

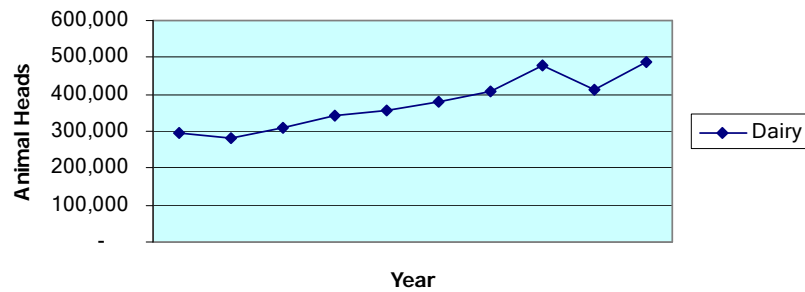
# Thailand Country Profile (Agriculture Segment)

Dr. Arux Chaiyakul

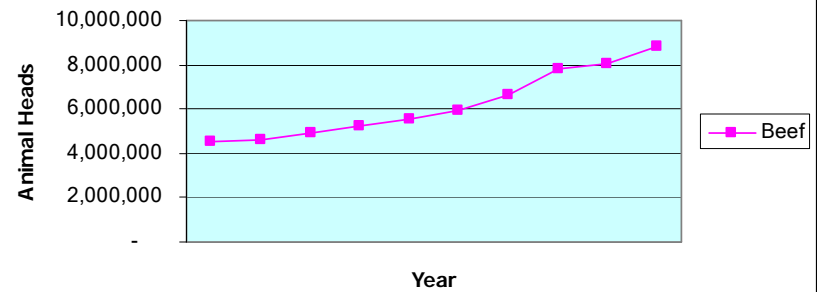
Department of Livestock Development  
Ministry of Agriculture and Cooperatives  
Kingdom of Thailand

# Livestock Statistics

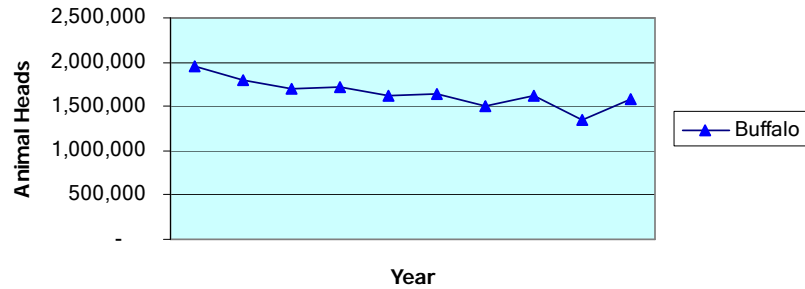
Statistics of Dairy Cattle in Thailand (Year 1998-2007)



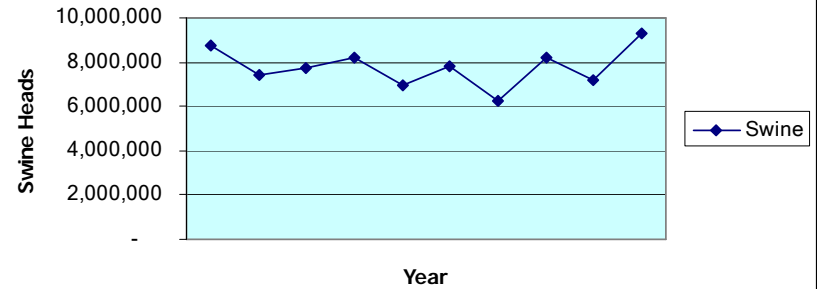
Statistics of Beef Cattle in Thailand (Year 1998-2007)



Statistics of Buffalo in Thailand (Year 1998-2007)

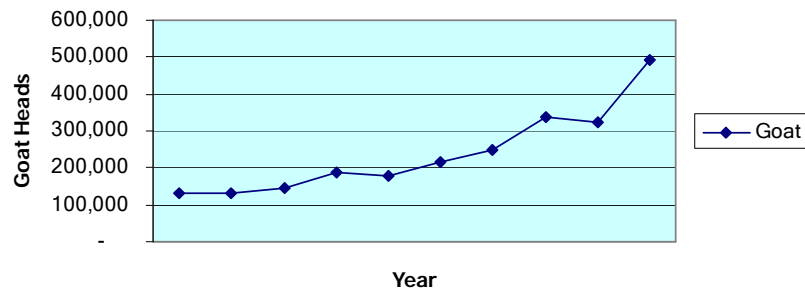


Statistics of Swine in Thailand (Year 1998-2007)

