Introduction

As the 21st century advances, flagrant disparities in terms of infrastructural development and capacity begin to emerge. This is particularly evident in the nascence of transport infrastructure in East and South Asia, a region frequented by political instability, natural calamities, and pervasive poverty. These factors have contributed to the decay of existing infrastructure, and the stagnation of programs to construct additional infrastructure. Furthermore, the prevalence of corruption and a lack of political stability, in conjunction with general deficits in transparency and accountability, has reduced government expenditure on nationally-funded construction programs, diverting capital into other sectors—such as the enhancement of security capabilities. Inclement weather conditions, which are persistent in many regions of South and East Asia, compound these difficulties by necessitating the reconstruction and restoration of damaged infrastructure. Concomitantly, the growth of sustainable transport in South and East Asia is hampered. The deficiency of existing transport infrastructure propagates broad economic and social ramifications. The inadequacy of intra-regional and contiguous connectivity in South and East Asia has injurious effects upon international investment in the region. Unrealized logistical potential impairs the commercial performance of local enterprises and restricts terrestrial trade. This in turn discourages foreign commitment to the region. Additionally, the paucity of inland water freight networks has led to the excessive usage of roads, leading to frequent road congestion (particularly in densely populated, developing metropolises such as Hanoi or Mumbai). This has also resulted in the rapid ascendency of pollution-emitting vehicles, degrading air quality and compromising general health. Finally, insufficient rural connectivity deprives communities of access to basic social and economic services, perpetuating economic disparities between rural and metropolitan regions.

Definition of Key Terms

South Asia

An area of the Asian continent encompassing India, Pakistan, Nepal, Afghanistan, Bangladesh, Burma, Nepal, Sri Lanka, the Maldives, Bhutan and Iran, as defined by the United Nations (UN). South Asia sustains approximately 20% of the global population, and is one of the most densely populated regions in the world.

East Asia
According to the UN, East Asia comprises China, Taiwan, North Korea, South Korea, Mongolia, and Japan. With a population exceeding 1.5 billion, East Asia hosts a percentage of the global population equivalent to South Asia’s. As with South Asia, official UN regional classifications will be adhered to for the sake of uniformity.

**Connectivity**

In the context of transport, connectivity is defined as the extent to which communities and populations are connected to each other through waterways, roads, rail systems and air routes, all of which influence the expediency of commute between these nodes.

**Transport**

Transport is the moving of goods or people from one point to another. This may be accomplished by land, air, or sea. Efficient transport networks are essential to both business, and the delivery of key services.

**Background**

While South Asia and East Asia often hold contrasting cultural and political mindsets, there is much commonality in terms of support for regional transportation and services. Propelled by monumental economic growth, regional powerhouses of India and China have seen tremendous development of transport networks in urban environments. However, without prudent development of transport networks in rural areas, this growth is unsustainable—in both an environmental and economic sense. A crippling lack of bureaucratic transparency in many areas encourages questionable government practices—practices which generally divert national assets away from the development of transportation infrastructure. The poor maintenance, and in some cases lack of, proper transport networks in rural region deprives population of convenient access to social and economic services. This also contributes to the growing sense of isolation in rural communities that do not enjoy basic transport infrastructure. Conversely, the excessive use of roads, especially in dense urban areas, causes congestion and releases harmful pollution into the atmosphere. In the long-term, this approach severely constrains economic agendas, and has dramatic environmental implications. Therefore, any serious effort at international remediation of this issue must take into consideration several key factors; namely, the political, economic, and environmental. These elements must be centric to any efforts to address the disrepair of infrastructure in East and South Asia.

**Economic**

The transport infrastructure gap in South and East Asia is consistently identified as the prime deterrent to international investment and economic growth in these regions. The high incidence of poverty the region—South Asia alone is home to approximately 43% of the world’s poor—often obscures the necessity for efficient transport networks. Without aforesaid networks, trade is severely impaired. The poor condition of roads, lack of freight transport, and unrealized potential for high-speed rail preclude the expansion of business operations in South and East Asia. Besides the trade detriments, low connectivity in rural regions isolates communities from centralized
transport systems, depriving them of access to key economic and social services. This humanitarian situation denies populations the benefits of government services, and cuts them off from urban centers, perpetuating impoverishment. In addition, the lack of cross-border connectivity discourages the accretion of regional trade coalitions, damaging long-term prospects. Poor intra-regional trade (intra-regional South Asia only accounts for ~5% of total trade, the lowest of any region) is the consequence of the lack of support for trans-national transport infrastructure. The development of trans-national infrastructure eases the exchange of goods and services, and fosters regional economic co-dependence. It is vital to favorable long-term results. However, the realization of any long-term infrastructure construction program is harmed by the lack of sufficient institutional capacity. The prevalence of corruption and scarcity of accountability and ethical governance diminishes the power of major institutional actors. The misuse of funding limits the capability of institutions to deliver large-scale transport programs.

