

# CDM Project Development in Thailand (Livestock Sector)

Arux Chaiyakul

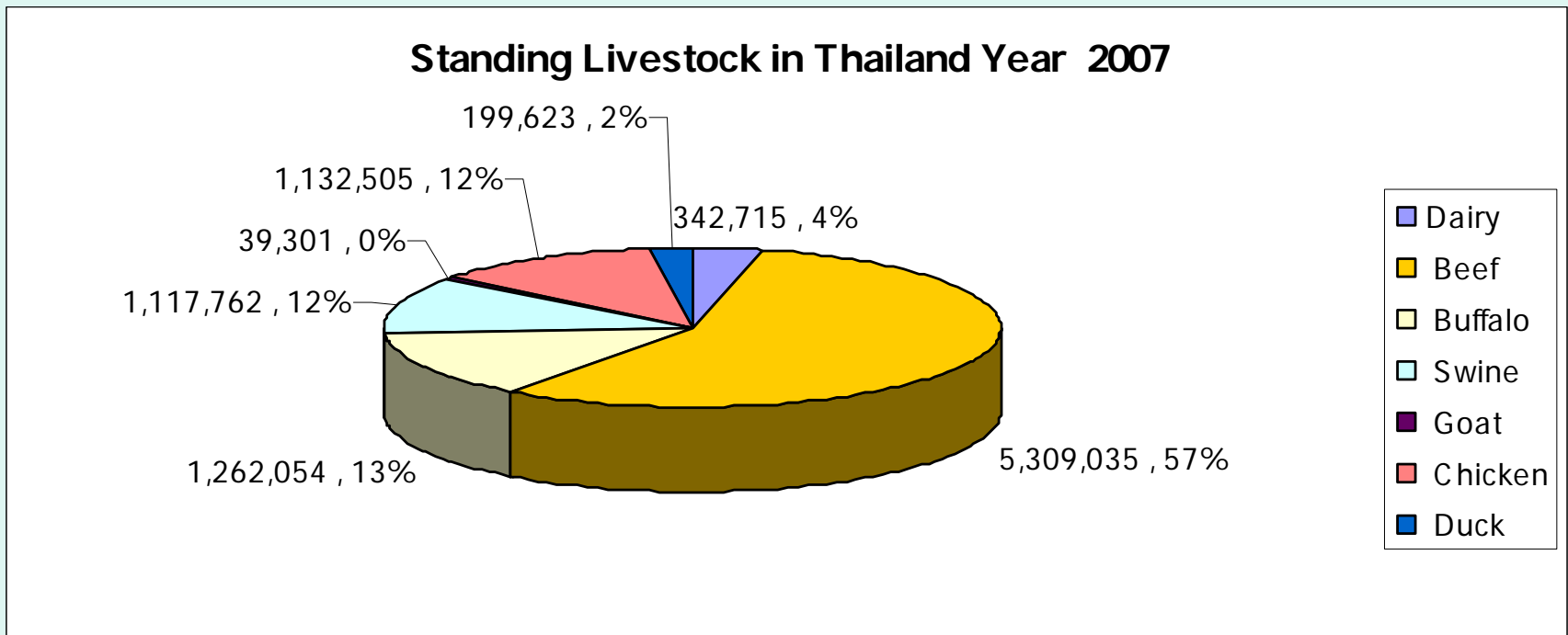
Sommai Chatsanguthai

Department of Livestock Development (DLD)



