

# EVALUATION OF SOCIAL COST BENEFIT OF SAMRUDDHI MAHAMARG

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**Abstract** - Infrastructure facilities like utilities, transport, schools and hospitals have been pressurized due to rapid urbanization and expanding towns. Transport plays a significant role of importance in the balanced development of economic and social systems of a country based on the sustainable development. It is very imperative for a government to make prudent choice in allocation of scarce resources because of the limited resources owned by the government. In other words, this can be termed as the absence of availability of a resource in an alternative project if it is being currently used in some other project. These foregone opportunities should be accordingly evaluated in the investment projects. Government should accordingly use these scarce resources so as to provide maximum benefit to the people at large. Social Cost Benefit Analysis (SCBA) is carried out for following. SCBA is a procedure evolved for appraising investment projects from the point of view of the society as a whole. In this study, evaluation of SCBA is being done for the Samruddhi Mahamarg, which is an upcoming eight lane expressway in Maharashtra state, which is 706 km long originating from Thane (Mumbai) and terminating into Nagpur and will be connecting 10 districts, 26 talukas and 392 villages of the state. This study is carried out to obtain the direct, indirect costs and benefits of the project

**Keywords:** Infrastructure facilities, urbanization; sustainable development; social cost benefit analysis

## 1) Introduction

For a sustained economic development, sound infrastructural development is very important. To ensure inclusive growth a good quality infrastructure system is vital and this inclusive growth reduces poverty and income inequality in the nation. A cannot realize its true growth potential if it has inadequate and inefficient infrastructure in the form of ports, power, transport, etc. India's growth on an increasing continuous growth track but its development is hindered because of lack of world-class infrastructure. According to the five-year plan, the deficiency in the infrastructure segment brought down the nations growth by 1-2 percent every annum. Therefore, it is very necessary to have a competent and serviceable infrastructure for integration of India with the other economies of the world.

In addition to this, the backward regions of the nation are developed due to expansion of infrastructure facilities, thereby removing regional imbalance. Infrastructure facilities are very important for economic development of a nation. Therefore, India should move on the paths of urban development and infrastructure growth on parallel tracks. United Nations World Urbanisation Prospects (2018) report suggests that 34% of India's population resides in urban regions. This increase in urbanization should be well supported with well-performing urban regions and integrated infrastructure development. Transport plays an essential role in the rapid development of any region. Limao and Venables (2001) states that, a poor transport and communication retards the process of economic development of that region. Therefore, transport plays a critical role in uplifting the social and economic growth. Speed and ease with which transportation can carry and mobilize their goods, significantly affects the quality of life and socio-economic conditions.

India's total road network length is just above 5.6 millions kms. 65 percent of goods in the country are transported through roadways, while almost 90% of the passengers use roadways for mobilizing from one place to other. Public-private partnership (PPP) model, increase in the number of two and four wheelers, increase in the industrial sector, allowing 100% FDI in road sector, increase in freight traffic, increase in tourists and trade flows between states are the key reasons for increase of road transportation and improvement in road connectivity in the nation. World Bank's Logistics Performance Index (LPI) suggests that India moved from 54<sup>th</sup> rank in 2014 to 35<sup>th</sup> rank in 2016. Key reason behind this increase has been increase in the growth of infrastructure activities like cargo export (10%), highway construction and widening (9.8%), power generation (6.6%), cargo import (5.8%) and cargo at major ports (5.3%). Road network is divided into three subcategories namely, State highways (total length: 176,166 km; share of total: 3%), National Highways (total length: 115,530 km; share of total: 2%), District and rural roads (total length: 5,326,166 km; share of total: 95%). National highways are grade roads that connect every major city of the nation while expressways are highways with six to eight lane controlled access road network with modern technologies. Expressways facilitate transportation from one corner of the state to the other cheaper and faster, improvising trade and business, decreasing traffic congestion and pollution and generating economy.

In this study, qualitative evaluation of the socio-economical benefits of the Samruddhi Mahamarg is done. Since it is essential to invest heavily in infrastructure for economic development in the most beneficial manner, a social cost benefit

analysis is undertaken to systematically analyze all tangible and intangible impacts to be incurred because of the project delivery to the society.

