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Transportation and Infrastructure

The Real Challenge Is No Longer Whether to Invest

Transportation and infrastructure sit at the centre of economic life. The roads, rail, and ports that these organisations operate carry the goods and people that every other sector relies on, mostly without anyone noticing until they stop. For most of the past century the work was to extend that network, but the pressure now is different. Demand is still rising and the network is still growing, but the assets built decades ago are ageing. What is asked of the organisations that run them keeps widening.

For years the debate in the sector was about money, and whether enough of it could be found to meet the need. That debate has not ended, but it has shifted ground. The question that now decides outcomes is whether an organisation can turn investment into performance, and the distance between the two is wider than it first appears. Money committed to infrastructure is not the same as infrastructure delivered, and infrastructure delivered is not yet infrastructure that goes on performing, year after year, under load.

The scale of the need is well established. Global infrastructure investment requirements are estimated at \$94 trillion between 2016 and 2040, around 19 percent more than current trends will produce, at an average of \$3.7 trillion a year.¹ Closing that gap will take more capital, and it will take better use of the capital already in motion. The sector has room to improve on the

second count, and the returns from doing so are large enough to change the economics of the whole programme.

It is that second problem—execution rather than financing—that we work on with transportation and infrastructure leaders.

Current Challenges: Funding Gaps, Delivery Constraints, and Uneven Performance Across Networks

The constraint that binds the transportation sector is execution. The needs are large and well documented, and the strategies to meet them are mostly in hand; what slows delivery sits elsewhere. Funding arrives unevenly, and logistics performance varies from one market to the next. Projects run on cycles long enough that the conditions they were planned for have changed by the time they finish, and reliability is expected to improve without leaning any harder on users or public budgets than either can carry.

1. Delivery productivity has long been the sector's weak point

Much of the available productivity goes unclaimed. Practical measures could reduce infrastructure spending by 40 percent, or roughly \$1 trillion a year, and the research behind that figure, drawn from more than 400 case studies, points to three levers: choosing projects better, running delivery more tightly, and getting more from what already exists.² The improvements are not hypothetical. They are available to any organisation prepared to build the discipline to claim them.

Few organisations work this way, and the reasons recur from one programme to the next. Projects are chosen for their visibility as much as for their fit with strategy. Planning at the front end gets compressed to meet a date, and the cost of that compression arrives later, as overruns and delay. Procurement leans toward what is familiar rather than what performs. And once an asset is built, the discipline needed to keep it performing tends to give way to the next thing being built.

2. Logistics performance varies sharply between markets, and the weakest fall further behind

The World Bank's 2023 Logistics Performance Index, covering 139 countries, measures how readily a country can form reliable supply-chain connections, along with the conditions that make those connections possible: the quality of its logistics services, its trade and transport infrastructure, the performance of its customs and border agencies.³ Those are the conditions weakest in the lowest-ranked economies, where transport infrastructure remains a brake on trade and on participation in the wider economy. The more telling finding concerns the

countries that score well. Even among them, the longest delays no longer happen in transit. They happen at the interfaces, in the seaports and airports and multimodal facilities where one system hands off to another.

That finding is worth pausing on, because it moves the problem. For a long time, the response to a transport bottleneck was to build more transport. What the interface data shows is that the constraint has migrated to coordination, to the seams between modes and operators, and coordination is not something that more concrete resolves.

3. Recent disruptions have shown how little resilience the system was built to hold

The 2023 index arrived as the fragility of global value chains was becoming difficult to ignore, and resilience, with its national-security dimension, was moving up the agenda. The pandemic congestion crisis, the blockage of the Suez Canal, the drought in the Panama Canal: each showed how quickly a single disruption now travels through supply chains that had been built for cost and never for shock. The reaction across governments and operators has been to reopen a trade-off the sector had long treated as settled, and to invest again in the redundancy it had spent years removing.

Trends and Insights: Long-Run Demand Is Rising, and Digital Tools Are Raising the Performance Ceiling

The case for investing in transportation and infrastructure is not weakening. On nearly every mode it is growing stronger, and the tools for raising asset performance and coordinating networks have caught up with the ambition. What was a pilot five years ago is now something an organisation can deploy at scale, which changes what the sector can reasonably expect of itself.

1. Freight demand is set to grow through 2050

By 2050, passenger demand rises 79 percent under the Current Ambition scenario and freight roughly doubles; under High Ambition the figures are 65 and 59 percent.⁴ The growth will not be even. Maritime shipping stays dominant for long-distance freight, carrying more than three-quarters of goods movements by 2050. Air freight is small by volume but grows fastest, pulled along by high-value goods. Road and rail go on carrying most domestic and regional freight, and the connections between modes matter more each year as supply chains are rebuilt for shorter cycles and greater resilience.

