

THE ORANGE LINE- FALLACY VS REALITY

1. This refers to a recent article published in this newspaper of February 28, 2016 by Dr. Farrukh Saleem presenting a case against Orange line in particular and mass transit system in general. While respecting the views of honorable writer, a professional analysis of issues raised by Dr. Saleem are presented here.
2. In transport science, decisions pertaining to mode selection of public transportation are taken on the basis of passenger demand stemming from passenger per hour per direction (pphpd) counts. The linkage of investment of scarce resources in transport is established from the economic benefits which such investment will yield to the economy i.e. “passengers travel time savings” and “vehicle operating cost savings”. In case of Orange line, detailed feasibility conducted by the consultants indicated an average daily ridership of 245,200 passengers per day in its first year of operation which is expected to increase to 495,500 in the year 2025. Taking the first year daily boarding of approximately 2,45,200, the pphpd works out to 10,100. It will increase to 20,500 in 2025. The consultants designed the system for a pphpd of 30,000 to adequately cater for passenger demand beyond 2025. The consultants recommended Metro train for Orange line on the basis of aforementioned data emanating from a detailed traffic modeling study of Lahore.
3. An interesting scenario has been presented by Dr. Saleem that instead of doing the Orange line project, the Punjab Government could provide Mehran VX to each and every passenger to resolve the transportation problems. It is stated that the basic principle of providing public transport is to offer a mode choice to reduce vehicles thereby alleviating congestion on the roads. Professional analysis of this proposition indicates that if Mehran cars are given to 2,50,000 passengers in place of Orange line project, it will generate vehicle demand of 5050 per hour per direction assuming two passengers per car ($10,100/2=5,050$). This will require 2.8 lanes to be occupied by this passenger demand alone. Possible capacity of single lane is 1800 cars/hour ($5,050/1800=2.8$). Presently, about three lanes are available along Orange line and as such the existing road will reach its capacity in first year of such intervention. The consequences of this congestion over the next thirty years horizon are obvious as in 2025, 2,45,500 more Mehran cars would be required to be given to the passengers with no road space to ply on unless the built-up area along this corridor is demolished to create more road lanes to accommodate this car demand. The loss to the economy for the proposed intervention would be Rs. 1.18 Trillion over the next 30 years horizon. Dr. Saleem has conveniently ignored the fact that bulk of passengers on this alignment come from the income bracket who can't afford to pay for the recurring operation and maintenance costs of Mehran cars. Question: Should the Government opt for this policy choice? Answer: An emphatic “No” from the professional standpoint.
4. The per Km cost of mass transit projects all over the world are compared on the basis of Capital costs of Civil Works and Electrical and Mechanical Equipment. These comparisons are never accurate as costs substantially vary between cities and metros

depending on project characteristics, ratio of underground to elevated to at-grade, ground conditions, choice of technologies, etc. Subject to these reservations, the core per Km cost of Orange Line Metro Train is USD 54.5 Million. Per km cost of first Phase of Jakarta MRT is USD 117.11 Million. In the case of Copenhagen it is USD 69.8 Million per Km. According to latest research on the subject the per Km cost of Metro Trains generally range between USD 50 Million and USD 100 Million. Question: Is Orange line the most expensive project of its kind on the face of the planet? Answer: "No Sir" not at all.

5. Mass transit systems all over the world are planned on their economic viability. The Economic Internal Rate of Return (EIRR) of the Orange line project is 13.60 %. Such projects are financially unviable and as such an operating subsidy will be required. The important point to note here is that in order to reap annual economic benefits of Rs. 39.38 Billion over the next 30 years horizon, capital investment of the Orange line project will have to be made today and its annual revenue/expenditure gap will have to be sustained. The so called financial loss of Rs. 40 Million a day or Rs. 14 billion a year would be compensated by economic benefits of approximately Rs. 123 Million a day due to the project. Question: Should the project be done or not? Answer: Yes- for its significant economic, social and environmental benefits.