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# The Truth about Thailand's Transport Infrastructure Development and Financing

## Introduction

A healthy body needs well-functioning flow systems such as blood circulation, respiration, and metabolism in order to transport nutrients, oxygen, carbon-dioxide, heat and waste products. For these substances to flow well, a strong and healthy mass transport system is required. Like the body, a healthy country relies upon excellent flows of goods, services, money, people, information, knowledge, culture, water, air and wastes. For these items to flow well, they must be supported by an excellent infrastructure network.

Viewing the body as a metaphor for a country and a mass transport system as a metaphor for an infrastructure network, it is widely agreed that Thailand is not very healthy due to a lack of infrastructure investment to support flows of economic and social activity. There is clear evidence indicating the poor health of Thailand, such as the high cost of logistics and transportation, traffic congestion in urban areas, deteriorating quality of life, and loss of competitiveness. Amornvivat et al. (2015)

argue that Thailand has lagged behind other countries in the region in terms of infrastructure investment since the Asian financial crisis in 1997. The relatively low quality of Thailand's infrastructure compared to other countries in the region is one of the major factors resulting in Thailand's sinking competitiveness. According to *the Economist* (2015), Thailand fares relatively poorly in international rankings when it comes to the quality of rail infrastructure and facilities, limiting its overall logistics performance in the view of many industries. In addition, the International Monetary Fund (2016) notes that Thailand needs to upgrade its infrastructure to keep up with regional competition, lift its potential growth, and avoid the middle income trap.

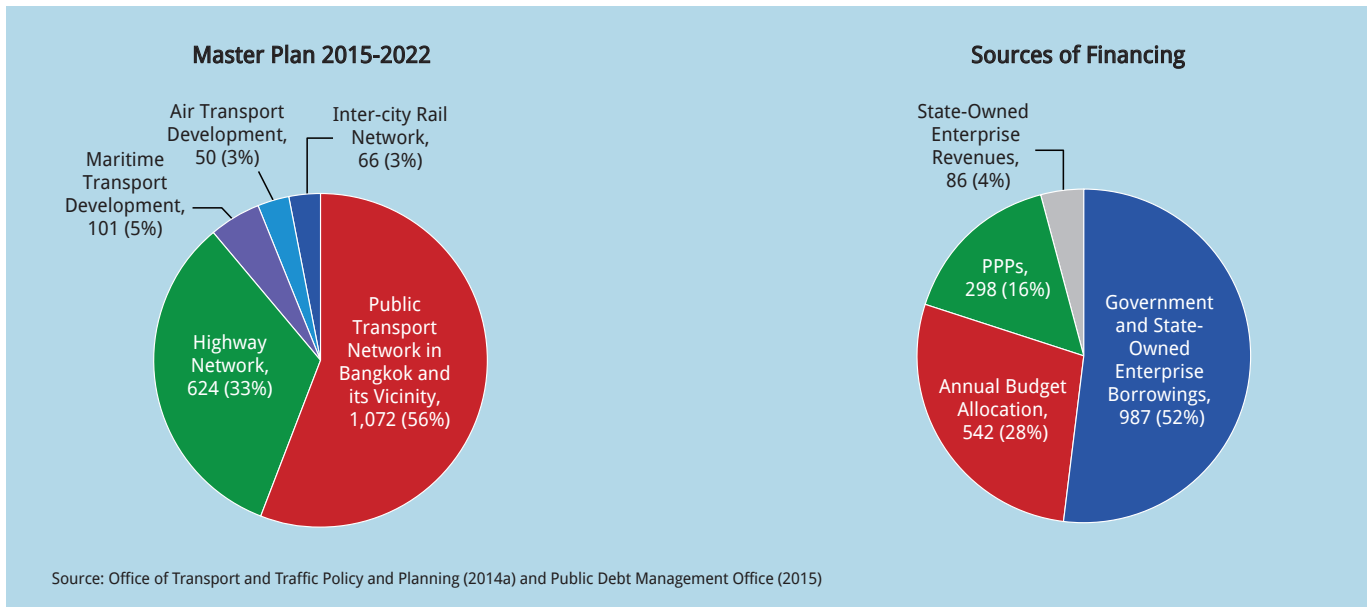
In 2015, the military-led government announced the Transport Infrastructure Development Master Plan 2015-2022 (hereinafter "Master Plan") with a planned total investment of THB 1,913 billion. The aim of the Master Plan is to promote connectivity and transform the country into a regional hub and enhance competitiveness as well as provide a foundation for long-term development (Royal Thai Government, 2016). The objective of this study is to investigate the details of the Master Plan, its sources of financing, and project disbursement. It then discusses some concerns and caveats that could benefit those interested in this multi-year infrastructure development program. Suggestions to improve Thailand's transport infrastructure development and management are also provided.

