

Memorandum of Understanding

Between



*Bangalore Metro Rail Corporation,
B.M.T.C Complex, K.H Road, Shantinagar,
Bangalore 560 027*

And



*Institute for Social and Economic Change
Dr. V.K.R.V Rao Road, Nagarathavi,
Bangalore 560 072*

May 16th 2011

Memorandum of Understanding between BMRCL and Institute for Social and Economic Change (ISEC) Bangalore for being the Expert Committee to assist the Bangalore Metro Rail Fare Fixation Committee.

1. This Memorandum of Understanding is between Bangalore Metro Rail Corporation Limited (BMRCL), a company jointly owned by Government of India and Government of Karnataka having its registered office at 3rd Floor, BMTC Complex, KH Road, Shantinagar, Bangalore 560 027 and Institute for Social and Economic Change, (ISEC) Bangalore, a Registered Society set up by the State Government of Karnataka, located at Dr. V K R V Rao Road, Nagarabhavi, Bangalore 560072.
2. BMRCL has been set up with the objective of providing Rail based mass Transit System to the city of Bangalore. ISEC is an all India Institute for Interdisciplinary Research and Training in the Social Sciences, established to create a blend of field-oriented empirical research and advances in social science theories leading to better public policy formulation.
3. BMRCL had sent a Request for Proposal to designate an expert body to collect and analyse relevant data and advise its Fare Fixation Committee on an ongoing basis to ISEC and upon receiving the proposal have reached the following understanding:

Project Objectives

4. The key objective is for ISEC to develop a robust analytical tool for fare fixation and evolve some principles on which tariffs can be fixed and calibrated periodically against indices. The recommendations will be based on various models that will take into consideration the operating costs, commuter related data, comfort and affordability as well as an appropriate pricing mechanism to sustain the investments.
5. **Scope**
 - a. ISEC would provide time-to-time inputs with regard to the theoretical options on pricing of sustainable urban rail transport systems. Also it would assess the pricing strategy adopted by other metro rail systems in India and elsewhere and modify the methodology if needed.

- b. ISEC will take into account the standards developed internationally where these are relevant.
- c. ISEC would analyse the local demand and use pattern of the services and its determinants and would outline an index link for fare revisions.
- d. The broad contours of the activity of the expert committee would be as outlined in **Annexure 1** to this MoU, which will form part and parcel of this understanding
- e. In evolving a pricing strategy ISEC would lay emphasis on affordability, impact on ridership, quality of the provision of transport system and sustainability so as to meet the O&M and capital recovery with reasonable return through user fares and charges more fully described in the **Annexure 1**
- f. The expert committee from ISEC would consist of the Director and at least two faculty members well versed with the issues in urban transport systems.
- g. ISEC Bangalore would conduct studies from time to time, which could go as inputs to the fare fixation committee. These studies would be based on the available secondary data as well as primary data collected by the Institute. ISEC would submit six monthly reports to BMRCL on aspects related to pricing and usage on Metro and will utilize all the relevant data to assist and advise the Fare Fixation Committee on an ongoing basis on all matters concerning fixation of fares and calibrating the revision of tariff.

6. Permissible uses and confidentiality

- a. BMRCL will provide the fullest possible measure of mutual assistance to ISEC in providing all relevant information. While all information gathered on the subject under this MoU shall be kept confidential it shall be shared with BMRCL and the Fare Fixation Committee.

- b. ISEC shall use the information obtained either from BMRCL or from third party sources only for the purposes of this MoU and the Project and not for any other purpose.
- c. The entire information collected though in the custody of ISEC, shall remain the property of BMRCL and ISEC shall not use the information held either for academic or for any purpose other than mentioned in this MoU.
- d. After the termination of the MoU, all papers and document connected with the Fare Fixation for BMRCL will be returned to BMRCL.
- e. Any academic paper that ISEC wishes to publish, during or after the contract period, shall be only after it being formally approved by a committee of four members of which two shall be academics and the other two representing Director BMRCL.

7. Duration of the MOU:

This Memorandum of Understanding is signed for an initial period of three [3] years and may be renewed by mutual agreement between the Parties. This Memorandum will be effective from the date of its signature by the *Managing Director, Bangalore Metro Rail Corporation* and *Director Institute of Social and Economic Change*

8. Remuneration

During the period of this Memorandum of Understanding, for the scope and services of ISEC envisaged therein, BMRCL shall pay Rs.12, 00,000 (Rupees twelve lakhs) per annum. The remuneration shall be disbursed in advance quarterly. Besides the annual remuneration an annual lump sum amount of Rs.1,00,000/-(Rupees one lakh) towards miscellaneous expenses shall also be paid in two installments. Subject to this Financial Arrangements ISEC may not commit any cost, expense or obligation without the written consent of that Party.

9. Termination clause

Each Party shall have the right to terminate the Memorandum of Understanding by giving [three] months' written notice in writing to the other Party at any time. If the

Memorandum of Understanding is terminated by either Party, steps shall be taken to ensure that the termination does not affect any prior obligation, project or activity already in progress.

10. Contact points

All communications between the parties shall be between the principal points of contact as agreed between them from time to time.