**Political**

Political instability and corruption are primary causes of the poor condition of transport in East and South Asia. Volatility in perennially war-torn Afghanistan and post-conflict Sri Lanka is compounded by the frequency of national disasters such as the 2004 tsunami in India, the Maldives, and Sri Lanka, as well as the 2005 earthquake in Pakistan, and recurrent flooding and typhoons in Bangladesh. This creates entropy in the region, destroying infrastructure and lives, necessitating vast expenditure on costly reconstruction programs. Comparatively, East Asia is slightly less beleaguered. However, poverty and political corruption remain common, especially in North Korea, Mongolia, and China. Corruption and the lack of accountability deters investment in reconstruction and development of infrastructure, particularly by foreign corporations, as well as delaying and siphoning funds from national efforts to support development. Phasing out state sponsored construction programs in favor of privately funded and managed construction may alleviate this issue. Effective resuscitation of the transportation sector may only occur once corruption has been excised, and a degree of stability established. Only then will significant rehabilitation occur. In addition, appropriate safeguards should be taken against environmental crises, such as the recent earthquake/tsunami in Japan. An effective response to these situations must be devised to minimize loss of life, as well as damage to infrastructure.

**Environmental**

As mentioned previously, the environment is a prominent factor in any decision pertaining to the reformation of the transportation system. Naturally occurring disasters, notably the 2004 tsunami in South Asia and the 2011 Fukushima fiasco, wreak havoc upon roads and rails. Rehabilitating this damage requires substantial investment in reconstruction, and, as in Bangladesh, destructive weather patterns are often recurrent, inflicting regular damage upon local infrastructure and industry. Even regular, predictable weather patterns can have adverse consequences on transport systems. In Mongolia, for example, the substandard posture on road maintenance results in copious surface water, especially in wet seasons; the inadequacy of the storm drainage system lacks the capacity to cope with even normal rainfall. However, another environmental threat presents itself with regards to this issue; climate change. Given the innate climatological sensitivity of these regions, any slight variation in climate or sea
level could produce catastrophic effects. A rise of 1.5m in sea level would submerge large swathes of South and East Asia, and would displace ~17 million people in Bangladesh alone. Obviously, this would have pernicious effects upon transportation networks. Pollutants expelled into the atmosphere by motorized vehicles further exacerbate these environmental concerns. The phenomenal increase in automobile ownership results in substantial degradation of air quality, principally in heavily urbanized areas such in East and South Asia. East Asia already plays hosts to the urban behemoths of Beijing, Shanghai, Guangzhou, Shenzhen, Tokyo, and Taipei, while South Asia has five cities with a population in excess of 12 million: Mumbai, Delhi, Kolkata, Dhaka, and Karachi. Rapid urbanization, combined with the increasing prevalence of motorized vehicles, creates egregious congestion and toxic air quality—while possibly accelerating climate change.

**Major Parties Involved**

**Asia Development Bank**

The Asia Development Bank (ADB) is a UN-affiliated financial institution that structures and provides pecuniary loans to members of the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), with a focus on encouraging foreign investment and international trade. In addition to supplying vital loans to conduce development, the Asia Development Bank also provides valuable analysis, consultation, and advice on means of economic development. A development program with the support of the Asia Development Bank could produce subsidized transport infrastructure, funding for which would be derived from the ADB. Examples of successful involvements with the Asia Development Bank include the Yichang-Wanzhou Railway project in China, and the Ulaanbaatar Airport and National Air Navigation Development Project. Loans dispensed by the Asia Development Bank come under strict conditions of good governance, which would be ensured by regular performance reviews, financial transparency and public disclosure. Thus, the Asia Development Bank constitutes a reliable means to facilitate the construction and rehabilitation of infrastructure, and hence is a powerful utility for both developed and developing countries.