The implication for policy follows directly. Decisions taken now will set network capacity for decades, and getting them right calls for a steadiness of analysis and planning that delivery organisations have often struggled to hold across the life of a programme.

2. Digitalisation has become more practical, and more valuable, across the sector

End-to-end supply-chain digitalisation, particularly in emerging economies, has let some countries cut port delays by as much as 70 percent against developed-market benchmarks.⁵ The number is best read as the distance between organisations that have invested in data exchange, automation, and analytics and those that have not. The gap is one of execution rather than access.

More than 80 percent of global trade by volume moves by sea, and AI is working its way into how that trade is run. Real-time visibility into where a vessel is and when it will arrive allows closer coordination with land-side logistics, and dynamic routing lets operators hold to their delivery commitments, carry less inventory, and reroute around congestion as it forms rather than after it has taken hold.⁶

The World Bank's work on maritime digitalisation makes the point that most technology programmes get backwards. Digitalisation is not first a technology investment. It is an investment in the organisation and its governance. The value goes to those who redesign their processes and decision rights to use better information, not to those who add new tools to the way they already worked and wait for the tools to do the rest.

3. Green logistics has crossed from preference into procurement requirement

Demand for green logistics has become a condition of doing business: around 75 percent of shippers now look for environmentally sound options when exporting to high-income markets.³ What began as a statement of values has become a line in the contract. Operators and asset owners that can't show progress on decarbonisation will feel the pressure first from the customers and counterparties that set procurement standards, well before any regulator reaches them. The transition carries a real cost in the investment it demands, and it hands an advantage to whoever moves early and builds the capability ahead of the requirement.

Opportunities and Solutions: Better Project Selection, Disciplined Delivery, and Stronger Asset Performance

The near-term priorities for transportation and infrastructure leaders are not new, and that is the point. They have been identified, consistently, across more than a decade of evidence. The constraint is finding the discipline to do it when the incentives point the other way.

1. Get more from existing networks before defaulting to new build

Choosing the right projects and cutting the wasteful ones could save or redeploy around \$200 billion a year worldwide.² For most organisations the highest return lies not in a new asset but in

an existing one made to work better. Maintenance backlogs, underused capacity, and poor information about the assets themselves are common everywhere, and closing the performance gap on what is already in the ground tends to beat new construction on return, at lower risk and over a shorter period.

This asks for a discipline most infrastructure organisations have not developed. A new build is visible, can be funded, and runs to a finish line. But asset optimisation has none of those qualities. It is operational, draws little attention, and is never quite finished, which is why it loses the contest for priority even where it wins the contest on economics. The economics ought to prevail more often than they do.

2. Invest in project selection and early-stage planning

One of the largest sources of savings in delivery is spending more at the front end, not less.⁸ Compressed early planning is among the most reliable predictors of cost overrun and schedule slip across the field. Organisations that take the time to define scope, settle decision rights, and resolve design questions before construction begins tend to come out ahead of those that do not, on cost, on schedule, and on the quality of what is built.

The state of New South Wales cut its project approval times by 11 percent in a single year. It did so not through new technology or new money, but by clarifying who decides what, aligning processes across agencies, and measuring performance. The improvement had been available all along, waiting behind a governance problem that no one had yet chosen to solve.

3. Use digital tools to lift asset productivity and network coordination

Digital investment in this sector pays off most clearly when it is tied to a particular operational outcome: a shorter dwell time at a port, maintenance scheduled by predictive analytics, freight routed on live network data, a view held across a corridor rather than lost at its seams. Put that concretely, the case makes itself. Put as a transformation programme, it tends to dissolve.

The tools can streamline operations and improve the exchange of data, and the links they build into inland rail and road networks are what carry goods cleanly from a port to where they are actually going. The value, though, does not come from the technology. It comes from redesigning the work and the decision rights around better information, with the technology serving as the condition that makes it possible rather than the project itself. Organisations that treat these as changes to the operating model capture the return. Those that treat them as technology projects mostly do not.

4. Strengthen coordination along corridors, across modes and agencies

Some of the largest performance gaps in a network sit not within any single mode or organisation but in the spaces between them. A multimodal corridor depends on coordination among operators and agencies that answer to no shared authority, and that coordination rarely

happens on its own. It has to be designed and given explicit governance, along with a forum that has the standing to resolve conflict and align priorities across organisational lines.