This study is divided into five sections. Following the Introduction, the second section provides the overview of the Master Plan. The third section lays out the Transport Infrastructure Investment Action Plans (hereinafter "Investment Action Plan") 2015 and 2016 as well as their estimated and actual disbursement performances. It also presents the information on the Investment Action Plan 2017 and its disbursement forecast. The fourth section discusses and comments on Thailand's transport infrastructure development and its financing. Finally, the fifth section concludes and offers suggestions for, but not limited to, Thailand's transport infrastructure project development and management.

## Overview of the Transport Infrastructure Development Master Plan 2015-2022

According to the Office of Transport and Traffic Policy and Planning (2014a), the main objectives of the Master Plan are to strengthen social and economic security, increase transport safety, and improve quality of life as well as enhance competitiveness and gain potential benefits from the ASEAN Economic Community. There are five transportation modes comprising

**Figure 1: Transport Infrastructure Development Master Plan 2015-2022 and its Sources of Financing (THB Billion)**



this multi-year Master Plan. They are the inter-city rail network, public transport network in Bangkok and its vicinity, highway network, maritime transport development and air transport development.

For the inter-city rail network, the government plans to upgrade rail infrastructure and facilities as well as to build a double-track railway network (standard gauge) in six main routes with their extension to borders. To resolve traffic congestion and pollution problems in Bangkok and its vicinity, the government plans to extend mass transit railways, procure new public buses, and improve quality of roads and bridges. With regard to the highway network, four-lane-road networks will be developed in order to connect key economic regions and border areas. New motorways and expressways will be constructed. In addition, the government plans to develop road facilities such as rest areas for trucks, a multi-modal transport system and cross-border logistics centers. For maritime transport development, seaports on both the Thai gulf and Andaman Sea will be developed. Lastly, the government plans to increase airport capacity with an aim to be the regional hub for air transportation, enhance the air traffic management system, develop an airport logistics park, and invest in human resources for civil aviation.

Figure 1 shows total investment for the Master Plan categorized by modes of transportation and their sources of financing. This 8-year Master Plan was initially estimated in 2015 to be worth ap-

proximately THB 1,913 billion, of which THB 66 billion was allocated for the inter-city rail network, THB 1,072 billion for public transport network development in Bangkok and its vicinity, THB 624 billion for the highway network, THB 101 billion for maritime transport development, and THB 50 billion for air transport development. According to the Public Debt Management Office (2015), the major sources of financing would come from government and state-owned enterprise borrowings accounting for 52% of total investment. The remaining funding would come from annual budget allocation, public private partnerships (PPPs), and state-owned enterprise revenues which accounted for 28, 16 and 4% of total investment, respectively.