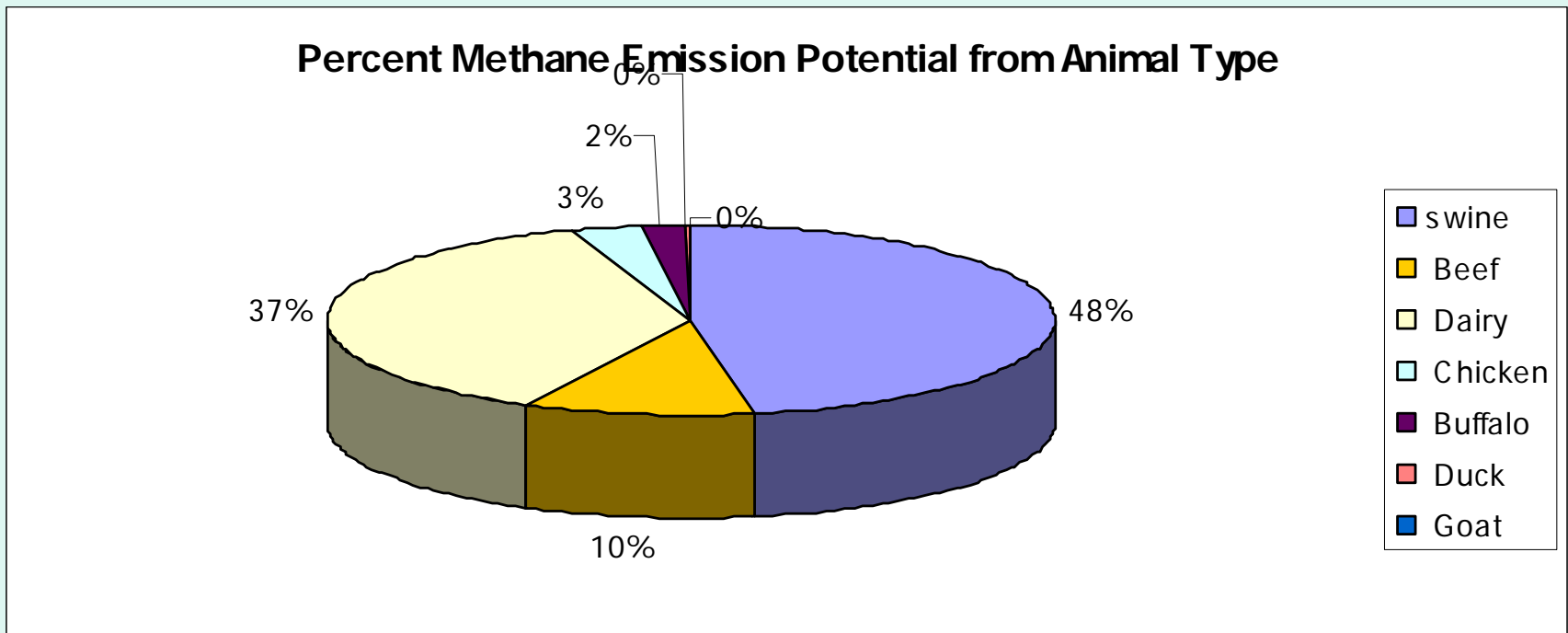
Where is Thailand?

