



Damarkheda (Gomai River) Bridge Detour: Socio-Economic and Transport Impact in Shahada (Nandurbar)

Author: **Mr. Vijaykumar Kashinath Gaikwad,**

Department of Commerce and Research Center,

N.T.V.S.'s G. T. Patil Arts, Commerce and Science College, Nandurbar, Maharashtra.

How to Cite this Article:

Gaikwad, V. K. (2026). Damarkheda (Gomai River) Bridge Detour: Socio-Economic and Transport Impact in Shahada (Nandurbar). International Journal of Creative and Open Research in Engineering and Management, <i>02</i>(9), 1-9. <https://doi.org/10.55041/ijcope.v2i9.231>

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<https://doi.org/10.55041/ijcope.v2i9.231>

Abstract

The roads in rural and remote, agricultural and border areas act as an important catalyst for commercial integration and social equity. The high level bridge over the Gomai river at Damarkheda in the Shahada taluka of Nandurbar district (Maharashtra) is very important in the connection of Nandurbar, Shahada and Akkalkuwa and Navapur with the interstate trade routes of both Gujarat and Madhya Pradesh. A recent ban on the movement of heavy vehicles on the bridge has been put in place by the Public Works Department, due to problems with scouring of the foundations of the bridge, subsidence and deterioration of the load-bearing concrete in recent years. As a result, freight trucks and vehicles carrying agriculture produce have to take long detours of 30-40 km via the poor condition alternative rural routes. Also the Maharashtra State Road Transport Corporation (MSRTC) buses have to take long detours of 30-40 km by the alternative rural routes which are in poor condition. The purposeful sample of 70 key informants and a 'grounded qualitative research design' was used to look at the socio-economic and logistical problems that stem from this. Four key structural consequences have surfaced from 'thematic analysis': (a) a significant drop in farmers' income (profit losses in these value chains is in the range of 15% to 22% over and above the payout received), (b) a substantial increase in transportation costs (the transport costs for example have come up by ₹2,500 to ₹4,500 per trip in the papaya value chain for IGR items and ₹1,800 to ₹3,400 per trip in the red chili value chain for IGR items), (c) passenger inconvenience and more school dropouts because of the suspension of public buses, and (d)

critical delays of 35-55 minutes in the transport of patients for emergency medical services. The research paper outlines these results as well as concrete policy proposals such as the creation of a 'modular bridge' (a bridge consisting of interchangeable sections), the quick allocation of funding and the implementation of a coordinated 'split-terminal' public transport management system.

1. Introduction and Geographical Background

The efficiency of market access and the welfare of the population in border agricultural belts is heavily dependent on transport routes. Nandurbar is located at the north west corner of Maharashtra, where it shares administrative and economical border with Gujarat to the west and Madhya Pradesh to the north. In this border area, Shahada Taluka is termed as a trade and cash crop hotspot with irrigated crops while Akkalkuwa Taluka located adjacent to it is a 'Scheduled Area' with small-scale tribal farming and seasonal migration.

Shahada Taluka is traversed by the Gomai River, a big right bank tributary of the Tapi River, which rises in the Satpura mountain range. The bridge on Gomai River, Nandurbar-Shahada route is an important connection between the head quarters of Nandurbar and the Agricultural Produce Market Committee (APMC) of Shahada. Besides, this bridge is used for heavy commercial traffic by interstate routes to and from Akkalkuwa, Gujarat (via Nijhar and Songadh) and Madhya Pradesh (via Khetia and Sendhwa).

The riverbed soil around the bridge piers is continuously being scoured away by the flow of water, micro-cracks are present in the deck slab and structural fatigue has set in, which is why the Public Works Department has declared the bridge unsafe for heavy vehicles. The administration has now imposed indefinite restrictions on the use of the bridge:



Only two-wheelers, light private vehicles and auto-rickshaws can be used on the bridge and a complete ban has been placed on multi-axle freight vehicles, tractor-trolleys and MSRTC buses. However, being few in number, there are no alternative bridges across Gomai and Tapi and as such the heavy traffic has to make lengthy detours, e.g., Prakasha or narrow village roads, thereby increasing their travel time by 30-40 km. The geographic limitation has a high economic, logistic and social burden on the regional economy.

