

Thailand Towards Sustainable City



Department of Environmental Quality Promotion

Thailand Towards Sustainable City



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Introduction

According to 2030 Agenda for Sustainable Development, it is an agreement on the direction to reach the sustainable world where the natural resources and environmental aspect. That is framed by the integration of natural resources and environmental management are included ensuring sustainable consumption and production patterns, the sustainable management and efficient use of natural resources substantially reduce waste generation. Conserve and sustain in use of the oceans, seas and marine resources, Protect, restore and promote sustainable use of terrestrial ecosystems and halt biodiversity loss, reduce the adverse per capita environmental impact of cities, including immediate action to combat climate change and its impacts. ASEAN community has adopted this agenda for implementation in the ASEAN member state under the ASEAN vision 2030, ASEAN socio – cultural community blueprint 2025 with the envisions the achievement of the environmentally sustainable cities.

Department of Environmental Quality Promotion, Ministry of Natural Resources and the Environment is the leading agency to implement the 2030 Agenda for Sustainable Development with concrete output on the local level under the ASEAN vision where an activity is currently running under the “ASEAN Environmentally Sustainable City Model Cities Programme” with the support from Thai government, Japan-ASEAN Integration Fund, ASEAN Secretariat and Institute for Global Environmental Strategies. The programme emphasized on the capacity building on sustainable environmental management with the public participation approach to the local administration and related parties.

This booklet is a collection of the best practice stories of the “**ASEAN Environmentally Sustainable City Model Cities**” in Thailand including the purposeful role model as Sustainable City where will moving towards to the “ASEAN Environmentally Sustainable City Model Cities” in the next phase.



III. Up to the Level of ASEAN Environmentally Sustainable City Model Cities

- Develop and Upgrade the capacity of environmental management programme to the model city in ASEAN level reaching an international standard.
- Develop the international partnership on environmental management.

Implementing Process

II. Develop Tools and mechanism for moving towards environment sustainable city

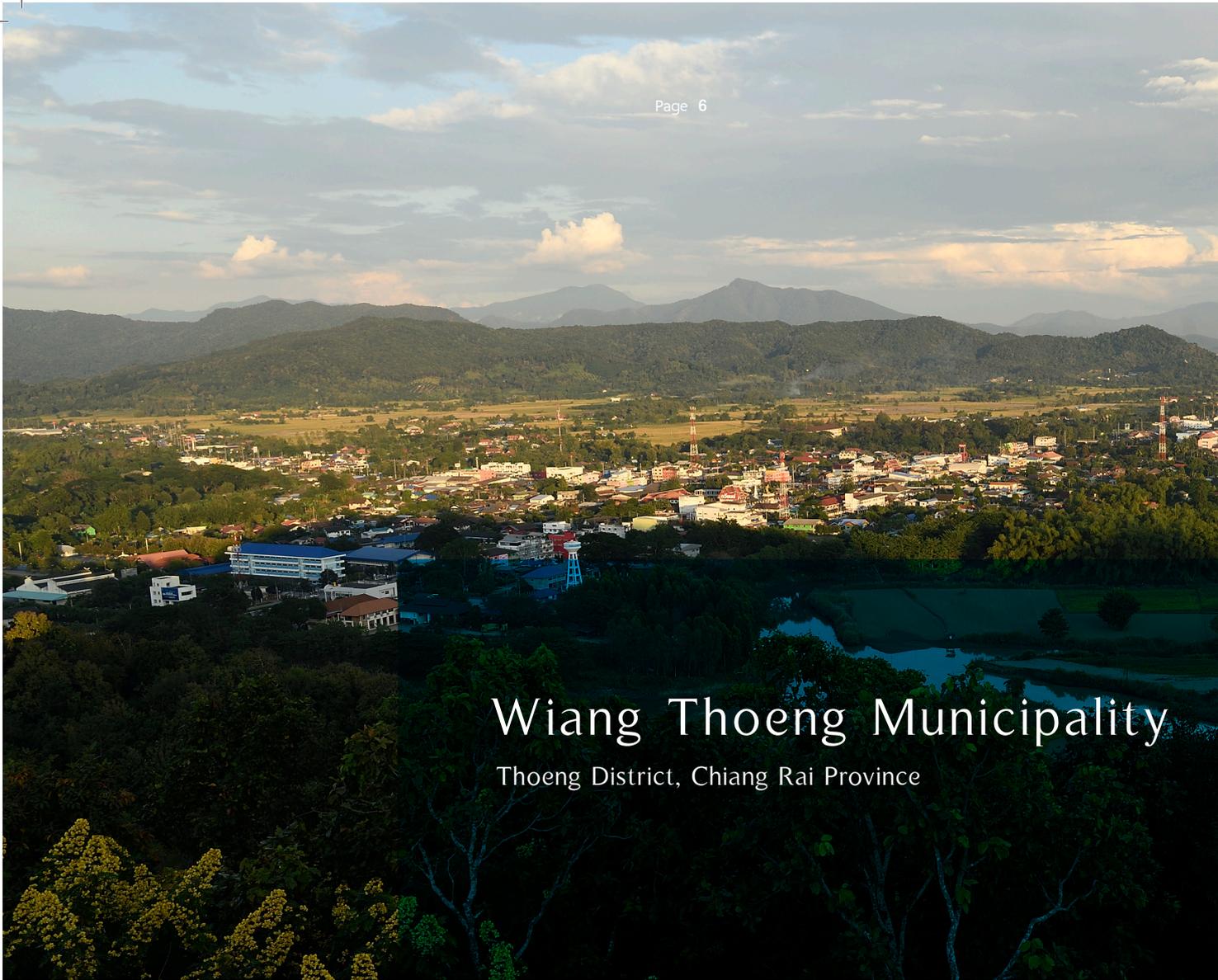
- Developed a criteria in evaluating the city development status which is the tools and mechanism in moving towards the environmental sustainable city.
- Develop and promote the provincial mechanism for environmental sustainable city.



I. Public Participation Promotion and networking

- Promote public participation and networking with related multi-partner in local environmental management through a local development plan as a tool.
- Capacity building on sustainable environmental management to the local administration and related parties.
- Summarizing the facts and acquiring lesson learn for further improvement.
- Project Expansion.





Wiang Thoeng Municipality

Thoeng District, Chiang Rai Province

▀ Vision : To be a livable city with happy citizen. Advance administration system as well as always learn for better development and environmental care.

▀ Population : 5,100 persons

▀ Area : 12 sq.km.

Wiang Thoeng Municipality is consisting of residential area harmonizing with agricultural area and a semi urban city. There are two major rivers that passing through the municipality namely; 1) Mae Lao River and; 2) Ing River. Wiang Thoeng used to be a significant political city in the historical period as you can see from the grandeur ruins where temple, earthenware, some parts of buddha image and moats exists.



