



ศูนย์บริหารจัดการน้ำจังหวัดแพร่
Phrae Water Resources Management Center

Project on Sustainable Development's City for Better Livelihood

Phrae's Situation (Past)

Provincial Water
Management
Operation Center:
Phrae Province

1995

2001

2011

2013

2016

Big flood in Yom river and Phrae because of the LOIS storm

Land slide and flash flood from Wiang Kosai National Park, Wang Chin District

Big flood in Phrae because of NOCK-TEN storm

Drought crisis in Yom river

Provincial Water Management Operation Center: S&T for Water Management at the provincial level



Goal 13: Take urgent action to combat climate change and its impacts

Using area specific information to monitor and manage water situation both normal and crisis

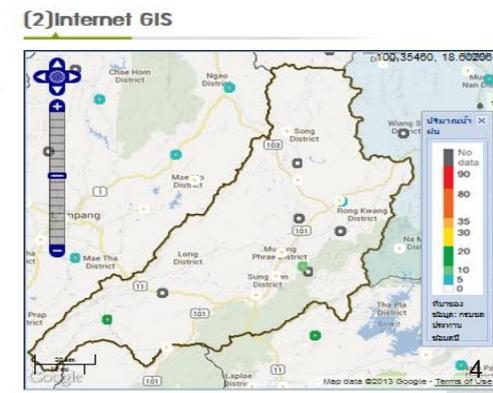


(1)ปริมาณฝน

ฝน 24 ชม. ฝนวันนี้ ฝนล่าสุด

สถานี	อำเภอ	ฝน (มม.) ▼	ล่าสุด
วังชิ้น	วังชิ้น	14.6	18:00
ขอมแฮะ	เขื่องแพร่	4.6	18:00
บ้านแมะเจด	วังชิ้น	3.0	18:30
บ้านแมะจอ	วังชิ้น	0.5	18:30
คลองขวาง	เด่นชัย	0.5	18:15
บ้านแมะเขิล	สูงเม่น	ไม่มีฝน	19:00
บ้านนาทูน	วังชิ้น	ไม่มีฝน	18:45
บ้านโคกข่าหิน	สอง	ไม่มีฝน	18:45
บ้านท่าไร่ไผ่ใต้	สูงเม่น	ไม่มีฝน	18:30

* ปริมาณฝนสะสม ที่ตกใน 24 ชม นับจากเวลาที่ระบุ



S&T Adaptation

“DSLMM” for Community Water Resource Management

DSLMM 

Water Resource Management aims to create understanding of local people about their water supply, water demand, waterway in the area, sustainable management using water table, and identify source of budgeting for management

D	S	L	M	M
Water D emand	Water S upply	L ogistic of Management	Water M anagement	M oney (Budget of water)