# Thailand Livestock Profile

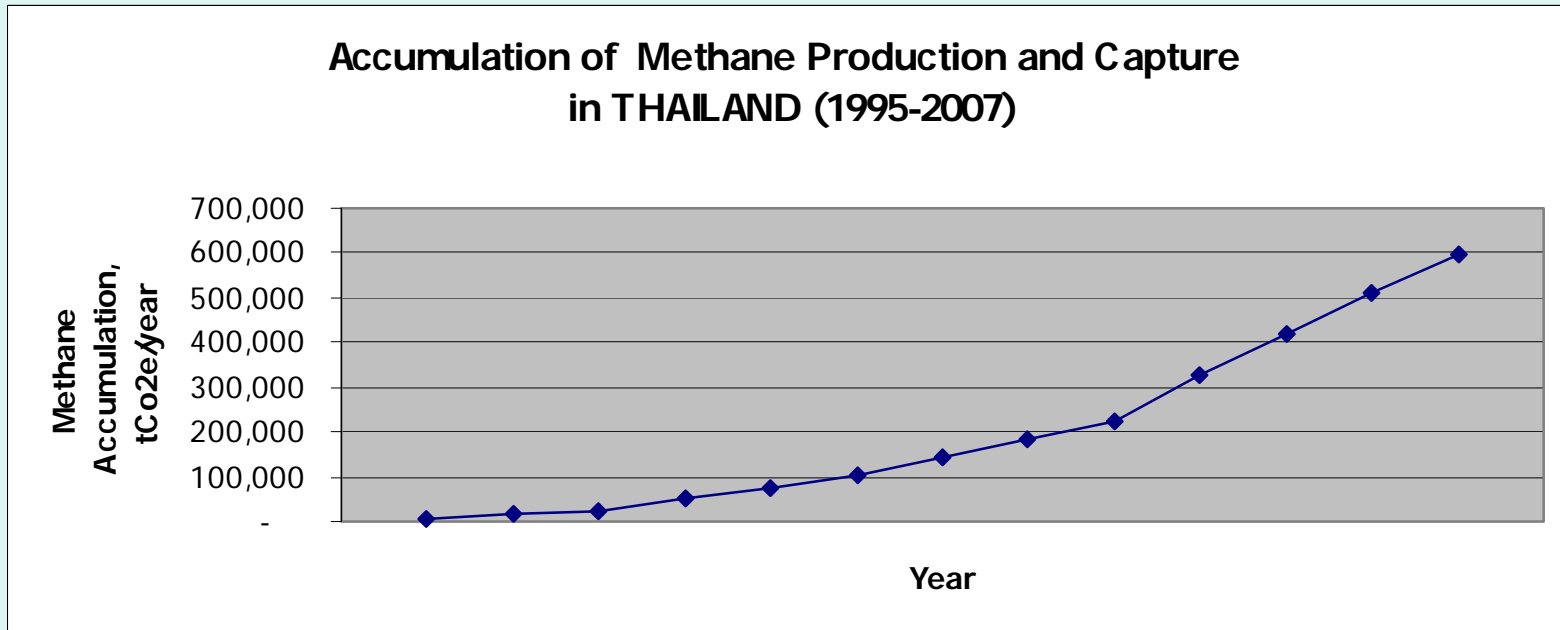


**Livestock Unit = 500 kg**

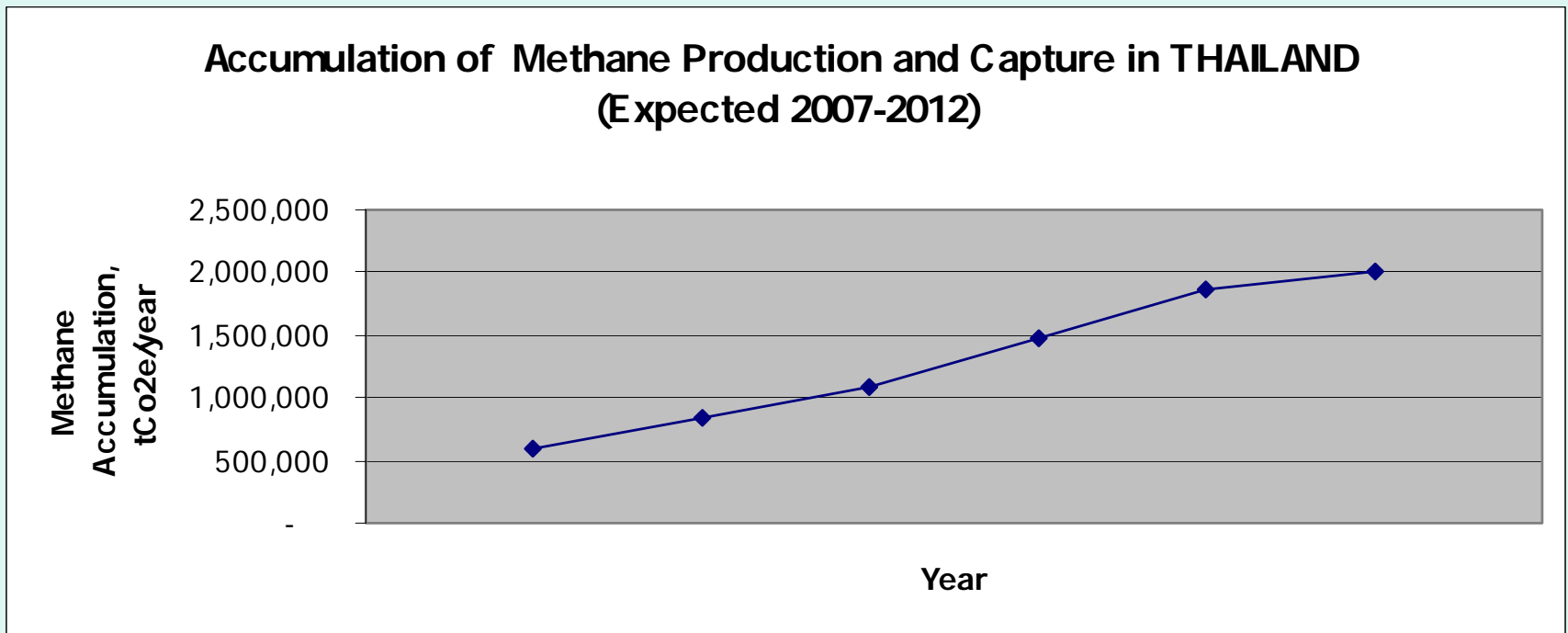
# Methane Emission Potential from Livestock Waste