Public-private partnerships can carry modernisation forward where the risk is sensibly allocated and the governance is built with care. The evidence on private participation is consistent on the point that matters: value depends far less on the financing structure than on the quality of the governance, procurement, and execution capability assembled around it.²

Conclusion: Winning Organisations Will Modernise Operations Before Expanding Capacity

Transportation and infrastructure are moving toward an operating model that is more integrated, more data-enabled, and more deliberately built for resilience. The demand growth is real, the investment need is established, and the direction is not in doubt.

What remains uncertain, for most organisations, is how to make the transition without giving up the reliability and affordability that customers and regulators still expect while it is under way. That is the delivery problem, and it is where execution capability stops being a phrase and becomes the thing that separates the organisations that create lasting value from those that only spend. The first type align capital strategy with the capacity to deliver, fold digital tools into daily operations instead of piloting them at the edges, and keep service steady while the system reorganises around them. Infrastructure without that discipline is expensive and underperforms. Infrastructure with it becomes a lasting economic advantage.

The sector has the evidence, the tools, and in most cases the intent to close the gap. What it needs is the discipline to turn that intent into something delivered.

How mBolden Works with Transportation and Infrastructure Leaders

We work with senior leaders in transportation, logistics, and infrastructure organisations on the operating model and organisational side of transformation—the governance structures, decision rights, and change approaches that decide whether a programme of investment delivers the performance it was meant to.

Our work in the sector includes operating model design for organisations navigating major network investment, governance and accountability frameworks for complex multi-agency

delivery programmes, and change strategy for organisations folding digital tools into established operational environments.

Engagements are typically project-based, ranging from four to twelve weeks, with optional ongoing advisory support.

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Frequently Asked Questions

Why does committing capital to infrastructure not translate into delivered performance?

Because the three steps are further apart than they sound. Money committed to infrastructure is not the same as infrastructure delivered, and infrastructure delivered is not yet infrastructure that goes on performing year after year under load. The \$94 trillion estimated investment need between 2016 and 2040 is well understood, but closing the gap will take more capital and better use of the capital already in motion. The sector has substantial room to improve on the second count, and the returns from doing so are large enough to change the economics of the whole programme.

Why do most infrastructure organisations fail to claim the productivity that is already available?

Because the incentives work against the discipline that would capture it. Practical measures could reduce infrastructure spending by 40 percent, or roughly \$1 trillion a year, through better project selection, tighter delivery, and getting more from what already exists. Few organisations operate this way, and the pattern recurs from one programme to the next. Projects are chosen for visibility as much as for fit, front-end planning is compressed to meet a date, procurement leans toward the familiar over what performs, and once an asset is built, the discipline needed to keep it performing gives way to the next thing being built.

Where do the longest delays in transportation networks actually occur?

Not in transit, but at the interfaces. The 2023 Logistics Performance Index found that even among the strongest-performing countries, the worst delays now happen at the seaports, airports, and multimodal facilities where one system hands off to another. That finding moves the problem. For a long time, the response to a transport bottleneck was to build more transport. The interface data shows the constraint has migrated to coordination, to the seams between modes and operators, and coordination is not something that more concrete resolves.

Should new build be the default response to capacity pressure?

For most organisations, no. The highest return lies not in a new asset but in an existing one made to work better, and closing the performance gap on what is already in the ground tends to beat new construction on return, at lower risk and over a shorter period. The reason new build wins the contest for priority anyway is that it is visible, can be funded, and runs to a finish line. Asset optimisation has none of those qualities. It is operational, draws little attention, and is never quite finished, which is why it loses the contest for priority even where it wins the contest on economics.

Why do digital tools so often fail to deliver the gains they promise in this sector?

Because they are treated as technology projects rather than as changes to the operating model. Digital investment pays off most clearly when it is tied to a particular operational outcome — a shorter dwell time at a port, maintenance scheduled by predictive analytics, freight routed on live network data — but the value comes from redesigning the work and the decision rights around better information, with the technology as the condition that makes it possible rather than the project itself. Organisations that treat these as changes to the operating model capture the return. Those that treat them as technology projects mostly do not.

Where should a transportation or infrastructure leadership team start when the priorities feel overwhelming?

Begin where the discipline produces the largest return at the lowest risk. Get more from existing networks before defaulting to new build, and invest in project selection and early-stage planning, because compressed front-end planning is among the most reliable predictors of cost overrun and schedule slip across the field. The state of New South Wales cut its project approval times by 11 percent in a single year by clarifying who decides what, aligning processes across agencies, and measuring performance. The improvement had been available all along, waiting behind a governance problem that no one had yet chosen to solve.

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