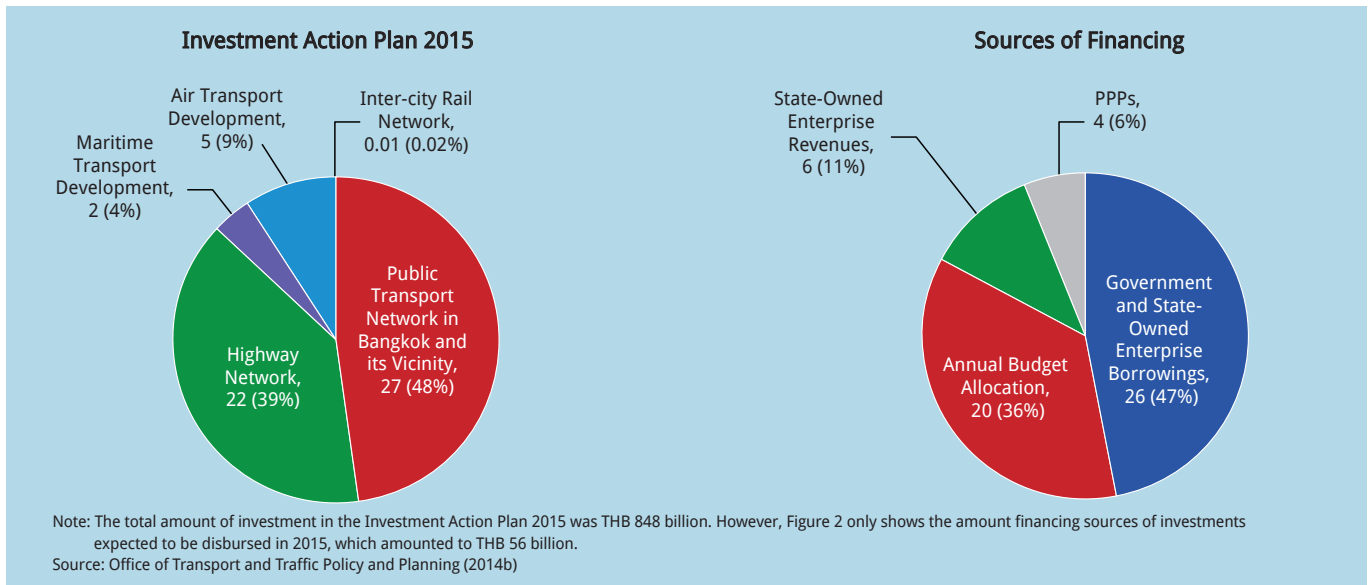
In addition to the Master Plan, the government began implementing annual Investment Action Plans starting the same year. Their purpose is to give priority to projects based on their importance and necessity as well as simultaneously stimulating the economy. The next section surveys the Investment Action Plans 2015 and 2016, and their estimated and actual performances. The Investment Action Plan 2017 and its disbursement forecast are also presented.

## Transport Infrastructure Investment Action Plans 2015, 2016 and 2017

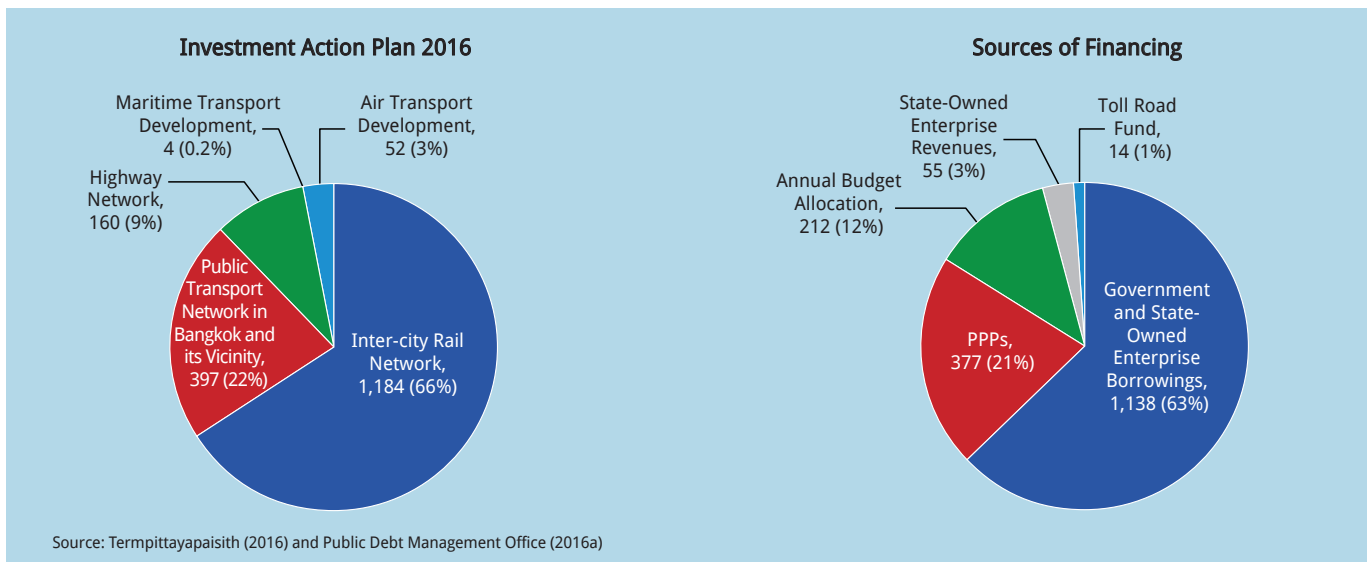
### Transport Infrastructure Investment Action Plan 2015