## 2) Overview of Roads in Maharashtra

At the end of FY 2016-17, data from economic survey of Maharashtra suggests that it has a road network of 3.03-lakh km length of roadways, which is the highest by any state in the nation. Public Works Department (PWD) and Zilla Parishads in the state maintain these roads. 22000 kms national highways, 4113 kms major state highways, 26590 kms state highways, 49,560 kms major district roads are present in the state. The state recorded a significant increase of 7.6% i.e. 3.14 crore increase in the number of the vehicles in the state as compared to previous financial year.

The industrial growth in Maharashtra is concentrated in the Mumbai Pune regions with some growth also present in Nashik and Aurangabad since these cities are strategically closely located to Mazgaon Dock and Jawaharlal Nehru Port Trust (JNPT). Mumbai and Pune are also focal points of Maharashtra in terms of land usage, population, and infrastructure. Vidarbha and Marathwada regions of Maharashtra, lack industrial growth and area development, less availability of fertile agricultural land, lack of abundant water supply and absence of new technologies has been the key reasons for making them economically underdeveloped regions as compared to the remaining Maharashtra.

## 3) Literature Review

Few international and domestic research papers are reviewed for social cost benefit analysis. Pienaar in 2014 in his study concluded that how the cost benefit analysis when accompanied by social evaluation of a road construction project could achieve more equitable distribution in a developing country like India. Therefore, cost benefit analysis should be accompanied with the appropriate use of social evaluation by weights calculated for specific expenditure collection. This in turn is harnessed towards apportioning probable economic activities and returns to lower-income communities. On the similar lines, a study was carried out in Sri Lanka Transportation Engineering Department, which evaluated the economic benefits and corresponding costs of the proposed Central Expressway in Sri Lanka. From the economic cost benefit analysis, the Central Expressway project is practicable. The project will result in improved mobility to the central and northern parts of the nation. Economic analysis indicators like benefit to cost ratio (B/C ratio) and economic internal rate of return (EIRR) values, initial sections of the ways are having high economic viability, and this is due to congested condition of old road network. Additionally, the benefits will go on decreasing, as the expressway will get expanded beyond higher populated area.

Bateman et. al (2012) proposed certain modifications to cost benefit analysis for road transport project appraisal. According to them these modifications to cost benefit analysis would encompass a comprehensive range of impacts related to environmental benefits assessment (which may be either intra-generational or inter-generational), should also encompass all competing transport modes if they are relevant options rather than just restricting the assessment to individual or competing road scheme project.

There are certain international and national cost benefit manuals available. Similarly, the Asian Development Bank has published a manual in 2013. This guide summarizes the latest developments in the field of cost benefit analysis. It also gives detailed analysis of how road appraisals are carried out. Similarly, Indian Road Congress (IRC) manual is also published for carrying out road appraisals of projects in India. The current study is carried out to evaluate the social and economic importance of Maharashtra Prosperity Corridor as a successful Public-Private-Partnership (PPP) project in completion of its objective.

## 4) Salient Features of Project

Maharashtra Samruddhi Mahamarg is an entirely planned Greenfield development. It is an eight-lane access controlled corridor between Mumbai (Thane) and Nagpur with a total distance of 706 kms and the evaluated cost for the same is Rs. 49000 Crore. This corridor passes through 10 districts and 26 talukas and 392 villages. This expressway will connect the smaller villages to the districts bringing economic prosperity to the villages. This east-west corridor will also have north-south connectivity. There are 24 interchanges on the proposed alignment of the expressway where state highway, national highways and roads will cross the alignment. Along the new expressway wayside amenities and new towns are proposed to be developed. The revenue generated from these streams will be used to repay the debts that are supposed to be raised to construct the facility. As, the proposed expressway will be passing through many remote locations, it will definitely be a place of industrial development in these locations and the expressway will be a seat of infrastructural launch pad.

The key aim of the project is to guarantee sustainable development and to promote and enhance agro-based industry in rural Maharashtra. 20 Krishi Kendra centers are proposed to be developed along the corridor. This development would

lead to reduction in migration in these regions, lead to employment generation, agriculture and agro-based activities. Land required for the project is estimated to be 24,255 Acres.

