
Opportunity and risk from urban planning policy relating to real estate development and preservation of rural and agricultural areas at the present in Mueang Chantaburi of Thailand

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Abstract The opportunity and risk relating to real estate development and preservation of rural and agricultural areas occurring from urban planning policy was studied in Chanthaburi, Thailand. Chanthaburi's comprehensive plan was compared a skim plan, with the town plan that specific in land use, and issued in different period of time, investigating the current extent of new development's area and preserved green area by using Google Earth, and interviewing experts from private and government sectors to seek their relevant opinions. The 5 year town plan issued in 2002, the comprehensive plan issued in 2012 and the drafted town plan issued in 2018 indicated the differences of rule and regulation regarding allowable types and details of land uses. These differences created opportunity that could allow much rooms for land owners to develop their estates in the case that the plans favor on the development of the lands, but somehow could add more risk in the case that the lands were restricted and not allowed for new development. The differences could also create more risk in reduction of the green areas of the town in the case that the plans favor more on the development and attract new developer to develop the area. In the opposite way, these could also create the opportunity for preservation of the green areas of the town with the proper planned policy. Additionally, to illustrate this concern, Google Earth was used to capture the satellite photos of the new development being built in the selected areas from 2007 when the 2002 Town Plan expired to analyze the extent and distribution of the urban and green areas around the town. Furthermore, interviewing relating government agencies and new developers revealed the risks of new development in various aspects involving, i.e., lack of knowledge for project feasibility study, urban plan regulation and relating laws. In turn, being able to gain this valuable knowledge, new developers could have advantage for making profitable investment decision. Additionally, integration of ideas and resources from various new entrepreneurs and public agencies could make the new development, sustainable and fruitful, for example, introducing and implementing the concept of urban green space into the urban planning policy in Chanthaburi.

Keywords: Risk and Opportunity, Real Estate Project Development, Rural and Green Area Preservation

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Introduction

Increasing urbanization and population growth resulted in scarcity of habitats in the urban landscape (McKinney, 2002) along with various environmental problems, such as reduction of green spaces and deterioration of ecosystem (Lee *et al.*, 2005). As rapid urbanization could cause more losses of urban green areas, it is important to preserve and promote urban green spaces for future generation. The great number of population that pumps up needs places for dwelling and doing business leading to evasion of the preserved green areas. Considering public interest's point of view, therefore, balancing of both is necessary to be achieved. Chanthaburi is the fertile eastern province of Thailand that is placed to be a green city without any pollution from heavy industries as per the country master plan. It is obliged to preserve their abundant forestry and agriculture by law. Figure 1 shows location of Chanthaburi province located in the east of Thailand. Additionally with its rich of natural resources and cultures, it attracts the great number of immigrants dwelling in the city. Besides people from the other big cities such as Bangkok more often escape their busy life style and city pollution to have a short vacation in Chanthaburi. As a result, this large number of immigrants led the city having problems such as inadequate infrastructure, invasion of green areas, flooding, and misuse of land as per Town Plan Acts. However, on the other hand, these immigrants' needs create opportunity for real estate developers to build more profitable project like residential buildings commercial buildings, hotels and resorts.

Chanthaburi city has grown from the old town area located in the middle of the city along the main river and expanded diagonally to the suburb along main roads existing to the country highway in the north, south and east of the city. Chanthaburi city area consists of main municipal districts namely Mueang in the middle, Koh Kwang in the south, Tha Chang in the north, and Channimit and PhubPhla in the east. Consulting with Urban Planning Department, it was found that there were conflicts occurring from real estate developers and land owners regarding misuse of lands as per Chanthaburi's Town Plan Act. There were two types of urban plans that were implemented in Chanthaburi including Chanthaburi's Town Plan issued in 2002, Chanthaburi's Comprehensive Plan issued in 2012, and Drafted Chanthaburi's Town Plan prospectively issued in 2018. The comprehensive plan is more a skim plan that gives board detail of zoning area indicating allowable land uses. The town plan, however, is more specific and fine in the detail of the land uses.