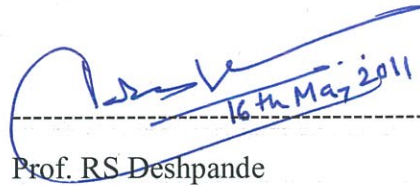
11. Amendment clause

The Memorandum of Understanding may be modified or amended by written agreement between the Parties.

“IN WITNESS WHEREOF the undersigned, N Sivasailam, Managing Director, Bangalore Metro Rail Corporation Limited and of Mr. RS Deshpande, Director, Institute of Social and Economic Change, respectively, have signed the present Memorandum of Understanding in English in two originals, at Bangalore this ^{16th}~~22nd~~ day of ^{May}~~February~~ 2011.

For Bangalore Metro Rail Corporation Ltd.

For Institute of Social and Economic Change



N. Sivasailam

16/5/11

Prof. RS Deshpande

Annexure

Fare Fixation for Bangalore Metro Rail Corporation: Issues and Options

Bangalore Metro project is one of the well designed integrated public transport systems. The attempt is to provide comprehensive connectivity with convenience, comfort, and affordability. In doing so frequency and reliability of service along with safety and aesthetics are accorded high priority. However to accomplish its aims the Bangalore Metro needs to evolve a need based investment policy to create the necessary infrastructure and an appropriate pricing mechanism to sustain the investments. ISEC shall attempt to evolve some principles on which tariffs can be fixed

Some theoretical considerations

Bangalore Metro could be characterized as a 'natural monopoly'. Natural monopoly occurs when a single producer most cheaply serves a market. Natural monopolies arise from economies of scale, which means that the largest firm has a cost advantage over its competitors, and hence is likely to become a monopolist. Where a single firm produces two or more products or services more cheaply than separately by two firms, economies of scales exist. A combination of economies of scale and scope is likely to lead to dominance of the market by a single multi-product firm. Such firms have market power to charge prices that generate excessive profit. It is important to examine the pricing options for a natural monopolist. Price is determined by the interaction of demand and supply. Any producer would maximize profits at the level of output where marginal revenue and marginal costs are equated. Under competitive conditions prices would equal marginal cost whereas an unregulated monopoly would charge a higher price, thus raising the price to consumers.

Bangalore Metro is also a 'public good'. Public goods are goods or services that can be consumed by several individuals simultaneously without diminishing the value of consumption to any one of the individuals. This key characteristic of public goods, that multiple individuals can consume the same good without diminishing its value is to be considered while evolving a pricing formula. In such situation the market price is no longer an efficient mechanism, because the stock of a public good is never 'consumed away'. For a given quantity, individuals will not automatically self-select their optimal

price, but will instead wish to pay the lowest price possible when they cannot be excluded from consuming the good.

If we want to ensure the survival of the firm then the lowest price consistent with the firm breaking even is to be considered. Then the implication is that a regulator should seek to drive prices down to average costs, unless the state subsidizes the losses associated. The situation is different, however, where a natural monopolist operates a multiservice utility. In such a case a firm that can offer different service to different customers or differentiate between customers in its pricing policies. If these services were provided, at marginal cost prices, by separate firms then both firms would make losses since they are both subject to economies of scale. Hence there is a need for a mark-up on marginal cost. One approach would be to apply an equal mark-up to both services. This would distort demand, since the reduction in demand for one service might be greater than for another service owing to differences in their respective demand elasticities. A preferred option is to adopt so-called Ramsey pricing which involves applying proportionately higher mark-ups where demand is more inelastic. The regulatory response to a natural monopoly of a multi-product service, where there is a requirement to break-even, should be to encourage differential mark-ups on marginal-cost for services with differing elasticities of demand.

Evolving a Pricing Strategy

We shall attempt to evolve a pricing strategy on the following considerations:

- (a) As a first step we shall review the theoretical options regarding pricing of urban rail transport systems
- (b) In the next stage we would assess the pricing strategy adopted by other metro rail systems in India and elsewhere and modify the methodology if needed
- (c) In the third stage we would analyze the local demand and use pattern of the service and its determinants
- (d) Finally we would outline an index link for fare revisions

Our objective would be to devise a strategy taking into three factors

- Affordability: to serve the urban poor with cross subsidy element
- Impact on Ridership: A lower fare may attract a higher ridership and a higher fare may take away ridership.
- Quality: for the passengers who value time saved and comfort level more than price. The cost of providing public transport to them need not be subsidized and can be met from the fare revenues.
- Sustainability so as to meet the O&M and capital recovery with reasonable return through user fares and charges, taking into account overall revenue on a Metro Rail system.

The Expected Output

ISEC Bangalore would conduct studies from time to time which could go as inputs to the fare fixation committee. These studies would be based on the available secondary data as well as primary data collected by the Institute. ISEC would submit a six monthly reports on aspects related to pricing and usage on Metro.

ISEC will also be the designated expert body to analyse the relevant data and advise the Fare Fixation Committee on an ongoing basis.

We expect that the pricing policy would generate revenues that can ensure an efficient and adequate supply of public transport service, contribute to the reduction of congestion and environmental impact of road traffic and efficient coordination between public transport modes.


For Bangalore Metro Rail Corporation Ltd *For Institute of Social and Economic Change*



N. Sivasailam

Bangalore

Date 16 MAY 2011.


Prof. RS Deshpande