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A BRIDGE TOO FAR? AN ANALYSIS OF THE PROPOSED BRIDGE ACROSS THE STRAITS OF MALACCA FROM A MARITIME PERSPECTIVE

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The proposal to build a bridge across the Straits of Malacca will have significant impacts on the shipping, environment and trade dynamics in the sealane. This commentary discusses the potential repercussions of this megaproject from the maritime perspective.

Bridge over busy waters

The recent announcement by a little-known group called the Straits of Malacca Partners Sdn Bhd to build a project to build a RM44 billion bridge linking Peninsular Malaysia and Sumatra has set the maritime community abuzz. Touted to be the biggest infrastructure project ever in Malaysia,

the 50 km bridge between Melaka and Dumai is envisioned to enhance socio-economic ties between the two lands.

The stunning scope of the project warrants close inspection from a maritime perspective as it will arch above the Straits of Malacca, a key passageway that facilitates a significant volume of global maritime trade.

It is certain that the bridge would generate significant impacts on the environment and activities in the surrounding area. The potential effects on several aspects are discussed below :

Shipping

It is certain that the construction of the bridge would hamper the safe movement of ships in the Straits. Traffic flow in the Straits, one of the world's busiest searoutes, would be adversely affected. The dense Straits is not only used by merchant ships and huge tankers traversing its length but also a big number of cross-traffic barter vessels and fishing boats. It is expected that the presence of the bridge would present an obstacle for the smooth flow of shipping traffic in the narrow waterway.

Merchant ships require adequate areas of navigable waters to allow safe transit along the Straits which have several chokepoints. With the presence of many fishing boats in the Straits, merchant ships would require at least 500 meters on each side of the ships as a safety zone to allow for evasive manoeuvres when transiting through the chokepoints and high density area in the Straits.

With the restriction on under-keel clearance (the gap between the bottom of ships and the ocean floor) for ships traversing the Straits, a very large container ship would require about 55-60 meters of height clearance above sea level. It is doubtful that the design of the bridge would be able to provide such considerable height clearance. The design of the bridge suggests that the opening in its mid-span area is very narrow and would pose a challenge for ships to navigate through. This would require ships passing under the bridge to reduce their speed and hence increase their transit time through the Straits. It is also projected that owing to the narrow passageway around the bridge, it would not be safe for vessels to overtake one another.

It is foreseen that the shipping community would not find comfort in the increase of transit time through the Straits. For ships, travelling at slower speed increases the risk of being attacked by armed robbers and also the risk of drifting due to the speed of sea current. The construction and presence of the bridge would not only reduce the speed of ships transiting through the Straits but would also cause difficulty for large container vessels to navigate through.

The bridge over Oresund Sound which connects the city of Copenhagen in Denmark and Malmo in Sweden by road and rail provides a point of reference for the kinds of issues that proposed bridge over Straits of Malacca could face. When the construction of the bridge over Oresund Sound was proposed, the shipping community was against it in protest over the possibility of the bridge hampering shipping flow in the Oresund Sound. Germany even submitted a proposal to

the International Maritime Organisation to prevent the construction of the bridge. Sweden then came up with the idea of providing an alternate route for ships to transit through the Oresund Sound. The bridge was designed to provide for an underground tunnel passage that passes through half of the Sound and allows for bigger ships to navigate across it. The construction of the bridge resulted in expenditure that was three times more than what was budgeted by the promoters of the bridge, as the alternate route was not provided in its original plan.

In general, mega projects tend to end up with cost overrun, and based on the Oresund Sound bridge experience, it can be expected that the bridge over the Straits of Malacca to cost more than the RM44 bil. price tag.

Environment

The magnitude of the environmental impact of the bridge during and after its construction would only be known after the conduct of an environmental impact assessment on the project. However, there is no doubt that such a massive project would adversely affect the coastal ecosystems on both sides of the bridge, and its impact would be felt by the Straits as a whole.

On a larger scale, the project could change the hydrology of the Straits. The movement and speed of currents would be altered by the presence of pillars supporting the bridge, and could potentially alter the nature of the Straits. Such massive impact should be taken into account in assessing the environmental impact of the project.

