

Urbanization and Sustainable Cities: A Case Study of UdonThani City, Thailand

ThanadornPhuttharak¹, AphisakDhiravisit²

Abstract — This article focused on the urbanization pattern of a regional city in Thailand. UdonThani city was selected as a case study in this article since the rapid growth rate of the city was higher than other provinces in a decade. The study was conducted by Satellite Images Analysis in order to compare UdonThani Municipality and Suburb areas from 1989–2014. Group discussion was used with representatives from local communities, government sectors, and private sectors. Results found that the urbanization process has been settled based on push and pull factors. Push factors consisted of the expectation of rural people in employment and income. Pull factors consisted of the expanding of the industrial sector, particularly in service and retail sectors, which affected the land-use change in the central business district (CBD) and surrounding communities. In addition, the sustainable urban development plan was suggested by city-related stakeholders. The plan included: 1) equality and justice, 2) zoning management, 3) self-sufficiency of the city, 4) city uniqueness, 5) social sanctions, 6) fair strategic planning, and 7) a citizen council, which led to the public space.

Keywords — urbanization, sustainable cities, UdonThani city

I. Introduction

The theory of modernization was developed at the end of World War II and focuses on the importance of investment and development within the industrial sector. The development resulted in rapid industrial growth. However, the growth caused a new type of production in the modern economy, which generated a pull factor for surplus labor in the agricultural sector labor and transformed them into industrial sector labor. Although urban development and economic growth in Asian countries was different from the European countries or the United States in terms of the balance between the rural and urban populations and economic growth, the phenomenon of migration from rural to urban areas was still occurring due to high levels of productivity in the city, which was higher than in the rural areas. High levels of productivity became a pull factor, which resulted in an increasing population in the urban areas of Asia and within the developing countries. In addition, poverty in the rural areas, invasion of capitalism to rural area, and rural living which was infiltrated by consumerism, forced rural people to change their living patterns; for instance, the land was transferred to capitalists for industrial activities. These were the pull factors, which accelerated migration to the city. Though it was thought that the movement of people would lead to the development of the industrial sector, it actually caused numerous problems,

such as infrastructural, social, and environmental and problems.

Urbanization and the growth of the modern city based on capitalism, is an important issue that the city administrators have to realize, especially within developing countries, including Thailand. Adoption of the National Economic and Social Development Plan, which was based on Western countries' approach, affected to a major change in the Thai economy and society. One of the most significant changes to Thailand's economy is a greater reliance upon industrial manufacturing as opposed to agricultural production. This made the country's urban areas change so rapidly that they were unable to control worrisome issues, such as the increase of the population, pollution, and so on. In 1960–1970, small-size factories have settled in Bangkok. This caused a massive migration from rural areas across the region, especially from the northeastern region. In 1970, the expansion of the population living in cities increased rapidly from 17% to 21% (Suthiprapa, Mithanon, Wattana, & Taesrikut, 2008). In 1980, the growth rate of Bangkok, which was a type of the Primate city, was higher than in Chiangmai, which was considered the second largest city in Thailand by more than 50 times. The city became over-urbanized similar to other cities in Southeast Asia, such as Jakarta, Manila, and Ho Chi Minh City where the economic base and the city's infrastructure could not support the increase in population.

The Thai government later adopted a policy which focused on distributing growth among regional cities by applying the "growth poles" theory to develop the regional city as the core of economic growth. In Thailand, Chiang Mai and KhonKaen were the provinces selected for development into regional cities in order to facilitate the growth of industry, as well as reduce the congestion and pollution of the main city (i.e., primate cities, such as Bangkok). This policy was an attempt by the government to solve problems in the primate cities by distributing growth to other areas throughout the country. Although this policy was good on paper, it led to the creation of new problems regarding the sustainability of the secondary city in both urban and rural areas, which reflects the inability of the state to impose regulations that make it more sustainable (Glassman & Sneddon, 2003)

UdonThani, which is located in northeastern Thailand, is a city that is growing and expanding rapidly. The advantage of UdonThani's location has made it the hub of a region that is filled with regional conveniences, such as a transportation route that links the central and northeast region and international boundaries. UdonThani has become the 3rd highest economic growth area in the northeastern region.