After Chanthaburi's 2002 Town Plan expired in 2007, Chanthaburi's Comprehensive Plan has been temporarily enforced and issued in 2012 until at the time when doing this research. Chanthaburi's 2002 Town Plan is the

detailed plan indicating different allowable usages of the areas zoning by different colors. For example, considering mainly in the town area, red zone indicates for dense residential area, orange zone indicates for fair dense residential area, yellow zone indicates for light residential area, and green zone indicates agricultural, suburb and recreation areas. Differences in details of rule and regulation from the two plans, 2002 Town Plan and 2012 Comprehensive Plan, might create gap for enactment and implement during the time when the former 5 year one, had been expired. For example, considering the green zone area, the real estate development could not be done in the zone as per Chanthaburi's 2002 Town Plan but might be doable as per Chanthaburi's 2012 Comprehensive Plan after the 2002 plan had expired. Therefore the researcher was interested in the conflict occurring from this urban plan policy. The research objective was to study the opportunity and risk from urban plan policy to real estate development and preservation of rural and agricultural areas at the present in Mueang Chanthaburi of Thailand. The conflicts were including, for example, changing the scope and type of allowable land use and the different size of the building allowed to build. The results of this research could show the impact of urban plan policy to real estate developers, land owners and public sectors regarding relevant risk and opportunity that need to be concerned for either investment planning and feasibility study for re project development, land owning, planning for infrastructure or preservation of green areas.



Figure 1. Chanthaburi Province of Thailand (Source: <https://legacy.lib.utexas.edu>)

Materials and methods

This research was based on analysis of the secondary information from the city plans including Chanthaburi's 2002 Town Plan and Chanthaburi's 2012 Comprehensive Plan and Drafted Chanthaburi's 2018 Town Plan, from satellite photos using Google Earth capturing at different period of time, and from the first information gaining by interviewing relevant private and public sectors. The selected places of this study were limited to the five districts in the city area namely, Mueang, Tha Chang, Phlub Phla, Phlub Phla Narai, and Koh Kwang as shown in Figure 2.



Figure 2. Muang Chanthaburi Districts (Source: Google Earth (photo taken in 2017))

Analysis of opportunity and risk from urban plan policy to real estate development and preservation of rural and agricultural areas at the present in Mueang Chanthaburi of Thailand was run by comparing the city plans, investigating the extent of real estate development and preservation of green areas using Google Earth, and interviewing private and public sectors to seek their opinion and to gain relevant information regarding the recent situation.

Firstly compare Chanthaburi's 2002 Town Plan with Chanthaburi's 2012 Comprehensive Plan and drafted Chanthaburi's 2018 Town Plan to indicate the difference of zoning, rule and regulation regarding allowable types and details of land uses at the five study places. Secondly, investigate the current extent of real estate development and green areas by using Google Earth to capture the satellite photos taken at different period of time: at the time when the 2002 plan expired and at the present, and compare the photos to show the extent of the developed areas after the 2002 plan expired. This comparison would show the areas that have high activities of real estate development and the green areas that have been reduced the most in the recent year. Thirdly, interviewing experts from private sectors like real estate developers and land owners and from government sectors like municipality, and urban planning department to seek their relevant opinions would reveal the recent situation of real estate development and green area preservation. The questions used in the interview were open-end questions as follows:

What do you think about the situation of real estate development and preservation of the green area at Muang Chanthaburi at the present?,

How does the urban plan policy like Chanthaburi's Comprehensive Plan and Chanthaburi's Town Plan effect on real estate development and preservation of the green area at Muang Chanthaburi at the present?,

How should you indicate the risk and opportunity occurring from the urban plan policies concerning the real estate development and preservation of green areas at Muang Chanthaburi at the present?.