# Capture of Methane Emission (from swine waste) Year 1995-2007



# Expected of Methane Emission Capture (from swine waste) Year 2007-2012



Target to treat swine waste more than 90%

# Background

- DLD has implemented the Livestock Waste Management in East Asia Project (supported by WB) that target to reduce pollution from pig waste to the Gulf of Thailand and South China sea
- Pig farms under LWMEA project for year 2007 has been selected to develop CDM program

# LWMEA Project Information

- Fund from GEF through the World Bank
- Project period 2006 – 2010
- Objective to reduce the negative environmental impact from livestock waste into South China sea and Gulf of Thailand
- Participating country : China , Vietnam, and Thailand
- Project Coordinator : FAO



# Wastes in pig farm



# Wastes in pig farm



# LWMEA Project Component

- Technology : Provide the Demonstration farms with the suitable technology
- Technology selection consideration
  - Low investment
  - Not complicated system
  - Easy operation with low maintenance
  - Acceptable performance

# LWMEA Project Component

- Policy Development :
  - Awareness raising by Campaign Poster & Pamphlet



# LWMEA Project Component



# LWMEA Project Component

- Policy Development :
  - Study the code of practice and lead to the future regulation



# LWMEA Project Component

- Decision support tool : Develop the easy tool for relative stakeholder

**ระบบการตัดสินใจ**  
ในการจัดการด้านมลพิษจากฟาร์มสุกร  
(Decision Tree Model)

หน้าหลัก | การจัดการฟาร์มสุกร | ระบบบำบัดน้ำเสีย | การจัดการสิ่งแวดล้อม | E-learning | การคำนวณกำไรในฟาร์ม | ติดต่อกรมควบคุมมลพิษ

**S** ระบบการตัดสินใจ  
Decision Tree Model  
ในการจัดการด้านมลพิษจากฟาร์มสุกร

ท่านมีปศุสัตว์ หรือ ต้องการทราบข้อมูลด้านใด?

- ท่านกำลังสนใจจัดตั้งฟาร์มใหม่ใช่หรือไม่
- ท่านมีปศุสัตว์ด้านระบบบำบัดน้ำเสีย
- ท่านมีปศุสัตว์ด้านกลิ่นเหม็นในฟาร์ม
- ท่านมีปศุสัตว์ด้านของเสียมาก
- ท่านอยากทราบวิธีการนำของเสียไปใช้ประโยชน์
- ท่านอยากลดค่าใช้จ่ายในฟาร์ม
- ท่านอยากเพิ่มกำไรภายในฟาร์ม
- ท่านต้องการศึกษา เรื่องการให้วัคซีนแก่สุกร
- ท่านสนใจกฎหมายที่เกี่ยวข้องกับฟาร์มสุกร
- ท่านสนใจเรื่องเทคโนโลยีสะอาดกับฟาร์มสุกร
- ต้องการติดต่อกรมควบคุมมลพิษฯ