The Office of Transport and Traffic Policy and Planning (2014b) reported that the Investment Action Plan 2015 comprised fifty-nine projects with total investment in the amount of THB 848 billion, of which THB 56 billion was expected to be disbursed in 2015 and the rest would be carried over during the next 7-year period from 2016 to 2022. Figure 2 shows the Investment Action Plan 2015 categorized by modes of transportation. It should be noted that this was for the projects worth THB 56 billion expected to be disbursed in 2015 only, of which THB 10 million was for the inter-city rail network, THB 27 billion for the public transport network in Bangkok and its vicinity, THB 22 billion for the highway network, THB 2 billion for maritime transport development, and THB 5 billion for air transport development. With regard to sources of financing, 47% came from government and state-owned enterprise borrowings, 36% from annual

**Figure 2: Transport Infrastructure Investment Action Plan 2015 and its Sources of Financing (THB Billion)**



**Figure 3: Transport Infrastructure Investment Action Plan 2016 and its Sources of Financing (THB Billion)**



budget allocation, 11% from state-owned enterprise revenues, and 6% from PPPs. Even though the government planned to disburse around THB 56 billion, the actual disbursement turned out to be only THB 1.6 billion which was almost 97% below the target.

**Transport Infrastructure Investment Action Plan 2016**

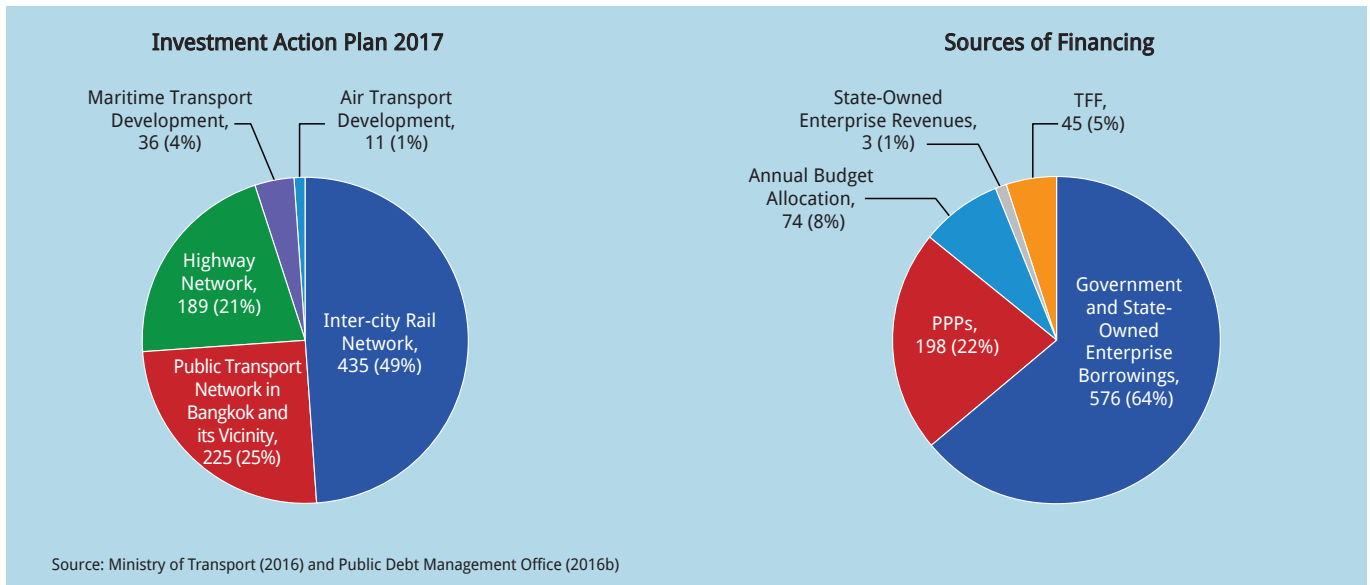
According to Termpittayapaisith (2016), there were twenty projects in the Investment Action Plan 2016 with total investment in the amount of THB 1,796 billion. Figure 3 illustrates the allocation of total investment, of which THB 1,184 billion was allocated for the inter-city rail