Outstanding Point in City Management

Preservation of historical moats and water quality : By solving the problem of illegal encroachment on the historical site and moats including city landscape improvement. Moreover, implementation of the natural waste water treatment method such as wetland construction, using a water hyacinth for water treatment and Dilution Technique.

Ing riverside Community Market : Development of the old local market into a new paradigm of a local market which are; healthy food market by selling natural local food and community products, environmental friendly market with no foam and plastic packaging including waste separation. The benefit with such activities is generating of household income and strengthening the economy of the community.

Waste separation at source : Encourage the household and the community to separate their waste at source by selling the recycled waste, making a fertilizer or bio liquid from organic waste. In addition, the Municipality also established the properly waste collection and waste disposal system by using a high temperature incinerator equipped with pollution control preventing health effect to the community.

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Self-Managed Village : “Baan Wiang Jom Jor” is a self-manage village with their own management system covering all quality of life aspect from environmental, health, economy, and social justice. The key strategy for the success is to implement the public participation concept in every community activities. The village handle its own development plan in the same way as the subdistrict development plan. The village also set up its own rules and restrictions as well as the community based solid waste management constitution.

The city of knowledge : Weingteong Municipality grabbed and collected the local knowledge from the local wise or communities as a local wisdom. Then, the knowledge is disseminated to the public.

Keys of Success

- ▶ Finding the municipality's potential then builds the capacity of its citizen and use the voice of the community as a guide for better improvement.
- ▶ Integrate the local knowledge together with the related knowledge from outside for better development.
- ▶ Looking for a partnership with organization and create an increasing network supporting the local development in moving towards sustainable municipality.

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โทรศัพท์: 086-380-3238

ลำดับที่	รายการ	จำนวน	ราคา	รวม
1	กระดาษพิมพ์ (Mix LDPE, HDPE, PP)	177.50 กก.	2.25	398.28
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3	กระดาษพิมพ์ (112.8+65.3)	18.50 กก.	1.00	18.50
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รวมทั้งสิ้น: 5,292.47

Chaman Municipality Makham District, Chanthaburi Province

The area of the municipality is close to Khao Khitchakut Mountain and Soi Dao Mountain where the mountains play an important upstream source of water of Chanthaburi province. Chanthaburi is famous for its fruits plantation such as rambutan, mangosteen, durian, and longan because of its fertile land. Chaman subdistrict has been legislated as green area suitable for agriculture. With that, Chaman municipality is a rural area with the settlement of agricultural based community. Moreover, it is having a community of indigenous tribe people named “Song” who are still practicing their own tradition and culture.

- Vision : Towards moral and honest community, better education, great care of environment, joining hand in hand for city development base on the self-sufficiency economy philosophy leading to peaceful community
- Population : 4,200 persons
- Area : 86.5 sq.km.

Outstanding Point in City Management

Agricultural Processed Product Group : The farmers in the community are all working together for making their crops into processed products providing more shelf life ie. Fried Durian Baked Banana and preserved mangosteen. By product such as mangosteen peel could be processed into charcoal deodorant acting as smell absorbent which earned the community with the 3 stars OTOP product generating greater profit for the community. The income is reserved as a central fund of the community to be lent out to the group members when needed with no added interest.

Concrete road with Bamboo structure : Chaman is a small size municipality where it has a limited budget to support all desired developmental activities. The community and the municipality are joining together to build their own road using bamboo stick instead of steel bars as a reinforcement material in building a normal concrete pave road: it is an integration between a local wisdom and engineering principle. Not only for solving the budget problem and efficiency

using the local resources like bamboo, but it brings more benefit to the people by having a concrete pave road.

Environmental Friendly Homestay : A community-based homestay that is focused on agricultural tourism with an environmental friendly approach. With that, the homestay implemented 3R Waste management principle: Reduce Reuse Recycle as well as wastewater treatment system and also food safety provision.

Community based solid Waste Management: Setting up the community's waste management system, as an example, encouraging each household in sorting out their waste and setting

up the recyclable waste facility. This also leads to an activity such as a programme on hazardous waste exchange with a common household use product and reusable waste market, the promotion campaign to keep the cleanliness in the community i.e. collecting the roadside litters and the livable house competition.

Key of Success

- ▶ Do not allow any limitations or any obstacle for the development of the municipality. Spend the time to analyze and understand the limitation and try to find the best way with people's understanding and public participation approach.
- ▶ Focus on building a community model as a pilot site then expand its implementation concept and framework to the whole municipality for a long-term period with stability and sustainability.



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Phuket Municipality

Mueang District, Phuket Province

The Phuket Municipality is a significant city of trade hub from tin mining in the past. With that, many Chinese and Western emigrated to Phuket for the business aspect which leading to the culture combination between the local people and those who emigrated. It brings positive effect to Phuket and become the first province in Thailand and in ASEAN city with unique culture characteristics that UNESCO nominated to be the City of Gastronomy in UNESCO Creative City Network. Aside from that, there is a Chino-Portuguese architecture in Phuket representing mix eastern and western design which become a famous tourist attraction. Because of the natural environment and unique culture, Phuket is now one of the World's best tourist destination.

- ▶ Vision : Phuket Municipal is the city of creativity and livable city.
- ▶ Population : 79,000 persons
- ▶ Area : 12 sq.km.

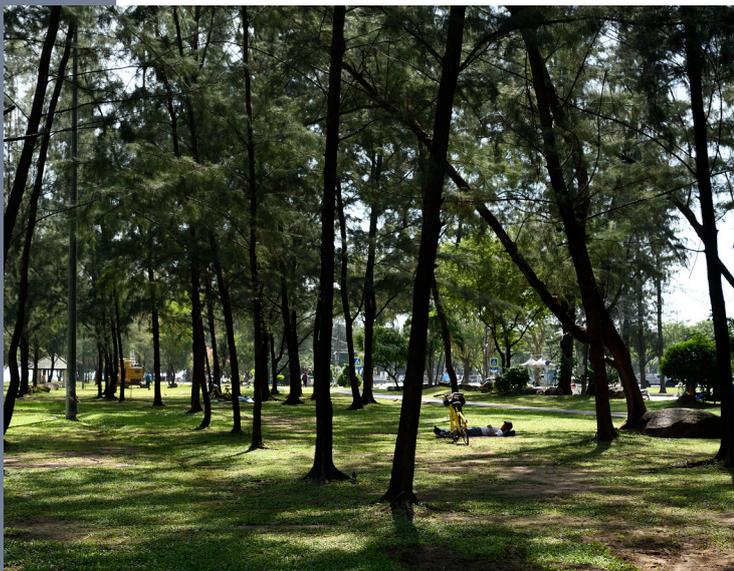
Outstanding Point in City Management

City Landscape Improvement and Increasing Green Area : Phuket Municipality improved the Saphan Hin Public Park adopting new concept in serving the citizen recreational activities and natural classroom through tree plantation aiming to increase the green area. Phuket also improve the old city landscape zone by placing the main electrical power line underground and pavement renovation with matching design of the Chino-Portuguese architecture where it can support for a multi-propose use.