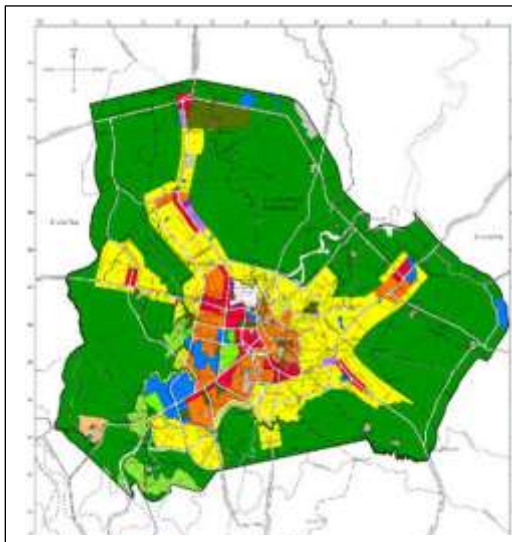
Finally analyze all the information gaining from comparing the city plans, investigating of the areas using Google Earth, and interviewing the developers and relating experts to indicate potential risk and opportunity from urban plan policy to the real estate development and preservation of rural and agricultural areas at the present in Mueang Chanthaburi.

Results

Comparison of Chanthaburi City Plans

Comparing Chanthaburi's 2002 Town Plan, Chanthaburi's 2012 Comprehensive Plan, and drafted Chanthaburi's 2018 Town Plan showed the difference of zoning and regulation regarding allowable type and detail of land uses at the five studied areas at different period of time. The secondary information that was used in the comparison obtained from the city plans show fragmenting and zoning of the areas together with their details describing rule and regulation of land use for each zone and fragment. Figure 3, 4 and 5 show

Chanthaburi's 2002 Town Plan, Chanthaburi's 2018 Town Plan and Chanthaburi's 2012 Comprehensive Plan, respectively. The concerned areas locate mostly on the residential area as indicated in the plan shown in Figure 5. The residential areas in the plans indicated by the color zones including the pink zone for community area and the green zone for agricultural, suburb and preserved recreation areas as per Chanthaburi's 2012 Comprehensive Plan, and the red zone for commercial and very dense residential area, the orange zone for fair dense residential area, the yellow zone for light residential areas, and the green zone for agricultural, suburb and preserved recreation areas as per the Chanthaburi's 2002 and drafted 2018 Town Plan. The summary details describing rule and regulation of land use for each color zone for residential areas is shown in the Table 1. It can be seen that in the transition time of the plan from 2002 to 2018, the 2012 Comprehensive Plan was temporarily implemented which altered all the color zone for residential areas as per Chanthaburi's Town plan to one pink color zone.



Source: Chanthaburi Urban Plan Department



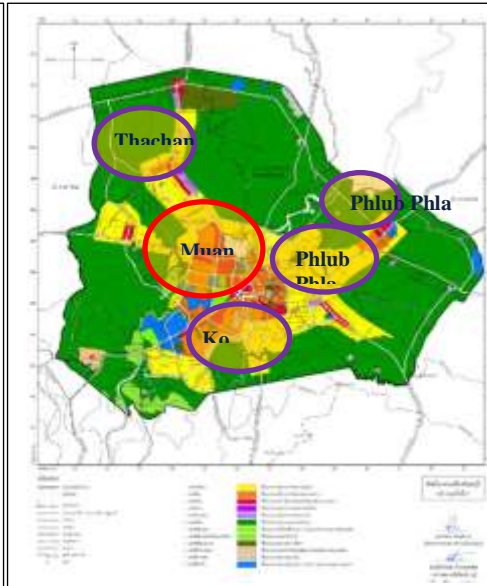
Source: Chanthaburi Urban Plan Department

Figure 3. Chanthaburi's 2002 Town Plan

Figure 4. Drafted Chanthaburi' 2018 Town Plan



Source: Chanthaburi Urban Plan Department



Source: Chanthaburi Urban Plan Department

Figure 5. Chanthaburi's 2012 Comprehensive Plan

Figure 6. Selected Places for the Study

Table 1. Types and Details of Land Use for Residential Color Zones

Color Zone	Type of Area	Detail of restriction of land use for residential and commercial development
Pink	Community Area	Allow for any residential and commercial estate development except for high rise and large
Yellow	Light Residential Area	Allow for any residential and commercial estate development except for commercial land allocation
Orange	Fair Dense Residential Area	Allow for any residential and commercial estate development except for commercial land allocation
Red	Commercial and Very Dense Residential Area	Allow for any residential and commercial estate development
Green	Rural , Agriculture and Recreation Preserved	Not allow for any commercial and residential estate development and land allocation

Change of the Extent of the Real Estate Development and Green Areas

Google Earth was used to investigate the current extent of real estate development and recent green area by capturing the satellite photos at different period of time in 2005 when the 2002 plan expired and in 2017. Comparing the photos showed the extent of the developed areas after the 2002 plan expired.

