Rawalpindi is the capital city of Rawalpindi division and is the 4th largest city of Pakistan. The city is an important administrative, commercial and industrial center, including locomotive works, gasworks, cotton, hosiery and textile mills.

Gujranwala

Gujranwala is capital of Gujranwala Division and the 5th most populous city of the country. The city is the 3rd largest industrial center after Karachi & Faisalabad¹. The city contributes 5-9% of Pakistan's national GDP². The city is part of large urban centers in north-east Punjab province that forms one of Pakistan's highly industrialized regions.

Sialkot

Sialkot is the capital of Sialkot district and is an important manufacturing hub for the province. The city is responsible for a sizable number of exports and manufactures half of the world's footballs.

Sargodha

Sargodha is the 12th largest city by population of Pakistan and one of the fastest growing cities of the country. Major industries in the city include textile, hosiery, flour, and oilseed mills, cotton gins, and chemical and soap factories.

Gujrat

Gujrat is the capital of Gujrat district, and along with nearby cities of Sialkot & Gujranwala, forms the 'Golden Triangle' of industrial cities with export-oriented economies.

These cities are facing numerous problems regarding urban mobility. As these cities develop at a steady rate, there is a lack of an efficient public transport system to provide accessibility to the commuters. Timely identification of

¹ Historical Perspective of Urban Development of Gujranwala, Dept. of Architecture, UET, Lahore, 2017

² Punjab at a Glance, Punjab Board of Investment and Trade, Government of Punjab

transport demand and services required for mobility for these cities may lead sustainable development of mobility for these cities.

As the impact of tail pipe emissions in urban areas is hampering daily activities and health of citizens in major cities, the emphasis lies in the introduction of eco-friendly modes of transport. These emissions have increased over recent years due to increase in private vehicle use, lack of efficient and clean fuel and the operation of illegal and depleted vehicles e.g., motorcycle rickshaws.

Hence, the government aims to induct environment friendly modes of transport in urban areas of the province to mitigate the impact of these GHGs and move towards a sustainable mode of transport. Punjab Transport Company (PTC) aims to conduct consultancy studies to evaluate the demand of urban transport in these cities. The study will provide a clear picture of the scale of services required for sustainable development of the transport sector for the city.

2. OBJECTIVES OF CONSULTANCY

To address shortage of public transport and mitigate the adverse effect of vehicular emissions in the province, PTC aims to conduct consultancy studies for **Rawalpindi, Gujranwala, Sialkot, Sargodha & Gujrat** cities.

The objective of this consultancy is to evaluate the introduction of eco-friendly buses and its allied infrastructure, potential urban and suburban routes, recommend appropriate business model for bus operations, develop financial model(s) and formulate technical specifications of vehicles & any allied infrastructure, if required. The consultancy also aims to assess the financial and economic viability and impact of the project.

3. SCOPE, DUTIES & RESPONSIBILITIES OF CONSULTANT

The responsibilities of the Consultancy Firm (Consultant) shall include, but are not limited to the following:

- a) The consultant must review the current transport system, including present traffic demand on all critical road sections/junctions and shall compare with road capacities. The consultant shall review existing policies and development plans, public transport routes, number/types of permits issued, vehicles & trips, problems with existing public transport system, public transport infrastructure facilities and services.
- b) The consultant shall carry out the necessary surveys for induction of Eco-Friendly buses in the mentioned areas. Surveys may include but not limited to the following: i) Existing Public transport modes and its routes, ii) passenger demand on existing modes, iii) Road inventory survey, iv) traffic count at major roads / intersections, v) user interview survey, vi) Origin- destination survey, etc. the consultant shall carry out necessary analysis after data entry of surveys.
- c) The Consultant shall review the previous public transport studies and/or data available with Transport Department / TPU / DRTA Offices / PTC to evaluate transport demand, requirement of buses, bus operations parameters, existing and proposed infrastructure, integration of routes with mass transit and feeder services, if available. Keeping in view the surveys and above data, the consultant shall recommend the most

appropriate routes feasible for operations of eco-friendly buses in the urban areas and the city's suburbs. The Consultant shall prioritize feasible routes for induction of sizeable fleet to manage passenger demand in the city by considering road infrastructure and other operational parameters.