สงวนลิขสิทธิ์ © กรมควบคุมมลพิษ สำนักงานจัดการคุณภาพน้ำ กรมควบคุมมลพิษ  
วันที่ 5 เดือน 02 ปี พ.ศ. 2558  
ออกจากระบบ

คู่มือการใช้งาน

# LWMEA Project Component

- Nutrient management : To manage the excess N&P from the treated waste





# Expected Results from LWMEA

- Treatment system for 200,000 pigs
- Hot gas reduction 70,000 ton CO<sub>2</sub> /year
- National Policy for pig farms which begins with COP, then regulation and finally with laws
- National Plan for Spatial Distribution
- Technical Decision Support Tool for nutrient management and environmental management planning

# Difficulty for LWMEA

- Thai farmers mostly are lack of environmental awareness and familiar with un-management waste
- High investment of WW system even availability of subsidy
- Not sufficient incentive from Government
- Weakness on regulation and law enforcement
- Available data base is inadequate

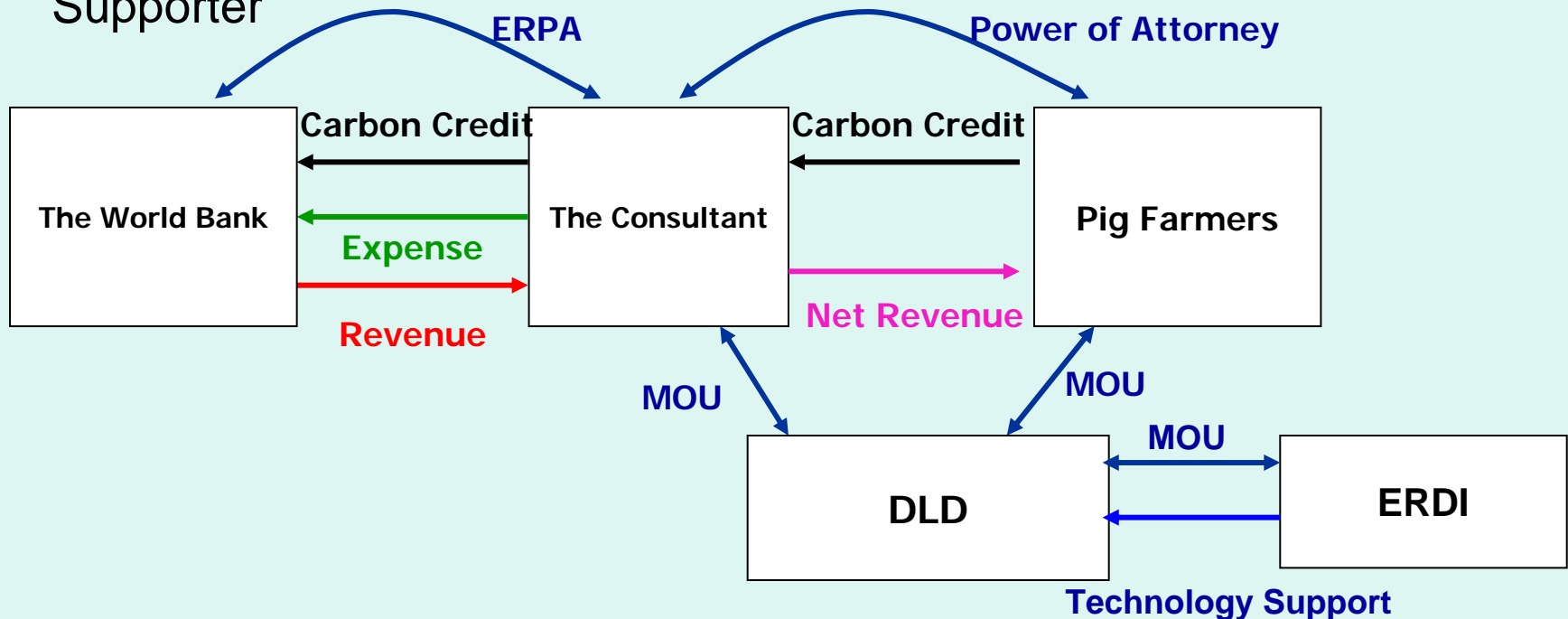
# CDM Project Development on Livestock Sector in Thailand

