

POLICY DIALOGUE

A visionary's experience in incorporating infrastructure into long-term urban planning - interview with Dr. Liu Thai Ker

Journal of Infrastructure, Policy and Development's (JIPD) Editor-in-Chief Dr. Gu Qing Yang and Managing Editor R.N. Sugitha Nadarajah sat down with the renowned former Singapore Master Planner Dr. Liu Thai Ker to talk about Singapore's experience in formulating and implementing public policies specifically in urban development and public housing, and the strong Singapore government's role in the accomplishments of the country's development.

Often credited as the 'Architect of Modern Singapore' and the 'Father of City Planning', among the titles earned for his 24 years of public service with the Singaporean Government, Dr. Liu's contribution to Singapore is commendable and has had a significant positive impact in developing the country both socially and environmentally.

As the former Chief Architect and CEO of the Housing and Development Board (HDB) from 1969-1989, Dr. Liu created around two dozen new towns of around 200,000 residents each and oversaw the completion of over half a million dwelling units. Later, as the CEO and Chief Planner of the Urban Redevelopment Authority (URA) from 1989 to 1992, he spearheaded the major revision of the Singapore Concept Plan, a strategic land use and transportation plan that was meant to guide Singapore's development till Year X, about 100 years.

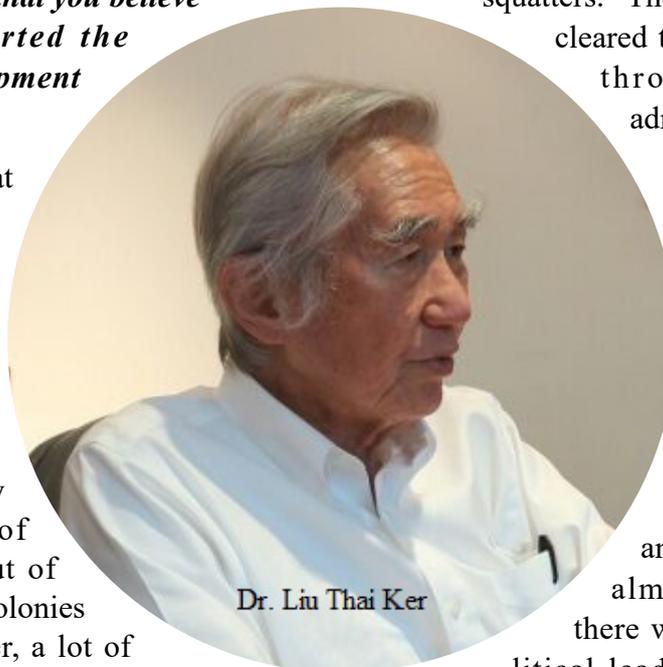
Currently, Dr. Liu is the Chairman of Singapore's Centre for Livable Cities (CLC) and Senior Director at the professional consulting firm RSP Architects Planners and Engineers (Pte) Ltd.

JIPD: What have been the institutional settings for Singapore that you believe successfully supported the infrastructure development of the country?

Dr. Liu: I would say that political will is most important. When the British left, Singapore was actually a very backward country. Just to describe what it was like, in 1960, we had approximately 1.6 million people, of which nearly three out of four lived in squatter colonies or slums. Decades later, a lot of my overseas friends visiting Singapore were prone to say, "It is easy to turn Singapore

into a modern city because you don't have squatters." They did not realise that we cleared them all by 1985 mainly through public housing administered by HDB.

In fact, in those days, at least three cities in Southeast Asia were more advanced than Singapore: Yangon, Saigon and Manila. How would we survive? If you read the newspapers in the 60s and 70s, I would say that almost every two weeks, there was a speech by our political leaders on the survival of the country. We were, in a way, forced to



excel. For tiny Singapore to survive, there was only one way forward: to be excellent. And, therefore, we pushed ourselves to do that.

We were lucky that we had very good first generation political leaders. Our first Prime Minister Mr Lee Kuan Yew and his cabinet colleagues were far-sighted and determined to change Singapore from a highly backward city into a modern metropolis. We were also motivated by fear because by 1965, when we separated from Malaysia, we became one of the smallest city-states in the world, with no natural resources.

