Rising to the Challenge of SDGs in Asia through University-Community Engagement

Contemporary urban reflections of Phayao

Dutrudee Makprasert
Urban architecture lecturer, University of Phayao (UP), School of Architecture and Fine arts, Phayao, Thailand

Abstract

Nowadays, the international trend focused to sustainable development worldwide. Thailand was also a country where confronted of the problems from urbanization of modernity. Therefore, the main issues for rehabilitation were social, economic and environment developments. Phayao was a perfect developing city model for sustainable development because it had suitable functions of healthcare and tourism. Moreover, it stepped to aging society already. This city case study was helpful to figure the rehabilitative method out. The research objectives were the contemporary cultural study for flexible change, created value of local cultural conservation for new generation and good participations of government, private sector and people for city development sustainably. To the methodology of the research was area-based collaborative research with architecture survey and essential data collection about contemporary culture. Finally, the research outcome presented the factors of social change in developing country with Phayao’s context and the solutions. It proved that technology had influence in the city developments of digital age. Apart from sustainable community being, the way to reach smart city was a new goal including the identity of city concept. Creative city was a good universal image of Phayao in various people groups’s connection and contemporary urban reflections. Following creative city concept, the powerful function which lifted the communities was educational institution. University of Phayao was the main hub of community engagement with high technologies and smart people creation. It concluded that educational sector was important to develop the urbanization in this new generation correctly.

Keywords
Phayao, Contemporary urban and Smart city

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Introduction

Phayao had long history since the 16th century of buddhist era until now and occurred many transformations in this city. These urbanizations impacted to Phayao demographic profile and urban activities. In these reasons, contemporary urban reflections of Phayao were a research about lifestyle cultures including popular cultures. The research guideline was cultural and new architectural analyses which affected to contemporary Phayao cultural changes.

Phayao was the edge city in the north of Thailand at geographical coordinate 19.2154° N 100.2024° E. The old inner city was next to Kwan Phayao, a big lake landmark of the city. The old name called Phu Kamyao city. The First King of Phayao was Phaya Ngam Muang in the 16th century of buddhist era. After that the city was colonized by Lanna kingdom until Rattanakosin period. The Phayao area was 6,335.06 sq.m. or 1,564,984.98 acres. The geographies were long mountains in the north direction. The plains amongst valleys were agricultural areas. The high level was between 300–1,550 meters above mean sea level. The main mountains were Phu Lang Ka, Sunpunnam, Mae Suk, Mae Phard, Mae Tam and Mae Tom. The forests were hill evergreen and mixed deciduous forests. The main rivers were Ing, Lao and Yom. The main reservoirs were Kwan Phayao (20.53 sq.m., 33.84 million m³) and Nong Leng Sai (8.9 sq.m., 6.5 million m³). The population in 2017 was 477,100 at 57th rank of country and the population density was 76.47 sq.km. per person at 65th rank of country. The main occupation was farmer and economic agricultures were rices, maizes, longans and para rubbers. The main road to the other cities was national highway 1 or Phaholyothin road. Famous tourist attractions were Si Khom Kham temple, Analayo Thipphayaram temple and Kwan Phayao.

According to Phayao demographic statistics, they were reduced continuously (graph 1). On the other hand, Phayao elderly people demographic statistics were also increased continuously (graph 2). Percentage of Phayao elderly people population was 18.84% of all Phayao population. It presented that Phayao started to complete aged society. At this moment, it stayed in aged society level the same as Thailand by world aged society situation report of United Nations. It meant that the society with minimum 60-year-old population was above 10% till 20% of all population. For Phayao tourism situation, the visitor demographic statistics were increased in succession (graph 3). These visitors were tourists and excursionists. Tourism authority of Thailand had a promotion of secondary tourist cities to help support economic growth and opened a campaign “Amazing Thailand Go Local”. Secondary tourist city travel could reduce taxes by tourist expenses about 15,000 baht in this whole year. Local communities gained tourism incomes at minimum 10,000 million baht in these expectations [11]. Phayao was a secondary tourist city in northern group expected to these city promotions. All demographic informations were an interesting point for finding the guideline of city adaptability in the future.
Graph 1: Phayao demographic statistics (December 2013 – 2017)