**China**

Inhabited by approximately 15% of the world’s population, and with a gross domestic product of 9.24 trillion USD, China is undoubtedly a regional economic powerhouse, and a source of trade and stability for many nations. Over the years, China has engaged in a number of visionary construction projects, resulting in the swift growth of transport networks in both urban and rural areas. Among the most ambitious of these include the world’s first commercial high-speed maglev train, and the Donghai Bridge, which spans over 32.5 kilometers. Although China is geographically vast, the advanced transport infrastructure in place produces a relatively high level of connectivity. Due to China’s economic primacy, China may be willing to assume the role of financial benefactor to beleaguered nations—in exchange for diplomatic goodwill. In addition, China shares terrestrial borders with a total of 14 nations. Developed infrastructure on these fronts is vital to inter-regional connectivity and fostering of
regional economic co-dependence; China currently has rail links with Kazakhstan, Mongolia, North Korea, Russia, and Vietnam, with plans to construct connections with India and Laos.

India

China’s nearest equivalent in South Asia, India is a burgeoning economic power in its own right, with a GDP of 1.877 trillion USD. India occupies a strategic economic position in the region, and is a part of the North-South Transport Corridor—a major land freight route between Asia and Europe. India has made efforts to reform its archaic transport infrastructure to accommodate the second-highest population on earth. These efforts, such as the Mumbai Monorail, and the addition of physical lane dividers to roads, have succeeded in reducing some of India’s ubiquitous congestion. Despite progress on this frontier, India’s transport sector is hampered by a litany of flaws, from deteriorating infrastructure to outdated systems. This has denied India of foreign investment on the same proportion as China, which is comparatively more advanced. Due to India’s central location and extensive borders, it is all the more imperative that appropriate trans-national corridors for transporting freight and trade goods be established. As the ascendant economic power in South Asia, India has a responsibility to initiate the process of expanding transport corridors with other countries in the region, many of whom will likely follow suit.

Previous Attempts to Resolve the Issue

Comprehensive overhauls and expansions of transport systems have already been initiated by most nations in East and South Asia—with varying levels of success. At the nadir of East Asia’s transport index is China, Japan, South Korea and Taiwan. Comparatively, progress in South Asia has been somewhat tepid, with Afghanistan, Pakistan, and Bangladesh all languishing in terms of transport services. India is slightly more bifurcated, with certain areas better developed, and others bearing more of a resemblance to its neighbors. In India, where congestion is endemic, substantial efforts have been made to modernize the nation’s infrastructure on a level equivalent to East Asia. In recent years, the Indian government has embarked on massive building projects to construct wider, better paved roads which feature physical lane dividers. This is unlike previous roads, which lacked physical lane dividers, and generally consisted of only one or two lanes. The deplorable state of these roads caused severe congestion and created a state of semi-permanent vehicular anarchy for commuters—despite having a relatively low vehicle penetration of 10.3 million cars, India records one of the highest numbers of deaths caused by traffic. India’s aviation sector is likewise troubled; airports frequently operate over-capacity, on antiquated equipment, and decaying infrastructure. Delhi’s Indira Gandhi airport, for example was designed to accommodate 12.5 million people, but must process and average of 16.2 million people. However, with the opening of Terminal 3 in 2010—which includes cutting-edge modern infrastructure and services, as well as additional capacity for 34 million passengers—many of these issues have been rectified. However, numerous airports remain in India, which require immediate upgrades and attention. In East Asia, the situation is more complex; Japan, South Korea, and Taiwan are a few of the most highly developed nations in the world, possessing extremely modern and efficient transportation networks. The ambitious infrastructure projects these nations have completed in the last decades, such as Osaka’s Kansai International Airport, exemplify an ideal approach to infrastructural development. Their advanced stage of development is a factor in the economic prosperity many of these nations have enjoyed, as
investors perceive the ease at which goods and services may be delivered. Similarly, certain regions of Eastern China (notably around Shanghai, Beijing, and Guangzhou) are equivalent to Tokyo or Seoul in terms of infrastructure. The tremendous expansion around these modern metropolises—such as the longest bridge in the world, the Donghai Bridge, and the Shanghai Maglev Train—has provided a massive employment boost over the last decade. China also contains the longest expressway network in the world, at 97,000 km, in addition to an extensive rail network that has grown from 21,800 km to 90,000 km, from 1950-2010. China continues to expand its rail network, recently opening a track that enables direct transport from Lanzhou to Urumqi via train. Furthermore, 423,000 km of road were built or upgraded in 2007 alone, resulting in a high level of connectivity (in 2007, 98.54% of towns and villages were connected by highways). However, the vast interiors of Tibet and Xinjiang are not consistent with development elsewhere. Due to the geographic isolation and inhospitable terrain in Tibet and Xinjiang, development in these regions has been languid. This situation may be remedied by the completion of an ongoing 250km extension to the Qingzang railway that connects Lhase and Shigatse. Progress in Mongolia has been steady but reassuring; as previously mentioned, air traffic services—including Ulaanbaatar’s Genghis Khan airport—have been upgraded since 1990 as a result of a collaboration with the Asia Development Bank. Additionally, a program of repairs and track upgrades to Mongolia’s rail network is steadily underway. However, Mongolia’s roads have remained largely unchanged for the last decades; of Ulaanbaatar’s 464 km of road, only 78% is paved.