The developed areas can be seen from the satellite photos either from the satellite view of buildings already built or filled and graded lands waiting for development. The buildings and lands, built or filled after expiration of the 2002 plan, were indicated, labeled and marked on the satellite photos as shown in Figure 7 to 11 for Mueang, Ko Khwang, Thachang, Phlub Phla, Phlubphla Narai district, respectively. The types of development with their calculated sum area for each district are summarized and shown in Table 2. Types of the buildings concerned in this study are including residential estate, commercial estate, hotel and resort and filled lands waiting for development. Additionally the extent of zoning as per the 2002 town plan was indicated in these marked satellite photos by laying the town plan on top of the satellite photos. By doing this, it help to illustrate the extent of the development done in the prospective green zone within the gap period from 2005 when the 2002 town plan expired to 2017 before when the 2018 town plan would be implemented. The summary of the developed areas that were done in the prospective green area are shown in Table 3. It can be seen from Table 3 that there are two districts, Ko Khwang and Tha Chang, having the real estate developments done on the prospective green zone the most. It can be observed that most of them are the residential development in the north at ThaChang district providing housing for people in the town and staffs and students of Rambhai Barni Rajabhat University and in the south at Ko Khwang District, as for low to medium price residential estate. The total estimated areas of the development on green zone are 851,230 m², 78% of its total development area, at Ko Khwang District and 621,700 m², 97% of its total development area, at Tha Chang District.



Source: Google Earth

Figure 7. Marked Satellite Photo – Mueang District



Source: Google Earth

Figure 8. Marked Satellite Photo – Ko Kwhang District



Source: Google Earth

Figure 9. Marked Satellite Photo – Tha Chang District



Source: Google Earth

Figure 10. Marked Satellite Photo – Phlub Phla District



Source: Google Earth

Figure 11. Marked Satellite Photo – Phlub Phla Narai District

Table 2. Area of Real Estate Development

District	Area of Real Estate Development (m ²)				
	Residential	Commercial	Hotel & Resort	Filled Land	Others
Mueang	360,390	297,380	-	241,660	577,330
Ko Khwang	649,260	21,110	7,270	103,630	96,590
Tha Chang	102,130	81,680	24,840	504,880	83,110
Phlub Phla	165,840	119,050	-	91,550	192,720
Phlub Phla Narai	52,180	73,700	-	88,910	126,060

Table 3. Area of Real Estate Development done in Prospective Green Zone

Development Area (m ²)	District				
	Mueang	Ko Khwang	Tha Chang	Phlub Phla	Phlub Phla Narai
Development on Green Area	333,420	851,230	621,700	163,180	113,880
Development on Residential Area	1,143,340	26,630	174,940	405,980	226,970
Total Area of Real Estate Development	1,476,760	877,860	796,640	569,160	340,850

Interviewing Private and Government Agencies

The private sectors like real estate developers, entrepreneurs and land owners and government sectors like municipality, and urban planning department were interviewed and revealed their relevant opinions resulted as follows.

Interviewing Result from Private Sectors

General comments: Urban planning in the current environment is not conducive to real estate developers and is not consistent with the actual use of public and private areas. There is a shortage of knowledgeable and open-minded staff. The public sector is lacking in information publicity to promote comprehensive urban planning. Most people do not have enough knowledge, and therefore, have little involvement in urban planning. As a result, there is a gap in the difference of this important information among them that affects their decision on feasibility of the real estate project development.

Opinions on opportunities from urban planning policy: some real estate developers could gain valuable knowledge from information of town plan policy. This knowledge made them gained the advantage on making profitable investment decisions, such as buying a piece of land at a low price before when urban plan policy would be altered to favor the development, i.e., converting from undoable to doable the real estate development. The real estate entrepreneurs believed that combining the ideas and resources from various entrepreneurs and also from public sectors could promote the sustainable and integrated real estate development and preservation of the green area for the city and attract more real estate investment coming in Chanthaburi.