## Current Situation

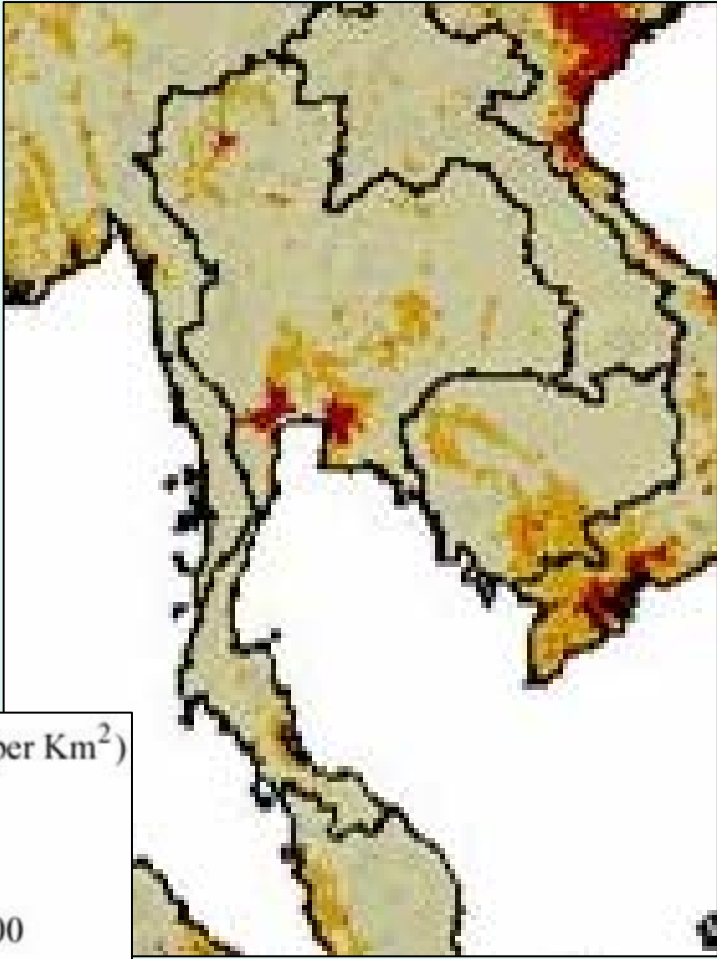
- Thailand DNA (Thailand Greenhouse Gas Management Organization, TGO) just established in 2007 ([www.tgo.or.th](http://www.tgo.or.th))
- CDM is new for people especially farmers
- Lack of experience to implement so far there are only 4 large pig farms in Thailand applying for CDM program
- Investment is too high for Thai farmers
- Not sufficient incentive for farmers

# Stakeholders in the CDM Project

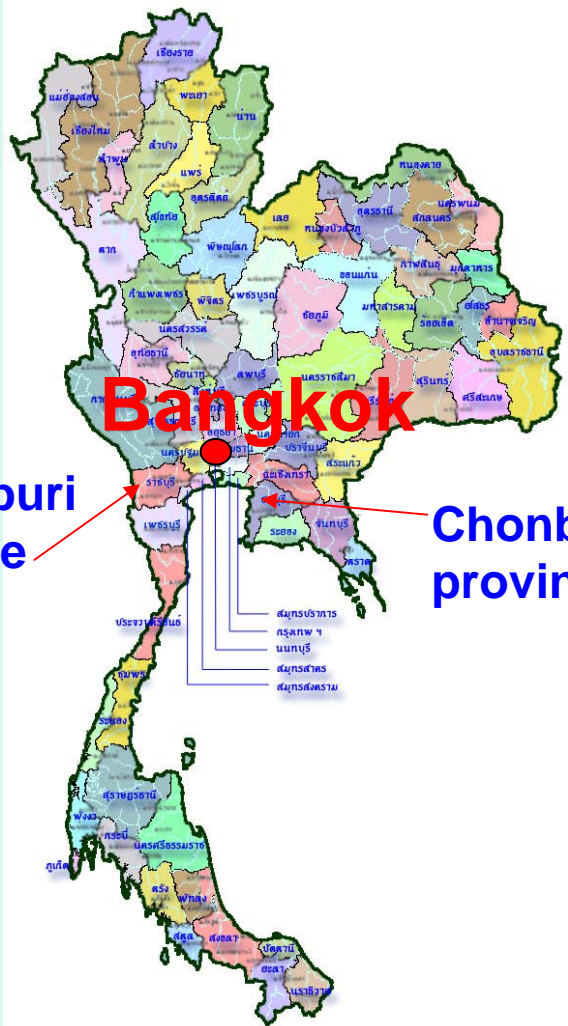
- The World Bank – Co-Project Developer and Carbon Credit Buyer
- Pig Farmers – Project Developers
- Department of Livestock Development (DLD) – Pig Farmers Advisor, Project Coordinator
- The Consultant – Project Implementer, Representative for Carbon Credit Sale
- Energy Research and Development Institute (ERDI) – Technology Supporter