In the context of urban planning and infrastructure building, we all had a sense of fear, a sense of determination and also a sense of wanting to get things done by tackling the fundamental causes of any symptom of urban ills. There's no guarantee to any city that it will automatically become and remain a first world city. You could move from first world to third world if you are not taking enough care. Similarly, you could move from a third world to a first world country if you are determined. Most importantly, you must have the political will to succeed and to objectively seek out the methodologies and solutions.

The second thing that I want to highlight is, you see, everyone talks about the importance of infrastructure. But very few people connect the provisions of infrastructure with urban planning. The two things are inseparable. You must plan in order to invest in urban infrastructure, at the right place, at the right time.

Fortunately, in Singapore, we did that. As early as 1965, we embarked on the Koenigsberger ring-shaped plan, which was completed in 1967. After that, we decided to prepare the Concept Plan 1971 with the help of United Nations Development Programme (UNDP). These 1967 and 1971 plans gave me a good starting point to

plan the 1991 Concept Plan, with the objective of upgrading Singapore further to a World Class city.

You need a good long term city-wide urban plan in order to know where to allocate infrastructure. Flooding is aggravated by urbanised area with hard surfaces. So where do you spend your money most effectively on drainage? Where do you place the MRT (Mass Rapid Transit) lines? Where do you locate the power plants? If you apportion these projects without being guided by an urban plan, they may be built in the wrong locations, thus creating pollution and other problems for surrounding residents.

The reason why I go to such lengths to explain this is because infrastructure and urban planning are in actuality inseparable. To use the human body as a comparison, the blood vessels are like the electrical cables. How do you align the blood vessels if you do not know where the organs are?

Also, we have to plan for the needs, not according to capability. If you are in a very poor country today and therefore plan only according to what you can afford, then when you become richer, what happens? You run out of land at the right places for the right land usage. Further, you must plan for long term, not short term. In many cities, you see a lot of power plants and airports in the middle of these cities. Why? Because these cities planned for shorter term. The power plants and airports were planned to be in the rural area and when the city expands, beyond these plants and airports, they end up being in the middle of the city. Eventually, power plants pollute the environment, and airports create noise and building height problems to the surrounding development areas.

We planned for long term, and planned according to the need rather than capability. In 1971, when we were still very poor, we already laid down the MRT lines on paper. We had no

money, and we went through a lot of debates on whether we should have the MRT or not. In 1982 when we had the money and decided to build MRT, the lines were already there and the land had already been acquired. If we did not lay out the line, because we were poor, I don't think we would have as many MRT lines at the right places as we are enjoying today.

Further, assuming that we have a good master plan, when we invest in infrastructure we have to invest in tandem with the pace of urbanisation. In other words, if you invest in an area where there is no urbanisation, then after you sink in the money, where do you collect back your investment? Whereas, if you work in tandem, the moment you sink in the money, you can get back your money from the residents living where infrastructure has just been installed in the form of electricity rates, the water usage rates, and so on. On one hand, it means that we don't waste money on infrastructure. On the other hand, we also made sure that the new development areas were well provided with infrastructure.

When we first took charge of Singapore, there were places all over the city that were far away from our proposed urban development areas. We could not afford to bring modern infrastructure to those places. One good example is Sembawang. In order to clear the squatters in the Sembawang area, we built HDB housing nearby, but unfortunately, it was so far away from the main centre of infrastructure. So what did we do? We put in septic tanks and electrical substations. We didn't need to run the long pipes and electric lines there from the main plants. There was a very small residential community located in the north-eastern region of Singapore far away from the main urbanised areas and we used chemical toilets as temporary measures to ensure that the environment wouldn't be polluted. In other words, in remote areas, we used appropriate technology at appropriate cost to upgrade the quality of the environment. We

were pragmatic and yet caring about the welfare of the people and our environment.

A good infrastructure investment has high economic value, but only if you invest it wisely. The Singapore government would only invest in infrastructure where it gets a return. Because once you get the return, you have the money to invest more.