network, THB 397 billion for the public transport network in Bangkok and its vicinity, THB 160 billion for the highway network, THB 4 billion for maritime transport development, and THB 52 billion for air transport development. Based on the information from the Public Debt Management Office (2016a), financing for these projects was mainly from government and state-owned enterprise borrowings accounting for 63% of total investment. The second major source of financing was PPPs followed by annual budget allocation. Other sources of financing came from state-owned enterprise revenues and the Toll Road Fund which accounted for merely 3 and 1% of total amount of investment. It

should be noted that the Toll Road Fund was an additional source of financing that did not initially appear in the Master Plan.

In December 2016, the Ministry of Transport reported that the total amount of investment for twenty projects in the Investment Action Plan 2016 was revised downward from THB 1,796 billion to THB 1,399 billion. Among twenty projects listed in the Investment Action Plan 2016, there were thirteen projects with total investment of THB 525 billion that were already approved by the cabinet while seven projects worth THB 874 billion were postponed since they were at that time in the process of cabinet approval, under feasibility study or under negotiation. The Ministry of Transport pro-

**Figure 4: Transport Infrastructure Investment Action Plan 2017 and its Sources of Financing (THB Billion)**



vided no details regarding the sources of financing of the revised Investment Action Plan 2016. While disbursements were estimated to be around THB 58 billion, the actual disbursement turned out to be only THB 19 billion or 32% of the target. Despite the fact that this disbursement rate was below 50%, it was much improved compared to the mere 3% rate in the previous year.

### Transport Infrastructure Investment Action Plan 2017

The Ministry of Transport (2016) also reported the Investment Action Plan 2017 as shown in Figure 4 where the government plans to implement thirty-six projects with total investment of THB 896 billion, of which THB 435 billion is allocated for the inter-city rail network, THB 225 billion for the public transport network in Bangkok and its vicinity, THB 189 billion for the highway network, THB 36 billion for maritime transport development, and THB 11 billion for air transport development. These projects are new and were not included in the Investment Action Plan 2016. There are five sources of financing for these new projects (Public Debt Management Office, 2016b). The main financing is still from government and state-owned enterprise borrowings accounting for 64% of total financing. PPPs account for 22% while annual budget allocation and state-owned enterprise revenues account for 8 and 1%, respectively. The government also plans to establish the Thailand Future Fund (TFF) to raise funds to finance these new transport infrastructure projects. Financing that comes from the TFF is estimated to be

around 5% of total investment according to the Investment Action Plan 2017. With regard to the disbursement forecast, the government plans to spend THB 8 billion for the thirty-six new projects in 2017. In addition, the government plans to disburse another THB 73 billion for thirteen projects that were listed in the Investment Action Plan 2016 as well as THB 68 billion for seven projects that were postponed in 2016. The total amount of disbursement for 2017 is estimated to be around THB 149 billion.