- d) Propose specifications for the recommended type of eco-friendly buses, taking into consideration the operational requirements of proposed routes e.g., daily mileage, route lengths, potential ridership, requirement of buses, bus headways and frequencies etc. for smooth operation. The considerations must include provision of Automated Fare Collection and Bus Scheduling System (AFC-BSS), Passenger information Systems (PIS), other system required for operations
- e) Compare different business models for induction and operation of buses, including Public Private Partnerships, based on best international practices and previous experiences of Bus operations, suggest appropriate business model for bus operations by evaluating the pro and cons of different models.
- f) Estimate Capital, Operational & Maintenance costs, revenue estimation based on different fare structures, work out financial assistance (if required) for induction and operation of buses for different business models.
- g) Conduct detailed cost to benefit and economic analysis of the project.
- h) Consultant shall work out comparative analysis of all possible types of buses and their sustainability model and study shall also include impact on environment.
- i) Consultant shall also workout human resource requirements for operations of public transport.
- j) Consultant shall also assess infrastructure requirements such as bus stops, shelters, workshops and parking areas along with financial implications.
- k) The consultant shall conduct a preliminary analysis to assess the energy requirements and availability of resources (depots etc.) to run electric buses in mentioned cities.
- l) The Consultant shall prepare Terms of Reference for induction of buses for all cities, keeping into perspective the proposed business model, urban bus routes and all relevant finding in the study.

4. CONDUCT OF THE STUDY

1. The consultancy firm will be engaged by PTC for the consultancy study. The firm will report to the Chief Executive Officer of PTC.
2. The Consultancy firm will work closely with the team constituted by PTC for undertaking the work defined above. The Terms of Reference may change as per mutual understanding of PTC and the Consultant.

- PTC will ensure that the Consultant has all necessary information, contacts, resources and meetings needed to perform the assignment.

5. TIME DURATION

Services of the consultant are required for a period of 10 months from the date of award of contract.

6. DELIVERABLES WITH TIMELINES

Punjab Transport Company requires the following deliverables against the specified timeline:

Sr.	Deliverable	Description (Report shall at least include)	Timelines
1	Inception Report	Objectives, methodology, literature review, survey questionnaires, analysis techniques and outcomes details of project	Within 01 month
2	Survey Report	Different surveys & analysis	Within 04 months
3	Draft Report	Tasks mentioned in Scope, Duties & Responsibilities of Consultants	Within 08 Months
4	Final Report	Updated version of draft report incorporating comments/ suggestions by the Client or any other government department	Within 10 Months

All deliverables to be submitted in following format

- Hard Copies (2 Nos.)
- Soft Copy (CD/DVD)

ANNEXURE II: BREAKDOWN OF ESTIMATED COST OF THE STUDY

A. Breakdown of Remuneration

Sr. No.	Position	Qty	Months	Billing Rate (PKR)	Total Amount (PKR)
1. Core Team					
1	Team Leader	1	10	800,000	8,000,000
2	Transport Economist / Financial Expert	1	2	600,000	1,200,000
3	Mechanical / Automotive Engineering Expert	1	1	600,000	600,000
4	Procurement / Contract Management Specialist	1	1	600,000	600,000
2. Support Staff					
6	Transport Engineer	4	8	300,000	9,600,000
7	Survey Experts	4	4	300,000	4,800,000
8	Financial and Economic Analyst	2	3	300,000	1,800,000
9	GIS Officer	1	4	250,000	1,000,000
10	Statistician	1	4	250,000	1,000,000
11	Socio-economic Analyst	1	2	250,000	500,000
Sub-Total (A)					29,100,000

B. Breakdown of Reimbursable

Sr. No.	Description	Unit	Unit Cost (PKR)	Quantity	Total Amount (PKR)
12	Per Diem Allowance	Per Month	500,000	10	5,000,000
13	Communication Cost	Per Month	100,000	10	1,000,000
14	Use of Computer, software, equipment, instruments	LS	2,000,000	1	2,000,000
15	Transportation Cost	Per Month	500,000	10	5,000,000
16	Surveys	LS	6,500,000	1	6,500,000
17	Printing and Advertisement	LS	500,000	1	500,000
Sub-Total (B)					20,000,000

Total	49,100,000
Contingencies	900,000
Total	50,000,000

**ANNEXURE III:
JOB DESCRIPTION AND QUALIFICATION OF THE PROPOSED STAFF**

Sr	Position	Qualification
1	Team Leader (Transport Planner / Engineer)	<p>Master's degree in Transportation Engineering, Transport Planning or Urban Planning from an accredited local /foreign university.</p> <p>10 Year of Experience in the field of Transportation Engineering/ Planning</p>
2	Transport Economist / Financial Expert	<p>Master's degree in Economics, Finance, preferably member of a professional body like ACCA, ICMA, CA etc.</p> <p>More than 5 years of working experience in projects related to financial modelling preferably transport financial modelling and carrying out economic analysis</p>
3	Mechanical / Automotive Engineering Expert	<p>Bachelors / master's degree in Mechanical / Mechatronics / Automotive Engineering.</p> <p>More than 3 years of experience regarding performance evaluation of bus technologies, bus specifications, engines and their relevant performances</p>
4	Procurement / Contract Management Specialist	<p>Master's degree in Engineering, Business Administration, Public Administration, Economics, Finance or related field.</p> <p>More than 5 years of experience in preparing and vetting tender documents, contract terms and conditions, legal documentation, procurement processes conducted under PPRA guidelines and evaluation of bidding documents in transport sector.</p>