Waste and Pollution Management : Establishing a complete waste management system. Starting with the household waste separation up to waste disposal by incinerator where the heat from burning process turned into electricity for the internal use of waste disposal plant and the excess are to be sold to the Provincial Electricity Authority. Furthermore, the wastewater treatment system can cover the majority of the municipality area besides reaching

the national standard of the Municipal Sewage Management System (MSMS2008) certified by Pollution Control Department, Thailand. The treated water is intended to use in the cooling system of the incinerator plant and to showering the trees and plants in the public places.

Tradition Preservation by The Communities : Phuket's citizen gets involve in various developmental activities such as mangrove plantation, waste collection and beach clean-up, a no foam and plastic packaging in the restaurant, market and educational institution. The junior tour guide performed by the students of Bangneaw Municipality School guiding the tourist who wants to visit Bangneaw cultural and traditional learning center for better understanding the specific culture and tradition of the community where it lasts for more than a century.



Key of Success

- ▀ Finding and develop the city's identity then use it as a benefit for the city's creative economic through tourism approach.
- ▀ The key success factor of city developmental programme is the multi-stakeholder collaboration for both public and private civil sector which include application of appropriate technology.

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Udonthani Municipality

Amphur Muang, Udonthani Province

Is major municipality situated near the boundary of Thailand-Laos where it became a transportation hub to indo -China region through Thai- Lao Friendship bridge in Nongkhai province. With this crucial location, Udonthani played a significant part of investment and economy for the province through the establishment of international airport supporting some international airlines that could bring tourists and products in and out of the country. Udonthani's population is concentrated in the business area where its citizens are looking for a better chance to settle with greater opportunity.

- ✔ Vision : Udonthani City Municipality is a good place to live. People here assent to further improvement of the city and is a economic hub worthy of investment, good government approach always preserve the great culture for all.
- ✔ Population : 130,000 persons
- ✔ Area : 47.70 sq.km.

Outstanding Point in City Management

Drug Free in blighted area : Udonthani Municipality transformed the blighted community where is illegally encroaching and drug source into a drug free community named “Pha Suk Mun Kong. People from the blighted community has been relocated in Pha Suk Mun Kong to improve their social and psychological environment to an upper level. Administering new policy for each citizen in the community that could help and support each other as a caring community. These system in turn resulted in the reduction of Drug problem and also giving a positive way for solving the related social problem in the community.

Full Public Health Service : Udonthani Municipality aims to be called the “Healthy Municipality” by initially implementing the education and promotion of health leading to the implementation of a full public health services program. The program includes public health promotion, prevention of health problem and protection of citizen’s health followed by the curing of diseases and conditions. Moreover, established the Udonthani Municipality Hospitals which were equipped with the latest technology in healthcare and pharmaceuticals. Alternative medicinal method is also available for those who are willing to take the choice. Additionally, physical therapy and dialysis Center are also made available including other services such as MRI and CT scan.

Udonthani Municipality Service Center : A One Stop service for the citizen, this service center provided all of the municipality’s public services for its citizen in a one stop shop system. The service center is using information technology to upgrade the service quality. The service center is also served as a database for the citizens of Thailand as well as foreigners entering the municipality. As of now, there are two operational service centers in Udonthani.

Udon Bike Share : Encouraging Citizens to use bicycle as their means of transportation to reduce the air pollution problem in the municipality. The implementation of public bike with an automated system in handing and borrowing the bicycle are in place. These bicycles are parked within all significant spots throughout the municipality area. Establishment of a bicycle lane is done for the convenience of those who wants to bike. The bike lane has a total distance of 10 KM.

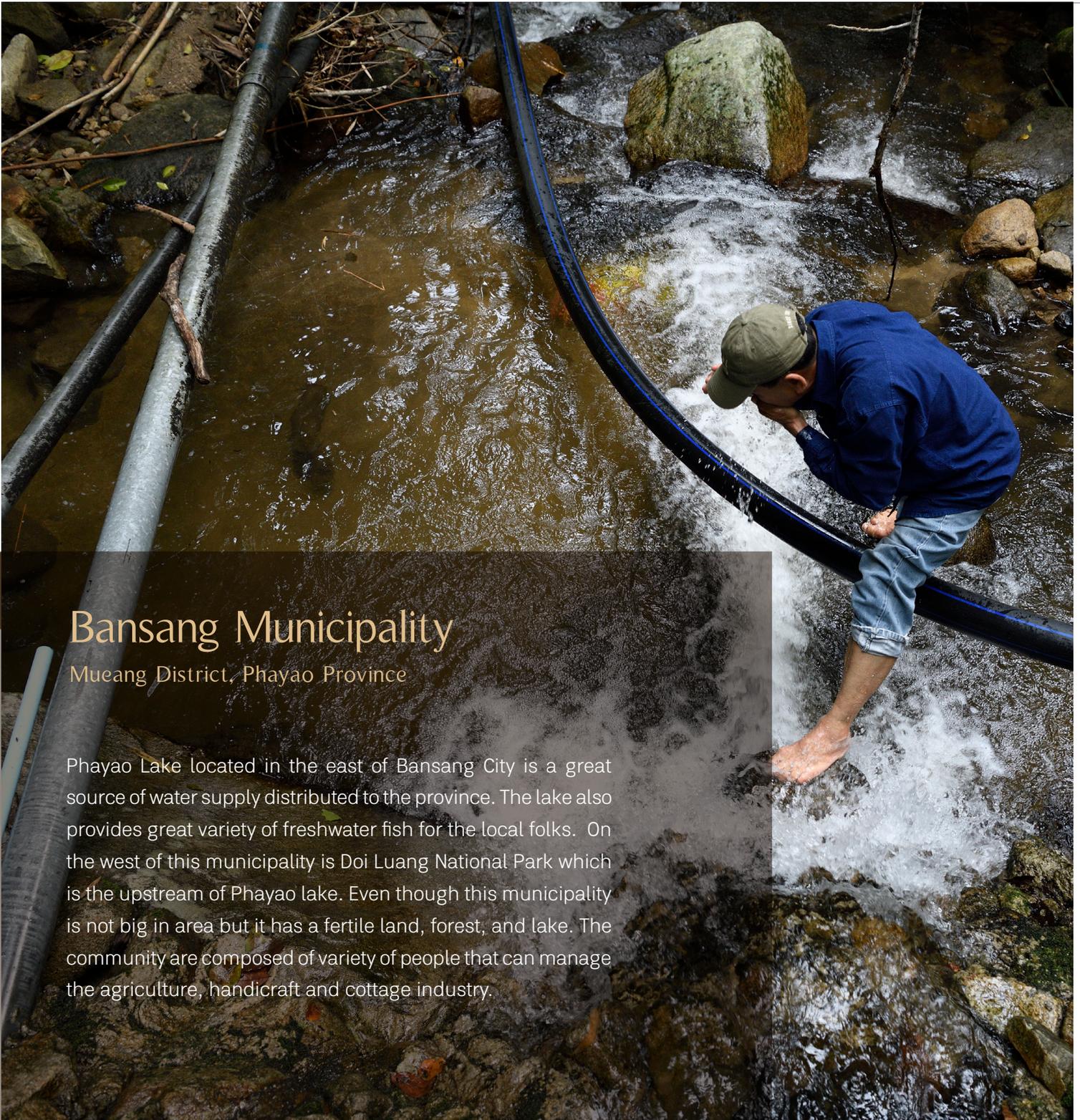
Community Forest : Udonthani Municipality along with the support of Udon Thani Provincial Department of Royal Forest Office helps the community in preserving the 8th Udonthani Municipality community Forest as a natural and environment learning source in raising citizen’s awareness on environmental management.



