

# **KMUTT SOCIAL LAB & COMMUNITY ENGAGEMENT : 4 Decades of KMUTT's Experiences**

Royal Project Foundation and King's Recommended  
Project Supporting Center (RSC)

King Mongkut's University of Technology Thonburi  
(KMUTT)

# ROYAL PROJECT FOUNDATION AND KING'S RECOMMENDED PROJECT SUPPORTING CENTER

## 4 Decades of Social and Rural Development

### 1982 - 1994

#### Doi kham Royal Food Processing Plants

In Fang District, Chiang Mai, Mae Chan, Chiang Rai, Lahan Sai, Buriram and Tao Ngoi, Sakon Nakhon.

- Research, development and application of engineering works and food processing.
- Develop and improve production process.
- Develop farmers' competencies through agri-industry model and contract farming systems.

### 2004 - Present

#### University Engagement and Social Labs

- Developing careers and quality of life for community areas and marginalized groups.
- Support learning and life skills for KMUTT staff and students.
- Learning areas and practical works practice for students (cooperative education, engineering-skills camp)
- Social laboratory for personnel and students to learn about Thai society

### 1995 - Present

#### Royal Project Foundation

Energy, engineering and environmental to support agricultural system (3E for A).

4 stations/35 centers in 6 provinces,

Eg: greenhouse systems, precision agriculture, water management, clean energy, processing – value added to farm products.

Developing farmers' competencies.

#### Royal initiative project of Her Royal Highness Princess Maha Chakri Sirindhorn

Academic works for learning and improving the quality of life of marginalized people. Under the development plan for children and youth in remote areas. Omkoi, Chiang Mai, Nan, Mae Hong Son, Buddhist Novice Schools, Phang Nga Tsunami Disaster Schools.

### 2019–Present (Post Covid –19 and Next Normal)

#### R&D to support sustainable development and National Development Strategies

- KMUTT Development Plan 13 and university mission towards sustainability
- Raise community's production capacity with inclusive innovation.
- Comprehensive and accurate solution to poverty problems including basic health services.
- Reducing learning loss and educational inequality
- to solve the problem of children dropping out (zero dropout)

# University with Community and Society

## to develop Thailand 4.0 and escape the middle-income trap

### KMUTT Sci & Tech + Innovation

#### Collaboration

- KMUTT social engagement
- Integrated research and curriculum to community needs.
  - Develop and facilitate learning community.
  - Full-time researchers in the village.
  - Create social innovation in the village.
  - IT mechanism to promote education opportunity and equality.

#### Existing Social Environment

The marginalized group comprises diverse socio-cultural backgrounds with incomes and living standards below the national average. These communities are remote and difficult to access, with inefficient market mechanisms and a lack of basic state services (infrastructure, healthcare, education, and constitutional rights). Their livelihoods and production systems are heavily dependent on nature.

#### 4-in-1 Model

1. Well-being and life quality improvement
  - Alternative crops management
  - Change agent development
2. Decrease inequality
  - Community resource-based management for sustainability
3. Develop knowledge and high-quality academic services
  - Develop and engage with community
  - Sustainable growth and inclusive innovation
4. Social Lab
  - Learning and growth with the community
  - Continuous improvement program

#### 3EforA

3EforA: Engineering, Energy and Environment for Agriculture to support the Royal Project Foundation

- Phufa Development Project, Nan Province
- Thailand Lifelong Education for Rural Development (Thai LERD)
- Science in Rural Schools (SiRs) to support Children and Youth Development in rural areas under the patronage of Her Royal Highness the Crown Princess Maha Chakri Sirindhorn
- Dual curriculum for remote schools, and promote vocational education for rural students

- Learning Community Enrichment, Community Based Enterprise, Incubation and Technical Services for Royal Factory, Sakon Nakhon Province
- Managing people in forest, Nahaew District, Loei Province
- Community Enterprise Incubation Unit, Non Din Daeng District, Buriram Province
- Sisaket Province: SEEM for PhraPariyattidhamma Schools under Her Royal Highness Princess Maha Chakri Sirindhorn
- Praratchathannayao Secondary School and Research Collaboration with Eastern Forestry Community Network
- The Eastern Economic Corridor (EEC) in Rayong: Living and learning City
- Collaboration with Thung Khru, Bang Khun Thian, Ratchaburana and Jom Thong District Under the Program of Career, Quality of Life and Environmental Development
  - People with Disabilities: Practice-Based Training for Reskill, Upskill, and Newskill to Serve Government and Private Sector
  - Our Khung BangKachao Project: Social Collaboration with Collective Impact for Sustainable Green Growth
- Ratchaburi Education Service Center: University for Western Region Development
- Science and Technology Learning Integration for Rural Schools in Phang-Nga Province
- Clean Energy for Koh Mak Noi Island, Phang-nga Province
- Career and quality of life development Bioresources conservation Waeng District, Narathiwat Province