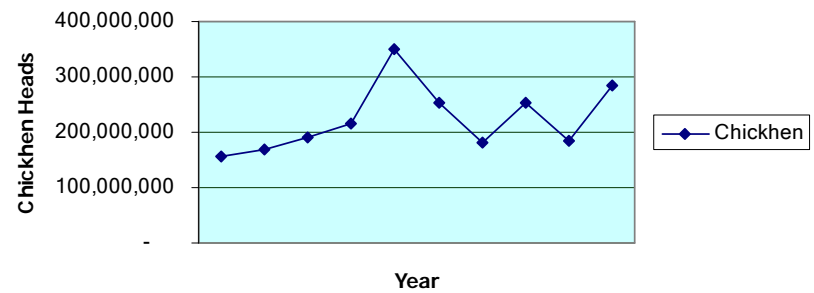


# Livestock Statistics

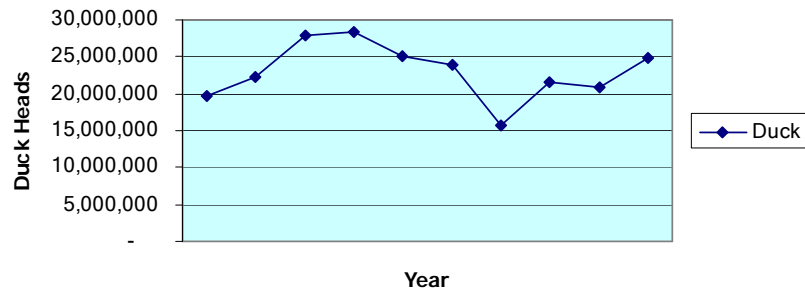
Statistics of Goat in Thailand (Year 1998-2007)



Statistics of Chickhen in Thailand (Year 1998-2007)



Statistics of Duck in Thailand (Year 1998-2007)

