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Management Framework for Land Based Financing in Egyptian New Cities based on the Chinese Model

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Abstract

Land based financing is a financing approach in which it can provide the needed financing to all urban infrastructure without depending on the government as the main economic funder or the low-income groups. This financing approach is based on obtaining revenues from private developers and high-end land owners through publicly-owned land selling or leasing to capture the increment in land value as a result of public investment in infrastructure which creates a sustainable financing mechanism for infrastructure provision and for urban development and expansion. However, the usage of this financing approach in some Egyptian new cities had exposed the government to many negative financial instability risks due to the current used policies which have caused to hinge and disturb the national urban development strategies. On the other hand, many international cases have used this financing approach effectively and achieved great outcomes on many levels; economic, social, sustainability, and urban development. One of these pioneering cases and considers have the longest experience in using this mechanism is China. The main objective of this research is to generate and deduce a management framework for this financing approach in Egyptian new cities based on the Chinese model. Accordingly, the research methodology includes literature review and qualitative analyses of some international pioneering cases in China in an attempt to deduce a set of criteria that eliminates any potential risks, neutralize the occurred risks, and unlock the full potentialities of this financing approach in Egyptian new cities. In conclusion, using land based financing effectively and with the right and suitable policies would achieve the governmental socio-economic, urban development, and sustainability objectives while keeps the negative impacts at their lowest levels.

Keywords

Urban Infrastructure; Land Value; Management; Urban Economics; Sustainable Financing

1. Introduction

Land based financing LBF is a method in which can be used to obtain and collect the needed capital for urban infrastructure projects through the sale, lease, or participation of the public lands with developers of lands owners. However, the value of public lands is being inclemently increased as a result of the governmental investment in infrastructure. Accordingly, LBF considers an approach of land value capturing. This would provide part or even all the needed financing for these kinds of projects without depending on the general budgets of countries or on the

low income citizens.

However, Egypt, Alike many other countries, uses this financing approach in new cities in order to provide all the needed utilities. Despite the tremendous success of this financing approach in many international examples, the current Egyptian used policies to capture the increment in public lands value has caused many negative risks and threats. The international examples include Australia, Netherlands, Sweden, Israel, Finland, Singapore, Russia, USA, Poland, China, Turkey, India, South Africa, Philippines, and Ethiopia. Some of these international pioneering cases have presented effective policies that have proven their ability to face unexpected negative risks. However, not all of the international cases are similar to the Egyptian circumstances. Only the Chinese model is similar to the Egyptian model with very few differences as will be illustrated later.

The research problem is that despite the success of this financing approach in many international examples, it has been causes many negative risks locally in Egypt. Accordingly, exploring the feasibility of neutralizing negative risks of this approach would help to unlock the comprehensive potentialities of it, avoid and eliminate any of the potential threats, and neutralize the already taken-place negative impacts.

The main objective on this research is to generate, derive, and deduce a public land management framework for this financing approach in the Egyptian new cities based on the Chinese experience which unlock the full potentialities, eliminate risks, and neutralize the already occurred negative impacts of this financing approach. In order to achieve the previously mentioned objective, the research methodology includes literature review and comparative qualitative analysis of some pioneering cases in China in an attempt to deduce a set of criteria that eliminate any potential risks and unlock the comprehensive potentialities of this financing approach. Accordingly, the research structure will be divided into two parts; the literature review part and the Chinese model analysis. The first part will include 1) land based financing definition, justification, and its methods, 2) revision of the failure and success stories of this financing approach in Egypt, and 3) the land value increment determines. The second part will include 1) the Chinese model selection criteria, 2) analysis of pioneering cases studies in China, and 3) the management framework deduction.

2. Negative Impacts of Land Based Financing from the Literature

By reviewing literature, a number of published papers and reports introduce many negative impacts of using land based financing in Egyptian new cities that have affected negatively on all sectors of investments and business as well as have hinged the urban and economic growth.

In 2006, the World Bank investigated the influence of the public land management policies in Egypt and investments. The study is based on analyzing the used policies in Egypt and their impacts on investment in various sectors including industrial manufacturing, real estate development, tourism, and agriculture. It Is has been concluded that the used management policies in Egypt are causing many negative impacts on investments in all sectors. Many factors have caused these negative impacts including the governmental and institutional laws, procedures, restrictions, land location, building permits, and utility connections(The World Bank, 2006). In 2008, it stated that Egyptian government does not fully benefit from the increased land value resulted from public investment in infrastructure. The study is based on the revision and analysis of recent studies of Egypt's urban sector. It has been concluded that the used public land management policies must be improved to reduce land speculation and to allow the government to capture the increment in land value instead of the private sector and landowners. Furthermore, the government must adopt a decentralization concept allowing for local government to participate in steering the collected revenues from the public land management (The World Bank, 2008).

Hegazy et al suggested that a total reform of the land management policies used in Egyptian new cities is needed. The study is based on the analysis of 6^{th} of October new city through interviewing academic staff including professional planners and university staff. The authors concluded that many factors must be taken into consideration in new cities in order to achieve sustainable development including new cities location, public transit infrastructure, public land sale sequence, land coding, and accessibility (Hegazy & Moustafa, 2013).

Tadamun initiative argued that the Egyptian new cities did not succeed in realizing their target populations. In this paper, the new cities population growth rates national wide have been analyzed and compared. It has been concluded that the revenues from the public land sale are way less than the governmental spending on infrastructure. In addition, the new cities are suffering from the lack of suitable infrastructure and services. Furthermore, the real estate prices are higher than what average citizens can afford (TADAMUN, 2015).

In 2017, research carried by Meselhy, he argued that the Egyptian real estate market may be suffering from a bubble that will burst soon. The study is based on comparing the real estate conditions in Egypt and in USA. The author has concluded that the real estate bubble symptoms that had happened in USA causing the bubble to burstare existed in the Egyptian market. The author recommended that the decision makers in Egypt must take actions to avoid the bubble burst in Egypt (Meselhy, 2017).