In preparing an urban plan, the first step is to paint a clear vision and then create the master plan and the detailed urban plans to match this vision. Parallel with these planning efforts, we create an infrastructure master plan, detailed infrastructure plans, and engineering designs. Then, of course, we legislate the plans, we do the usual promotion, and then carry out the development. This is not only a Singapore story; this would be a desirable development model for any city.

But I need to emphasize that the reason that we could do this so smoothly owes to a large extent to our public housing policy. From the very beginning, our government introduced public housing with the vision of giving decent housing to every single citizen. To create a liveable community for the residents in public housing, we had to accommodate them in highly self-sufficient new towns. As we had to build many new towns to accommodate every citizen, we very quickly realised that new towns could be regarded as the basic building blocks of Singapore the city. Besides planning, HDB was also involved in urban design and engineering design of the new towns. HDB also helped the government resettle squatters and thus clear land for new developments. By virtue of our massive housing programme, we could effectively clear squatters and slum dwellers. In many other cities, even though they have public housing policy, there are difficulties resettling squatters and clearing land for new development. These parcels of unencumbered land were made available to develop public

housing infrastructure as well as other uses such as commerce and industry. This in a way summarizes how Singapore managed to create a relatively successful urbanization story in a relatively short time.

This HDB story, I often tell people, is an open secret weapon of Singapore's urbanisation. Why 'open'? Anybody who comes to Singapore can see our public housings, which are everywhere. Why 'secret'? This is because few people understand the thoughts and strategies that went into the implementation of the HDB projects. With their naked eyes, what they see are just blocks and blocks of flats. It rarely occurs to visitors that behind the physical structures, there are many other roles played and contributions made by HDB. This is a very important part of the Singapore urbanisation story.

I often suggest that a good vision for urban planning must come from the values of a humanist. A good urban planner needs to have a humanist's heart to give the right values and to care for the people. He also needs a scientist's head to put the parts of the urban plans together very logically. And finally, the urban planner needs to have an artist's eyes to romance with the land and create a beautiful environment. We need all three aspects together.

Many people ask me, "Why is it that there are so few straight roads in Singapore?" Have you ever wondered? This is because our planners and engineers romance with the land. We should not treat land as just a heap of earth. We should treat it with feelings. If you want to respect the rivers, the hills and so on, you don't just cut and change them at will.

In fact, Woodlands Expressway is a good case in mind. Originally, it was planned as a fairly straight line. I was in URA (Urban Redevelopment Authority) at that time and I explained to the engineer in charge, "If you do so, first of all, you'll destroy the many small

hills; secondly, because you have to cut the hills, you have to build retaining walls and the total cost could be higher." So, I drew for them a new road line skirting around the hills. And that was how it was eventually built. Unfortunately, logically as it may seem, the Singapore urbanisation story is not often seen in other cities, especially among those in the developing world. More often than not, their infrastructure is not related to planning; they plan for short term and not long term; and they plan according to capacity rather than need.

People think that planning is easy. It is true up to an extent because anybody can draw lines and put colours on paper. As a result, many plans are created without sufficient explanation or justification. But as a planner I feel that there's a huge burden on me. I feel that every line I draw or every patch of colour I paint, either for our city, or an HDB town or for a flat design, it affects the quality of life of millions of people every day. As a form of self-discipline, I tell myself that I must know the consequence of every line and every patch of colour before I allow myself to put them on paper.

That's why I spent a lot of time researching and also talking to people — business people, academicians, Members of Parliament, my staff, and so on — just to get the right understanding and opinions. In the early days, HDB itself handled the property management of HDB estates. So I used to talk to our estate management people almost weekly to get their feedback. At one stage, I even had a dozen sociologists with PhD degrees to advise me. It was a constant, intensive, never-ending search and research. The hard concrete and steel structures are in fact a translation of many software ideas.

JIPD: You underwent a lot of challenges when you were involved in urban planning. Singapore, as we know, has limited amount of

land and also very limited resources, so what did you think was the biggest challenge for you and how did Singapore overcome it?