Keys of Success

- Find the best potential of the municipality for both the physical and social capital and other opportunities from outside. After that building and upgrading the existing municipality’s social capital for better quality and increase the performance in more satisfying result.

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Website : www.udoncity.go.th



Bansang Municipality

Mueang District, Phayao Province

Phayao Lake located in the east of Bansang City is a great source of water supply distributed to the province. The lake also provides great variety of freshwater fish for the local folks. On the west of this municipality is Doi Luang National Park which is the upstream of Phayao lake. Even though this municipality is not big in area but it has a fertile land, forest, and lake. The community are composed of variety of people that can manage the agriculture, handicraft and cottage industry.

- Vision: To be a livable city with better environmental quality, quality citizen and good governance administration concentration
- Population: 4,300 persons
- Area: 23.8 sq.km

Outstanding Point in City Management

Water Resource Management : Both of the community and Bansang Municipality are working cooperatively for the water resource management. The community are benefited for using the natural source of water in their agricultural needs in all season. The activities such as check dam establishment, setting up of systematically water supply system from the mountain servicing the community. Moreover, The Bansang Municipality applied the natural wastewater treatment system for the fermented fish cottage industry.

Forest Conservation Community: Mon Kaew Village is a community located close to the upstream neighboring a conservation forest and a National Park. In the past, a forest degradation was happened in the area. However, with the help and hardworking support of the surrounding communities living in the area, a forest restoration and conservation has been done until the area registered as a community forested area. The provided forest conservation program

includes, survey route for monitoring activity, forest ordination ceremony, reforestation and plantation, tree and plant survey and firebreaks.

Changing Corn Field into Thai Bamboo Forest : Bansang municipality encourage the villagers to plant thai bamboo instead of corn plantation due to the consumer demand and stable price, it will bring a stable condition of household income and reduce the illegal encroachment of forested area. Moreover, thai bamboo is a perennial tree and can hold the moisture in the soil.

Household Waste Management : Inspire the community to carry on the household waste management by waste separation like selling the recyclable waste, making a bio liquid from organic waste, creating a handmad bamboo fence for organic waste composting around the tree, separation of hazardous waste and placing it at the hazardous waste collection point provided by the community for the properly disposal.

Keys of Success

- ▶ The sustainable city management should respect and understand its ecosystem and socio-geography and followed by step by step activities of developmental implementation concerning environment.



▶ Contact : Bansang Municipality 107 Moo 8, Bansang Subdistrict, Mueang District, Phayao Province 56000
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 Email : pranomwkf@gmail.com , Facebook : www.facebook.com/profile.php?id=100021577032540

Takhli Municipality

Takhli District, Nakhon Sawan Province

Takhli Municipality is a semi urban and rural community. This can be noticed by the living style of Takhli citizen who are concentrated on trading where both side of the main road are full of commercial buildings while outside the business zone is an agricultural area.

- ▶ Vision : "Takhli" The happiness city
- ▶ Population : 24,400 persons
- ▶ Area : 16 sq.km



Outstanding Point in City Management

Complete Waste Management System : The Takhli Municipality was assigned by the government as a cluster zone landfill site in servicing the neighboring local administration organization. To accomplish this, it is necessary to set up the waste management systematically from the source until reaching the sanitary landfill site with the public participation approach. For example; waste separation at source, setting up the recyclable waste facility, campaign on no foam and plastic for shopping, using the cotton bag campaign, systematically waste collection, as well as efficient sanitary landfill management.

Efficiency Service Fee Collection : Creation of an efficient service fee collection by combining the waste collection fee with the pipe water charges fee in one bill. It is the municipality's advantage by acquiring more services in getting full collection within the municipal area and solving the problem on manpower limitation. This service fees are used to support the improvement of the pipe water quality standard where Takhli Municipality awarded as the winner of water quality management from the Department of Public Health.

Reduce The Air Pollution from Pig Farm with The Biogas : The community has suffered with the pollution problem from the pig farm such as the odour and wastewater. To solve the problem, the community are joining hand in hand to transform the pig's manure into a biogas for household use and the biogas by products is used as a fertilizer in the plantation. Its benefit is not only to solve the pollution problem but also reducing the household expenses and cutting the conflicting problem between the pig farm and the community.

Home after Class : This is a facility serving the school children after finishing their classes and encourage them to spend their free time doing a variety of activities, thus helping them away from drugs that could ruin their life and it also leads to the reduction of social problem in the future. The children spend their time in the facility doing creativity activities like training, drawing, painting, and many more.