The previous studies discuss and elaborate the LBF experiences locally as well as their negative impacts (see Table 1). The usage of this mechanism locally in the Egyptian new cities has caused many negative impacts on investments in all sectors as well as fluctuations to business and unsustainability. The reduction in investments, the high living costs in new cities, high housing prices, low demands on public lands, real estate bubble, and the low outcomes of public land sale are all resulted from the unsuitable policies of using publicly-owned lands as assets for urban infrastructure financing. In addition, the papers have concluded that the public land management policies in Egypt must be a subject of dissection, modification, and reformation since these policies are causing negative risks on all aspects of life; social, economic, urban development, investment, and quality of life.

Table 1. Literature Review Summary of Papers Concerned with the Negative Impacts of LBF in Egypt

Year	Author	Publishing Country	Area of Focus	Objectives
2006	The World Bank	USA	Public land management in Egypt	Examining the public land management policies and exploring their suitability for investments
2008	The World Bank	USA	Infrastructure financing and urban development in Egypt	Presenting a review of the urban sector in Egypt and the used financing methods for infrastructure provision
2013	Ibrahim Hegazy, Wael Moustafa	Egypt	Development in New Cities assessment (6thof October)	Investigating the challenges of sustainable development in 6th of October new city and exploring the potential action to achieve sustainable development
2015	TADAMUN	Egypt	New cities Evaluation national wide	Evaluating new cities and whether do they have achieved their targets or not.

Continued on next page

Table 1 continued

2017	Mohamed Meselhy	Egypt	Real Estate Bubble (New Cairo)	Comparing between the housing bubble in New Cairo new city, Egypt and USA
Source: Author, based on (The World Bank, 2006)(The World Bank, 2008)(Hegazy & Moustafa, 2013)(TADAMUN, 2015)(Meselhy, 2017)				

3. Land Based Financing as One of the LVC Approaches

Using public lands as assets can provide the required revenues in short time with simple administrative procedures when being compared with the other two LVC approaches. However, the other two LVC approaches are being characterized by:

- As for the taxation based approach, it needs a long period to achieve the needed revenues as well as huge number and high densities of citizens and suffers of political rejection in many cases.
- As for the development based approach, it suffers from its need for a soohisticated administrative and marketing skills and has narrow base of contributors.

On the other hand, LBF has a wide base of contributors which enable it to collect revenues in short period through the direct public land sale or lease. In addition, LBF needs vacant publicly-owned lands in order to work effectively. As a result, the Egyptian new cities constitute a fertile example to use this financing approach. Furthermore, the LBF approach is being used in many international examples effectively, accordingly, the use of its methods themselves is acceptable, but rather their application in some local cases local new cities in Egypt is the problem. As a result, this financing approach has very good potentialities under certain conditions which will be identified, derived, and deduced of the qualitative analysis of the Chinese model.

There are about three main technique of the land-based financing; the sale of public lands, the lease of public lands, and the grant or participation of public lands with developers in exchange for other benefits. These techniques are not fixed and they can be modified based on each example circumstances and conditions (Peterson G. , 2009) (The World Bank, 2006).

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4. Lands as Assets for Urban Infrastructure Financing

Land considers one of the four production factors. The other three factors are capital, entrepreneurship and labor. In order to use lands as assets, its nature must be described and its value determents must be identified and illustrated.

4.1. Land Nature

The main characteristics of lands are:

- Its free gift of nature so that it cannot be produced. Accordingly, the government does not need to pay any capital in order to get lands from anyone.
- It is fixed in supply so its amount is fixed and inelastic. Once, the available lands are sold there will be no more lands unless it is being brought from someone.
- It is immobile so land cannot be transported from a place to another and each land has its unique physical conditions and specific context.
- It is a primary factor for all industries whether to be located in or to get the raw material from. Accordingly, it is very important and subject to the principle of supply and demand.
- It is a passive factor of production so it cannot produce anything by itself which means that its value is being determined by its owner activity and the improvements that being made within it (Francis, 2010).

4.2. Land-Value Determinants

Land value is being determined mainly by the market forces of supply and demands. Whenever the demands on lands are gotten higher, the prices would incrementally increase and vice versa. However, demands on lands are being affected heavily by many factors. These factors are development regulation, accessibility, social, cultural, and demographic factors, physical attributes of lands and infrastructure, and land speculation (see Figure 1) (Francis, 2010).

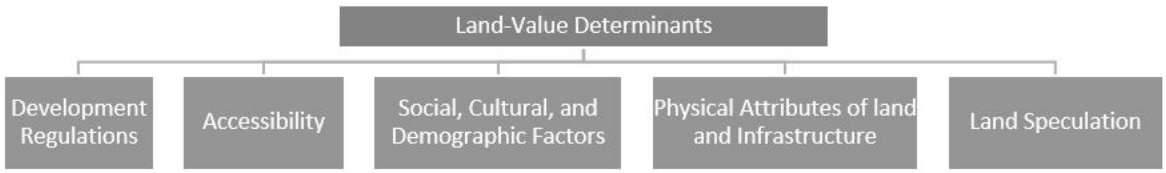

Figure 1. Land-Value Determinants – Source: (Francis, 2010)

4.2.1. Development Regulations

The regulation and the physical planning strategies adopted by the government can push up the value of lands. This includes zoning laws; land uses code, building codes, rent controls, and any other regulations (Francis, 2010). Planning strategies and quality are tended to achieve the perfect composition which in turn would achieve the

highest land value. Accordingly, the bad planning strategies and the low planning quality would create a land use conflict and low demands on lands and in turn would decrease the land value (Obala, 1990). For examples, prohibiting some land uses may decrease their supply against the demands which in turn would increase their value. Furthermore, allowing for more heights and more floor area ratio would increase the lands value and vice versa. In addition, using single-use planning strategies would create lands less in value than mixed uses planning strategies.(Waweru, 2014).