Dr. Liu: Again, we have to be thankful to our political leaders. Keep in mind that, in the 60s, we were extremely backwards. Yet, the first cabinet members decided that the only way to achieve Home Ownership For All was to go high-rise, because we had a relatively large population with limited land. In those years, we looked to the West for inspiration — they were like sages. But during that period, with very few exceptions, these experts condemned high-rise high-density housing because they had generally poor experiences in their own countries. However, if we were serious about housing every single citizen in our country, we had no choice but to go high-rise. I asked myself, “Why do the Western experts, when at that time they were light-years ahead of Singapore, condemn high-rise?” It was a challenge. And we had to find out the reasons.

We, in HDB, made a fair few trips to Europe as a part of the study, over a period of three to five years, to try to understand why European high-rise high-density failed, in order to avoid repeating their mistakes. We identified the problems one after another, and proceeded to overcome those problems through policy design, urban planning regulations and building design. And as we identified a few shortcomings in the West, we tried to find solutions to overcome these problems. For example, one of the key factors in the West, among many others, was that they treated public housing as a place largely for the desperately poor. So in our public housing estates, we mixed approximately 1/3 former squatters to 2/3 urban folks. We also mixed 1-, 2-, 3-, 4-, and 5-room apartments together. That was how we managed to make high-rise public housing a success. As a result, by 1985, we resettled all squatters and slum dwellers as well as housed every citizen, and so you don't find

ghettos in Singapore.

In short, the Singapore experience tells us that when you identify the needs clearly, despite the odds against you, you still have to carry out the tasks. If we had listened to the Western experts and went low-rise, we would not have solved the housing problem. We made policy choices according to needs, and then proceeded to find ways to solve problems. That is another valuable lesson.

JIPD: In terms of implementation, this part is very difficult for many countries, as you are very familiar with China. In developing infrastructure, how do we implement, for example, a coordination between different government agencies?

Dr. Liu: China has both clear advantages and some disadvantages in urban planning. The disadvantage is that different agencies tend to create their own plans even on the same site: the land authority has a plan, the urban planning department has a plan, the economics department has yet another plan. That's why, nowadays in China, they are advocating *duo gui he yi* - 'many plans combined into one'. However, while it is on everybody's lips, I don't see much tangible progress so far. But I am sure one day it will happen. And I wish it would happen soon.

Whereas in Singapore, not only do we have only one plan, we also have one implementing agency. URA produces the plan and URA enforces the plan. However, despite the fact that URA alone has authority over the plan, every change in the URA plan must be discussed through the Master Planning Committee, which consists of representatives from different government departments with interest in the urban plan. This is one way of having only one plan and yet taking into account the concerns of government-wide departments. This could be a good model for the Chinese authority to

consider.

In the whole world, while the country most favoured to good urban plan is most likely Singapore, the second best is China. Not USA, not Europe, but it is China. Why? Because China has only one political party running a strong central government. The land in China is state-owned. If you have one government, if you have the right idea, and if you want to develop housing, infrastructure, or industry, it is easier because the land is in the hand of the government. The Chinese government basically do appreciate the need for good planning. What is urgently needed is good planning ideas.

I feel that China, Vietnam and Russia share the same common advantages among them. What they need now is to have the right planning ideas, and to improve their administrative systems. I often tell my Chinese friends that they have no excuse not to plan their cities well. By comparison, in America, they have two strong political parties, often undermining each other's plans and projects. And their land is mostly not state-owned. Their urban authorities cannot be as powerful as those in Singapore or China. Therefore, despite having good planners, it is difficult for them to push a good plan through.

Why didn't Singapore have the disadvantages? A large part is due to the fact that we were a British colony. The British had centuries of experience of urban culture. When they came to Singapore, although they did not do a brilliant job in urbanisation — that's why three out of four people were squatters in 1960 — the understanding of a good urban society was taking root in Singapore. Some of our first generation politicians were civil servants in the British colonial government. Their understanding of what makes a good city gave our country a good start.

JIPD: What do you think the impact of infrastructure development is on Singapore's social and economic development?

Dr. Liu: In terms of economic development, it is very obvious. I often conduct informal surveys on foreigners working here. I would ask them, "Why do you leave your big country and come to work in a small place like Singapore?" A hundred percent of them will say, "Because everything works here".

People want to go to a place where everything works. Not only that. You've heard this saying and I'm sure it is still true — when an MNC wants to transfer someone to a foreign place, they don't talk to that someone first. They talk to that someone's wife first.