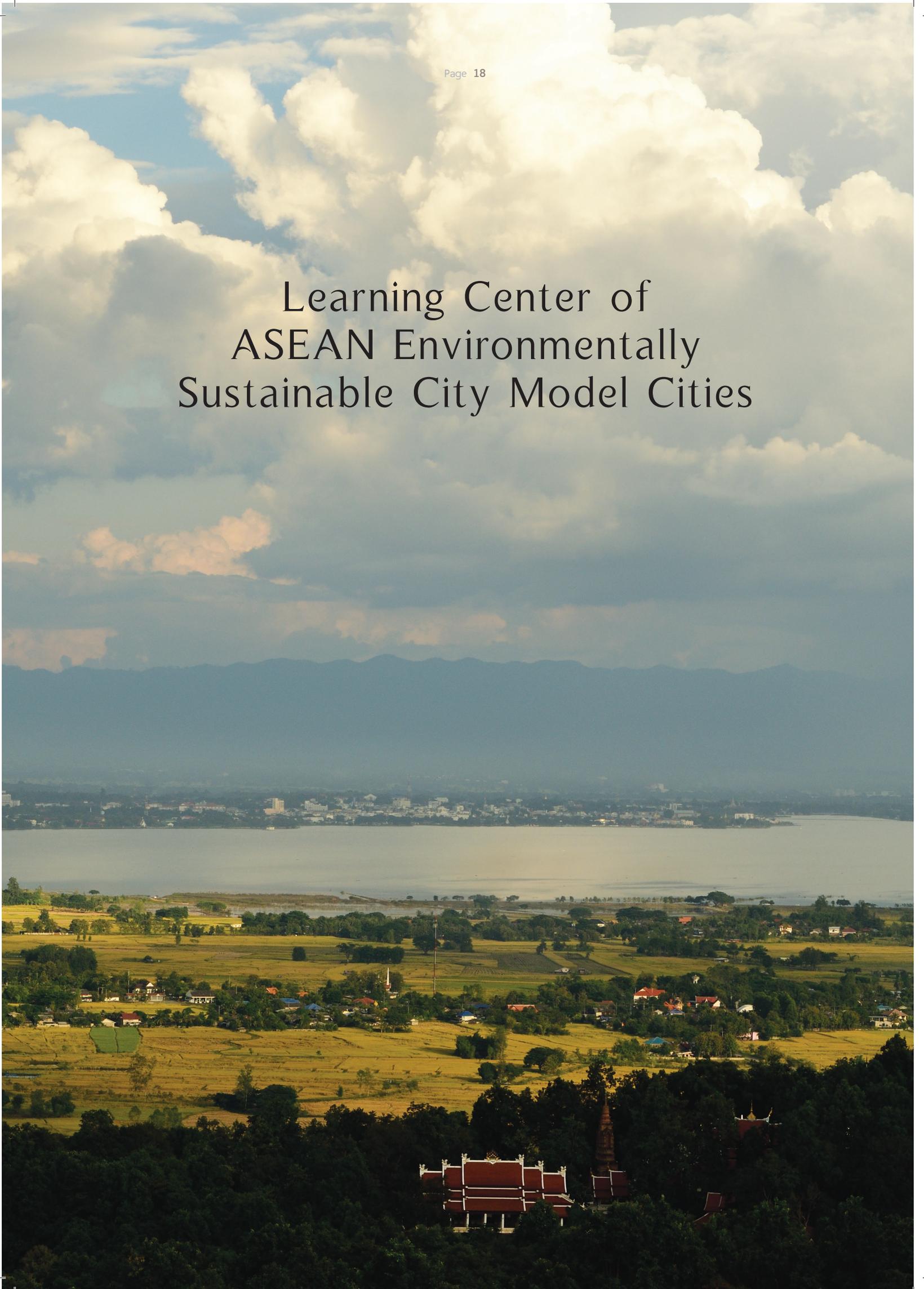
Keys of Success

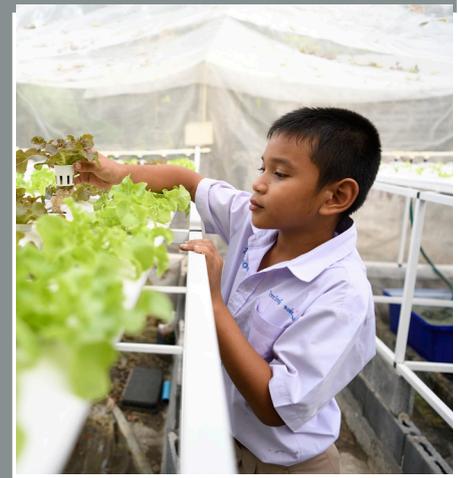
- ▀ A clear municipal and developmental policy and achievement which will focus on the need of the people. Solving the problem as well as strengthening the people's capacity by public participation approach.
- ▀ Integrating and joining hand in hand between the internal unit which has a related work for the better service and achievement. For example; the job integration between public service division, public health and environment division and financial division for efficient service fee collection.



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Learning Center of ASEAN Environmentally Sustainable City Model Cities





Renu Nakhon Municipality

Renu Nakhon District, Nakhon Phanom Province



Learning Center #1: Managing Local Wisdom

Sato (Lao u, or Thai rice wine): Sato is a type of Thai Rice Wine utilizing Thai local wisdom. The method of making lao u, local sticky rice and herbs are gathered and put altogether into a jar. A thin bamboo is then inserted in the jar serving as a straw. Lao u has a sweet, scented taste and is popular to be given to the guests during Thai blessing ceremonies.

Learning Center #2: Conservation of Trees in Municipality

Trees in the municipality are closely monitored and registered. After their height and circumference are measured, their biomass and their carbon absorption capacity are calculated. This is one of a key strategic initiative in expanding and preserving green spaces in the municipality.

Learning Center #3: Model School of Sustainable Environment Management

- Schools are cooperating with the municipality to establish a sustainable economy learning center where the students and the community will learn about concept of sustainable economy as well as utilizing local wisdom. Then, they will be able to raise pigs or chickens, learning fundamental agricultural skills, do organic farming, and making bio-fertilizers.

- Schools implementing a waste-sorting program in order to ingrain students with waste sorting and recycling habits. Students will learn about the differences between recyclable, organic, and general waste.

Learning Center #4: Local Crafts

Renu Nakhon municipality act as a center where people can learn how to weave cloth, including with looms, and sew. These hand-woven fabrics are passed down from the traditional way of dress of the Renu Nakhon Thais where their dress consists of navy cloth with red accents and a red rose embroidered at the chest area. A cherished local heritage, this traditional cloth should be further developed into a quality OTOP (One Tambon One Product) product.

Learning Center #5: Community Participation in Environmental Management

To achieve a role model that recognizes the importance of the environment, every household needs to sort waste. Details of community participation are as follows:

- The revenue generated from recycling of waste by bank members are divided into two parts; one part as income for families, and the other part as welfare funds in case of death.
- Organic waste will be utilized as compost and bio-fertilizers for growing organic vegetables for household consumption.

Learning Center #6: Local livelihood and Culture of Phu Thai Ethnic Group

The municipality is a place where people can learn about the art, culture, dress, traditions, and language of the Phu Thai Ethnic group which is unique to this area. Phu Thai in Renu Nakhon municipality have their own distinctive culture different from other ethnic in the country. The art of acting is a particular noting to worth, as its beautiful form has spread both in Thailand and abroad.



- Vision : Happiness city with zero pollution and cultural heritage.
- Population : 4,700 persons
- Area : 2.40 sq.km.
- Contact : Renu Nakhon Municipality, 326, Moo 9, Phontong Subdistrict, Renu Nakhon District, Nakhon Phanom Province, 48170
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Krabi Municipality

Muang district, Krabi province



Learning Center #1: The 26th Mangrove Forest Resource Development Station (Krabi)

The 26th Mangrove Forest Resource Development Station in Krabi is a place where people can learn about the ecosystem of mangrove forests and how to conserve green spaces. There, people can also study about marine life, the local way of life, recycled trash, and the quality of the air and soil.