4.2.2. Accessibility

Accessibility is concerned with both pecuniary and time cost. Lands which are connected with the surrounded other areas with fast roads or cheap mass transit or near to the centers of the towns are more accessible and in turn are higher in value. On the other hand, the value of lands that are located far away will get lower (Elnagdy & AbdelAty, 2018). Value of lands is tended to move from areas that suffered from accessibility issues like congestion, bad roads, or no public transit to areas that are more easily to be accessed and reached (Thorncroft, 1965). Alike, lands value located in a central location and near the city center is higher than lands located in marginal areas.

4.2.3. Social, Cultural, and Demographic Factors

These factors include population, prestige and education levels, migration, residents' income, and all the other social issues. Any social activity that causesto an increase in demands over a specific urban area would increase its value and vice versa. For example, in the 1950s, United Nations Reports showed that the value of lands in cities has been raised due to the influx of migrants from rural to cities (Francis, 2010). In addition, an increase in resident's income would increase their purchasing power and willingness allowing them to buy more properties. Accordingly, the pressure on the fixed supply of lands will get higher and the value would be increased (Onyango, 1988). Furthermore, the desire of human being to be part of specific unique community increases this community value. These unique communities may include rich communities, diplomat's communities, or highly educated communities. On the other hand, the increase in population may affect negatively on land value in case of over-crowding. Alike, areas that culturally unsuitable, cause fear and sense of insecurity, or do not have an identity may not attract local residents.

4.2.4. Physical Attributes of land and Infrastructure

The physical attributes of the lands include soil characteristics, climate, location, and topography. The physical attributes of infrastructure include the availability of water, sewer, electricity, public transit, and any other traditional network and the availability of hospitals, schools, parks, police stations, and any other services.

Different soil characteristics affect the land value according to its land use. As sand soil increase the value of residential lands but decrease the value of agricultural lands (Syagga, 1994). Alike, different topography, climate, and location characteristics affect the land value according to its land use. For example, lands located near to slums have a less value than lands near a high-class residential community. As for the physical attributes of infrastructure, Mbugua argues that the value of lands and properties that have a good access to water supply, electricity, drainage and other services like hospital and commercial uses is tended to get higher than those with bad access or no access (Mbugua , 2000).

4.2.5. Land Speculation

Land speculation is the purchase of land by high-income people and keeping it undeveloped for a while with the hope that it will become more valuable in a future. This would create an artificial land scarcity and would cause

a bubble in the lands and real estate market. Accordingly, the prices of lands are becoming unreasonably high (Kreibich & Kombe, 2000).

4.2.6. Land Value Determination Summary

Table 3summarizes the previously mentioned land-value determinants that can limit or enhance the lands and properties values.

Table 2. Land Value Determinants Summary

	Land-Value Determinants				
	Development Regulations	Accessibility	Social, Cultural, and Demographic Factors	Physical Attributes of Land and Infrastructure	Land Speculation
Maximize the Land Value	Allowing more heights and floor area ratio Mixed uses High-quality planning Good land use management	Land is accessible by public transit and roads Land in central location	Moderate human migration to cities Income increase Unique prestigious communities Communities with identity	Suitable soil, climate, context, and topography for the land use Infrastructure and services are available	The existence of high-income land speculators increases land value unreasonably but creating bubble
Minimize the Land Value	Limiting heights and floor area ratio Single uses Low-quality planning Poor land use management	Land is far away from public transit and roads Land does not have Land in remote location	Human migration from cities Overpopulation Income decrease Deteriorated informal communities Communities with no identity	Unsuitable soil, climate, location, and topography for the land use Infrastructure and services are unavailable	Non-existence of land speculators decreases the land value but creating healthy market
Source: Author, based on (Kreibich & Kombe, 2000), (Mbugua , 2000), (Syagga, 1994), (Onyango, 1988), (Francis, 2010), (Waweru, 2014), and (Obala, 1990).					

5. International Effective Policies from China

Many countries have used public lands as an asset for urban infrastructure financing including Australia, Netherlands, Sweden, Israel, Finland, Singapore, Russia, USA, Poland, China, Turkey, India, South Africa, Philippines, and Ethiopia (Nystrim, 2007)(Peterson G. , 2009). Some of these international pioneering cases have presented effective policies that have proven their ability to face unexpected negative risks. However, Australia, Netherlands, Sweden, Israel, Finland, Singapore, Russia, USA, and Poland are classified by having very high human development indicators according to 2017 statistics (United Nations Developemnt Programme, 2017). These indicators

include the Human Development Index (HDI), the Inequality-Adjusted Human Development Index (IHDI), the Gender Development Index (GDI), the Gender Inequality Index (GII), and the Multidimensional Poverty Index (MPI). Accordingly, it is no use of comparing such cases with the Egypt since they are a lot advanced (economically, ideologically, culturally, and socially) and in order to create a public land asset management framework that is feasible and applicable in the Egyptian new cities, the cases that will be analyzed must be similar to the Egyptian new cities circumstances. The cases that are similar or close to the Egyptian human development indicators according to 2017 statistics are China, India, Ethiopia, South Africa, Philippines, and Turkey.

However, not all of the international cases are similar to the Egyptian circumstances. The usage of public land in Turkey, Philippines, and South Africa is based mainly on old properties sale within the inner urban fabric of cities' centers and it is not used as a primary financing source (Peterson G. , 2009). In addition, the usage of public lands in India is based on acquiring land from private individuals by law force then reuses them which resulting many conflicts between government and landowners. In addition, this mechanism is being affected heavily by political considerations (Raghuram & Sundaram, 2009). As for Ethiopia, all reviewed published papers within the literature review have highlighted that its policies are in deep need for reformation (Yirga, 2014). Accordingly, only the Chinese model is similar to the Egyptian model with very few differences since 1) they are close to each other in the HDI, 2) the government owns the lands, and 3) they use this financing mechanism as a primary way of financing (see Table 4).