### 5) Social Cost Benefit Analysis of the Project

Social Cost-Benefit Analysis is a method of evaluating projects with reference to net social cost benefits that they develop towards the community as a whole. SCBA measures the pros and cons of a project in an ordered and rational manner. It guarantees that the net total benefits to the society exceed the net total costs required for construction (Nickel, Ross and Rhodes, 2009). The following study keeps in consideration the clauses of IRC: SP: 30-2009 for examining the costs and benefits of Samruddhi Mahamarg. The figure 1 shows the framework examined for evaluation of the social cost and benefit.



Figure 1 : SCBA Framework for Samruddhi Mahamarg

#### 5.1) Costs of the Project

The table 1 below summarizes all the costs required for construction of the project.

Table 1 : Total Costs of Samruddhi Mahamarg

Particulars	Cost	
	Value (INR)	% Of total project cost
<b>Total EPC Cost</b>	29,029.31	58.95%
<b>Centages</b>	1973.99	4.01%
<b>Pre-operative costs</b>	2235.83	4.54%
<b>Escalation</b>	2119.93	4.30%
<b>Interest during Construction period (9.5%)</b>	6388.00	12.97%
<b>Land Acquisition</b>	7500.00	15.23%
<b>Total Project Cost (TPC)</b>	49,247.09	100.00%

Source: www.msrdc.org

##### 5.1.1) Construction Cost

The entire proposed roadway length to be constructed is 706.2 km. The expressway includes link with Vadape – Ghoti – Sinnar – Aurangabad – Karanja – Wardha - Butibori along with link from Karanja – Loni – Nagzari corridor. The current proposal estimates the cost of construction to be Rs. 29,029.31 Crore, which totals to 58.95% of the total project cost. The per km construction cost comes out to be Rs. 41.11 Crore.

##### 5.1.2) Social Costs – Compensation to Farmers

With a total funding of Rs. 1018 Crores between two districts, the direct purchase of scheme is in full swing. Up until 4<sup>th</sup> May, 2018 an estimated amount of Rs. 996 Crores out of the total funding has already been distributed among the

beneficiaries. A total of 1727 purchases were made in Ahmednagar and Nashik districts up until 4<sup>th</sup> May 2018. This land acquisition resulted in immediate remuneration to 4849 beneficiaries in the Nashik and Ahmednagar districts. 71% purchase procedures in the Ahmednagar and 61% purchase procedures in the Nashik district have been completed.

## 5.2) Benefits of the Project

### 5.2.1) Road User Benefits

We have to quantitatively analyze the benefits incurred by the construction of these facilities such as benefits occurred due to reduced congestion, travel distance, road maintenance cost savings and reduced incidents of accidents.

### 5.2.2) Vehicle Operating Costs

Approximate reductions in the vehicle operating costs are estimated to be 8% to 35% depending the type of vehicle. The smooth, clear and efficient roads while make the maintenance of the average speed on these roads highly probable, which will be beneficial in improving the working of the vehicles like trucks, cars, buses, etc. Additionally, fuel costs are also expected to be reduced because the vehicles would be able to maintain continuous average speed due to better quality of pavement and reduced traffic.

### 5.2.3) Time Savings

The proposed expressway is set to limit the speed to 150 kmph. This will reduce the current total travel time from Mumbai to Nagpur from 16 hours to 8 hours. The 8 hours is expected to be completed in two halves 4 hours from Mumbai to Aurangabad and another 4 hours from Aurangabad to Nagpur.

### 5.2.4) Accident Cost Saving

The super access controlled expressway is aiming at zero fatality and to achieve this feat, the expressway consists of around 50+ flyovers, 24+ interchanges, more than 5 tunnels, 400+ vehicular and 300+ pedestrian underpasses at crucial locations. The underpasses and flyovers are planned to benefit those vehicles which would be leaving or joining the expressway without disturbing the traffic flow and also to prevent accidents. In case of any accidents or emergencies, there would be provision of continuous CCTV surveillance on the expressway and provision of telephone booth at every 5 km to allow reporting of such incidents. Table 2 depicts the count of road accidents and persons killed in Maharashtra state. Following the directions mentioned in IRC : SP : 30-2009, it is very easy to calculate the reduction in the number of road accidents. Using data from certain previous studies, it is possible to calculate the cost of accidents using WPI. The project expects to further reduce the occurrence of accidents in the state.