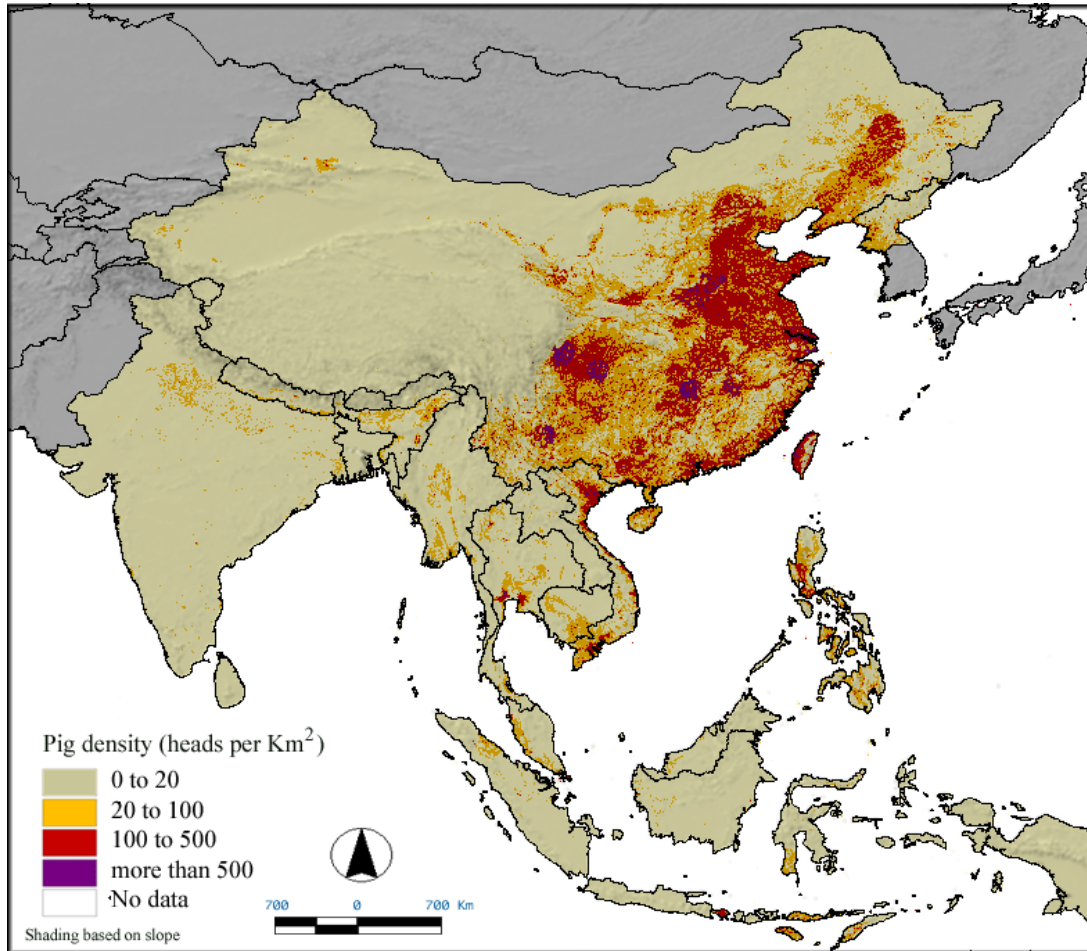


# Livestock Waste and Management Practices

- Swine Waste

- Large scale – Biogas system by Covered lagoon and Channel digester
- Medium scale- Biogas same as large scale or open pond
- Small scale – Fixed dome or open pond

# Swine Density



# Livestock Waste and Management Practices

- Cattle (Diary and Beef) and Buffalo Waste
  - Self feeding in grass field – no waste collection
  - Feeding in byre – collect and use for compost
- Goat Waste
  - Self feeding in grass field – general no waste collection, some collection is for compost

# Livestock Waste and Management Practices

- **Chicken Waste**

- Countryside farm – no waste collection
- Industry farm - collect and use for fish feed and compost

- **Duck Waste**

- Countryside farm – no waste collection
- Industry farm - collect and use for compost

## Methane Emission Potential from Livestock Waste

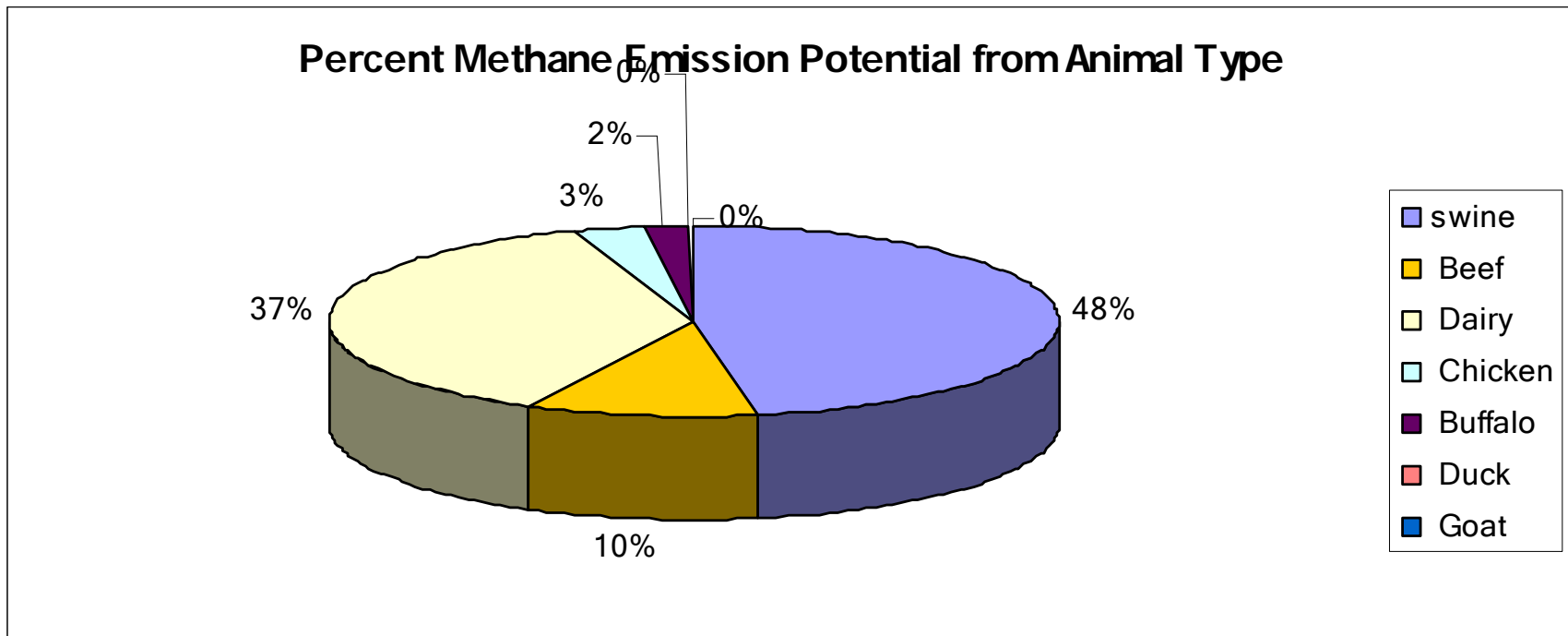
	Dairy	Beef	Buffalo	Swine	Chick	Duck	Goat
GWPC <sub>H<sub>4</sub></sub>	21	21	21	21	21	21	21
DCH <sub>4</sub> , ton/m <sup>3</sup>	0.00067	0.00067	0.00067	0.00067	0.00067	0.00067	0.00067
MCF%	0.7	0.02	0.02	0.7	0.02	0.02	0.02
MS%	1	1	1	1	1	1	1
N, head x 1,000	410	8,000	1,350	7,150	184,000	20,000	320
Bo, m <sup>3</sup> CH <sub>4</sub> /kg dry manure	0.24	0.24	0.24	0.29	0.39	0.39	0.24
VS, kg dry manure/animal/day	5.0	2.5	2.5	0.3	0.02	0.02	0.3
E CH <sub>4</sub> , tonCO <sub>2</sub> e/year	1,768,683	493,013	83,196	2,236,198	147,411	16,023	2,366