2. Theoretical Framework & Research Questions

The theoretical framework and research questions are presented. The theoretical framework and research questions are shown.

The present study is based upon the cross-fertilization of two concepts:

1. Spatial mismatch and “friction of distance”: Implicit tariff for local producers from artificial barriers that make it more difficult to get to customers. Agrarian areas suffer from the effects of friction of distance as it affects the ability to access competitive markets, reduces farm-gate prices, and raises reliance on commercial intermediaries.

2. Infrastructure related Inequity and Structural Neglect: Delays in the reconstruction of key rural transport systems for an extended period is a form of structural neglect, which affects basic socio-economic rights, including access to markets, education and basic health care services.

In this study, the researcher is interested in systematically exploring the actual effects of this issue (or obstacle), thus four important qualitative research questions are formulated:

1. The structural deterioration of the Gomai River bridge and the need to detour heavy vehicles around the bridge by 30–40 km is expected to impact on operating costs, turnaround time and economic viability of commercial freight transporters.
2. In terms of perishable cash crops (papaya, banana and chilli) in Shahada Taluka, what effect is the disruption to heavy vehicles from door-to-door transport having on the post harvest handling, transshipment costs and transit losses for farmers, and the farm gate price to which they have access?
3. (Commuter Uncertainty and Social Welfare): What impact have the direct conveyance of MSRTC buses across the Gomai bridge, suspended or curtailed, had on the mobility of the people who use the buses on a daily basis—continuity of education for rural students and how they get to hospitals in time for the 'Golden Hour' in the event of a medical emergency?
4. What are the institutional and administrative constraints, budgetary and inter-departmental issues with the Public Works Department (PWD) and regional planning agencies that have helped with the delay in the structural repair/reconstruction of the bridge?

3. Research Methodology

3.1 Research Design

The methods used in this study are 'empirical', 'phenomenological' and 'qualitative' to gain an understanding of the firsthand experience, operational challenges and institutional realities of the local stakeholders affected by the restrictions on the bridge.

3.2 Sampling Framework (N = 70)

The sampling was done using a 'purposive' and 'multi-stakeholder' sampling approach in Damarkheda, Shahada, Prakasha and the adjoining transport routes. After thematic data saturation was reached for the core subjects of the study (themes) and N = 70 was reached, the sample size was determined N = 70 was determined after themes of the study (themes of the core of the study) were saturated as part of thematic analysis.

Agricultural producers and produce traders (n=26) were included in group A.

Commercial/cash crop farmers (n=14): papaya, banana, cotton, chilli, sugarcane.

APMC's (n=8) Shahada (Licensed Traders & Commission Agents).

Fertilizers, pesticides and seed retailers (n=4).



The second group consisted of those related to transport (n=25) and public transport professionals, including those in the transport industry (Group B).

Commercial drivers of heavy cargo vehicles and multi-axle trucks (n=14).

MSRTC (State Transport Corporation) bus drivers (n=6), conductors (n=6) and depot administrative staff (n=6).

Drivers who rendered informal/local transport services (six-seater rickshaws, shared jeeps) (n=5)

Group C: Public health, administration and commuters (n=19)

Local road maintenance supervisors (n=5) and Public Works Department (PWD) engineers.

n = 6 rural medical officers and Emergency Medical Service (108 ambulance) drivers.

Representatives of Gram Panchayat (Sarpanch/ Gram Sevak) (n=4).

The higher secondary and college level students who commute on a daily basis (n=4).

Students will use appropriate data collection tools and study methods.

This was done over a course of two months of fieldwork. Data collection methods used for gathering primary data are:

Semi-structured in-depth interviews (IDIs): 70 face-to-face interviews were held in Ahirani, Marathi and Hindi with a pre-tested interview guide. 2. Observational assessment on site: Traffic counts at both ends of the Damarkheda crossing, surface quality assessment of the diversion route and cargo-transfer operations.

Secondary document verification: PWD traffic restriction notices, MSRTC depot schedule cancellations, APMC arrival records and district emergency health transit logs.