Though UdonThani is continuously growing, it is facing more and more problems inherent to large cities.

The urbanization phenomenon in UdonThani city was driven by at least two factors: 1) The land use change, and 2) The increase of population. Urbanization was a direct driver that caused changes in the ecosystem and led, in part, to climate change—the rapid change of the ecosystem nowadays that has been caused by humans who seek a particular lifestyle, especially following the industrial era. Humans have caused numerous changes to nature. The change in land-use has had a direct influence on ecosystem processes (Nelson et al., 2006).



Figure 1. An expansion of regional cities in the northeastern region of Thailand

This paper tries to reveal and understand patterns of urban development in UdonThani that are now expanding rapidly and investigate patterns of sustainable city development which the stakeholders were acted as agency based on the city structure, regulations, and laws (Giddens, 1984). At the core of sustainability is the need to pay attention to negotiate conflicts and deal with a way to be the sustainable city. Where democracy is stunted, decisions and actions that weaken sustainability are more likely to occur. (Eckstein & Thromgorton, 2003). The agency in both local and urban areas would be key factors that boost the development of UdonThani city by brainstorming and working together to regulate and issue the suitable policy to bring sustainability to UdonThani city.

II. Objectives

- 1) Investigating patterns of city expansion of UdonThani city, the rapid growth city.
- 2) Investigating patterns of the sustainable city development of UdonThani city, the rapid growth city.

III. Methods

This article has been conducted using a qualitative approach to investigate patterns of expansion and the development of the rapid growth city. UdonThani was selected

as a case study and included the UdonThani municipality area, CBD, and suburban areas. Satellite Images Analysis was used to compare the land-use change between the UdonThani municipality and suburb areas from 1989–2014 in order to understand the urban expansion. Group discussion was also used with representatives from communities, government agencies, private sectors, and persons who were interested in brainstorming ideas, opinions, and guidelines of city development planning. The conclusions, which were generated by stakeholders, were analyzed carefully in order to create suitable guidelines for sustainable city development.

IV. Results

1) The land-use change

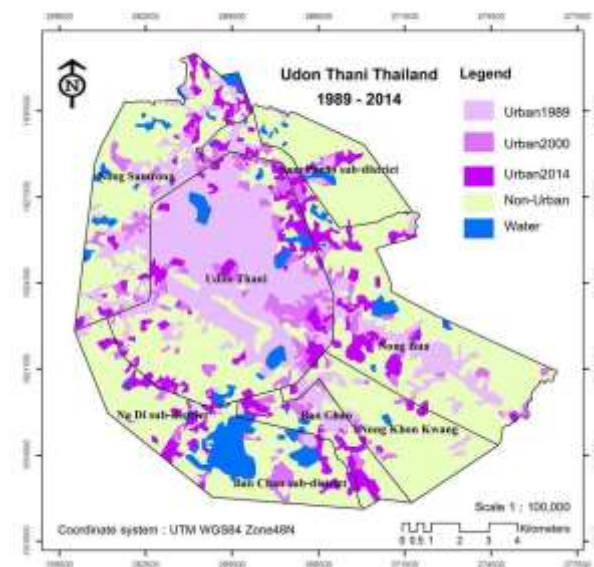


Figure 2. Land-use change in UdonThani city from 1989–2014

	1989	2000	2014
UdonThani Municipality	49.33	59.99	68.59
Nongsamrong Municipality	23.50	30.75	38.40
Nongbua Municipality	17.62	23.34	36.16
Banchan Municipality	16.97	28.47	48.47
Nongkhonkwang Municipality	7.77	11.04	14.15

