合併処理浄化槽を考える

Learning Centre (LC) - Tuesday, 27 April 2004
Water Supply, Sanitation and Health: Public Health Aspects を参考にしつつ

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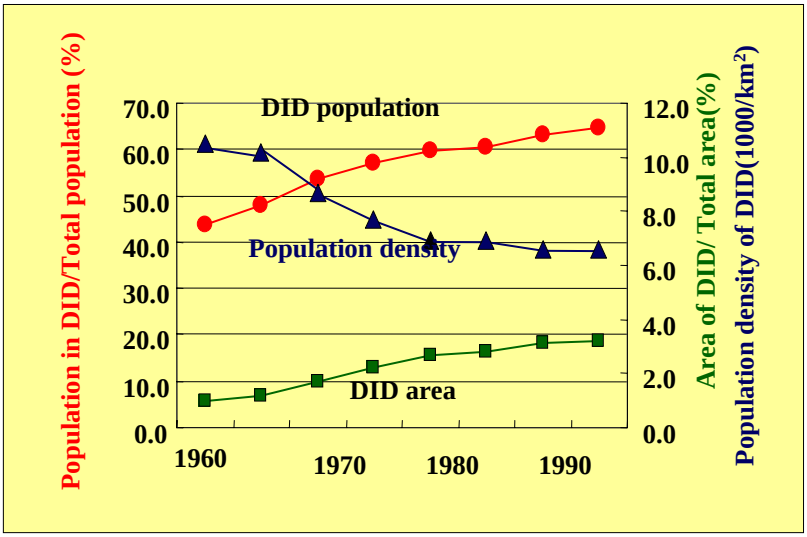
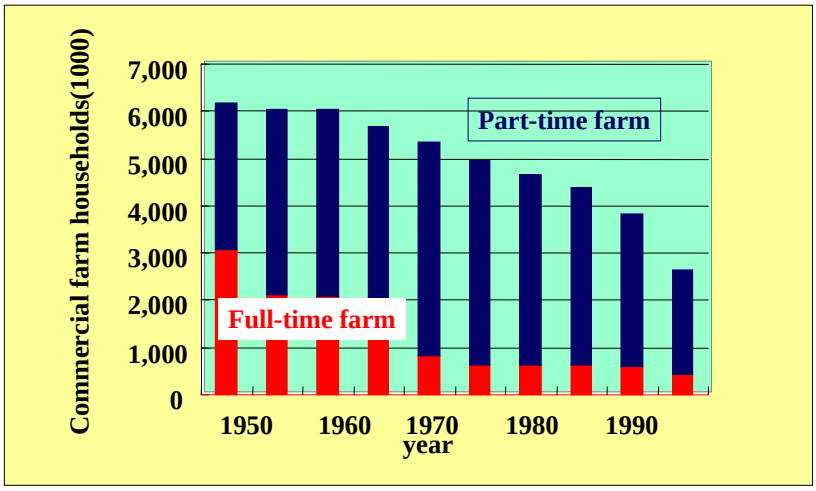
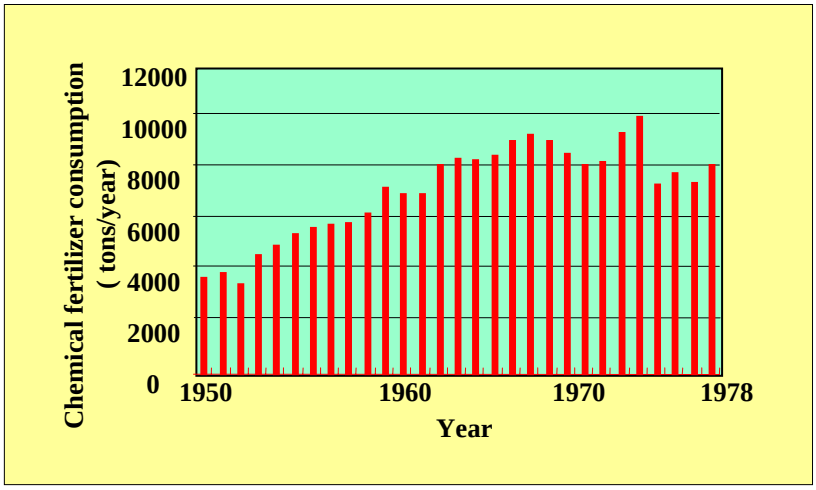
Trends of densely populated area