# KMUTT SOCIAL LAB for Royal Project Foundation

## Community Integrated Learning Platform Addressing Fundamental Real World Problem

### VISION

Engineering Energy and Environment for Agriculture 3E for A



### MISSION

Science and Technology for Community



### UNIQUE APPROACH

Action Research on Area Based for Teacher, Researchers and Student And Engagement with The Community



### Clean & Green Energy

- Renewable Energy in Remote area
- Solar Cell
- Win Turbine Generator
- Hydro Turbine Generator



### Social Entrepreneur

- Change Agent
- Re-Skill, Up-skill, New Skill
- Social Enterprise



### Smart Farm

- Green House
- Big Data
- Weather Control
- Precision Agriculture



### Zero Waste

- Food Processing
- New Product
- Value Added



### Value Chain

- Cost Analysis
- Logistic
- Marketing



# KMUTT Social Lab as Supporting Mechanism for KMUTT Entrepreneurial University

The Social Lab is a learning space for KMUTT students and staff to lead sustainable development, applying knowledge to create social and ecological impacts for grassroots-level national development.

Support learning spaces for students and staff to become change leaders.

- Support 3% of students (~ 420 people) in SDG through:
  - Gen-Ed and Gen 232
  - Internships, Co-op, Local WIL
  - Student projects
- 1% of change leaders (140 people)
  - Design the KMUTT Journey: Entrepreneurial Mind - Liberal Arts.

## SO6-KR2

Change Agent W.  
Green Heart  
3% General  
1% Global  
Leadership

## SO2 & SO3

Relevance excellence research and research utilization and impact

## Relevance Excellence Research

Use the FF-8 mechanism (Inclusive and Sustainable Development) to create technology transfer mechanisms and business incubation units for social impact.

## Social Lab

## Design Impact Measurement and Management (IMM)

- Group and categorize social engagement activities to align with SDG goals.
- Establish IMM and follow-up evaluation.
- Prepare SDG Report + THE SDG Impact.

## SO6-KR4

Target areas that achieve goals. SDG & HAI  
100% participation  
10% Engage with  
SDG impact

Change our stakeholder to be KMUTT customers

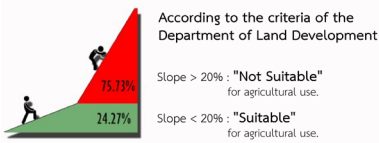
## SO1

High Quality S&T manpower  
20 people of local  
Change agent become  
KMUTT fellow (4life)

Develop and elevate local change agents to become KMUTT4Life.

The goal is to make them leaders of community change, working with KMUTT as members under the OBEM development framework: KMUTT4Life  
~ 20 people per year.

# Nan Province : Focus Program and Works



## Community Food Security

- Quality rice seed
- increase production yield of high-land rice production

## Alternative career to replace monocrop farming

- Strawberry shooting and farming
- High-value vegetable

## Capacity building of local people

- Reskill – Upskill – Newskill Program. Local Change Agent
- Mrabli ethnic group
- Master degree, Community and Resources Management.

## Children-youth and learning development

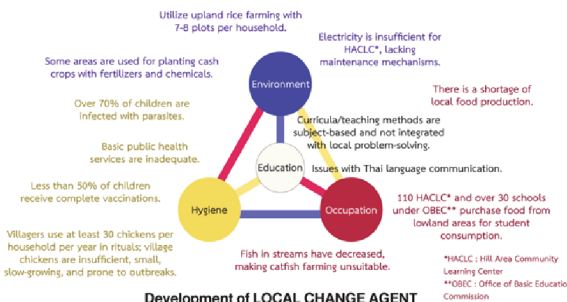
- Sciences in Rural Schools (SIRs)
- Vocational education and career development in schools





# Support for Projects under the Royal Initiative of Her Royal Highness Princess Maha Chakri Sirindhorn : Omkoi District, Mae Sariang District, Mae Hong Son Province