Figure 3. Percentage of urban area within local municipality

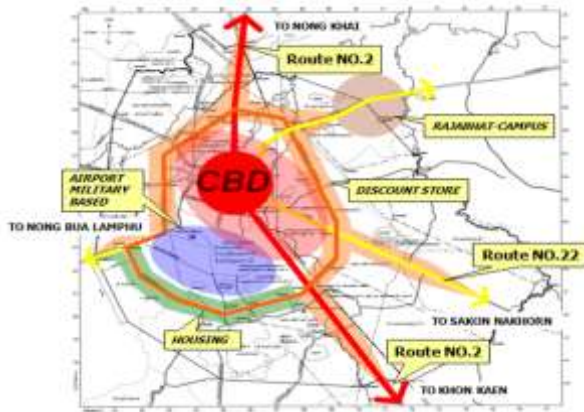


Figure 4. Direction of city growth

According to the analysis of land-use change using GIS data, the direction (red line) of city growth related to the transportation routes that are Highway No. 2 (Mittrabab Road) and Highway No. 22 (Nittayo Road: Udon Thani–Nakorn Phanom). The highway No.2 passed through the UdonThani municipality from the north to the south of the municipality, and the highway No.22 passed the east of the municipality, respectively. In addition, the ring road (east side) of UdonThani city is the location of major retail stores, the university, and a public park, which are key factors that attract the growth of the city in this direction. The west side of Ring Road is blocked by the airport and military area, so it is difficult to develop the city facility in this direction.

2) Impact of Rapid City Expansion on the Community

Expansion of the city affected the community in both positive and negative ways. This might indicate that the threats or opportunities for the community depended on community awareness. It was important to issue some plans or guidelines to prevent problems. The community had to participate in the planning process to share and learn with city stakeholders in order to develop their community or prevent some problems that might occur within the community. The study conducted the group discussion and the conclusions were presented as follows:

2.1) **The discontinuation.** People in the community were separated into groups. They had their own ideas about the development of the city, which were different from other groups. They would not listen to ideas that came from the other groups. In addition, the city administrated by municipality committee, which was the group elected under the principle of competition. Therefore, when the “winner” was elected to the city administration, the “loser” did not attend to city development participation. In some cases, the elected party might give priority to their supporters rather than focusing on city issues overall. These problems might therefore link to other problems, such as the lack of participation in city development.

Discrepancy of city administration. While the preparation of development projects or policies relating to the development of the city was in progress, projects were

questioned from the community about the city administrator’s decision. Who would get an advantage from the project? What was the project applied for? The administrator ran the project based on public interest or personal interest. For instance, with regard to the water resource issue, water resources in UdonThani city were limited. This caused a tussle over the water supply between various sectors, such as households, agriculture, or industry. Therefore the city administrators should be careful to set the priority to allocate water resources.

2.2) **Lack of self-development policy.** According to a previous review, it was found that the direction of growth in UdonThani city was based on the world development, such as globalization and regionalism. This made UdonThani city need the support of development policy from government agencies.

2.3) **Low rating of community awareness about city development.** It was quite difficult for the community to receive information about city development because the participation by the community in city issues was still low or there was a lack of a communication channel between government agencies and the community. Therefore, the community had a difficult time receiving development direction of UdonThani city from the government.

2.4) **Jurisdiction of administration and responsibilities.** Municipalities in Thailand have divided the jurisdiction of the administration by area. However, most city problems are not only limited to only one municipality area, such as flooding, traffic problems, pollution, and so on, so the problems spread to other municipality areas. As in UdonThani city, the UdonThani municipality could not handle the problems without cooperation from other municipalities. However, the congestion of law concerning the administrated area and the limits of the budget were major problems that slowed the operation down.

2.5) **Lack of local preparation.** Local administrations still had limitations that resulted in difficulties related to city expansion, such as budget, authority to make decisions, lack of coordination with other organizations.

2.6) **Lack of strong civil society.** The direction of city administration was still determined by the government and private sector. People had less chance of participating in city development.

2.7) **Bureaucracy.** Low efficiency in administration and outdated regulations related to city development were examples of bureaucratic problems that led to many city problems, such as a lack of transportation system efficiency, lack of infrastructure development, and so on.

2.8) **Social inequality.** The study found that there was inequality in law enforcement between people who came from the different social classes, particularly rich and poor people in the city. For example, rich people in the community who were affected by the flooding problems normally lift up their house by covering with soil. This solution affected poor people who did not have the money to lift up their house. Due to the solution by the rich people, waterway then was blocked and changed to the lower area, where was the residential area of the poor people was.