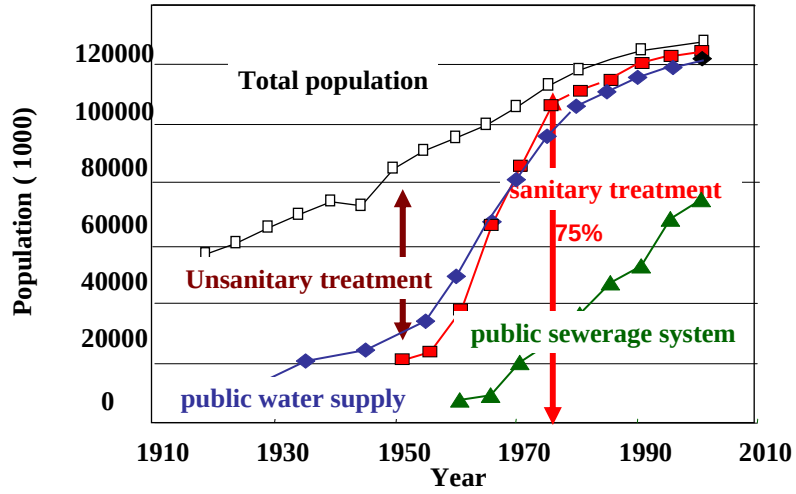
Trends of Commercial Farm



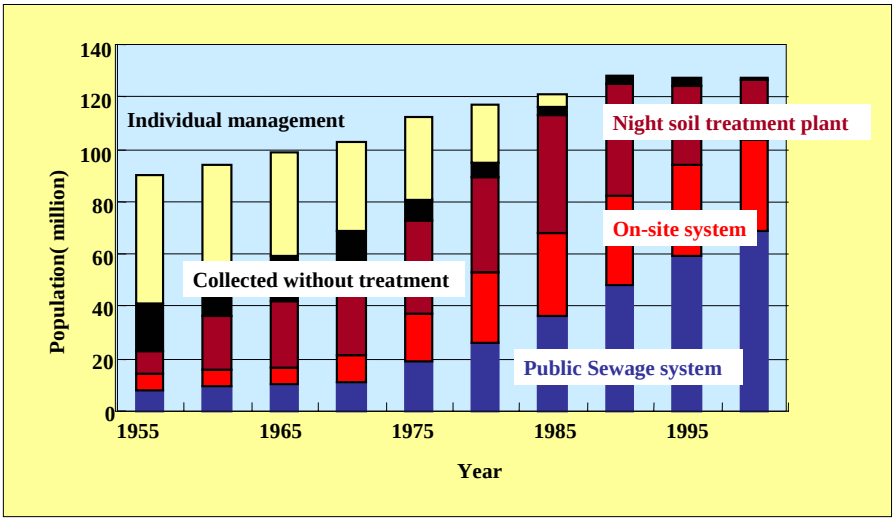
Consumption of Chemical Fertilizer



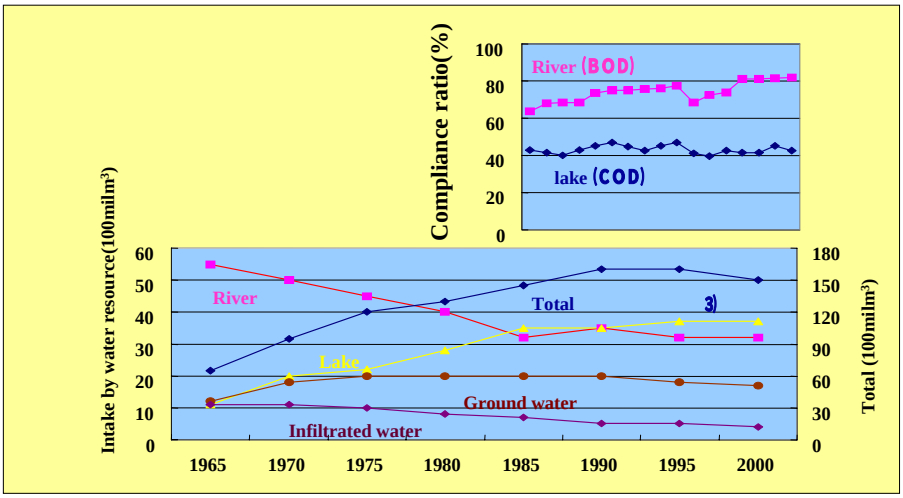
Development of water supply and sanitation