The Chanthaburi's urban plan policy makes most of Chnathaburi's area green, which make less in pollution and more on recreation for our living. It promotes great healthy life environment. The real estate developers could integrate design and develop their real estate projects to be in line with the green policies to promote green tourism and living. The town plan every 5 years was given opportunity for both private and public sectors to adjust the town plan as per the recent condition of urban development and needs of preservation of green areas concerning the integrated public's interest.

Changes in urban plan policy have a great impact on real estate investment decisions, such as on the type of project that can be built and the return on project development. Change in policy that is conducive to the development increase the chances to make profitable investment. For example, switching from the green zone to pink zone could make the real estate

development be doable, as a result, increase both the value of the land and the investment.

Opinions on risk from urban planning policy: some real estate entrepreneurs faced the risk in the project development due to their lack of knowledge and understanding of the town plan. The entrepreneurs found that there were many projects that were under construction but could not be continued because the development was not allowed according to the requirements of the town plan. Some real estate project owners believe that feasibility of real estate project development is limited by city planning requirements and relating laws, which frame the format of the project development. For example, the town plan has limitations on the usable area, height and size of the building, affecting the return on investment of the project. If the entrepreneurs do not understand this well, it could add more risk when they make the investment decision.

Additionally, the uncertainty of urban plan policy, such as expropriation of land or change in land use, creates more risk on the project development. Changes in urban plan policy that is unfavorable to the development of real estate projects increase risk on not being able to make profit from the investment. For example, the project had been developed in advance expecting change of urban plan policy but it would not be one as they thought, resulting in a breach of the Town Plan Act later on.

Interviewing Results from Government Agencies

Opinions on opportunities from urban planning policy: real estate entrepreneurs should study and understand the relevant laws such as Town Plan Act, Land Allocation Act, Building Control Act, Condominium Act, Hotel Act and Factory Act before deciding to develop a real estate project. This understanding could create opportunity and reduce risk on the real estate project development. Regarding changing environment and use of space, there would be review of the town plan every five years. Local authorities together with real estate developers could collect information on the recent patterns of land use and its change and submit to the Provincial Planning Office for consideration. The proposal for the changes could be based on the principle of state benefits and appropriateness of land use in accordance with urban planning principles.

Opinions on risk from urban planning policy: the most local real estate developers do not have sufficient understanding of urban planning and enforcement. There are few local entrepreneurs who are aware of this risk from urban planning policy and study the utilization of land according to the town

plan before investing. For example, in the investment, entrepreneurs usually start with buying land and then do the development without knowing in detail whether they could do it in accordance with the town plan. For instance, they would plan to develop real estate projects in the green zone areas designated only for an agricultural and rural area and not allowed for any real estate development. They would then face problems in breach of the town plan act and not be able to get a construction permit later on. They usually try to solve the problem by making request to the urban plan department to review the town plan by changing the color of the zone in order to make their real estate projects doable.

Discussion

Cities are interconnected with rural areas which help provide the ecosystem services and food security essential to urban functioning and sustainability (The Sustainable Development Solutions Network Thematic Group on Sustainable Cities, 2013). However, they deplete natural ecosystems such as forests, water, and air to provide for the consumption needs of their inhabitants (Atkins in partnership with DPU and DFID, 2012). Considering the real estate development in Mueang Chanthaburi, the gap period during the implementation of the town plan, from 2007 when the 2002 town plan expired to 2018 when the prospective 2018 town plan would be issued, has made the real estate development boosted up in both the area that allow and not allow to do so.

It creates opportunity for the city to grow by boosting economic, adding more jobs, attracting and circulating external funds. This adds economic value also for the country. However, if this expansion were not properly planned and managed, the resources of the city would be depleted and diminished in the fast rate. To encounter this problem, balancing the needs for financial economic profit and maintaining the proper ecological services is necessary. Initiation of integrated plan involving both private and public sectors are required for the city to have sustainable, productive, profitable and integrated developments.