2.9) **Relationship between city administrator and local community.** It was rare to see the administrator come to the local community, so there was lack of problem perception with regard to the administrator.

2.10) **Pollution from industrial activity.** The rapid growth of the city which arrived alongside the industrial activity caused the pollution within the community.

2.11) **Brain drain problem.** It was found that the educational system in UdonThani is in highly quality. Schools and universities have produced the quality human resources to society for a long time. These human resources do not normally serve their local community as they look for a better place to live, such as Bangkok where they can have a better life.

2.12) **Traffic problems.** The growth of the city resulted in many negative impacts on the community, particularly with regard to the traffic. People had more chances to buy vehicles. This led to a number of cars in the street. In addition, another reason that caused traffic problems was the fact that the drivers did not respect the traffic rules and the rights of other people to share the road.

3) Suggestions and Guidelines

The group has discussed the impacts of city expansion and the suggestions of how to resolve the problems are as follows:

3.1) **Creating guidelines for the participation of all parties.** The municipality committees must administer the city without bias and give city stakeholders a chance to participate in city issues. It is important to get participation from city stakeholders because the city development needs to be done conducted the right direction. The committee can set public meetings and invite locals, the private sector, and the government sector in order to share ideas about city development and find suitable guidelines for development.

3.2) **Making unity in the local organizations.** Today, city problems extend rapidly and cover both within UdonThani municipality and the suburbs. So local organizations should cooperate in the work in order to solve the problems. Local organizations should not only focus on their interests, but they should also focus on the overview also. In addition, a concept of the city region should be considered for use. The concept will help stakeholders develop the city easier and systematically. To build unity with local organizations, the host can set a monthly meeting of the League of Municipalities in the province in order to support collaboration among municipalities in policy issuing or project operation.

3.3) **Neutrality and fairness.** City administrators will have to make a decision fairly quickly in order to offer the most advantages to the locals. The administrator must realize his accountability and responsibility within policy or development project issuing.

3.4) **Managing area by zoning.** It was good to manage the area by focusing on the balance between physical development and the livelihood of people appropriately. The administrator should place the zoning for the industrial sector

far from the residential area. Waste disposal areas should not be located in an area that is full of people. In addition, the administrators should enforce the law strictly without bias.

3.5) **City uniqueness.** Development that copies the others causes the city to lack the uniqueness that was based on the context of history, the environment, and the ecological landscape. Therefore, stakeholders should conduct the development by indicating a suitable direction for UdonThani city.

3.6) **Social sanctions.** People might not accept an offense that violates their rights. Although the law cannot convict the offenders, society should have their own way to deal with the problem. Society has its own regulations to control all parties in order to ensure that people live peacefully.

3.7) **Making a strategic city plan.** City administrators should invite stakeholders from every sector that are related to the city in order to brainstorm and share ideas regarding city development policy. The city's strategic plan should be carried out without domination from politics and bureaucracy. It is important to give priority to human resource development through a process of education in order to build the morality and consciousness of the community to people.

3.8) **Establishing the civil council.** This was a way to create public space for strengthening civil society. The civil council should offer the opportunity for city stakeholders to discuss issues between the government, the private sector, and locals. People would then have a chance to participate in the civil council. The UdonThani municipality established the civil council on September 11, 2012, in order to jointly determine the direction of city development. When they received some recommendations from the civil council, the government agency, that was in charge of city development, reconsidered and wrote a master plan.

3.9) **Development of transportation system.** It was important to develop the transportation system to resolve traffic problems in UdonThani municipality. A mass transportation system was considered by the government sector through placing the parking lots at the corners of the city. People can park their private vehicles outside of the city, and then travel within the city using public transportation.

v. Conclusion and Discussion

The phenomenon of urbanization in major cities in Thailand and Southeast Asia has continued to grow over the past decades. The phenomenon caused many problems, and spread over to both the CBD and suburb area. People have to deal with more difficulty of problems because the city grows very fast and has more complexity of management. Therefore, development has to be balanced with economic, social, and environmental factors. In addition, city stakeholders should participate in the city planning in order to find the best guidelines for development.