**Possible Solutions**

- Privatize the construction and maintenance of transport infrastructure (ie. Roads, overpasses, tunnels, traffic lights, etc.). Major state-funded construction projects encourage financial embezzlement and corruption. Eliminating this source of monetary irresponsibility would also alleviate the considerable fiscal burden endured by many nations by stimulating the private sector. Furthermore, delegating the construction of transport infrastructure to private firms will permit the redistribution of manpower and resources to other sectors of society, increasing productivity in those areas.

- Ensure transparent procurement protocols for corporate bidding on government-dispensed construction contracts. Transparency is imperative to major government commissions; maintaining a transparent procurement process will increase accountability, discourage corruption and enhance overall productivity on projects of a large scale. In situations with a deficit of transparency, lucrative contracts are often used as a vehicle for furthering political agendas through favor-trading and cronyism. Mandatory disclosure of the procurement process will presumably diminish aforementioned, as well as likelihood of funds being misappropriated. However, it may be challenging to maximize transparency and guarantee the veracity of publicized information.

- Encourage adoption of hybrid and low-emission vehicles to supplant high-emission diesel and petroleum-based vehicles. Reducing air pollution constitutes a significant consideration vis-à-vis the topic of climate change. Given the susceptibility of many regions in East and South Asia to climatological variation, carbon emissions and fuel pollutants may have dire implications on the climate, potentially causing flooding, rising sea levels, and destruction of infrastructure.
• Implement capacity-building mechanisms to enhance effective decision-making. Expanding federal knowledge of infrastructure development will greatly augment the efficacy of state-run construction and maintenance projects, in addition to permitting governments to evaluate corporate bids more perceptively.

• Increase fiscal allocation to the research and development of creative transport solutions on a national level, which would be undertaken by the federal government.

• Reduce corruption in the federal government at both a national and municipal level. As previously emphasized, corrupt bureaucrats are debilitating opponents of an effective, functional transport network. Additionally, the lack of culpability for corrupt officials in many countries creates additional impediments in prosecuting unethical civil servants, and deterring future behavior of a similar nature.

• Expand existing, and construct additional, transport infrastructure to cope with severe weather conditions. For example, in underdeveloped areas torrential downpour often exceeds the drainage capacity of sewer systems. This allows for the gradual accumulation of surface water, which reduces road safety, slows the speed of commute, and leads to traffic congestion. In seasonal regions, the inadequacy of infrastructure to cope with snowfall (i.e. De-icing equipment and vehicles, ice treads, etc.) results in slick, icy, or even obstructed roads and transportation networks. Furthermore, ice that forms on aircraft and runways are hazardous to planes taking off and landing, occasionally prompting inconvenient and expensive delays. Other challenges to the aviation industry include volcanic eruptions and poor consumer confidence following several high-profile aviation incidents in 2014.

• Stabilize volatile regions to an extent that permits the expansion of infrastructure and transport networks. In war-torn Afghanistan or Taliban-ridden Pakistan, peace is tenuous, and any semblance of stability is fleeting. The threat to personnel and equipment presents a massive difficulty, even to routine maintenance operations. This leads to the descent of infrastructure into decay and disrepair, counteracting advances made in other areas.

Bibliography