## Discussion and Comments on Thailand's Transport Infrastructure Development and Financing

As argued in the Introduction, a healthy country, like a healthy body, requires smooth functioning of different types of flows that have to be supported by good infrastructure. However, assessing the performance of transport infrastructure project implementation and its disbursement in Thailand since 2015 reveals several areas of concern about the country's future health. First, the total amount of investment over the 8 years of the Master Plan initially set in 2015 was to be around THB 1,913 billion, but the sum of investment in the Investment Action Plans 2016 and 2017 is THB 2,295 billion. This exceeds the total

investment first announced in 2015. Investigating the details of individual projects listed in the Master Plan and those given in the individual annual Investment Action Plans reveals some projects were not included in the original Master Plan but later appeared in the annual Investment Action Plans. This raises the question whether the Master Plan is reliable as a guideline for those who are interested in using the information for their analyses. It seems that the Master Plan simply provides very broad information about modes of transportation that will be developed, but the details about individual projects could be changed or adjusted anytime, depending upon their readiness and appropriateness. Some projects might be withdrawn and new projects could be added in the future. Therefore, it is better to follow the annual Investment Action Plans on a regular basis for projects expected to be implemented in that year. The other caveat is that even the details and number of projects listed in the annual Investment Action Plans could be changed, adjusted or postponed during the year.

Secondly, the sources of financing and their composition have been changed over the years. While the Master Plan identified four sources of financing, namely, government and state-owned enterprise borrowings, annual budget allocation, PPPs, and state-owned enterprise revenues, the Toll Road Fund was later added as another source of financing in the Investment Action Plan 2016 and subsequently, the TFF is the latest source of financing added in the Investment Action Plan 2017. With regard to the composition of financing



sources, government and state-owned enterprise borrowings are the key sources of financing whereas the financing from PPPs and the TFF increased as the government tries to avoid raising public debt. However, one should not rule out the possibility that other new sources of financing might be introduced in the future. Those interested in investing in or doing business related to these multi-year mega projects should look for information regarding the sources of financing in the annual Investment Action Plans, not in the Master Plan.

Lastly, on the issue of disbursement which measures progress of the projects in relation to what the government had planned, the performance of disbursements in 2015 and 2016 was still far from perfect. It should be noted that it is not unusual for governments to be over optimistic and for large-scale infrastructure projects to be long delayed. These transport infrastructure projects are no exception as the expected disbursement period for projects listed in the Investment Action Plan 2017 has already been extended beyond the year 2022, according to the Public Debt Management Office (2016b). It remains to be seen how much the government can improve the disbursement rate and manage the implementation of these projects in the future so that the Master Plan would not become a multi-year rolling plan with no sign of completion. Those who plan to provide lending to these projects or conduct analyses about the effects of disbursement on the economy should be aware of these facts and take them into account. This is because a disbursement rate of, say, 97% would give a totally different picture of the economy compared to achieving merely 3% of the target.

## Conclusions and Suggestions for Thailand's Large-Scale Infrastructure Project Development and Management

### Conclusions

The plan to develop transport infrastructure in Thailand is not entirely new and the effort to put such a plan into action has been long delayed due to economic and political instability during the past two decades. The latest attempt was made

in 2015 by the military-led government which proposed the 8-year Master Plan covering 2015 to 2022. The government reasoned that transport infrastructure development would promote connectivity, help transform the country into a regional hub and enhance competitiveness as well as lay a foundation for economic and social development. To put the Master Plan into action, the government has implemented the annual Investment Action Plans starting in 2015 to set project priorities and stimulate domestic economic activity.

Investigating the details of the Master Plan, the annual Investment Action Plans, and the disbursement rate of the projects reveals several concerns. This study finds that there is no consistency between projects listed in the Master Plan and those listed in the annual Investment Action Plans where the latter seems to be more reliable than the former. It also finds that the total amount of investment for all projects is not clear, since the total investment given in the Investment Action Plans 2016 and 2017 combined is far greater than the overall 8-year total investment given in the Master Plan. In addition, the government has not only added new sources of financing but also changed the proportion of financing coming from each source on a yearly basis. Finally, the actual rates of disbursement for the transport infrastructure projects thus far have been relatively low compared with what the government initially estimated. Despite these facts, it should be noted that it is not unusual with large-scale infrastructure project development and management that intent is not the same as outcome. As argued by Dörner (1997), only one hopes that these incidences are always to be found in other projects.