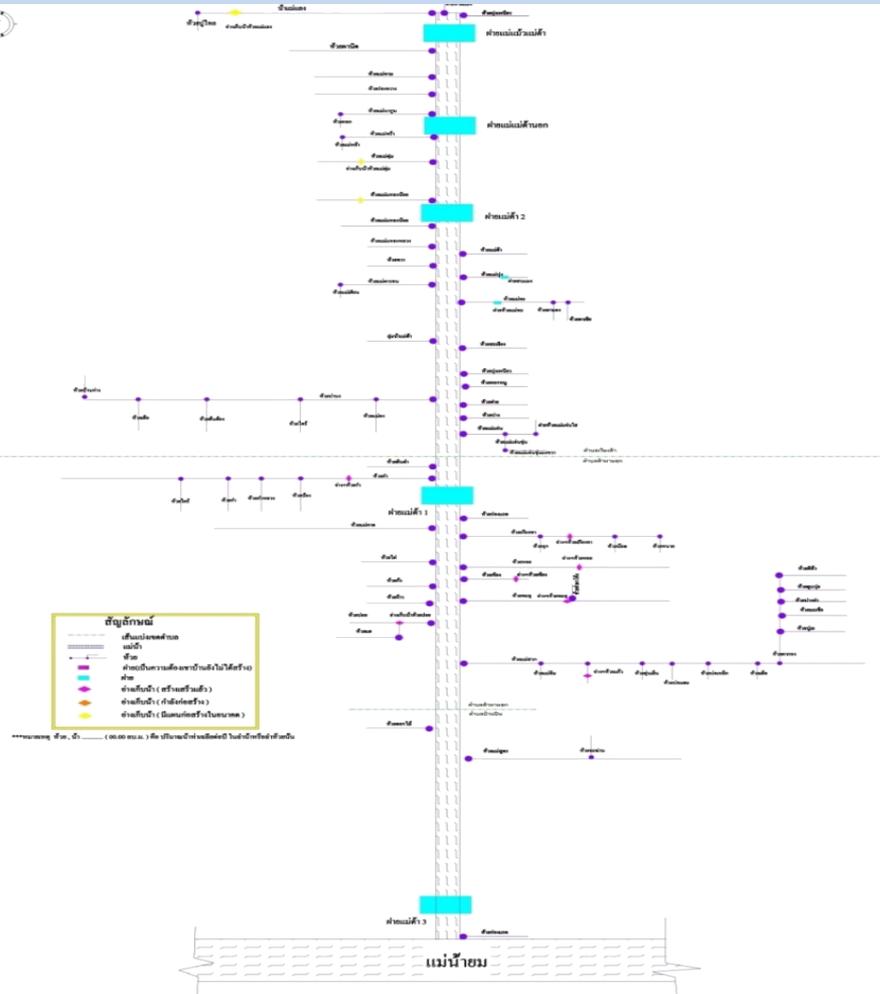
* Created by Mr.Apichat Todilokvech

Example of DSLMM in Maeta Basin

Located in 3 sub-districts are;
Wiang Ta, Ta Pha Mok and Ban Pin Sub-district

Maeta Water Balance

D Demand	Water demand for agriculture and consumption 57,288,449 m ³ /year
S Supply	Runoff amount 146,000,000 m ³ /year 9 Small reservoirs contain 2,473,000 m ³ /year
L Logistic	Sub-district water diagram
M Management	Amount of water management, reserve water 54,815,449 m ³ /year
M Money	Budget planning



Sustainable Development's City: Phrae Community



Goal 2: Zero Hunger

Goal 11: Make cities inclusive, safe, resilient and sustainable

Phrae community realize that the **organic farms** is the **food bank** and very important to their health. They expand the farms to both adults and youths in the community

Organic Farms



Food Market from the Forest



Collaboration with Lao PDR

Phrae Community and Maejo University (Phrae Campus)

cooperate on agricultural techniques for
clean food purposed

expand



National University of Laos (Dongdok Campus)

- Conference for social forestry
- Study visit to local forest
plantation together

Maejo University transfer the Biopesticides knowledge to plant the clean food



Maejo University work with Lao PDR



Project on Sustainable Development's City for Better Livelihood

Project Area of SDGs



Goal 2: Zero Hunger

Goal 11: Make cities inclusive, safe, resilient and sustainable

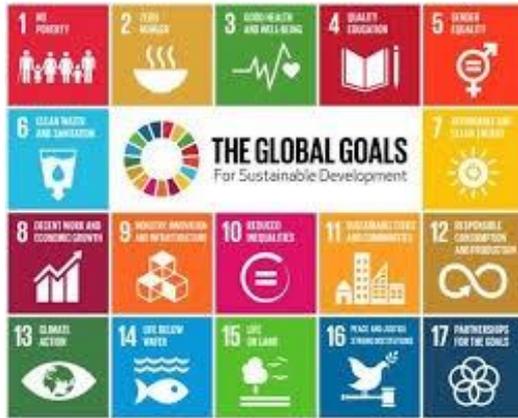
Goal 13: Take urgent action to combat climate change and its impacts

Project Platforms

sustainable development for better livelihood



***Project on Sustainable Development's City
for Better Livelihood***



Goal 11:
Make cities inclusive, safe, resilient and sustainable

Phrae



Sustainable city
and community

???