Graph 2: Phayao elderly people demographic statistics (December 2013 – 2017)

Source: The bureau of registration administration, department of provincial administration (2018) [6]

Graph 3: Phayao visitor demographic statistics (2012 – 2016)

Research objective
1. Contemporary Phayao cultural study for suitable city adaptabilities in this new generation sustainably
2. Created value of Phayao local cultural conservation for new generation
3. Good participating promotion of government, private sector and people for city development

Research methodology
1. Area-based collaborative research with architecture survey and essential data collection about contemporary Phayao culture
2. Data analysis and synthesis for research conclusion and discussion
3. Research public relation in journals, medias and exhibitions

Research result
The division of contemporary Phayao urban reflections used Smelser social change theory in explanation (Smelser, 1963) [5]. It involved with different 4 processes of urbanization in developing countries:
1. Technological process
2. Agricultural process
3. Industrial process
4. Ecological management process

Picture 2: Phayao city center
Picture 3: Bicycle lane at Kwan Phayao waterfront
Picture 4: Tops plaza
Picture 5: Makro
## Contemporary urban reflections of Phayao

### 1. Contemporary technology

The main 3 parts of contemporary technologies in Phayao people lifestyles:
- **First part**: Intelligents as artificial intelligence (AI) and internet of things (IoT)
- **Second part**: Digitals as cloud, chatbot and augmented reality (AR) or virtual reality (VR)
- **Third part**: Meshs as blockchain or bitcoin [3]

There were 3 technological types of contemporary Phayao technologies:

<table>
<thead>
<tr>
<th>Information technology : IT</th>
<th>Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Smartphone</td>
<td>1. The necessary technological selections because of the high technological prices</td>
</tr>
<tr>
<td>(2) LED display (Light Emitting Diode)</td>
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</tbody>
</table>

| Transportation technology | |
|---------------------------||
| (1) Drones                | 2. Wrong technological uses |
| (2) Kerry express         | 3. Complicated technologies |
| (3) Electric golf cart    | 4. Instead of human labor by artificial intelligences (AI) or robots |
| (4) Safer road            | |
| - Closed-circuit television (CCTV) |
| - Speed camera            |
| - Speed limit sign        |

| Architectural technology | |
|--------------------------||
| (1) Commerce and service| |
| - Community malls with superstores and mixed-use functions for one stop services as Tops plaza, Tesco lotus, Makro and Charoenphan department Store |
| - Convenience stores as 7-elevens and Family marts |
| (2) Educational institution |
| - University of Phayao (Comprehensive University with liberal arts in the asean community) |
| - University of Phayao Demonstration School |
| (3) Healthcare |
| - University of Phayao Medical Center and Hospital |
| (4) Urban design |
| - Universal design in public spaces as good signs, ramps, wayfindings for the blinds and bicycle lanes around Kwan Phayao waterfronts of the inner city |

### 2. Contemporary agriculture

#### 2.1 New self-sufficiency theory

The new self-sufficiency theory from sufficiency economy philosophy by King Rama 9 for farmers to develop their useful natural resources following this formula:

Flexible ratio of 30 : 30 : 30 : 10 in the average area per household (24,000 sq.m.)

| (1) 30% - ponds | 1. Decadent environmental quality because of forest destruction for agricultures especially air pollution from burned forests, water sources with synthetic agricultural chemicals and drought |
| (2) 30% - rice fields | 2. Poverty |
| (3) 30% - crop fields or plant gardens | 3. Lack of knowledge in new agricultural technological development |
| (4) 10% - Buildings and others |

#### 2.2 Organic farming

Farming without synthetic chemicals for fertile soil, ecological diversity and environment conservation
### Contemporary urban reflections of Phayao