Table 3. Countries where governments use public lands as an asset for urban infrastructure financing

Case	Human Development Index HDI	Classification	Rank	Comments
Egypt	0.69	***	111	—-
Australia	0.93	*	2	Cases with very high human development indicators and they are a lot advanced (economically, ideologically, culturally, and socially)
Netherlands	0.92	*	7	
Sweden	0.91	*	14	
Israel	0.89	*	19	
Finland	0.89	*	23	
Singapore	0.92	*	5	
Russia	0.80	*	49	
USA	0.92	*	10	
Poland	0.85	*	36	
China	0.73	**	90	Ideal competitive
Turkey	0.76	**	71	Using old properties sale within the inner urban fabric of cities' centers and it is not used as a primary financing source
South Africa	0.66	***	119	
Philippines	0.68	***	116	
India	0.62	***	131	Acquiring land from private individuals by law force then reuses them which resulting many conflicts
Ethiopia	0.44	****	174	The used policies are in deep need for reformation

Notes			
Human Development Index HDI includes health, education, income, inequality, gender, poverty, work, employment, human security, trade, financial flows, mobility, communication, environment, sustainability, and demography factors.			
* Above 0.8	Very High HDI	** Above 0.7	High HDI
*** Above 0.55	Moderate HDI	**** Below 0.55	Low HDI
Source: Author, based on data from (United Nations Developemnt Programme, 2017)			

The Chinese model consists of two polar; all the Chinese cities and Honk Kong. Each of these two polar has its unique policies. Despite Hong Kong follow China administratively, it has its own laws and policies. In facts, Honk Kong has used public land as an asset for infrastructure financing before all China cities by about 138 years. Accordingly, Hong Kong has a lot of experience than all the Chinese cities and considers the most successful case worldwide in using public lands as an asset for urban infrastructure financing (Nystrim, 2007).

5.1. Hong Kong, SAR (Special Administrative Region), China

Hong Kong is Special Administrative Region that follows China and consists of three main regions; they are Hong Kong Island, Kowloon, and New Territories. The selection criterion of this case is based on the adopted policies by the government when demands on lands getting low and its unique urban development strategies around public transit nodes.

5.1.1. Hong Kong Public Land Lease Mechanism during Crisis

Public lands are being lease in Hong Kong since 1841. The government owns the vacant lands in Hong Kong. It supplies the market with the pre-announced amount of lands in targeted development locations in order to be leased by private developers. So, it leases lands (sells the development rights only of lands) to private developers for 50, 75, and 99 years that can be renewed after re-assessment of the land rent (Government of Hong Kong, 2017). Despite the negative impacts of the Asian financial crisis in 2001 on Hong Kong economic system and especially on the public land lease revenues, the policy adopted by government of Hong Kong has enabled the government from face such a crisis. This policy is called “Demand Oriented Model”.

When the Asian financial crises took place in 2001, the land leases contracts and the demands on lands and properties have declined severely and as a result, the government has suspended all land sales for commercial development. The total revenues collected have plummeted almost to zero (Peterson, 2006). Accordingly, after 2003, the government has changed its policy from a proactive role to a more passive one. The government has switched from the supply-oriented model to demand-oriented model. Before the financial crisis in 2001, the government was supplying the market with the pre-announced amount of lands in targeted development locations. After 2003, the lands and their infrastructure are being provided by the government only in response to the private developer’s requests and for the prices suitable and acceptable for the government. This would prevent the government from providing infrastructure for lands that will not be sold.

Between 2004 and 2010, the land sale revenues started to increase very slowly. Staring from 2010, the revenues started to increase as in 2012 only the total number of sold lands was equal the total number of sold lands between 2004 and 2010. Accordingly, the government in 2013 has made a decision to switch back to supply-oriented model (Li, Wong & Cheung, 2015).

In addition, the notion of land lease is ensuring the sustainability of financing since lands are going back to the government in the end of the lease time in order to be re-leased again. Furthermore, this would ensure that at all times the government will be the only owner of all lands.

5.1.2. Public Land Management around Public Transit Stations

Hong Kong has a very unique management framework for public lands around public transit stations. It is called Rail plus Property (R+P).

As Figure 2 showed, the government sells the development rights of lands around the public transit paths and nodes to public transit operator for 50 to 70 years. The operation company is owned by the government. This sale is being performed before the construction of the public transit project. The operator pays the land premium for these rights. However, the operator buys the development rights of lands before its value is getting higher. Then, he starts to divide these lands into small parcels to sell their development rights to private developers. Those developers pay the costs of the land premium to him and bear the construction costs of the development. So, he does not bear any financial risks. However, the public transit operator generates revenues through receiving a portion of the private developer's profits according to the agreement or in some cases; he may have the ownership of some of the commercial and office spaces to lease them. Furthermore, R+P program does not only achieve huge revenues, but it can be used to face the huge increase in residential and commercial spaces demand and to encourage urban development. As since 1995 to 2010, R+P program was responsible for an increase in the residential units by approximately 100.000 units through its encouraging attribute of the urban development (Verougstraete, 2014).

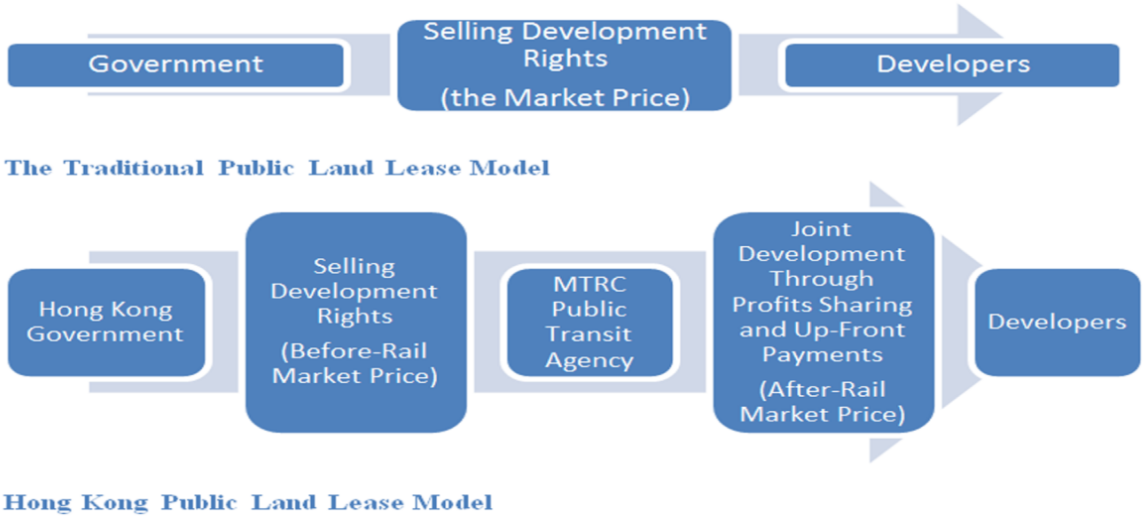

Figure 2. Hong Kong Public Land Management Model around Public TransitStations – Source: (Elnagdy & AbdelAty, 2018)