Learning Center #2: Khu Muang Community

Krabi serves as a learning center for the community where people can breed and raise giant mud crabs in the natural way. The mangrove forest ecosystem must also be conserved, so that the soil quality will be maintained. Furthermore, the area is a source of food for marine animals and sources of income for the community. Here, people from the community can relax while learning about mangrove forests. The mangrove forest is overseen by the people of the community.

Learning Center #3: Hin Kwang Market

Situated on the edge of the Krabi River, the Hin Kwang Market complements the mangrove forest. The space is a place for people to relax, exercise, and connect to the Hin Kwang port. There, people can also learn about local culture and history. Hin Kwang Market serves as an environmentally friendly way of community tourism, where prior importance is given to the production and consumption.

Learning Center #4: Learning Center of Andaman Culture

Under the concept “Art develops people, people develop cities,” people can learn about the municipality’s history and culture through art and mixed media. The center helps ingrain people about the importance of environmental conservation through various activities. Ton Gla School Andaman aids in developing this initiative to increase green spaces by growing carbon-absorbing trees.



- ▀ Vision : Livable City with people’s happiness and cultural heritage. To be a quality city and hub of public services and eco-tourism.
- ▀ Population : 3,100 persons
- ▀ Area : 19 sq.km.
- ▀ Contact : Krabi Municipality, 292 Maharaj road, Paknam Subdistrict, Muang District, Krabi Province, 81000
Tel : +66 75 62 0601 Fax : +66 75 62 0603
Website : www.krabcity.go.th Email : krabcity@gmail.com

Phichit Municipality

Muang District, Phichit Province



Learning Center #1: Learning Center of Environmental Management, Nam Tok Building, Bueng Si Fai:

This learning center is highlighting and simulating the use of solar energy from a waterfall. The center teaches the people and learn about the history of Phichit. Visitors can also learn how to conserve the environment through videos, festivals, plays depicting the history of Phichit, showcasing recycled products, and demonstrating ways to use renewable energy in everyday life.

Learning Center #2: Division of Public Health and the Environment

The learning center helps people to learn about how the entire waste of Phichit is processed and managed. Some processed waste is being transformed into usable products like home decorations. Presently, the initiative has created many jobs in the community, producing products from waste that are sold both in Thailand and abroad.



- Vision : To be a livable city with administering efficiency and satisfied services.
- Population : 22,000 persons
- Area : 12.017 sq.km.
- Contact : Phichit Municipality, Budsaba road, Muang District, Phichit Province, 66000
Tel : +66 56 61 2119
Website : www.phichitmuni.go.th
Email : phichit@phichitmuni.go.th

Learning Center #3: Environmental Management and Knowledge Center, Ban Tha Luang Public School

With the management operating under the philosophy of sustainable economy, the school functions as a way to teach students for being environmentally friendly. From kindergarteners to high schoolers, students are trained to sort waste, practice financial discipline and sustainable consumption, and planting of vegetables. The teaching equipment in the school are also made from leftover materials.

Learning Center #4: Environmental Management and Knowledge Center, Phichit community buildings (25 locations):

This center is for the people to learn about environmental conservation and protection, according to the philosophy of a sustainable economy. Each community needs to do an activity, such as using bicycles, sorting household trash, planting organic vegetables, or recycling waste. Below are the differences between communities:

1. Soilless Planting Learning Center, Pichit Thani community: Trash such as plastic bottles and vinyls are used as planting containers.
2. Recycled Waste Processing Learning Center, Pracha Uthit community: Ribbons and ropes are braided into products.
3. Organic Vegetable Farming Learning Center: Bio-fertilizers from organic waste are gathered from Pak Thang community.
4. Recycled Paper Processing Learning Center, Busaba community
5. Pak Thang Community Organic Farming Learning Center: This center produces a variety of high quality organic composting formulas and inform people on how to do organic farming as an occupation.

Koh Kha Municipality

Koh Kha District, Lampang Province



Learning Center #1: Environmental Earthworms

This learning center manages organic waste by assembling people of the community into groups to help produce bio-fertilizers and soil fertilizers from earthworm farming. Part of the yield is shared within community members to be used for their organic farming while other part is for sale providing members with additional income and contributing to the welfare and amenities of the community.

Learning Center #2: A Shop Not for Sale!

In the Community: In order to ingrain a habit of sorting and recycling the waste within the household, the community has established a shop where people can bring recycled materials to use in place of cash in exchange for consumer goods. At the shop, the recyclable materials will be weighed and assessed to calculate its equivalent monetary value.

In the Temple: The temple is supporting environmental and waste management in and around the temple areas by encouraging people to keep areas clean, sorting of waste, plant trees, organize temple areas, and grow earthworms for organic waste decomposition. Volunteers and temple staff are assigned to work together to assemble monks' alms and other things that people bring to the temple during festive or religious events to be used as materials to be exchanged with people's recycled materials. Income from this activity will be used to develop the temple as well as in aiding the underprivileged.

Learning Center #3: Model Waste Management Household

The ideal model household in terms of waste management is one that practicing sorts waste into four categories—organic, general, recyclable or re-sellable, and hazardous. This waste sorting scheme successfully reduces waste from 250 to 300 kilograms per day in 2009 to only 80 kilograms per day in the present.

Learning Center #4: Sustainable Homes & Garden Refrigerators

In order to ingrain a self-sufficiency economy, sustainable agricultural lifestyle according to His Majesty the King's life philosophy, Koh Kha Municipality encourages people to grow seasonal fruits and vegetables and to avoid using chemicals in household gardens. Each household is recommended to grow at least seven types of plants for consumption; any leftovers should be shared with the community or for sale. Thus, Koh Kha established a health declaration and healthy public policies in every community in Thailand.

Learning Center #5: Improving Community Landscape

Furthermore, the Koh Kha encourages people in the community to make their homes clean, livable, and hygienic by supporting public and environmental initiatives. The community is responsible for coping up with the program execution, following through, and evaluating themselves according to their initiatives. This helps to tackle the problem of waste overload in a systematic manner; where the solution is found to be a cooperation with the people within the community.

Learning Center #6: Community Forests

Riverbank areas is utilized as a learning base as well as a food bank for the community. The people in the community cooperates through their initiatives in finding almost-extinct trees, herbs, and other rare plants and assigning people to rotate and to look after these plants. For the identified tress, the community should put a cloth surrounding the entire tree. People that come across on rare or endangered plant species are informing the municipality, so that the plant can be conserved and further bred for conservation.