## Methane Emission Potential from Livestock Waste

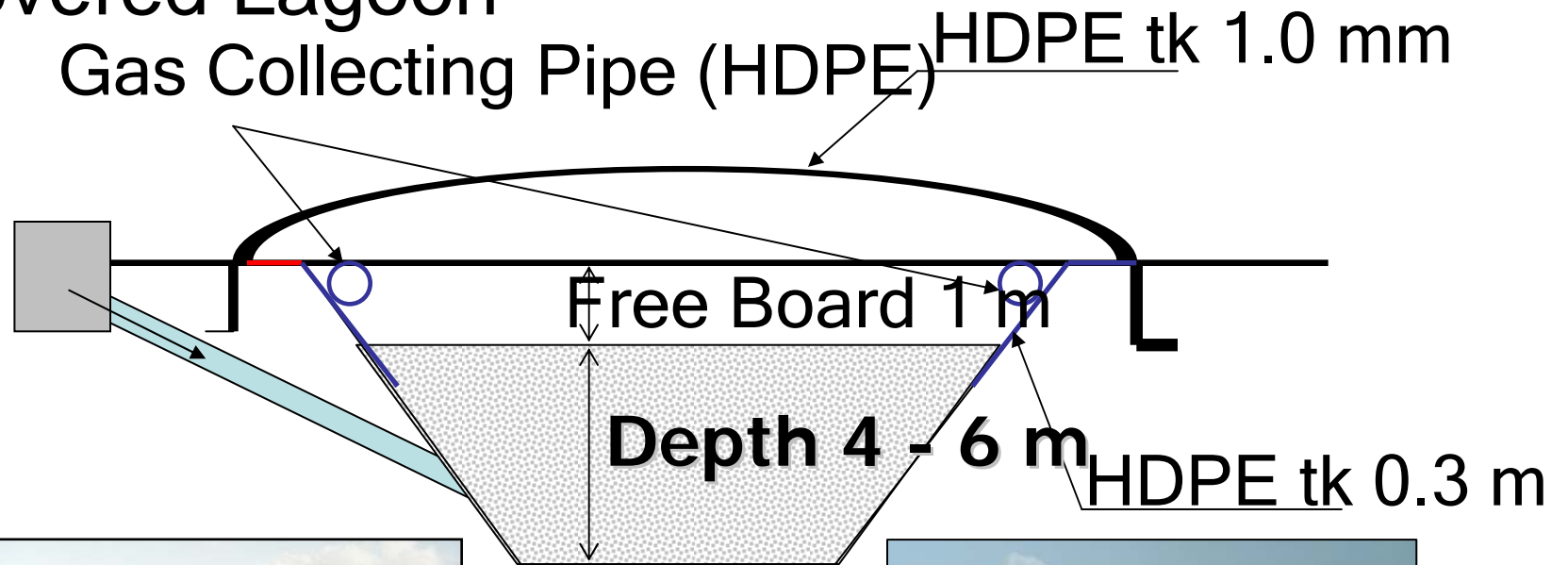
- Methane Emission Potential from Swine Waste Equal to  
**2,236,198** ton CO<sub>2</sub>e/year
- Total Methane Emission Potential from Livestock Waste Equal to  
**4,746,891** ton CO<sub>2</sub>e/year