This model would allow governments to achieve the maximum revenues from pubic land management around important surface infrastructure nodes and paths without bearing financial risks. This includes the public transit routes and stations, roads, and other services (hospitals, education facilities public spaces, universities, etc.). In addition, this model would encourage and steer urban development and urban expansion.

5.2. The Chinese Cities

As mentioned early, the Chinese cities have learned a lot from Hong Kong experience in public land management. Accordingly, Chinese cities have experienced an extraordinary economic growth and urban growth. However, the Chinese financing mechanism has a lot of effective policies and practices that enabled the government to support the economic and urban growth challenges.

5.2.1. Public Land Leasing Methods (Listing and Tender Auction)

Public land lease is being used in China since the economic reforms in 1979. However, before 2004, 98.6% of lands were leased through negotiation. After 2004, a notice was issued obligating the government to lease

lands through tender auction or listing auction (Yang, Ren, Liu, & Zhang, 2014). In listing auction, the land is being sold to the bidder offering the highest price. In tender auction, all bedding are being evaluated according specific criteria like bedding price, corporation reputation and performance, the proposed development plan, and the payment conditions. The land is being sold to the bidder with the highest evaluation score.

Despite that public land lease can achieve huge economic benefits to governments; this mechanism may cause many social undesirable consequences. The government should intervene in order to keep the balance between the economic benefits and the social objectives. If the government left the land allocation to the commercial forces then the result would be a net loss to the entire society (Brueckner, 2007)(Deng, 2003).

However, the usage of the previously two auction types has helped the Chinese government to promote urban development, stabilize the housing prices, encourage low housing, and keep the balance be the entire Chinese economic system. In listing auctions, the government achieves the highest potential revenues since the highest bidding will get the land according to the free market power. On the other hand, in tender auction, the government achieves its macroeconomic and social objective since bidding with the highest score according to the government objective will get the lands.

The tender auction can be classified as the evolutionary model of leasing land through negotiation. The tender auction allows governments to achieve their economic objectives with the highest benefits for the society and with the least corruption probability.

Furthermore, alike all Chinese cities, the government does not lease land to individuals. The government only leases land to private developers. This would reduce the construction period, increase the urban development process, reduce buildings permits needed as well as building violation, and reduce the pressure on the government facilities.

5.2.2. Integration between Public Land Lease and other Financing Sources

The integration between public land lease and other financing sources is one of the most innovative policies adopted by the Chinese government. The traditional public land lease method requires the existence of public fund to construct urban infrastructure which in turn would increase the value of lands around this infrastructure. After that, the government starts to lease lands with the after-development value.

The integration between public land lease and other financing sources policy is based on that the government borrows money from local and international banks against the future anticipated value of the improved lands. This money would use to finance the infrastructure construction and in turn the government lease public land with the after-development value. The revenues are being used to repay the banks loans (Peterson G. , 2006).

This policy would enable governments from creating urban expansions and constructing infrastructure even without the existence of public fund ate the start point of projects. Accordingly, the integration between public land lease and debts has created a loop of sustainable financing that require a zero capital in its start point.

5.2.3. Redevelopment of Public Lands

Redevelopment of public lands policy adopted by the Chinese government has proven its ability to raise huge revenues as well as encourage urban development. The redevelopment of public lands policy is based on moving State Owned Enterprises (SOE) and Municipality's administrative buildings from the central location in the city centers to new locations where lands are cheaper. However, this process is being managed by a central authority as in first years of this policy implementation, many SOEs has tried to capture the land lease revenues for themselves. The existence if this central authority would guarantee the fair and right distribution of these revenues for the most suitable projects instead of being a privilege for a particular sector or individuals (Chreod, Ltd., 2005).

This policy has two-faced importance. First, the government leases the vacant lands through auction for developers to construct housing, small-scale business, and commercial activities. These vacant lands are characterized by

being in central locations and have the highest land value. Second, the new locations where the SOEs and Municipality's administrative buildings will be constructed on would act as new urban centers for new urban expansion which encouraging urban development. In addition, this would immediately increase the lands value around these new locations allowing the government to lease the surrounded lands.

5.3. Effective Policies Summary

Each of the previously mentioned local and international cases has introduced a set of effective policies. Table 5 summaries these effective policies and elaborate their positive impacts.

Table 4. Countries where governments use public lands as an asset for urban infrastructure financing

Used policies	Positive impacts	Case
Land leasing	The sustainability of financing since lands are going back to the government after the lease period	Hong Kong, Special Administrative Region, China
Demand-oriented model (providing public lands only based on the private sector requests)	Optimizing the governmental spending's	
The development policies of public lands around surface important infrastructure paths and nodes	Encouraging urban development Maximizing revenues Reducing financial risks Ensuring the continuity of the revenues stream	
Integration between listing auction and tendering auction	Archiving the maximum socio-economic objectives	The Chinese cities
Leasing lands to private developers only (the government does not lease lands to individuals)	Reducing the construction period Increasing the urban development process Reducing buildings permits needed as well as building violation	
Integration between land lease and loans	Creating a loop of sustainable financing that require a zero capital in its start point.	
Single central authority that manage public lands	Preventing conflicts due to governmental institutions fragmentation	
Moving state owned enterprises (SOE) and municipality's administrative buildings from the central location in the city centers to new locations	Leasing the vacant lands through auction for developers. These vacant lands are characterized by being in central locations and have the highest land value. Creating new urban centers for new urban expansion which encouraging urban development. This would immediately increase the lands value around these new locations	
Source: Author, based on (Peterson G. , 2006)(Li, Wong, & Cheung, 2015)(Brueckner, 2007)(Deng, 2003)(Chreod, Ltd., 2005)		

6. The Preliminary Public Land Asset Management Framework

The Public land asset management framework consists of three main parts; the threats analysis, the public land management criteria, and the management program application feasibility (see Figure 3).