**Table 2: Number of Road accidents and Casualties in Maharashtra**

Year	Number of Accidents	Number of Casualties
2015	63,805	13,212
2016	39,848	12,883
2017	35,853	12,264

### 5.2.5) Reduced Traffic Congestion

The number of vehicles in the state is on a continuous rise and it is very necessary to handle such a huge traffic and ensure smooth traffic flow. The expressway is estimated to have eight lanes and about 600 entry and exit points generating a regularized traffic, which will reduce congestion. There is a small amount of land left on both sides of the expressway for further expansions.

## 5.3) Social Benefits

### 5.3.1) Pollution Control

The road projects specifically expressway or highways are constructed at the cost of environment. Further, continuous movement of vehicles on such expressway would contribute to Greenhouse gases (GHG) emissions and other suspended particulate matter (SPM). This poses an impending health threat for commuters and also imperils biodiversity. Hence, it is necessary to have plantation along the highways. The proposed expressways would follow the guidelines as per IPC: SP: 21-2009 and MORTH Green Highways Policy – 2015 to develop a green corridor. A number of species, as per the climatic

conditions of the region, will be planted. Thus, the plantations along both sides of the entire stretch of expressway would reduce heat, help in absorption of GHG and dust particles, would provide shade on roads, reduce noise pollution, grass plantation on the embankment slopes will reduce soil erosion, enhancement of bio-diversity, enhance greenery and aesthetics along the stretch of 700 kms.

### **5.3.2) Tourism**

The state government estimates increase in the tourism sector to 2 to 3 times due to construction of the Samruddhi Mahamarg. As, the key tourist destinations throughout the state would be connected by the expressway, therefore the people will get easy access to these tourist places.

### **5.3.3) Employment Generation**

As per the estimates, the project is supposed to generate direct employment of 8000 people per day, which includes skilled, semiskilled and unskilled laborers during construction phase. Post construction phase, almost 800 people will be provided direct employment through improved commercial and industrial development of backward areas along the stretch. The project would also generate social benefit in terms of indirect employment generation for cleaners, guards, local vendors, operation and maintenance workers, etc. which will be both temporary and permanent.

### **5.3.4) Agriculture Production**

To enhance rural development and to encourage agro-based industries, around 20 Krushi Samruddhi Kendras are projected to be constructed across 10 districts. These Kendra's will be positioned at the juncture of the expressway at an average distance of 30 km from each other. An area of approximately 1000 to 1200 acres (400 to 500 ha) will be allocated to each Kendra. This will encompass an agro-based industries, industrial and business hub along with a residential area armed with basic facilities. Additionally, it is estimated by the government that around 20,000 to 25,000 people will get employment from each Krushi Samruddhi Kendra.

### **5.3.5) Health**

New hospitals will be coming alongside the expressway with many other facilities and amenities such as pure water supply and proper fulltime water to the household, veterinary clinics, godowns, cold storages, waste water treatment plant, food processing units, water services, etc. Thus, this project further will boost the employment and keep the surrounding healthy.

### **5.4) Other Benefits**

Due to this expressway there would be improvement in administration, law and order and defense. Additionally, the other benefits also comprise of appreciation of value of land adjacent to the expressway, development of proposed education facilities in villages, development of local handicrafts, improved quality of life of people, etc.

## **6) Conclusions**

A robust infrastructure is a necessary condition to achieve stable, all-encompassing and sustained economic growth. Infrastructure facilities are like wheels of development without which the economy cannot function properly. Road Transport is a very significant part of physical infrastructure and it has been experiencing exponential growth in the State as demonstrated by increasing number of vehicles. Thus, a road network is very critical to the economic development, trade and social integration.

The Maharashtra Samruddhi Mahamarg will link the state of Maharashtra to Delhi-Mumbai Industrial Mahamarg and Western Dedicated Freight Mahamarg. Parts of Maharashtra will have direct connectivity to these Mahamarg and JNPT, the country's largest container port. This, in turn, will enhance the export and import trade activity of the state. The project will boost socio-economic development in the entire central region of the country. The expressway will link various agricultural and industrial centers of the state to the key consumer markets of Mumbai and Nagpur. The Krushi Samruddhi Kendra will provide excellent business opportunities, pre-eminent infrastructure, good transport links and highly suitable atmosphere to the investors. Further, these Kendra's would also generate self and wage employment thereby preventing forced migration. It can therefore be concluded that the social and economic benefits of Samruddhi Mahamarg outweighs its social and economic costs qualitatively.

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