The seabed ecosystems of the areas where the bridge would be built would be affected during the construction phase of the project as piling works are carried out and construction materials are deposited. Marine organisms are vulnerable to sedimentation and to disturbance to the seabed and subsoil

The project also has the potential to negatively impact the coastal ecosystems at the local level. On the Malaysian side of the bridge, the site is near Padang Kemunting, an important nesting area for hawksbill turtles or *penyu karah*, one of the four species of turtles which nest in Malaysia. Melaka has the largest hawksbill turtle population in Peninsular Malaysia and the construction of the bridge could further destabilise the already threatened population of this specie. Besides affecting the impact on marine life and fisheries, the project could also negatively affect the marine and coastal tourism industry in the area.

The earthquake that hit Sumatra which caused devastating loss of lives and property and triggered high waves that was felt as far as Samoa in the Pacific should pose as a warning to the safety of the bridge. Should the bridge take a direct hit from another strong quake or tsunami, it would likely suffer serious damage. One shudders to think of the consequence of the bridge collapsing to the economies of the region but also to the environment. It is possible that a strong jolt would render the bridge unsafe for use, or even worse, could result in the bridge collapsing – in parts of in its entirety. This could cause ships to face difficulties to traverse the Straits, particularly in areas along the bridge affected by such disasters. The lives of fishermen and economic activities could also be affected.

Maritime trade and trade transport

The presence of the bridge would likely generate several impacts to maritime trade, ports, shipping traffic and infrastructure developments in and along the busy waterway. A project of this magnitude would surely alter the landscape of maritime trade in the surrounding areas and would reshape the dynamics of the economy in the area including shipping, port operations and other related activities.

They would have to slow down significantly to the bridge to avoid colliding with the bridge's pillars. The reduction in sailing speed would naturally have a chain effect on the speed of north-southbound traffic and cross traffic in the Straits. The scenario in other busy waterways elsewhere that host bridges could provide an indication of things to come for shipping traffic around the bridge over Straits of Malacca. The busy Straits of Bosphorus in Turkey hosts two bridges – the 1.07 km long Bosphorus Bridge and the 1.09 km long Fatih Sultan Mehmet Bridge - across it and ships traversing through the waters under and surrounding those bridges have to exercise extra caution to avoid any untoward incidents.

The 'slow down, bridge ahead!' approach that ships would adopt would lead to the increase in voyage costs, longer delivery time of cargo, logistics handling cost and the building up of bottlenecks along the maritime supply chain. This would put paid to the essence of maritime trade which is speed and efficiency in the delivery of goods. Any obstacle that frustrates the fast and efficient delivery of goods to demanding markets across long and complex supply chains would not be looked upon kindly by the parties involved.

There is active maritime trade between Peninsular Malaysia and Sumatra. Assuming that the cost of transporting goods via the bridge would be cheaper than shipping them across, the bridge could erode the 'market share' of maritime trade that currently facilitates much of the trade between the two. While this would bring the smiles to hauliers and truckers, shipping operators of barter trade would frown at the loss of business. In addition, ports on both sides of the Straits that depend on barter throughput as a source of revenue, such as Lumut Port and Northport in Peninsular Malaysia, and Dumai Port in Sumatra, would be adversely affected. Significant drops in port throughput for barter trade and maritime trade in general between the two areas would affect the development plans and business orientation of the ports. Their loss of trade would also affect the logistics companies and ancillary service providers supporting these ports such as warehouse operators, ship management companies, shipyards, bunker suppliers and many others.

A distant but nonetheless possible outcome of the presence of the bridge is the diversion of shipping traffic from the Straits to waters which do not have such structures impeding the flow of traffic. It would be possible that shipping lines would shun traversing the Straits to avoid facing the risk of collision with the bridge's pillars and with other ships in the congested waters around the bridge, and to sail through passages which is unimpeded to conduct trade between East and West. A Straits of Malacca with a bridge across its narrowest point might just drive shipping lines to consider traversing through alternative routes such as Makassar Straits and Lombok Straits. Less shipping lines going through the Straits would be bad for the business of ports

along the sealane and maritime service providers in the region servicing those ships. Road transport's gain from the bridge would be the maritime sector's loss.

Conclusion

It is anybody's guess what would be the economic impact of the bridge on the regions' economies, but it would certainly have an effect on maritime trade between Peninsular Malaysia and Sumatra and the shipping flow in the Straits would be. A thorough and comprehensive study of the potential cost-benefit, legal, environmental, strategic and socio-economic impacts of the project needs to be conducted before any decision on such a colossal project is made. Until then, the proposed bridge across the Straits of Malacca will remain a bridge too far.