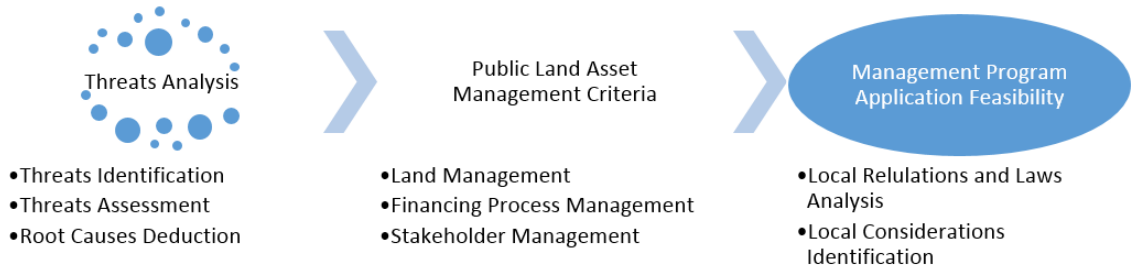

Figure 3. Public Land Asset Management Framework Parts -Source: Author

6.1. Part One: Threats Analysis

The main objective of this stage is to analyze the current situation. This analysis includes three stages:

- Firstly, the identification of the threats including all the occurred threats and all the predicted ones
- Secondly, the assessment and evaluation of these threats to create a full picture of their results as well as to identify their severity. In this stage, the threats with low negative impacts will be neglected and excluded
- Thirdly, the detailed analysis of each of the major threats to identify and explore their root causes

6.2. Part Two: Public Land Asset Management Criteria

The public land management criteria consist of three main parts; public land management, financing process management, and stakeholder management.

Each of these parts includes a set of practices and criteria that, if used, would eliminate any potential negative impacts and unlock the comprehensive potentialities of this financing approach. These potentialities include achieving the maximum socio-economic, urban development, and sustainability objectives. The economic objective includes obtaining the needed revenues for infrastructure financing. The social objective includes making the real estate market affordable for all residents. The urban development objective includes encouraging urban development and expansion strategies. The sustainability objective includes ensuring the continuity of financing and the right of future generations.

6.2.1. Land Management

Public land management concerns mainly with increasing the value of lands and insuring the existence of demands on lands. However, In order to increase the lands value, many criteria must be taken into considerations:

- The existence of effective and flexible development regulation including suitable land coding, urban planning and development strategies, and land uses management.
- Lands are in a central location near important facilities and are accessible by public transit and roads.
- The suitability of lands' physical attributes with their land uses within the development strategies including soil, climate, location, and topography.

– The suitability of infrastructure's physical attributes including the existence of the needed modern infrastructure and services as well as all the traditional ones.

Furthermore, the existence of demands on public lands is an essential matter for this financing approach. The demands on lands are affected heavily with the targeted resident's social, cultural, and demographic factors. The government can follow two policies; the supply-oriented model or the demand-oriented model.

– When demands on lands are exceeding the land supply, the government may follow the supply-oriented model. This model allows the government to provide infrastructure to a pre-announced amount of lands.

– On the other hand, when supply of lands is exceeding the demands on lands, the government may follow the demand-oriented model. This model allows the government to provide infrastructure to lands only on the request of developers.

Redevelopment of public land considers an effective way to provide public land supply. This would not only provide public lands for sale, but will also create a new urban center to encourage urban development through moving the governmental building to a new location. In addition, this would increase the value of lands around the new location and would give a clear signs and incentives to developers to invest in these new locations. This policy can be applied within new cities or within old cities. In case of old cities, this would regenerate the urban fabric within the old city centers.
Public lands around distinctive surface infrastructure nodes and paths should have different management policies. These lands include lands around public transit stations, main commercial roads, and services (hospital, universities, schools, commercial malls, etc.). These lands have a higher value than their instances due to their high accessibility feature to public transit, roads, and services. In addition, these lands can act as focal points to encourage urban development.

6.2.2. Financing Process Management

Financing process management concerns with 1) the sustainability of financing, 2) the infrastructure provision, 3) the used policies and applicant's eligibility, and 4) the integration between more than one finance methods.
However, the infrastructure provision is divided into two main sectors:
First, the government provides urban infrastructure on its own expense
In this case and in order to ensure the infinite existence of lands and the sustainability of financing, the government can:

– Using public land lease instead of public lands sale so lands would be leased over and over and the ownership of lands would remain with the government.

– Using profit sharing with the private developers would ensure the existence of ongoing stream of revenues but would need governmental supervisory authorities.

– Using "in-kind contribution' would provide the government with properties that can be leased or sold. In-kind contribution means that a share of the built property by the private developer would be owned by the public sector.

Second, the private sector provides urban infrastructure on its own expense
In this case, the private sector would be responsible for the infrastructure provision. The government can:

– Using land participation method through allowing the private developers to provide and construct infrastructure on its own expense in exchange for lands which would protect the government from any kind of risks. In addition, this would decrease the economic burdens on the government responsibilities.

As for the used policies and applicant's eligibility, suitable and effective payment policies must be adopted which ensuring that land buyers have the affordability to pay the land and construction costs in an attempt to reduce the number of speculators, to create healthy real estate market, and to encourage urban development.
Furthermore, the integration between Land Based Financing and other traditional financing methods like loans would produce infinitive possibilities of new sustainable innovative financing mechanisms. Accordingly, the government may not be forced to provide an up-front capital for the infrastructure construction.