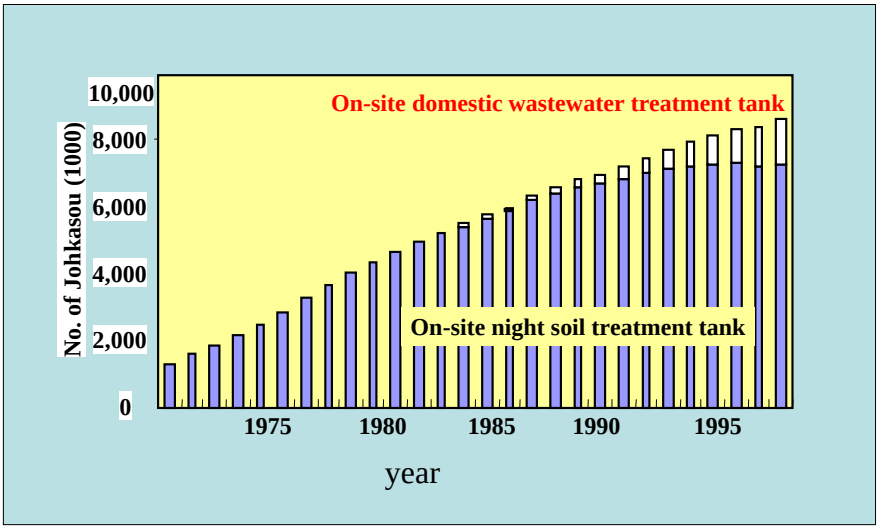
Development of domestic wastewater management



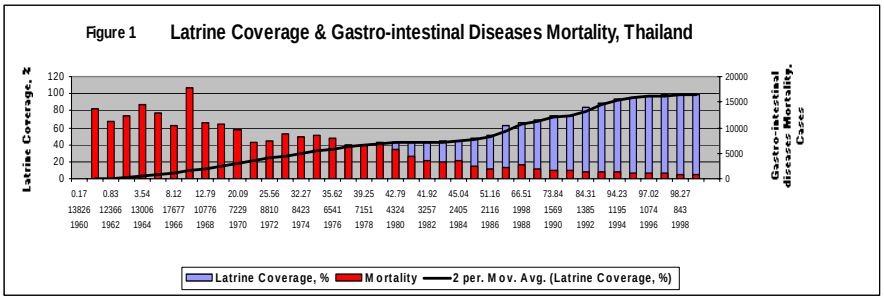
Ambient environmental standard water resource for water supply



Development of on-site treatment tank



Universal Sanitation - Thailand



Onsite Wastewater Treatment in the USA

- 23% of the 115 million homes in the U.S. use onsite treatment systems.
  - More than 60 million people.
  - One-third of all new homes.
- Primary system: septic tank with gravel drainfield leading to soil absorption.
  - No prior approval needed; directed by local code requirements of sizing, soil, etc.

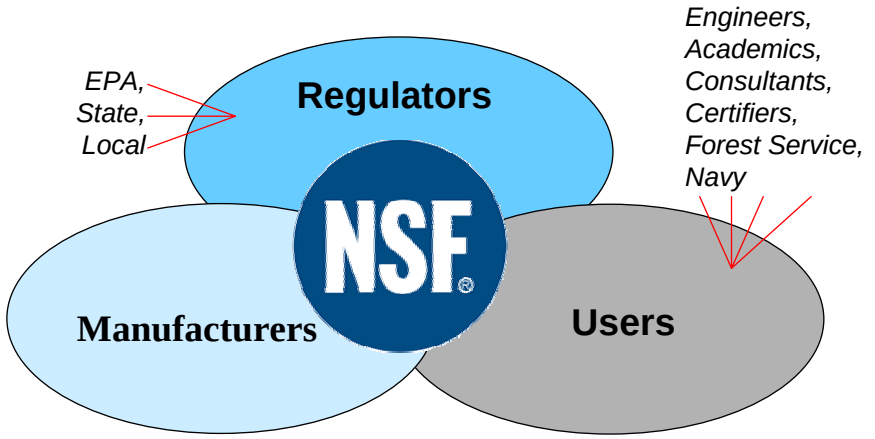
Onsite Wastewater Treatment in the USA

- Movement towards “alternative” or “advanced” treatment technologies.
  - Proprietary designs.
  - Better effluent quality, so more suitable for poor or sensitive receiving environments.
  - More complex, so greater reliance on demonstration of performance, monitoring and maintenance.