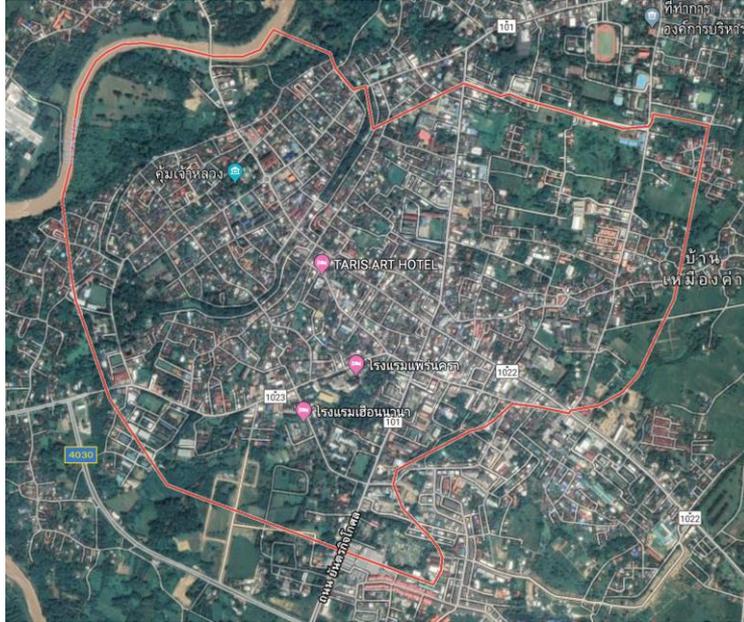
Phrae



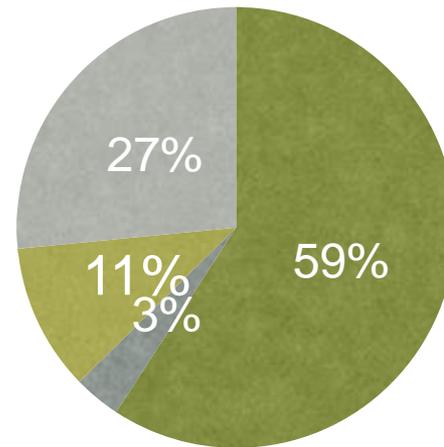
Phare
Urban
Forestry

Pilot project

Green space in Phrae municipality



Type of GS	Area / <u>sq.m.</u>	% of total GS	% of total area	GS / <u>sq.m.</u> / person
Natural GS	303,328.00	59.22	5.11	18.11
Tended GS for pleasure	17,650.00	3.45	0.30	1.05
Street trees'	55,300.00	10.80	0.93	3.30
Tended GS for use	135,968.30	26.54	2.29	8.12
Total	512,246.30	100.00	8.63	30.59



- Natural green spaces
- Tended green spaces – for pleasure
- Street trees
- Tended green spaces – for use

Green space in Phrae municipality



Phrae Urban forestry

Project goals

- Raise public awareness about the importance of trees in the city.
- Caring and conserving trees in the city.
- Helping local agencies consider where and how to invest in green space development.
- Help assess the variety of species and detect various threats from pests and plant diseases that may occur in the province.

Phrae Urban forestry

What has been done

Phases 1: Urban forest in Phrae old city
(Data collection)



Phrae Urban forestry

What we are doing

Phases 2:

2.1 Plant guide book

2.2 Analyze the dust holding efficiency of plant species



ตารางแสดงประสิทธิภาพของพืชในการดักจับฝุ่น

ชื่อไทย	ชื่อวิทยาศาสตร์	ประสิทธิภาพในการดักจับฝุ่น
ไม้ดอก		
ศรีตรังอินเดีย	<i>Theinbegia Grandiflora (Roxb. Ex Retzler) Roxb.</i>	***
ตีนเป็ดนางฟ้า	<i>Quisqualis indica L.</i>	***
แฉะเขนย	<i>Antigonon leptopus Hook & Arn.</i>	**
ฉัตรใบ	<i>Clitoria Tematea L.</i>	**
แฉะขจร	<i>Pennisia Volubilis L.</i>	**
นกกระจก	<i>Passiflora foerida L.</i>	***
ไม้ใบเขย		
ไผ่ตง	<i>Thyrsostachys Staminea Gamble</i>	***
วงศ์ตีนเป็ด	<i>Begonia Spp.</i>	**
ต้นสมอจีน	<i>Leonotis Nepentifolia (L.) R.Br.</i>	**
ไม้พุ่ม		
วาจนา	<i>Dracaena fragrans (L.) Jack</i>	**
แก้ว	<i>Murraya paniculata (L.) Jack</i>	***
พรางนางพญา	<i>Caesalpinia Pulcherrima (Mill.) Swartz</i>	***
นริศฉัตร	<i>Nyctanthes Arbor-Tristis L.</i>	***
ทองอุไร	<i>Tecoma Stans (L.) Kunth.</i>	***
โมก้าน	<i>Wrightia Religiosa Benth. Ex Kurz</i>	**
กระดังงา	<i>Syzygium Australe (G.Crawford. Ex Link) B.Hyland</i>	***
ไม้ต้น		
ลำไย	<i>Diospyros Burfoida (Blume) Hiem</i>	**
ลิ้นจี่	<i>Smilax Asper Lour.</i>	**
ทุเรียน	<i>Theopelta Papouha (L) Sol. Ex Correa</i>	**
ทุเรียน	<i>Albizia Lobbekii (L) Benth.</i>	**
ชิงช้าไฟฉาย	<i>Senna Tincoriensis (DC) H. S. Irwin & Bamesby</i>	**
แปรงจิ้งจอก	<i>Bassosonia Papyrifera (L.) Thun. Ex Vent.</i>	**
ตีนเป็ดฝรั่ง	<i>Averrhoa Bilimbi L.</i>	**
โมก้าน	<i>Holopterna Pubescens (Buck-Horn) Wall. Ex Guban</i>	*
โมก้าน	<i>Wrightia Pubescens R. Br.</i>	***
ศุภางค์	<i>Phanera Spp.</i>	***
ชิงช้าไฟฉาย	<i>Cassia Stamea Lamk.</i>	**
ตะขอมิ่ง	<i>Muntingia Calabura L.</i>	***
ตะขอมิ่ง	<i>Lagerstroemia Floribunda Jack</i>	***
ต้นตีนเป็ด	<i>Lagerstroemia Speciosa (L) Pers</i>	***
เหต	<i>Lagerstroemia Tomentosa C.Presl</i>	***
จามจุรี	<i>Samanea Saman (Jacq.) Merr</i>	***
ผักเสี้ยน	<i>Spathodea Campanulata P.Beauv.</i>	***
ชมพูอินเดีย	<i>Tabacca Rosea (Berthol) Dc</i>	**
พ่าง	<i>Trema Orientale (L) Bl</i>	**

Example of a plant guide book and a table of the dust holding efficiency of plant species

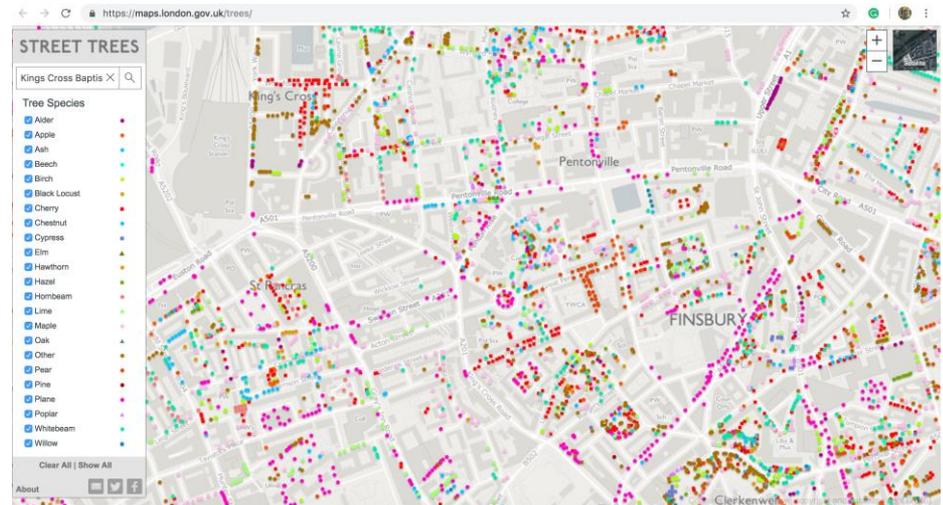
Phrae Urban forestry

Phases 3:

3.1 Open data for everyone

- Guideline for urban design and planning

What we are going to do next



<https://maps.london.gov.uk/trees/>

Phrae Urban forestry

What we are going to do next

Phases 3:

3.2 Aesthetic and Urban landscape

- Tourist attraction
- Tourism economic



Pink trumpet, Nakornpathom



Cassia fistula, Suphanburi



Yang Na, Chiangmai

Phrae Urban forestry

Phases 3:

3.3 Urban green network

- The concept —> a city in the park.
- The park will expand to connect with various public spaces in the city, activity areas, roads, bicycles, pedestrian areas.
- The city more beautiful and benefiting from green spaces.