- ▶ Vision : To be a livable city with a better quality of life, well economy, suitable transportation, good governance, environmental concerned, learning society, caring society and strong community.
- ▶ Population: 5,000 persons
- ▶ Area: 4.78 sq.km.
- ▶ Contact : Kohkha Municipality, 399 Moo 3, Sala Subdistrict, Koh kha District, Lampang Province, 52130
Tel : +66 54 28 1066 Fax : +66 54 25 2402
Website : www.kohkha.go.th Email : kohkha@hotmail.com

Nong Teng Municipality

Krasang District, Buriram Province

Learning Center #1: Leaning Center of Wisdom

Leaning Center of Wisdom is a place where people can learn about agriculture, energy production, natural resources, and the environment. It should be a hands-on center where people can test, demonstrate, research, and discover more knowledge and technical skills. This way, the community will be able to implement all these know-hows on their own, a way of life that aligns with the Late King Bhumibol Adulyadej's initiatives. The community will also be able to utilize their wastes, leftover materials, or use things in the most efficient possible manner. Ultimately, the costs of environmental management should reduce, with the help of tools such as weed-cutting machines, trailer sweepers, sofas from vehicles, and energy-saving ovens. Lastly, there are initiatives to use solar cell energy in place of electrical energy, water pump using solar cells that produce tap water.

Learning Center #2: Ban Chan Community Forest

The Ban Chan Community Forest is a natural public forest sitting on the edge of the Chi River. A rich and plentiful land, the forest is known for its biodiversity. Ban Chan forest is crucial to the livelihood of the community, serving as a food source, learning and research center, as well as a place for traveling and relaxation. Geographically, the forest also functions as a water wall that prevents the Chi River from flooding into agricultural areas. Its conservation and management are overseen by the board of the community.

Learning Center #3: Recycling Bank

The municipality is running as a place where the community can learn about recycling through hands-on participation. This recycling bank is managed by the community.



Learning Center #4: Raising Earthworms for Waste Management at Ban Nong Takrong

Nong Teng municipality is also running a place where the community can learn how to manage organic waste. Households can sort their waste and raise earthworms, resulting in bio-fertilizers and compost products for agricultural use. Raising earthworms will help decrease costs comparing the use of chemicals in farming.

Learning Center #5: Community Water Supply System at Ban Nong Teng Yai, Moo 17

The community uses solar energy in place of electricity to pump water during daytime. Overseen by the community, this system suffices to supply tap water to all of the people.

Learning Center #6: Sustainable Economy Learning Center at Ban Khok Khamin, Moo 5

On December 16, 1979, King Bhumibol and Princess Sirindhorn visited the area, giving decrees to the Royal Irrigation Department to build the Nong Kut Yai reservoir in 1980. With an area of approximately 160 hectares, the reservoir serves to keep water and aid the agricultural areas through drainage distribution system. Together with the establishment of the reservoir, the agriculture of surrounding areas also changed; from planting monoculture crops, farmers implemented seasonal rotation farming. This new practice generates income for farmers even after farming season. In addition, people also assembled in formal groups to strengthen their community power. Some of these groups including the group for new agricultural organization are, cow raisers, fruit farmers, and organic jasmine rice farmers.

Learning Center #7: Community Global Warming Learning Center

Located in Ban Chan School, Moo 6, this learning center is part of the Community Power Program to Build a Livable, *Sustainable City and Reduce Global Warming*. This is a place where people in the community, together with other interested people, including kids and youths, can learn and understand more about global warming. The people can find information on how practically reduce global warming in their daily lives as well as an information about the municipality's initiatives in adapting various global warming conditions.

Learning Center #8: Luang Por Chei Museum Heritage

Guru Raj Temple has a rich cultural heritage and is preserved as a museum for the people. Inside the temple houses a statue of Luang Por Chei (Pra Kru Sirisilawimol), recognized as a foremost monk among the Nong Teng people. Silk and cotton cloths in a variety of patterns are also showcased at the temple, to educate visitors on how different tribal people wearing a dress. Several groups of people are presenting in the temple such as the Kuy, Laos and Cambodians where they are all beautiful in their own way.

- Vision : To be a livable city and environmental sustainability.
- Population : 12,000 persons
- Area : 71.17 sq.km.
- Contact : Nong Teng Municipality,
Ban Nong Kham Moo 14, Nong Teng Subdistrict,
Krasang district, Buriram Province, 31160
Tel : + 66 44 66 6466 Fax : + 66 44 66 6467
Website : www.nongteng.go.th
Email : nongteng2555@hotmail.co.th,
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Chiang Rai Municipality

Muang District, Chiang Rai Province

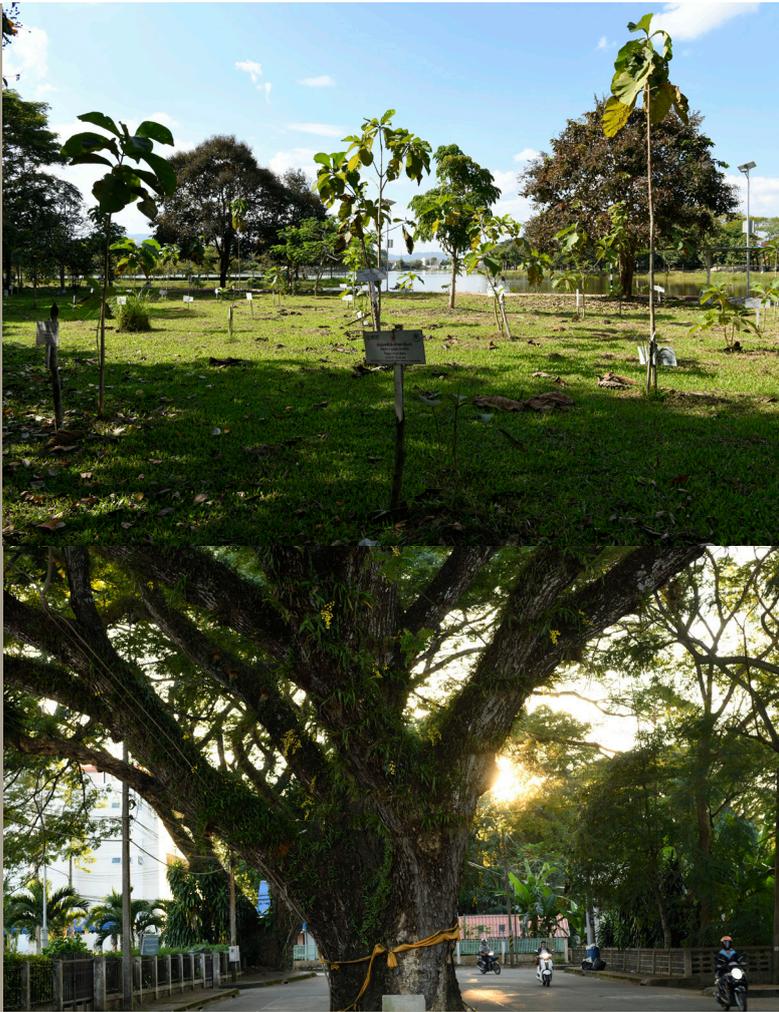
Learning Center #1: Cultural Diversity

Chiang Rai is excellent for showing the cultural development of the past to the present day, especially in the area of the Kok River. The municipality development is also a testament to the connection between the people and the river. Cultural heritage in Chiang Rai is central to the revival of the Kok River and the conservation of the environment.