# Methane Emission Potential from Livestock Waste

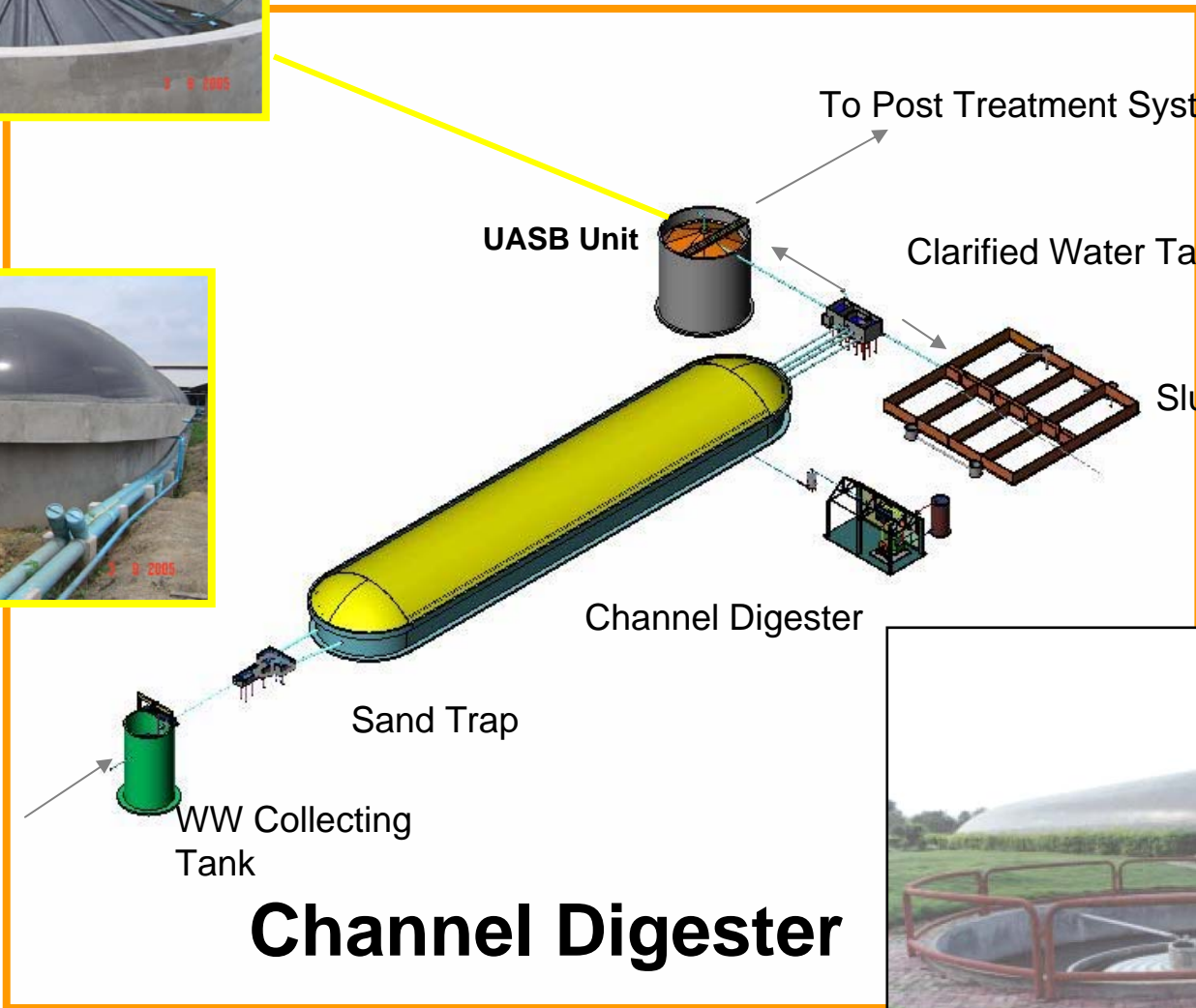


# Wastewater Treatment System with Biogas Technology

- Covered Lagoon



# Wastewater Treatment System with Biogas Technology



**Channel Digester**

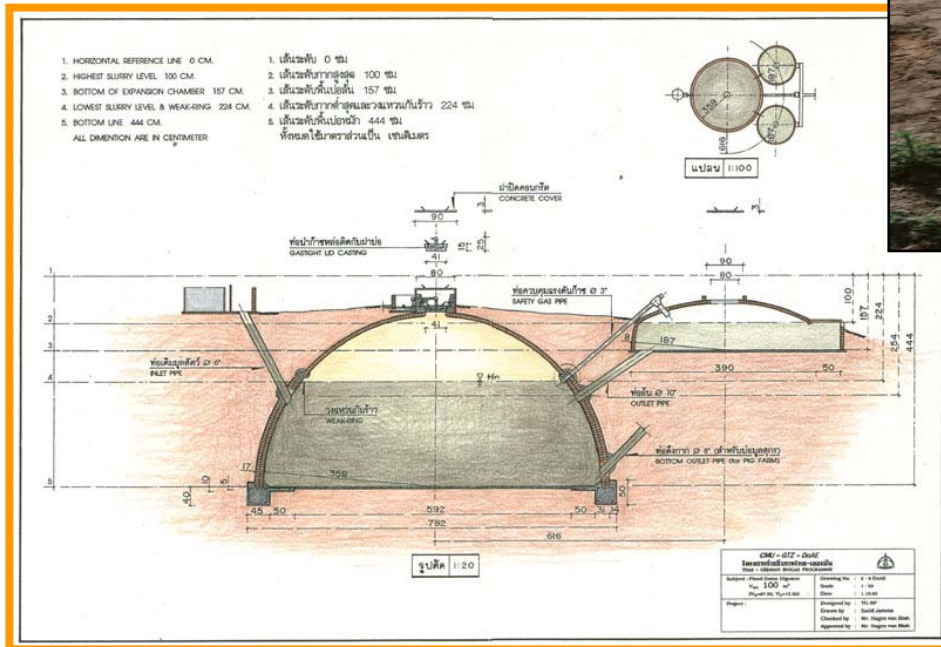