## Concept of 3F1P and The Projects initiated by H.R.H. Princess Maha Chakri Sirindhorn in Remote Areas



### Development of LOCAL CHANGE AGENT

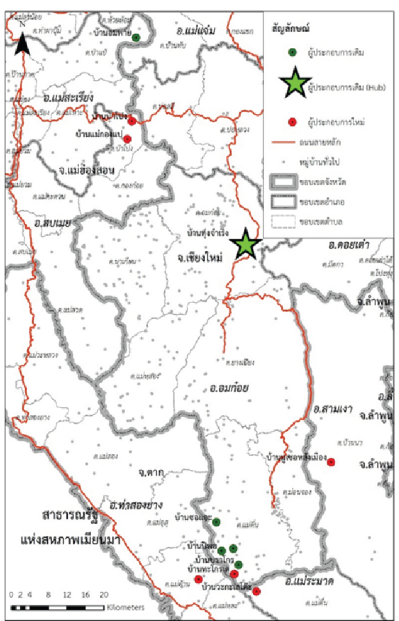


**Food Production :** Raising chickens in highland areas, expanding the model of native chicken farming at Ban Pipo, and cultivating vegetables to reduce expenses while ensuring sufficient supply for consumption and utilization.

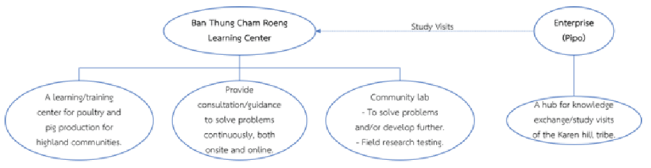
**Public Health :** Developing educational materials and enhancing teachers' first-aid skills, as well as fostering leadership in public health transformation.

**Education :** Advancing the integration of teaching through research-based projects with participation from 12 teachers. Submitting and showcasing works at the Conference on Innovations for Community Well-being.

**Energy Systems and Technical Skills :** Installing a hybrid electricity generation system combining solar power (500 Wp) and a water wheel hydro system (100 W). Transferring technical knowledge to 30 students from Ban Po So and Sao Hin schools.



## Performance Report for the Fundamental Fund (Fiscal Year 2023 - 2024)

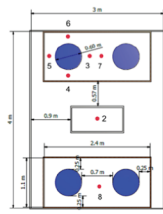




# Project: "Suckling Black Piglet nursing System for Ban Pi po Community, Mae Tuen Subdistrict, Omkoi District, Chiang Mai Province (FF Year 2024)"

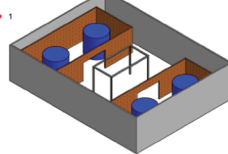
To design and test a nursing system for black piglets to increase the survival rate from  $\leq 50\%$  to  $70\%$  for the Ban Pi Po community, Mae Tuen Subdistrict, Omkoi District, Chiang Mai Province.

Compare the outputs, outcomes, and impacts with the project goals outlined in the project proposal. => Archived 40%



Prototype for Black Piglet Nursing System

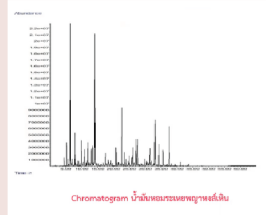
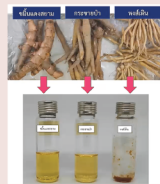
Data Collection Points for Data Logger  
 Point 1 : Collects weather condition data.  
 Point 2 : Collects data from the sow's pen.  
 Points 3, 4, 5, 6 : Located 15 cm from the heater.  
 Points 7, 8 : Located 30 cm from the heater.



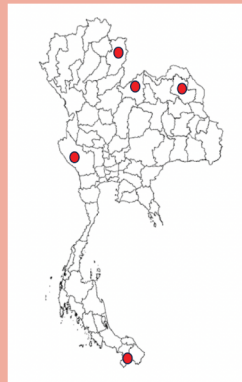
Output	Quantity	Quality
nursing system for black piglets in suckling phase	<ol style="list-style-type: none"> <li>1. design the nursing system.</li> <li>2. Test and improve the efficiency of the system.</li> </ol>	<ol style="list-style-type: none"> <li>1. A prototype black piglet nursing system for the suckling phase, designed to suit the context of the testing area.</li> <li>2. Performance evaluation data of the piglet nursing system during the suckling phase.</li> </ol>

## The transfer of knowledge in the development of products from the Zingiberaceae.

A workshop was organized to transfer practical knowledge on the development of soap products from Zingiberaceae to community members interested in adding value to these plants. This approach is beneficial for the economic development of the community.



## Community resources and bio-diversity management



Please contact :  
Mr. Surain Thapanangkun  
Surain.tha@kmutt.ac.th

Ms. Pavinee Patanachan  
pattanachan@gmail.com  
Tel. 081-8698275

Ms. Wipharadee Muangkaew  
wipharadee.307@gmail.com

Facebook: KMUTT Social Lab