Onsite Wastewater Treatment in the USA

- Onsite wastewater treatment systems regulated throughout the country.
  - Regulations governed by individual state and county sewage codes, not at the federal level.
  - Codes often vary even within one state.

Consensus Standards: Key to Success – Stakeholder Involvement



NSF/ANSI Standard 40

- Scope: Any system claiming to treat 400 to 1500 gpd, and having a single point of effluent discharge.
- Products tested to-date:
  - Mechanical (forced air)
  - Sequencing Batch Reactors
  - Packed Media Bed
  - Rotating Biological Contact Chamber
  - Fixed Film

NSF/ANSI Standard 40

- Infiltration and exfiltration resistance.
- Noise level
- Access ports.
- Failure sensing and signaling equipment.
- Product literature and labeling
- Service and warranty requirements.
- Effluent quality performance.

NSF/ANSI Standard 40

- Influent Wastewater Characteristics
  - $CBOD_5$ 100 mg/L - 300 mg/L
  - TSS 100 mg/L - 350 mg/L
- 26 Week Minimum Evaluation Period
- Effluent criteria (30-day, 24 hr composite):
  - $CBOD_5$ 25 mg/L
  - TSS 30 mg/L

Environmental Technology Verification

ETV Pilot Program

- Important Principles:
  - Voluntary program for commercial-ready technologies only; not research.
  - No pass/fail requirements.
  - Only for products where no standards or protocols exist today; not meant to compete with or duplicate those already available.

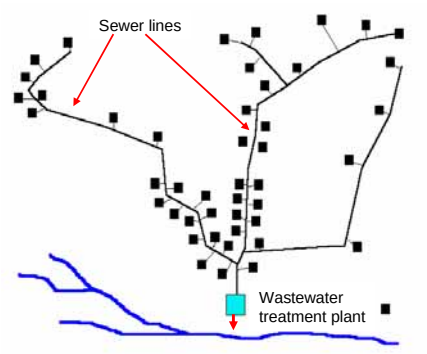
ETV Pilot Program

- Current Protocols for:
  - In-Drain Treatment Technologies.
  - Mercury Amalgam Removal Technologies.
  - Technologies for Separation of Manure Solids from Flushed Swine Waste.
  - Residential Wastewater Treatment Technologies for Nutrient Reduction.
  - Secondary Effluent and Water Reuse Disinfection Applications.

ETV Pilot Program

- Current Verifications:
  - Five Nutrient Reduction Technologies (Nitrates).
  - One Manure Separation Technology.
  - Three Secondary Effluent and Water Reuse Disinfection Devices (UV).
  - All include brief verification statement and detailed verification report.