The Rose Fitzgerald Kennedy Greenway is a linear park located in several Downtown Boston neighborhoods.

What we are going to do next



The Rose Fitzgerald Kennedy Greenway

Phrae Urban forestry

What we are going to do next

Phases 3:

3.4 Urban farming



Growing or producing food in a city or heavily populated town



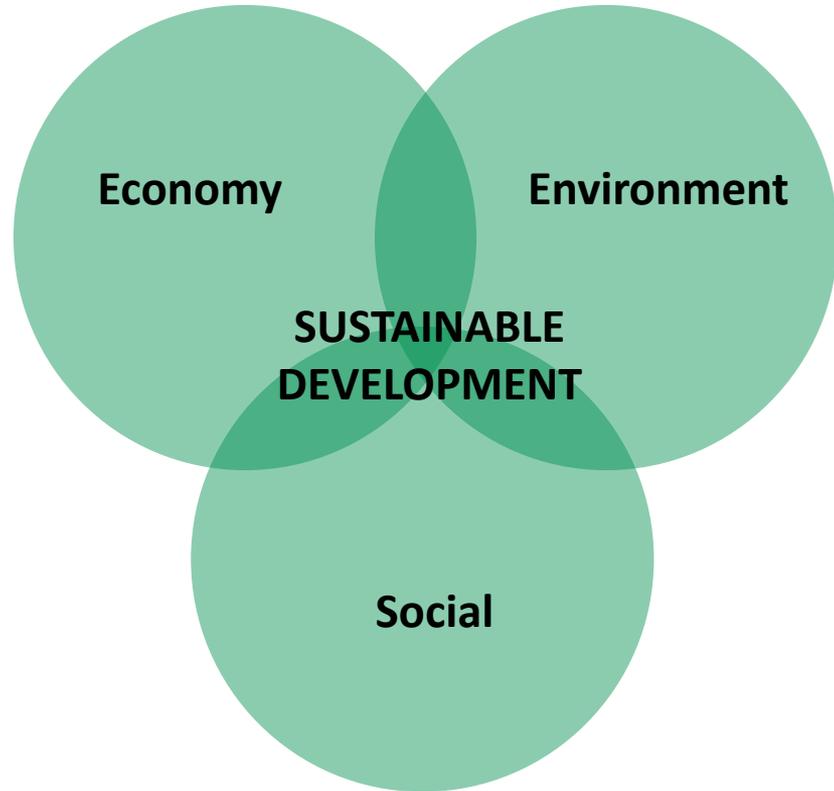
Organic rooftop vegetable and herb garden on top of high-rise building in Bangkok



Bangkok Farmer's Market

Benefit of urban forest

- Storing carbon
- Aesthetic
- Tourism development
- Biodiversity and habitat
- Air pollution
- Better health for people
- Reduce crime



Project on Sustainable Development's City for Better Livelihood

Project Partners

Japan

The National Agricultural Research Organization (NARO)

+

Thailand

Hydro and Agro Informatics Institute (HAI)

+

Phrae Community

+

Maejo University (Phrae Campas)

+

Lao PDR

National University of Laos (Dongdok Campas)

Project Mechanism

Knowledge Sharing

1. **learn the agricultural techniques** among NARO japan with HAI and Phrae community Thailand at APAN-Agricultural Working Group (AgWG) Meeting*

Doing

2. To encourage Phrae community to **be the prototype of sustainable development city** for better livelihood, and local economy

Expanding

3. **Expand the knowledge to Lao PDR**, then, to ASEAN member countries.

Project on Sustainable Development's City for Better Livelihood

Project Outcomes

- the natural and environment development for **climate changed resilience** and the better solution of **disaster risk reduction**.
- the new technology for the organic smart farms which being the clean **food security**



Project on Sustainable Development's City for Better Livelihood

Project Budget

Total budget = 15,000 USD

No.	Details	Budget (USD)
1	Knowledge Sharing at APAN – AgWG Meeting (Thai = 2 persons + Lao PDR = 2 persons) [4 persons x 1,200 USD]	4,800
2	City Development – Phrae Community	7,000
3	Knowledge Sharing with National University of Laos (Dongdok Campas)	3,200
Total		15,000