6.2.3. Stakeholder Management

Stakeholder management concerns with all the participated parties of this financing approach. However, three main stakeholders are existing; the government, the land buyer (developers), and the end user.

Land buyers can be selected through four main methods; lottery, public auction, listing auction, and negotiation.

- Lottery is not a recommended method since it is offered to public. Most applicants do not have the affordability to pay the land and construction costs. They buy land to sell not buy to hold.
- Negotiation may lack of transparency and may encourage corruption. However, this method can be replaced by listing auction since the later can achieve the optimum social and economic objectives.
- Public auction is the most suitable way to achieve the highest economic benefits to governments but may lead to threats to real estate market and to increase the properties prices. However, this method would ensure that the land price is similar or higher than its real market price.
- Tender auction is suitable for achieving the society objectives while achieving the optimum economic benefits to government. In addition, this method would encourage urban development and affordable housing. However, this method would ensure that the land price is similar to its real market price.

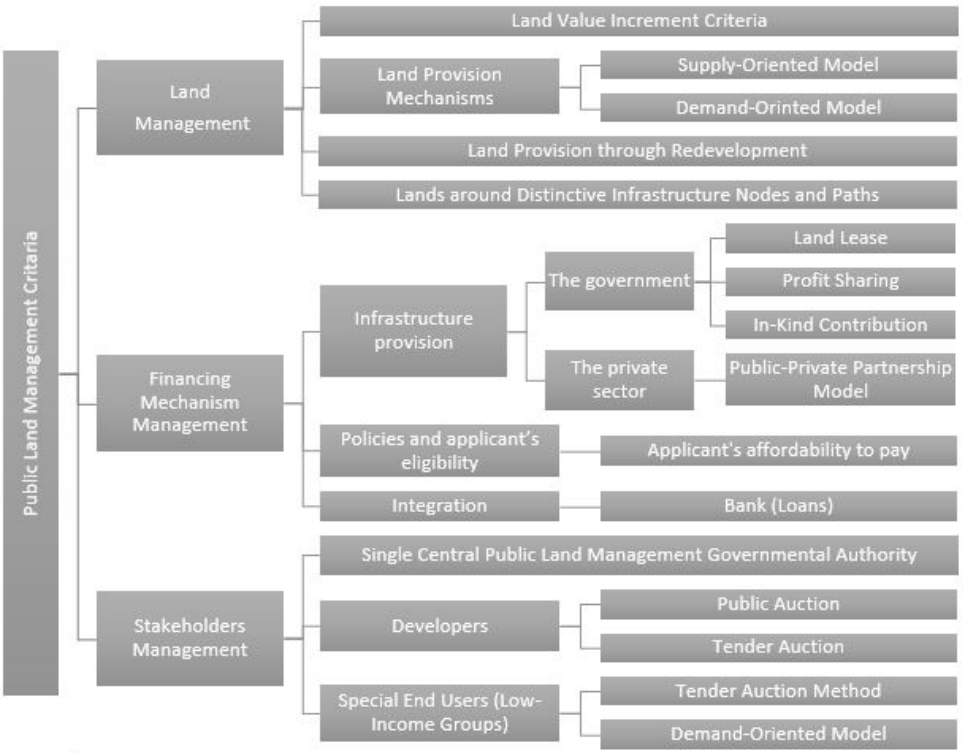

Figure 4. Public Land Management Criteria Summary – Source: Author

The government must deal with developers instead of individuals. This would reduce the construction period, increase the urban development process, and reduce buildings permits needed as well as building violation. However, in case of the willingness of government to provide an affordable housing (e.g. social housing for low-income groups) or provide any subside properties (e.g. small retails or industrial workshops); the government can achieve that through the tendering auction method or through demand-oriented model. This would 1) ensure not to spend capital on properties that will not be sold which constituting disabled resources and 2) decrease the economic burdens on governments as well as mitigate potential risks.

The existence of a single central authority that manages and makes decision on public land reduces conflicts between the different governmental institutions resulted from the governmental institutional fragmentation. In addition, this would direct and steer the revenues toward the most suitable place and would maximize the efficiency of such a financing approach.

6.3. Part Three: Management Program Application Feasibility

The main objective of this stage is to explore the application feasibility of the management program of the public lands. In this part, the current local regulations and laws are being analyzed and a development proposal of these regulations is being presented to the decision makers to apply the public land management program. However, under certain circumstances, some laws cannot be changed due to some political and ideological considerations. Accordingly, this would call for a redevelopment and resubmission of the public land management program in an attempt to achieve the suitability and appropriateness of this management program with the local regulations and laws and with the political and ideological considerations.

6.4. The Public Land Asset Management Framework Flow Chart

The implementation process and the execution stages of the three parts of the public land asset management framework are being illustrated and elaborated in Figure 5, (found after the conclusion). These parts, as mentioned early, are the threats analysis, the public land management criteria, and the management program application feasibility.

7. Conclusions

The research problem is that despite the success of land based financing in some Egyptian cases, it has been monitored that many other cases have been exposed to set of financial instability risks. Accordingly, studying the feasibility of eliminating these risks of the land-based financing would help in unlocking the full potentialities of using the land-based financing, avoidance and\or elimination of any potential risks in the future, and neutralize the already occurred negative impacts of this financing approach. The main objective on this research is to generate, derive, and deduce a public land management framework for this financing approach in the Egyptian new cities based on the Chinese experience which would unlock the full potentialities, eliminate risks, and neutralize the already occurred negative impacts of this financing approach.

Many issues have been resulted from the land-based financing unsuitable policies adopted by the Egyptian government in many cases. The reduction in investments, the high living costs in new cities, high housing prices, low demands on public lands, real estate bubble, and the low outcomes of public land sale are all resulted from the unsuitable policies of using publicly-owned lands as assets for urban infrastructure financing. The public land management policies in Egypt must be a subject of dissection, modification, and reformation since these policies are causing negative risks on all aspects of life; social, economic, urban development, investment, and quality of life.