# Wastewater Treatment System with Biogas Technology

- Package Biogas System



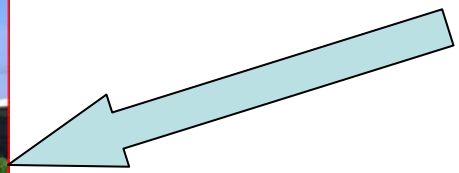
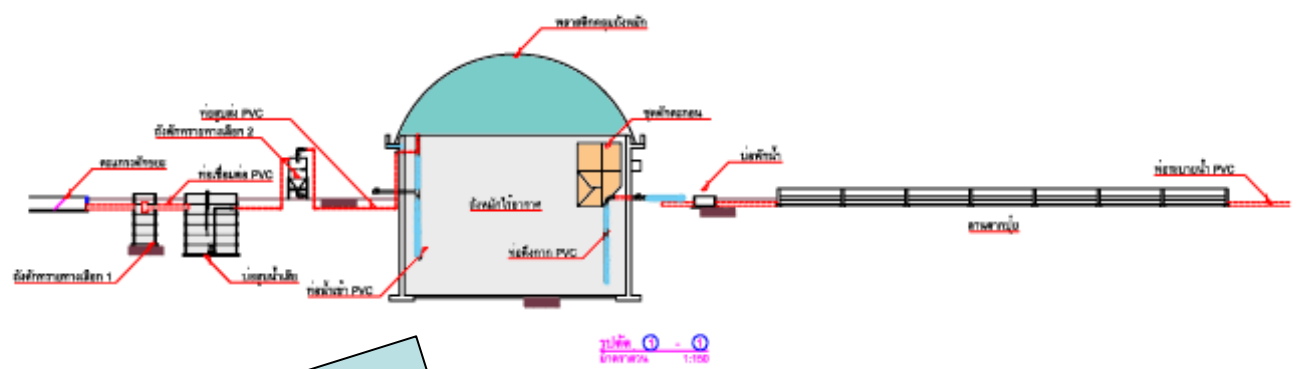
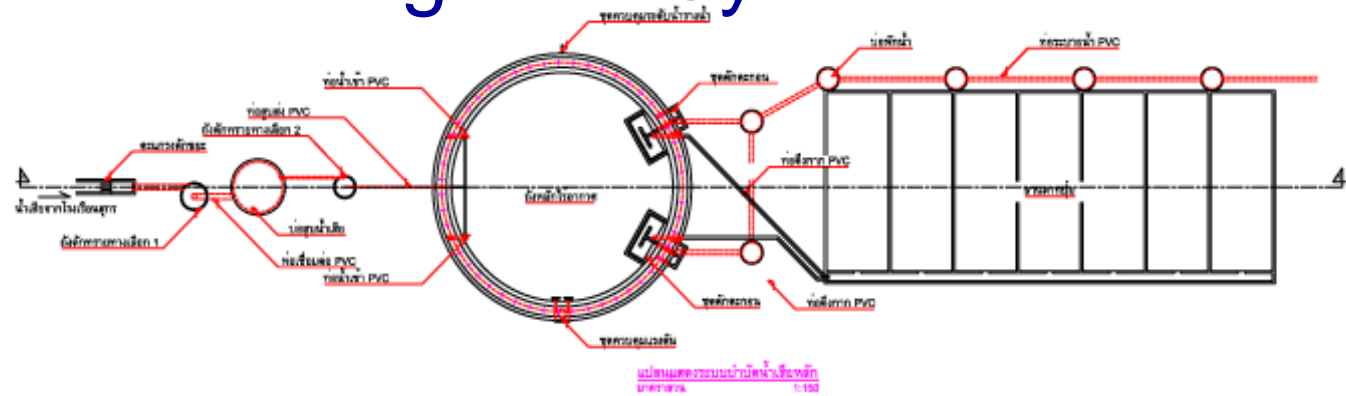
# Wastewater Treatment System with Biogas Technology