3.4 Data analysis and reliability skills:

All audio recordings were verbatim transcriptions and translations to English. Data analysis involved engaging in the six-step coding process of Braun and Clarke (2006); open coding, axial coding, and selective coding, to search for recurrent meaningful patterns. Credibility and trustworthiness was achieved by verifying information-providing members, by analysts triangulating information, and by keeping a clear audit trail.

4. Results of the Direct Observation and Thematic Analysis.

The financial impact of a "30-40 km detour" caused by the disruption of logistics. Subject

Theme 1: Logistics Disruptions and financial impact of a "30-40 km detour".

There are additional costs for using Prakasha - Mhasawad Marg or other rural roads for diversion of heavy cargo vehicles:

Direct fuel consumption and vehicles wear and tear: transporters reported an extra fuel usage of 9 to 15 liters of diesel per round trip. Operators of cargo vehicles face an additional expense of ₹2500 to ₹4500 per trip due to these tires, suspension and brakes being worn out by driving on narrow, uneven roads in rural areas.

Financial instability for small vehicle owners: Small-scale transporters who have only one or two commercial trucks on bank loans reported that this detour has a negative effect on profit. This puts a tremendous burden on working capital, making it challenging to service loan installments (EMIs) or even defaulting.

Deterioration on secondary roads: Rural 'Other District Roads' (ODRs) have only been designed for use with standard rural traffic loading. But these roads are breaking down due to the daily use of heavy 10- and 12-wheeler vehicles on the new roads.

Theme 2: Agrarian Distortion, Post-Harvest Losses, and Transshipment Squeeze

This results in problems like big potholes, dust pollution and vehicle breakdowns. Efficiencies in the agricultural sector, post harvest losses, and transshipment.

The Gomai River basin is regarded as a very rich area for horticultural crops in Shahada region of Maharashtra. This region's 'Grand Naine' variety bananas, export quality papayas and dried red chilies are well known:



Transshipment costs: High capacity (multi-axle) cargo containers and interstate trucks cannot go directly into the riverside orchards or storage centers. As a result, farmers will need to use smaller pickup trucks (such as Bolero Max) or tractor-trolleys to load their crops. The produce will need to be moved over a broken bridge and reloaded onto larger vehicles. The produce will have to be carried over the damaged bridge and loaded onto larger trucks again. This double handling of goods i.e. loading and labour along with transit in the crates adds extra cost of ₹150-250 per quintal.

Physiological loss due to perishability: An additional 60-90 minutes of travel time on the rough winding road results in loss of moisture from the papaya and banana consignment, which causes a loss of 15% to 22% in the net farm-gate auction prices of these products.

Theme 3: Public transport bottlenecks and educational dropouts are an issue.

Instead of completely shutting down the route, the State Transport Authority had to divert buses via an alternate route to avoid the damaged crossing. The extra 30-40 km stretch of single lane rural roads added over an hour to the travel time on either trip. As a result, while the MSRTC continued to function to a certain extent in order to fulfill its public service obligations, the depot had to cut down the number of daily trips. The increased interval between trips, along with the uncertainty of arrival times, created problems for rural commuters, farm laborers and students who depended on the morning and evening services.

Theme 4: The Golden Hour has been compromised and is a critical time for those in need of emergency medical service.

Deficiency in Trauma and Critical Care Services: Nandurbar Civil Hospital is the main Tertiary Critical care centre for the region. Emergency medical services (108 ambulances) have to make a detour of 30–40 km to move the critical trauma patients, snake bite victims from Satpuda belt and high risk obstetric patients from Shahada and Akkalkuwa.

Ambulance drivers reported regular delays from 35 to 55 minutes in responding to medical calls. Many respondents directly cited these delays as contributing to deaths in transit and complications for mothers, creating a serious lack in the emergency medical response system. The government is hamstrung by its own institutions and suffers from paralysis in policy implementation.

The community representatives discussed the lack of community involvement in the design process, hydrological status, and tender approval, due to numerous institutional barriers encountered by the State Public Works Department (PWD), the National Highway authorities, and the irrigation/river conservation agencies, especially in the tribal belts where the projects are visible and the lack of infrastructure is an ever-present reality.