However, Lands are one of the four production elements. Its value is being determined mainly by the market forces of supply and demands. Whenever the demands on lands are gotten higher, the prices would incrementally

increase and vice versa. However, demands on lands are being affected heavily by many factors. These factors are development regulation, accessibility, social, cultural, and demographic factors, physical attributes of lands and infrastructure, and land speculation.

Many countries use public lands as assets for urban infrastructure financing including Egypt, Australia, Netherlands, Sweden, Israel, Finland, Singapore, Russia, USA, Poland, China, Turkey, India, South Africa, Philippines, and Ethiopia. However, it has been found that the Chinese model is the ideal comparative to the Egyptian model since it is the closest to the Egyptian development index, it has similar circumstances, and it has been the subject of many published researches according to the literature review.

By analyzing many Chinese cases, a set of effective policies have been deduced. The policies include 1) creating mixed-uses high-density compact residential neighborhoods that encourage walkability and cycling, 2) creating cities in central locations, accessible by public transit, and based on multi-economic base, 3) integration between land value capturing and public private partnership as well as banks, 4) land leasing to developers only instead of land sale for individuals, 5) intensive development of lands around surface important infrastructure paths and nodes, 6) integration between listing auction and tender auction, 7) the existence of a single central authority that manage public lands, 8) moving state owned enterprises (SOE) and municipality's administrative buildings from the central location in the city centers to new locations, and 9) adopting demand-oriented model during crisis.

As a result, a public land asset management framework has been deduced. It is divided into three main stages; 1) the threats analysis stage that concerns with threats identification and assessment in order to identify their severity and then the root causes deduction, 2) the public land management criteria stage that concerns with the mitigation strategies generation based on the land, financing process, and stakeholder management criteria derived from the cases effective policies, and 3) management program application feasibility stage that concerns with the local regulations and laws analysis in comparison with the mitigation strategies.

In conclusion, using land-based financing effectively for urban infrastructure financing and with the right and suitable policies and procedures would achieve the governmental economic, social, urban development, and sustainability objectives while keeps the potential financial risks at their lowest levels. This would allow the government to provide the all the needed infrastructure and to create and construct new communities without bearing any economic burdens and without depending on low-income groups to finance the national urban development and expansions strategies.

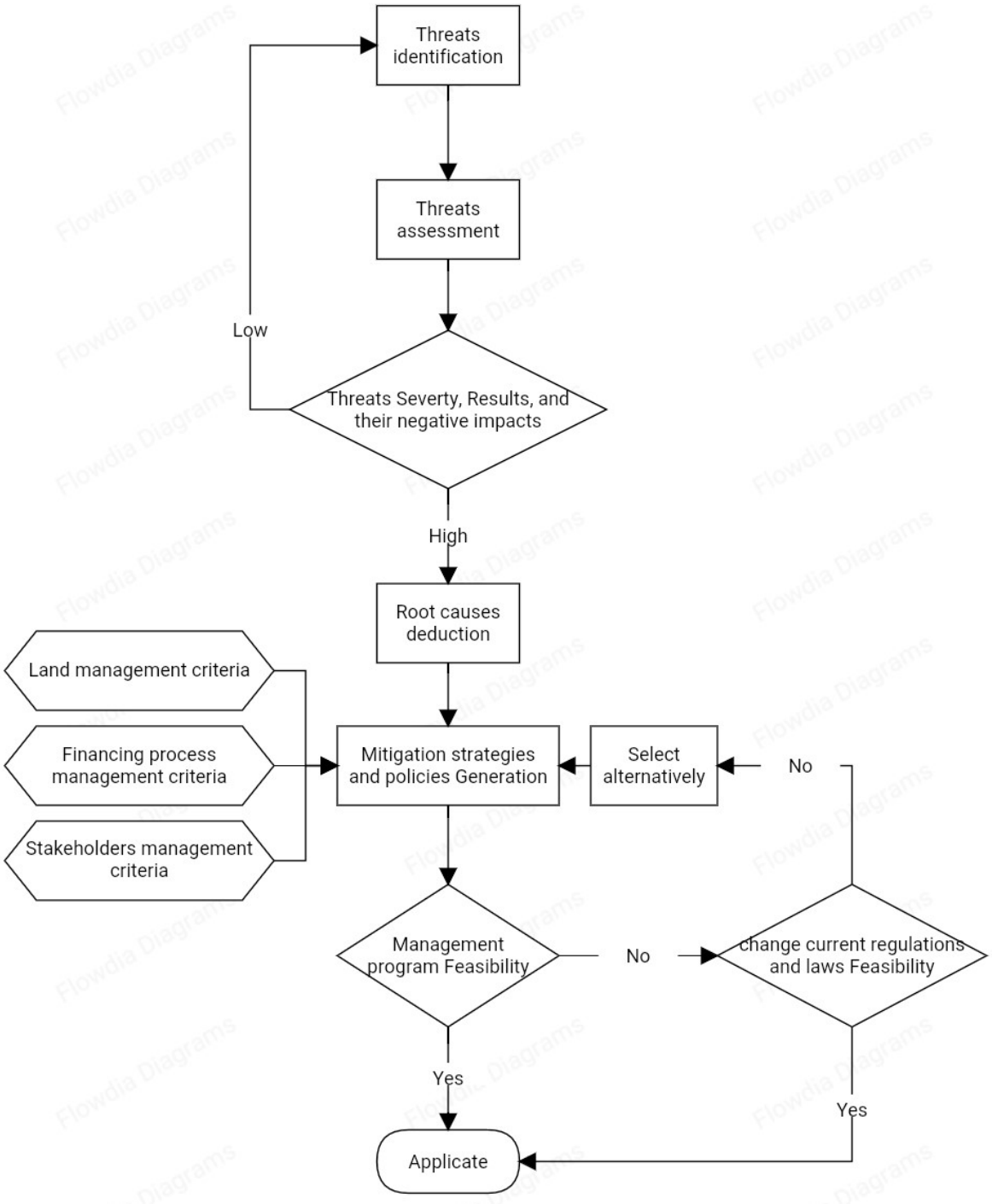

Figure 5. Public Land Asset Management Framework Flow Chart – Source: Author

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