# CDM Project Area



After P.Gerber



## Thailand Map and Pig Density Map

## CDM Project Information

- Total farms number in project = 10
- 9 Farms in Ratchaburi (West of Bangkok)
- 1 Farm in Chonburi (East of Bangkok)

# CDM Project Development Conditions

Pig farms who are eligible for CDM project

- Almost are medium size (10,000-20,000 pig heads)
- Keep all waste in their open ponds (No discharge)

## Problems

1. Small farms are not feasible to invest by themselves
2. Carbon credit buyer do not want to buy because of too high cost for development

# CDM Project Development Conditions

## Solution

**Bundle** all pig farms in the project in order to increase CERs volumes and reduce transaction cost

- If not bundle, no farm gets income from CDM Project



# CDM Project Development Conditions

## Constraint for Bundle of farms

- All farms have to apply for the same technology
- Implement and finish in the same period

## Recommended

- Keep project at small size (less than 60,000 ton CO<sub>2</sub>/year)
- Each farm is not far from each other to save the DOE cost

# Support

-  GEF Fund managed by the  World Bank through Livestock Waste Management in East Asia Project
-  Energy Policy and Planning Office (EPPO), Ministry of Energy (MOE) managed by  Energy Research and Development Institute (ERDI)
- USA EPA through The Methane to Markets (M2M) Program

# Progress of CDM Project (The Bundle Project in Thailand)

## Milestones

- April 2007 Project Opening Workshop in Bangkok



- August 2007 Farmers orientation





# Development of CDM Project on Livestock Sector in Thailand

## Milestones

- August 2007, First Project Stakeholder Meeting
- December 2007, Project Pre-Appraisal Meeting and MOU signing between DLD and Project Implementer (The Consultant)



# Income

- Tarket 120,000 heads
- Carbon credit 60,000 tonco2/year
- 1 tonco2 = 18 usd
- 10 years =  $18 \times 60,000 \times 10 = 10,800,000$   
USD

# Development of CDM Project on Livestock Sector in Thailand

## Milestones

- March - April 2008, Project Appraisal Meeting
- May 2008, Finalized for PDD (Project Design Document) and Finished IEE (Initial Environment Evaluation)
- June 2008, Project Validation by DOE and Started Engineering document preparation
- September 2008, Process to Thailand Greenhouse Gas Management Organization (TGO)
- October 2008, CDM Project approved from TGO
- Expected to start construction in 1<sup>st</sup> Quarter 2009

# Technology system proposed in Thailand

- Channel Digester Plus system;
- A Concrete tank where both the Channel digester and up-flow anaerobic sludge blanket are housed and covered with flexible sheath to store biogas
- The Channel digester is rectangular and about 5 times longer than it is wide



# Technology system

- Collection tank
- CDB is based on tec. criteria for MCUASB designed established by ERDI
- Add following enhancements;  
extendedHRT, separate sludge storage,  
reduced size of drying bed, a back up  
pump,flaring unit, monitoring instrument,  
enclosed electricity generator room

Thank you for your attention