The result of the study showed that there was invasion of the green area during the gap period of plan implementation. This invasion seems not to be aware by any agencies to take action and control. Therefore this point was to be highlighted. The integrated town plan concerning proper and productive development and preservation of urban green space needs to be considered by all relating stake holders in the city. Gill *et al.* (2007) emphasized that the urban green spaces could play a central role in both climate-proofing cities. Hence, urban green spaces are to be preserved and promoted for future generation as they provide essential key ecological services. Conservation of

biological diversity and ecosystem services in urban environment necessitate valuable ecological information which could be incorporated into urban green space planning and management (Gairola and Noresah, 2010).

Urban green spaces are wider initiatives of local authorities and communities with environmental, social and economic objectives that can justify any funding for all represented and involved stakeholders (Jose *et al.*, 2018). For example, the green infrastructure in urban could be add into the prospective town plan. A green infrastructure approach uses natural processes to deliver multiple functions, such as reducing the risk of flooding and cooling high urban temperatures. Green infrastructure includes parks, playing fields, private gardens, allotments, green roofs and walls, and cemeteries. The term refers to ecological processes rather than color, so includes sustainable urban drainage systems, wetlands, rivers and canals (Houses of Parliamentary Office of Science and Technology, 2013). Additionally, urban green spaces could stimulate social and economic regeneration of communities in a multi-agency area, beyond landscaping. Urban green spaces play a relevant environmental, economic, social and cultural role (Jose *et al.*, 2018).

Conclusion

The research analyzed and illustrated the opportunity and risk relating to the real estate development and preservation of rural and agricultural areas occurring from urban planning policy at the present in Mueang Chanthaburi of Thailand. Comparing the Chanthaburi's comprehensive plan, and Chnathaburi's town plan and the extent of real estate development by using Google Earth shows that the gap period during the implementing time of the town plans has made the scale of real estate development pumped up in number in both the zones that are allowed and not allowed to do so. The current extent of the real estate development's area in the selected five studied areas is shown in Table 1 and 2. It was found that there were some areas of the development that evade the prospective green zone of the city in accordance with the city plan. The total estimated area of real estate development in the green zone is 2,083,410 m² about 50 percent of the total 4,061,270 m² development area. Most of the invaded green areas of 851,230 m² occurring at Ko Kwang District at the south of the city and of 621,700 m² occurring at Tha Chang District at the north of the city.

The comparison resulted to illustrate how this gap period with the difference of the rule and regulation from the plans could create opportunity allowing more rooms for real estate developers to build their estates in the case that the plans favor more on the real estate development. Opportunity, for instance, could be gaining more profit from temporarily increasing of land

price and developing real estate project during the gap period, i.e., changing from green zone as per the 2002 plan to pink zone as per the 2012 plan. Risk, for example, could be buying lands that they thought to develop or to keep for investment but somehow later the area where the lands were located might be changed from the pink zone to the green zone indicating making them not be able to do as they planned. This gap period could also create more risk in reduction of the green areas of the town in the case that the plans favor more on the development and attract more real estate developers to develop the area. In the opposite way, these could create also more opportunity for preservation of the green areas of the town with the proper planned policy.

Furthermore, interviewing relating government agencies and real estate developers revealed the opportunities and risks of the real estate development and preservation of the green area in various aspects as follows. Urban planning in the current environment is not conducive to real estate developers and is not consistent with the actual use of public and private areas. Most local real estate developers do not have sufficient understanding of urban planning and its enforcement. Gaining valuable knowledge from information from the town plan policy could help them to gain the advantage on making profitable investment decisions. Changes in urban plan policy have a great impact on real estate investment decisions. Concerning the integrated public's interest, allowing to review and reconsider the town plan every 5 years give opportunity for both private and public sectors to adjust the town plan as per recent condition of urban development and needs on preservation of green areas.

Finally, the results of this research could show the impact of urban plan policy to real estate developers and local government agencies regarding relevant risk and opportunity that need to be concerned for investment planning and decision for real estate development and preservation of green areas. The integration of ideas and resources from various real estate entrepreneurs and public sectors could make both public and private real estate development more integrating, sustainable and fruitful, as a result, improving and promoting healthy and recreation life style by, for example, introducing and implementing the concept of urban green space and infrastructure in to the urban planning policy of Mueng Chanthaburi.

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