### Suggestions for Thailand's Large-Scale Infrastructure Project Development and Management

The Office of National Economic and Social Development Board and the World Bank (2008) pointed out almost a decade ago that the transport sector in Thailand exhibited institutional deficiencies such as lack of central planning, weak coordination, and unclear separation between operation and regulation functions. Government and state-owned enterprises played a large role in planning, regulation, and service provision. Without a sound policy framework, there was no continuity in policy and projects were delayed. These deficiencies presented a challenge to financing infrastructure improvements as private investors' readiness to re-enter the market and act as a crowding-in effect was

contingent on policy improvements and reduced risks. While a clear policy framework was needed, the development direction set forth by policy makers should be based on reliable facts and data reflecting Thailand's current status of infrastructure development. Systematic, periodic, and internationally consistent infrastructure information collection and dissemination would provide Thai policy makers with a good background to better evaluate the current situation, identify bottlenecks, set clearer policies and prioritize projects more effectively.

If there were only one change to be made to make the suggestions of the Office of National Economic and Social Development Board and the World Bank relevant to today, it would be to replace 'past tense' with 'present tense,' almost all sentences still remain true based on the findings in this study. This lack of improvement would be unsurprising to Taleb (2012) who notes that government officials often are better at talking about the problem than at fixing it. Taleb (2010) also argues that government officials are motivated more by maintaining their position than by finding real answers. In order to solve these issues, government must not only be benevolent but also must have good intentions for the well-being of the people and for the health of the country. This study views that these are critical assumptions for the successful implementation of public infrastructure development and management. Although they seem idealistic, without them, none of the above issues would be resolved since empirical evidence from around the world seems to indicate that a government that promises its people a paradise on earth typically delivers nothing but chaos and catastrophe, according to Popper (2011).

Assuming a government is benevolent and has a good will to benefit the people and the country, it must also understand that complex systems, like society and economy, cannot be controlled in a conventional way, like pressing a button or steering a car, and that top-down control attempts will usually fail (Helbing, 2009). In addition, Thaler (2017) recommends governments conduct a 'premortem' before any major decision is taken by assuming that, at some time after a plan has been implemented, its outcome is a disaster and then writing a brief history of that disaster. Thaler views that there are two reasons why a premortem might help prevent adverse outcomes. First, explicitly going through this exercise can overcome natural organizational tendencies toward groupthink and overconfidence. The pre-

mortem procedure gives cover to skeptics who otherwise might not speak up since the point of the exercise is to think of reasons why a project did fail. The second reason a premortem can work is because starting an exercise by assuming the project has failed, and now thinking of why that might have happened creates the illusion of certainty. Thaler argues that laboratory research indicates that asking people why something did fail rather than why it might fail, inspires them to be more creative in problem solving. Lastly, according to Dörner (1997), government must learn to think in temporal configurations. This is because human beings, by nature, do not give adequate attention to the characteristics of processes that unfold over time. Government must also learn to realize that there is a delay between the execution of a plan and its effects. Furthermore, government must learn to cope with side effects and understand the emergent property of complex systems that the effects of its decisions may show up in unexpected places. Dörner suggests that government can learn to cope with and manage complex systems through computer simulation exercises. A computer simulation can immediately highlight the consequences of a government's decisions and plans thereby helping government officials develop a greater sense of reality.

All of these are suggestions for the government. Until Thailand finds a government that not only is generous, has good intentions for society and the economy, and conducts premortems before making decisions on large-scale infrastructure projects but also thoroughly understands properties of complex systems and more importantly, has the courage to accept them, the smooth flows of social and economic activity and the country's future health remain questionable.

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