<table>
<thead>
<tr>
<th>2. Contemporary agriculture</th>
<th>Problem</th>
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<tbody>
<tr>
<td>2.3 Young smart farmer</td>
<td>The promotion of young smart farmers to apply new agricultural technologies in productions, managements, marketings and connections until being local agricultural leaders</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>2.4 Agricultural application</th>
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<tbody>
<tr>
<td>(1) DOAE Farmcheck Application</td>
<td>(Agricultural news for farmers)</td>
</tr>
<tr>
<td>(2) DOAE Farmbook Application</td>
<td>(Digital farmer registration) [1]</td>
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<th>3. Contemporary industry</th>
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<tbody>
<tr>
<td>3.1 Agricultural industry</td>
<td>Phayao industrial vision “Safety standard agricultural industries and sustainable enterprises” [7] following value-based economy in Thailand 4.0 policy</td>
</tr>
<tr>
<td>3.2 Tourism industry</td>
<td>Phayao tourism vision “conservative tourism with creative local economy”</td>
</tr>
<tr>
<td>3.3 Young entrepreneurs chamber of commerce : YEC</td>
<td>The young entrepreneur member promotion of The Chamber of Commerce to train them in business administration and management skills to develop further technical capacities for playing a critical role in the future of the Provincial Chambers</td>
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</tbody>
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<tr>
<th>4. Contemporary ecological management</th>
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<tbody>
<tr>
<td>4.1 Sustainable community</td>
<td>Contemporary international community development in worldwide for balancing natural resources, local wisdom and culture with good participations to self-sufficiency ability and good life quality [10]</td>
</tr>
<tr>
<td>4.2 Model sufficiency economy village</td>
<td>“Bua village” Phayao model sufficiency economy village and famous organic rice farming village following sufficiency economy philosophy by King Rama 9</td>
</tr>
<tr>
<td>4.3 Community Tourism OTOP Nawat Witee</td>
<td>Advanced concept of one tambon one product (OTOP) for community tourism development by tourist attraction to travel in the opened community [8]</td>
</tr>
</tbody>
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### Problem

1. Natural disasters
2. Economic crises in Thailand and abroad
3. Under standard raw materials
4. High manufacturing cost because of middleman
5. Lack of tourism personnel
6. Lack of knowledge in new tourism technological Development
7. Unready open communities for tourism
8. Language barriers

1. High internet network device’s prices
2. Lack of knowledge in new technological devices
3. Lack of creative economic ideas
4. Migration for employments
5. Low wages
6. Many unready communities for elderly people
7. Limited transportation because of no train station and airport in the city
Conclusion

According to research study, contemporary technologies had influence in all factors of community change. Therefore, the expectation of sustainable development in communities will be more raised by technologies completely.

The future of contemporary Phayao city
There were 4 parts to present the future of contemporary Phayao city:

1. Contemporary technology

1.1 Information technology: IT
(1) The main roles of augmented reality (AR) and virtual reality (VR) in medias for tourism such as the presentations of museums and entertainments
(2) The popular digital world and internet of things

1.2 Transportation technology
(1) The constructions of modern transportation technologies for community growths such as the high speed trains (Denchai – Chiang Rai – Chiang Khong line), the economic road (R3A: Thailand – Laos - China), the national highway 1021 (Chiang Khong, Chiang Rai – Phayao) and Maeka international airport
(2) Drone delivery
(3) Instead of human labor by artificial intelligences (AI) or robots in special cases
(4) The urban design for electric cars, smart cars, gyroscopic vehicles with self-balancing movement in different axes of rotation and light rail transit (LRT) in the city
(5) The design for road safety devices such as self-driving cars, electronic log devices (ELDs) or navigators

1.3 Architectural technology
The trend of environment conservation affected to architectural design for sustainable architectures in various building types. The design concept was living together with nature and technology. In this reason, the architectural design focused to the balance of green building technologies with energy savings and living, the respect to building laws and especially universal design. It was an architectural design criteria without physical conditions of users. It was international criteria to design the city for Phayao aging society preparation.

2. Contemporary agriculture
New self-sufficiency theory will be practiced by young smart farmers widely. They were pioneers to develop the traditional agricultures with applying modern technologies and local wisdoms together for more valuable agricultural products. The methods supported to increased efficient productions, good product qualities, time saving, reduced manufacturing costs, environment conservation and self-sufficiency farmers sustainably. In this digital age, farmers accessed to agricultural informations conveniently with good advisors all times. Apart from these, farmer conservation attracted to new generations for continuing this occupation in the future. The people consuming behavior also started to demand organic agricultural products in the markets for their healths increasingly.
3. Contemporary industry
Contemporary industries in Phayao still remained image of the city about organic agriculture and Thai style tourism with innovations for gained enterprise and community economies. The new agricultural industrial pattern applied modern technologies for reducing manufacturing costs and increasing product qualities such as automatic machines and robots in productions, efficiency factory system design in producing process, green houses for vertical organic farms and genetically modified organisms (GMOs) for specific qualifications, etc. In Thai style tourism industry, tourists were more attracted to travelling inside local communities. This promotion helped local people to gain incomes from tourism directly. They were able to produce the local tourism products by themselves in leisure times especially elderly people. Hence, this strategy brought local people to participate in building their own sustainable communities further.