And what will attract this wife to come here? The clean air that we have (our government decided on air pollution control almost from Day One), flowing traffic, safety, good infrastructure, comfortable life. And the foreign schools — our American school in Singapore is reputed to be the best American school outside USA. We also have British schools, Japanese schools, Australian schools and international schools. This did not happen by accident. This was part of our government's plan to attract foreign investment. So, good infrastructure definitely makes it more attractive for foreign investment.

Socially, I think, in HDB, we actually plan communities. We subdivide new towns into neighbourhoods, neighbourhoods into precincts, precincts into building blocks, and within each block we have community spaces such as void decks and segmented corridors which I refer to as courtyards in the sky. These sequences of spaces are more than a convenient spatial subdivision. They form a hierarchy of social spaces to nurture community cohesion and sense of belonging. These ideas we have studied and thought through carefully.

JIPD: As an urban planner, how do you incorporate long-term infrastructure development into a country's urban planning scheme? And what kind of infrastructure do you think has played a more crucial role in Singapore's development?

Dr. Liu: All of them — water, electricity, sewage, drainage. For example, drainage is important because every time it floods, it is not only an economic loss, but also loss of properties and life. As Mr Lee Kuan Yew used to say, when a city floods, not only people cannot go to work, but also ambulances cannot go to hospitals quickly, and there will be loss of lives as well.

We need to have a good long-term master plan. Then, PUB (Public Utilities Board) will follow up with locating the power plants of the right sizes. LTA (Land Transport Authority) would work out the road alignments and widths. MRT engineers have also drawn up the land needed for MRT (Mass Rail Transit) lines and stations. With all these plans and design in place, we have the coordinated staging plan as well as the detailed engineering designs.

Throughout my career in the government, I worked very closely with PUB, LTA, MRT as well as EDB (Economic Development Board). Officers in EDB would tell me how much industrial and what kind of facilities were needed to attract foreign investment.

We planned for as many things as we could think of that Singapore needed. But if you don't have enough money, you make do with whatever there is within your capacity. As mentioned earlier about the creation of Sembawang New Town, if we found it uneconomical to build a proper sewage plant, we built septic tanks or chemical toilets. We practise what we preach. By our actions, we have demonstrated that by being down-to-earth, we could urbanise Singapore with Quantity, Speed and Quality.

Personally, also, I feel that you must manage your finances carefully. What is most important is that you don't invest in any infrastructure that doesn't give you return. You don't move too fast, neither do you move too slowly.

It is a matter of being careful and logical in practising a disciplined approach to planning and development. You have to be disciplined and very business-like. I believe in the 80s, the Economist devoted a special issue called 'Singapore Incorporated', in which Singapore government was portrayed operating as a business corporation. And the Economist was right. We managed our country like a company. We almost never wasted anything. That's how we lifted ourselves from poverty to become a relatively wealthy nation.

JIPD: Do you think that, in the development of a country, the legal issue is important?

Dr. Liu: Yes, it is a relevant question. When we first started, we had only had 30% of Crown Land. Then through decades of land reclamation and compulsory and acquisition, the government eventually manage to own around 90% of the land. Most cities have the compulsory Land Acquisition Act. But only a few cities can use it to the extent that we have done. What is the difference? The difference is that we have a good master plan. Every time we want to acquire a piece of land, we tell the land owner, "This is the master plan. When we acquire your land, we use it for this stated public purpose". We never deviated from this commitment. Over the decades, the government has demonstrated that the acquired land has in fact helped to improve the quality of life of the people and the quality of physical environment. This long streak of good track records manages to win over the support of the people and the private land owners. A good track record is a very important factor in good and successful governance.

Our government is also very particular about

expressing the planning intentions clearly in our plans. We have been fussy about writing our planning rules and regulations as clearly as possible and make them readily available to the members of the public in a totally transparent way to ensure that every citizen and businessman would have the same access to planning information. On one hand, these

measures are taken in the interest of fairness. But at the same time, it helps to give potential investors, local or foreign, a sense of confidence in their investment. And the process of planning approval is relatively fast. We all know that in the business world, time is money. Setting clear legal guidelines can, therefore, help the economic growth of Singapore.