- Fixed Dome System



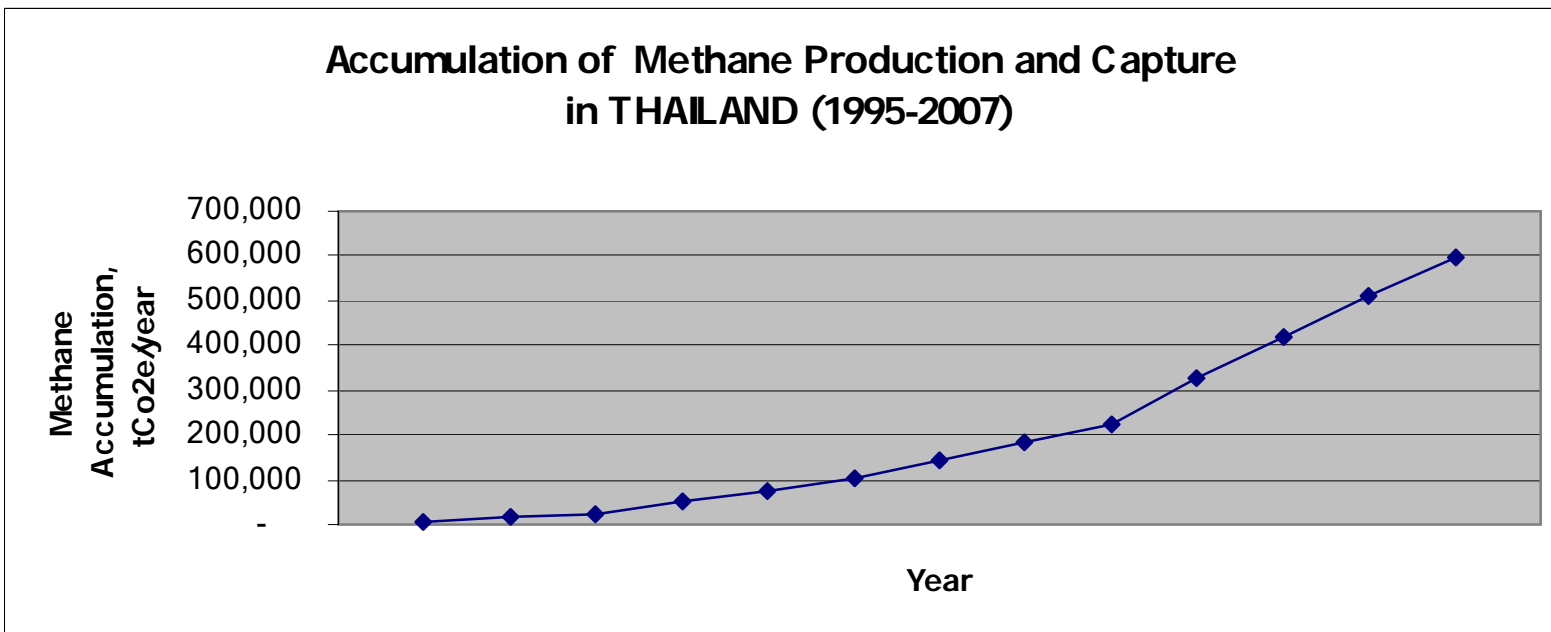
# Wastewater Treatment System with Biogas Technology