Learning Center #2: Urban Agricultural Ecosystem

The Pa Ngiu community is a model community in terms of food safety. Under the program Organic Agriculture, the community plants various types of seasonal vegetables. Production and sales are managed by the community for their own consumption. Furthermore, the community serves as an agricultural school for students coming from different schools. Pa Ngiu community is also an agricultural tourism destination and a good area for cycling.





Learning Center #3: Wetland Ecosystem

Nong Pueng is a public wetland with the geographical characteristic of “monkey cheeks.” Serving as a large water reservoir in times of drought, the wetlands helps to slow down water flow during flood season that might otherwise affecting Chiang Rai by flooding. The area around Nong Pueng is filled with large trees, an ecosystem planted using the Miyawaki method. Nong Pueng is essentially a science classroom for students from all over Thailand to not only learn about conservation and biodiversity, but also providing platform for the people to have a hand in helping to conserve trees by measuring trees and reporting their growth through the Internet.

Learning Center #4: Climate Change Adaptation in Food Security and in Anticipation of Disasters in Chiang Mai

The community is divided into zones. The first zone is for people to learn about Chiang Rai’s climate change and possible disaster situations; it is also a place where people can collaborate. The second zone is established according to the philosophy of sustainable economy, simulates agricultural ecosystem for food security in times of need. The third and last zone is a shelter where people can stay in times of disaster; here, people will learn and be reminded of the possibility of such cases, becoming better prepared for any disasters due to the climate change.

- Vision : To be a livable and happiness city
 - Population : 73,000 persons
 - Area : 60.85 sq.km.
 - Contact : Chiang Rai Municipality, 59, Utaakit road, Wiang Subdistrict, Muang District, Chiang Rai Province, 57000
- Tel : +66 53 71 1333 Fax : +66 53 71 3272
 Website : www.chiangraicity.go.th
 Email : info@chiangraicity.go.th

Chiang Khian Municipality

Thoeng District, Chiang Rai Province



Learning Center #1: Conserve the Forest and the Water

Chiang Khian municipality has a community forest covering an area of approximately 841.44 hectares. A rich, plentiful land home with a variety of plants and animals, the forest is an important source of food for the community. In addition, the forest is also the headwaters of two rivers where the community are looking for it. The community is responsible for the forest demarcation, rules and regulations regarding forest use, and assigning people to conduct patrols. Patrols will prevent intruders or people using the forest in a wrong way. Other activities include reforestation, forest inventory, tree registration, canal dredging, and releasing of fish into the river.

Learning Center #2: Waste Sorting

Households is a role model in terms of waste sorting and expected to separate trash following the four categories namely:

1. Recyclable Waste: People bring this waste to the waste recycling bank in the community. This waste is managed by the community where a clear rules and regulations are established to enable smooth waste management.
2. Organic Waste: Households are encouraged to turn their organic waste into a compost and bio-fertilizers.
3. General Waste: In the household, the sorted waste has to and keep inside their household while waiting for its collection by the municipality waste truck. The municipality waste truck collecting the trash in every two to three times in a month.
4. Hazardous Waste: The municipality has one trash can for hazardous wastes per community. Each month, the municipality collecting hazardous waste and put in an area designated for hazardous wastes.



Learning Center #3: Sustainable Economy

The household role model that received the King's Cup from HRH Princess Maha Chakri Sirindhorn are the one that have lived their lives according to the philosophy of sustainable economy, preserving local wisdom and protecting the environment. These households are concerning about food Safety and environmentally friendly consumption with regards to agriculture, livestock, and being organic. They also use rice husk biomass burners, local herbs, raise bees, and produce local products, which provides addition income for the elderly.



- Vision : To be a livable city with cultural heritage and moving towards ASEAN Model city on sustainable environment.
- Population : 4,300 persons
- Area : 76.3 sq.km.
- Contact : Chiang Khian Municipality 65 Moo 7, Chiang Khian Subdistrict, Thoeng District, Chiang Rai Province, 57160
Tel : +66 53 91 8086 Website : www.chiangkian.go.th
Email : info@chiangkian.go.th

Phanat Nikhon Municipality

Phanat Nikhom district, Chonburi Province



Learning Center #1: Public Park:

The initiative aims to conserve and register big urban trees. Thus, a green municipality can become a place for relaxation. The program aims to achieve at least 9 square meters of greenery per person, according to the standard of the World Health Organization. In addition, the initiative includes measuring the tree's height and circumference, registering and calculating the amount of carbon absorption capacity of big urban trees.

Learning Center #2: Srikittiwannanusorn municipal school 1; The Model School of Sustainable Environment Management

This is a learning center born out of cooperation between local administrative organizations, the school board and teachers, students, and members of the community. The school helps to decrease carbon emissions through various activities, including planting organic vegetables and local herbs, creating compost and bio-fertilizers, establishing a recyclable waste bank, creating products from used items and herbal products, and avoiding the use of foam and other one-time-use materials.

Point #1: Planting Organic Vegetables:

It is a place where students and other interested people learn various ways to plant organic vegetables for household use.

Point #2: Garden of Local Herbs:

This garden helps students learn how to grow local herbs and encourages them to use for medicinal purposes. The garden also yields herbs that are used to make herbal products to be given to their parents and other people in the community.

Point #3: Making Compost:

Making a compost helps to reduce the amount of organic waste in the school; the activity helps in the school's organic farming initiative. The compost is used for soil remediation for many different kinds of plants. This way, the plants will not be affected by diseases or insects.

Point #4: Bio – Liquid from Organic Waste:

Another way to reduce organic waste around the school is to make bio- liquid. Bio-liquid helps the community by getting rid the undesirable odors, treat wastewater, decompose organic matter, and can be used in the pretreatment of waste.

Point #5: Recyclable Waste Bank /

Products Made from recyclable waste:

This initiative helps to encourage systematic waste sorting and management of recycled waste. In addition, students will also be ingrained with the habit of waste sorting and the value of environmental conservation.



Learning Center #3: Learning Center for the Livable Communities of Phanat Nikhom: Environmentally Friendly Products

The Learning Center for Livable Communities combines the organic waste collected from households and fresh markets with local wisdom and traditional herbs to make healthy, environmentally friendly products that people can use in their daily lives, including bio-fertilizers. This way, the people of the community are truly a part of the holistic process of wastewater treatment.

- ▶ Vision : To be a livable and sustainable city with the good governance based on the sufficiency economy philosophy, and public participation.
- ▶ Population : 10,989 persons
- ▶ Area : 2.76 sq.km.
- ▶ Contact : Phanat Nikhom Municipality
 22/7 Ban Kao road, Phanat Nikhom Subdistrict,
 Phanat Nikhom District, Chonburi Province,
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FIRST PUBLISHED IN 2018

ARTWORK, PHOTOS AND ORGANIZE

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