4. Contemporary ecological management
Sustainable development was mainly practical in contemporary urbans recently including Phayao ecological management. However, the city management also involved with smart technologies in this age. According that the guideline to reach smart city was a new goal for developing the cities which brought the identity of city concept to creative city. Therefore, there were 2 contemporary concepts to practice in Phayao ecological management:

4.1 Smart city
Ecological managements in many cities had the references from smart city [9] and applied to their city contexts following 6 parts of smart city the same as Phayao:

1. **Smart governance** - convenient services of government, good public participations and verifiable managements
2. **Smart energy and environment** - efficiency energy and natural resource consumptions, alternative energies (bioenergy, wind or solar energies) instead of main energies, effective waste management and monitoring
3. **Smart mobility** - convenient public transportation accessibility, safety roads, good logistics management, vehicle sharing and eco-car driving
4. **Smart economy** - modern innovations for business developments, business connections and collaborations
5. **Smart living** - safety city, healthy people and good urban infrastructures
6. **Smart people** - good social behavior, positive thinking, creativity and long for knowledge

4.2 Creative city
The city promotion to be Phayao creative city was a good universal image in various people groups’ connection and contemporary urban reflections following smart city concept. In explanation, there were 3 people groups who were advantageous from Phayao creative city:

1. **Elderly people group**
   This group was the most to care about because they could not be self-sufficiency people conveniently with their physical conditions. Therefore, contemporary urban preparation for them was universal urban landscapes with the principles of universal design. In which were equitable and simple uses, flexibility in use, perceptible information, tolerance for error, low physical effort, size and space for approach. For their activities, they could earn from tourism in leisure times by community tourism OTOP nawat witee promotion.

2. **New generation group**
   This group was pioneers for city and country developments. The creative city will make them be smart people and have good livings. According that the contemporary urban for new generations was adaptability and community integration. Creating spaces were comfortable settings, casual and co-working spaces. A third space called “urban porche” was fashionably casual area both indoor and outdoor at the building’s entrance. Many porches acted as flexible spaces, serving as art galleries, pop-up shops and informal meeting hubs. They were good contemporary urbans for creative cities. Moreover, the powerful function of the city to create smart people was educational institutions. University of Phayao was a high educational institution in the city where had creating spaces for them. This clearly presented the main hub of community engagement and brought to a student city. Thus, contemporary Phayao urban reflections were plenty with popular cultures. Costs of living were not expensive. Products and services were reasonable prices. These attracted students to live and learn here.

3. **Visitor group**
   This group was mainly tourists in the city. They helped local economies by tourism. The major country incomes also gained from tourism. Therefore, the city promotion of conservative tourism more attracted Thai and foreign tourists to travel in Phayao. The identity of Thai style was famous around the world. Almost tourists liked to travel in local cultural places such as temples, museums or cultural centers. Contemporary Phayao urbans for tourism were local cultural conservations, permeabilities, good tourist facilities and urban porches. According to creative city, it was considerably charm to tourists in elderly people and new generation groups. The criterias of these groups were necessary in contemporary architectural and urban designs for Phayao tourism as well.
Reference


Biography

Name: Miss Dutrudee Makprasert

Professional: Lecturer at Department of Architecture, School of Architecture and Fine arts, University of Phayao

Address: School of Architecture and Fine arts, University of Phayao, 19 Moo 2, Tambon Maeka, Amphoe Muang, Phayao, 56000 THAILAND

Telephone: +66 (0) 54-466666 Ext. 3362

Mobile: +66 (0) 85-618-0777

E-mail: dutrudee.ma@up.ac.th

Education

2007 Master of science in European urban studies (International program) Bauhaus University – Weimar, Weimar, Germany

2003 Bachelor of Architecture Kasetsart University, Bangkok, Thailand