## DLD Anaerobic Digester System



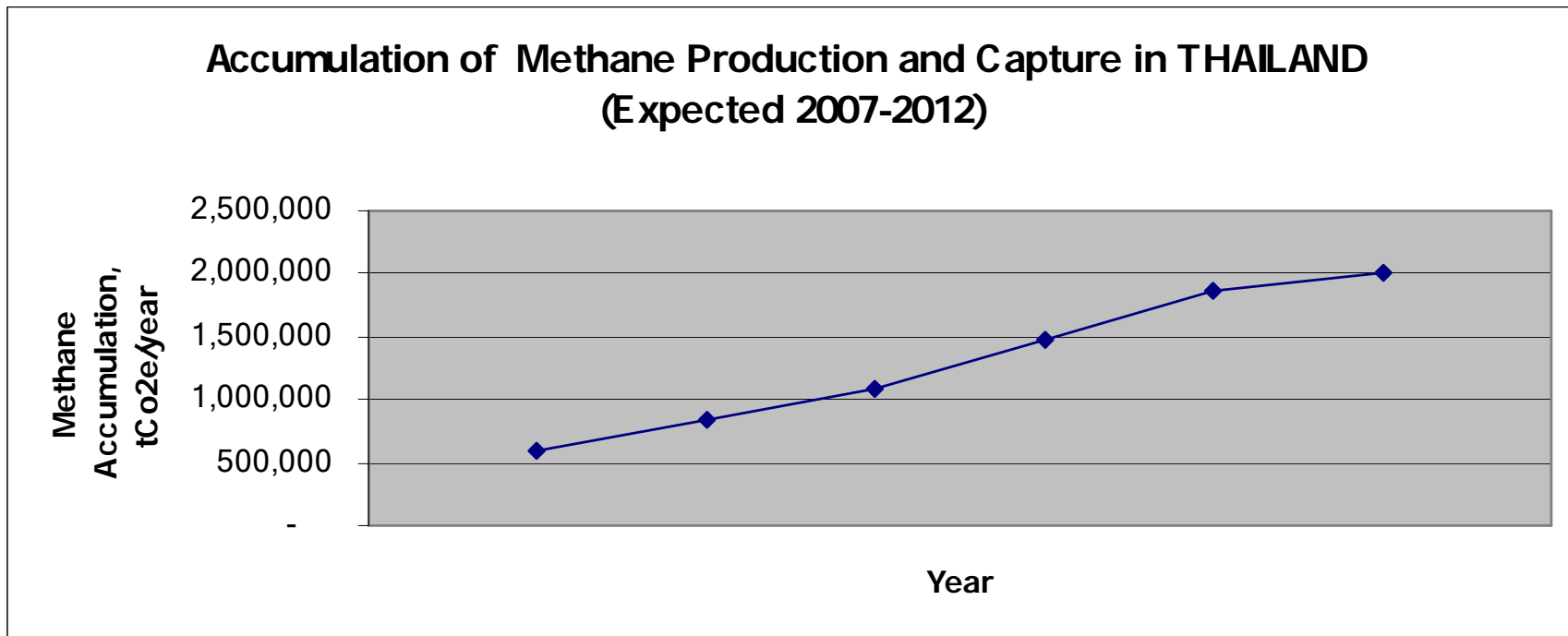
แบบก่อสร้างระบบบำบัดน้ำเสียฟาร์มสุกร กรมปศุสัตว์		
เจ้าของแบบ : วนวัฒนยาศิลปะและสถาปัตย์	แบบสถาปัตย์	แบบสถาปัตย์พื้นที่ 1,500 ตร.ม.
สถาปนิก : วนวัฒนยาศิลปะและสถาปัตย์	สถาปนิก	แบบสถาปัตย์
ออกแบบโดย : ศูนย์บริการวิชาการและถ่ายทอดเทคโนโลยี	ศูนย์บริการวิชาการและถ่ายทอดเทคโนโลยี	ศูนย์บริการวิชาการและถ่ายทอดเทคโนโลยี
344 ซอยสุโขทัย 22 ต.บางศรีเมือง	กรุงเทพฯ 10300	กรุงเทพฯ 10300
โครงการ : ฟาร์มสุกร เมืองนนทบุรี	พื้นที่ : 05	จำนวน : 21
วันที่ : 05	จำนวน : 21	ขนาด : 1:150

# 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%

# Stakeholders in Livestock Waste Management

- Ministry of Agriculture and Cooperatives
  - Department of Livestock Development
  - Department of Agriculture Extension
  - Department of Agriculture
- Ministry of Natural Resources and Environment
  - Department of Environmental Quality Promotion
  - Pollution Control Department

# Stakeholders in Livestock Waste Management

- Ministry of Energy
  - Department of Alternative Energy Development and Efficiency
  - Energy Policy and Planning Office
- Energy Research and Development Institute (ERDI)
- Local Administrative Organization
- Local Consultant