According to problems and suggestions in research findings, it has been found that the expansion of the city has

been run by government and private sector as key agents. The development of city policy creates many problems for the local community. The local community has less of a chance to participate in city development. It is important to get the cooperation from every sector to plan city guidelines, particularly the government and private sector (public-private partnership, PPP) that relates to issues including those from the economic, social, and environmental sectors and should be balanced in bringing the community and city forward together. This development pattern has occurred in some major cities in Southeast Asia, such as the Philippines and Indonesia.

VI. Acknowledgements

This research paper is funded through the Research University Grant from KhonKaen University. Thank you to all of those within the educational committee in the Doctor of Philosophy Program in Development Science, Faculty of Humanities and Social Sciences, KhonKaen University, Research Group on Wellbeing and Sustainable Development (WeSD) for their helpful advice. Thank you to the government and private sectors in UdonThani, particularly the UdonThani International Cooperation and Development office (UDICAD) for the data provided for this project.

References

- [1] T. Chaloeamtirana, "Thailand: The Politics of Despotism Paternalism," Bangkok: The Foundation for the Promotion of Social Science and Humanities Textbooks Project, Chulalongkorn University, 2009.
- [2] B. Eckstein and J. A. Throgmorton, "Story and Sustainability: Planning, Practice, and Possibility for America Cities," London: The MIT Press.
- [3] H. Frumkin, L. Frank and R. Jackson, "Urban Sprawl and Public Health: Designing, Planning, and Building for Healthy Communities," Washington: Island Press, 2004.
- [4] A. Giddens, "The Constitution of Society: Outline of the Theory Structuration," Los Angeles: University of California Press, 1984.
- [5] J. Glassman, C. Sneddon, "Chiang Mai and KhonKaen as Growth Poles: Regional Industrial Development in Thailand and Its Implications for Urban Sustainability," *The Annals of the American Academy of Political and Social Science*, vol 590, pp. 93-115, Retrieved from <http://ann.sagepub.com/content/590/1/93>, 2003.
- [6] A. Haemyuratham, "History of Interior UdonThani Province," Bangkok: Amarin Printing, 1985.
- [7] G. Hugo, "Urbanisation in Asia: An Overview," Paper Prepared for Conference on African Migration: 4–7 June, 2003; University of Adelaide, Australia, 2003.
- [8] G. W. Jone, "Southeast Asia Urbanization and the Growth of Mega-Urban Regions," *Journal of Population Research*, vol 2, pp. 119-136, 2002.
- [9] K. Permtunjit, "Theories and Concepts of Urbanization," Bangkok: Creative Publishing Company Limited, 1993.
- [10] C. Potsiou, "Rapid Urbanization and Mega Cities: The Need for Spatial Information Management," Copenhagen: International Federation of Surveyors (FIG), Retrieved from <https://www.fig.net/pub/figpub/pub48/figpub48.pdf>, 2010.
- [11] P. J. Rimmer and H. Dick, "The City in Southeast Asia: Pattern, Processes and Policy," Singapore: National University of Singapore Press, 2009.

- [12] D. Thavinpipatkul, "Urbanization and Social Change in Developing Countries," Bangkok: Chulalongkorn University Press, 2008.
- [13] J. Suthiprapa, P. Mithranon, P. Watana and C. Taesrikul, "Bangkok-Globalising The City of Angels," In G.W. Jones and M. Douglass (eds.), *Mega-urban Regions in Pacific Asia: Urban Dynamics in a Global Era*, Singapore: National University of Singapore Press, 2008.
- [14] G. C. Nelson, E. Bennett, A. A. Berhe, K. G. Cassman, R. DeFries, T. Dietz. et.al., "Anthropogenic Drivers of Ecosystem Change: and Overview," *Agronomy & Horticulture -- Faculty Publications*. Paper 364. <http://digitalcommons.unl.edu/agronomyfacpub/364>, 2006

About Author(s):

¹PhD.Candidate in Development Science, Faculty of Humanities and Social Sciences, Khonkaen University, Thailand

² Assistant Professor, Program in Faculty of Humanities and Social Sciences, KhonKaen University, Thailand