Informant Category (N=70)	Representative Narrative Excerpt	Primary Operational Impact
Freight Operators (n=14)	The 35 km diversion on rough roads in the villages tears our vehicle axles and costs additional diesel fuel. Gujarat's transporters refuse to come here unless there is a high detour charge.	Fuel burn (+9–15 L); ₹2,500–₹4,500 added operating cost per turnaround; trip delays.
Cash-Crop Farmers (n=14)	After 2 hours of rough detours, we arrived at the market with the fruit damaged and traders drop our rate immediately after reaching the market.	15%–22% farm-gate price erosion; ₹150–₹250/quintal double-handling transshipment costs.
APMC Traders & Inputs (n=12)	Grain and red chilli arrivals to Shahada mandi have decreased as sellers prefer diversion as other markets are available and fertilizers are late with additional charges.	Trade volume decline at local APMC; 8%–12% freight surcharge on construction inputs and fertilizers.
MSRTC & Transit (n=11)	"We haven't stopped service, but running the detour adds over an hour to every schedule. One bus cannot complete its usual number of trips in an 8-hour shift, so daily departures had to be spaced out."	Route diversion adding 30–40 km; daily trip frequency reduced; significant schedule delays during peak commuter hours.



Healthcare Responders (n=6)	The Golden Hour is lost every minute that is wasted during cardiac arrest or during severe obstetric bleeding as the result of the diversion of 35 km of potholes.	35–55 minute transit delay to Nandurbar Civil Hospital; elevated clinical risk.
Students & Commuters (n=8)	The bus pass is of no use as buses are not on time and we have to spend ₹50 - ₹80 daily on private tempos to reach the colleges in the morning for the lectures.	Academic disruption; financial strain on rural families; female student dropouts.
PWD Engineers (n=5)	The construction of a new bridge is required, a full-scale design is in the process of gaining permit, and there is a real risk of catastrophic failure under Class 70R heavy loading caused by scouring at the piers of the sub-structure.	Multi-departmental approval delays; funding allocation gaps in district plans.

6. Policy Recommendations and Interventions

1. Immediate Capital Sanction: The State Government of Maharashtra needs to accord high priority to the construction of a new high-level bridge under the Central Road and Infrastructure Fund (CRIF) or under the Maharashtra State Infrastructure Development Corporation (MSIDC), without following the traditional multi-year district planning procedure.

2. Interim Modular Heavy-Duty Bailey Bridge: Set up a temporary steel Bailey bridge with a heavy duty classification to enable a single lane of access for light agricultural vehicles, empty MSRTC buses and emergency ambulances to move in and out of the damaged structure.

3. Coordinated Split-Terminal Bus Transit: MSRTC needs to introduce Twin Terminal bus operation model in which buses run till both sides of the bridge, after which commuters and students cross the pedestrian walkway on foot and transfer to the other side of the bridge running bus without paying any detour surcharge.

4. Emergency Upgrades of 30–40 km Diversion Corridor: PWD should immediately make available road-maintenance funds to widen shoulders, fill potholes and provide safety barriers on secondary rural roads carrying the diverted traffic.

7. Conclusion

The civil engineering problem at Damarkheda with the Gomai river bridge is not a one-off; it's a live economic blockage that is stunting northern Maharashtra's agricultural heartland. This means that the 30-40km diversion places ongoing costs on agrarian households, lows regional economies, affects the education of children in rural areas, and creates hazardous time delay in emergency health services provision. This crisis will only be settled when we overcome the temporary measures we have enacted for traffic. Sustainable remediation requires a swift mobilization of capital to build a modern, resilient river crossing that will restore the important connectivity between Nandurbar, Shahada, Akkalkuwa and other inter-state economic corridors.

References

- Government of Maharashtra. (2021). *District Socio-Economic Review: Nandurbar District*. Directorate of Economics and Statistics, Mumbai.
- Indian Roads Congress. (2017). *Standard Specifications and Code of Practice for Road Bridges, Section VII: Foundations and Substructure (IRC:78-2014)*. New Delhi: IRC.
- NITI Aayog. (2023). *Aspirational Districts Programme: Baseline and Delta Performance Assessment Report*. Government of India, New Delhi.
- Starkey, P., & Hine, J. (2014). *Poverty and sustainable transport: How transport affects poor people with policy implications for poverty reduction*. UN-