Investment cost
of centralized sewer systems



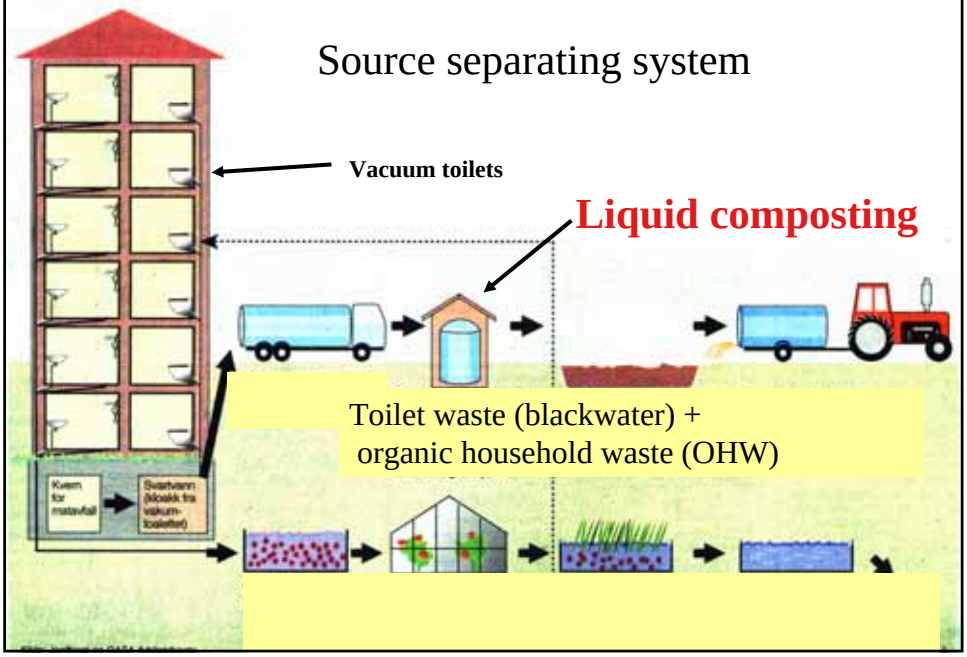
- Collection system **80%**
- Treatment **20%**

In the US:

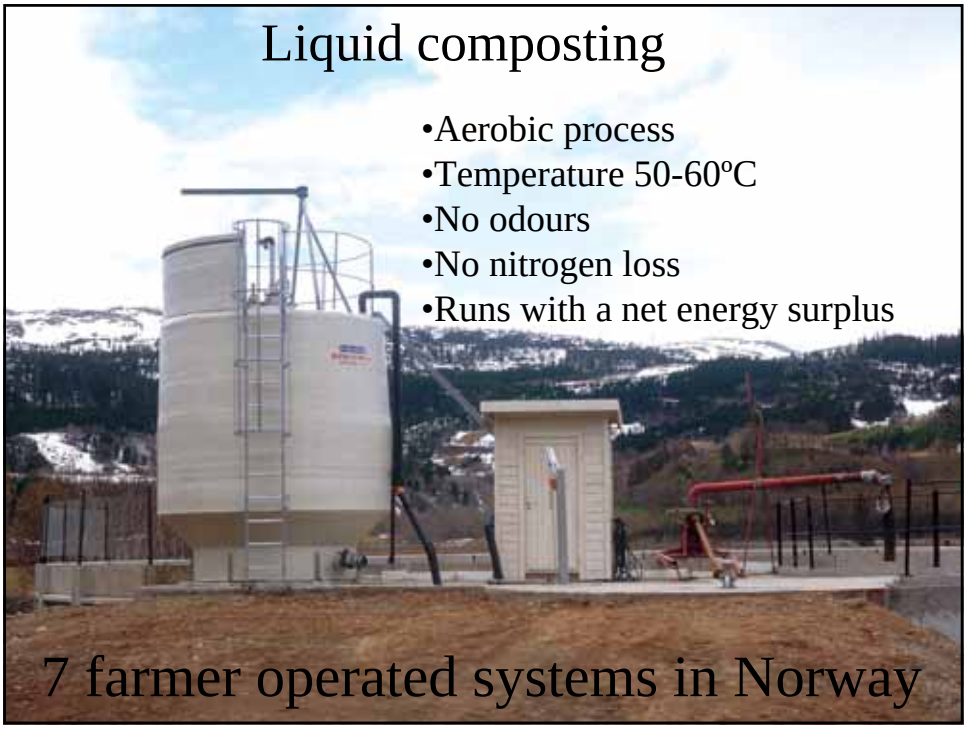
- 37% of all new developments are serviced by onsite or decentralised systems
- over 50% of onsite/cluster systems are in cities and their suburbs

(USEPA 2000)

Source separating system



Liquid composting



- Aerobic process
- Temperature 50-60ºC
- No odours
- No nitrogen loss
- Runs with a net energy surplus

7 farmer operated systems in Norway

Greywater treatment - student dormitories Norway

48 students
Wetland area: 2 m^2/student

Average effluent values

Total - P	0,04 mg/l
Total - N	2,2mg/l
BOD	3,9 mg/l
Fecal coli	<100/100ml

Greywater treatment in OSLO

Pretreatment
Biofilter (PBF)

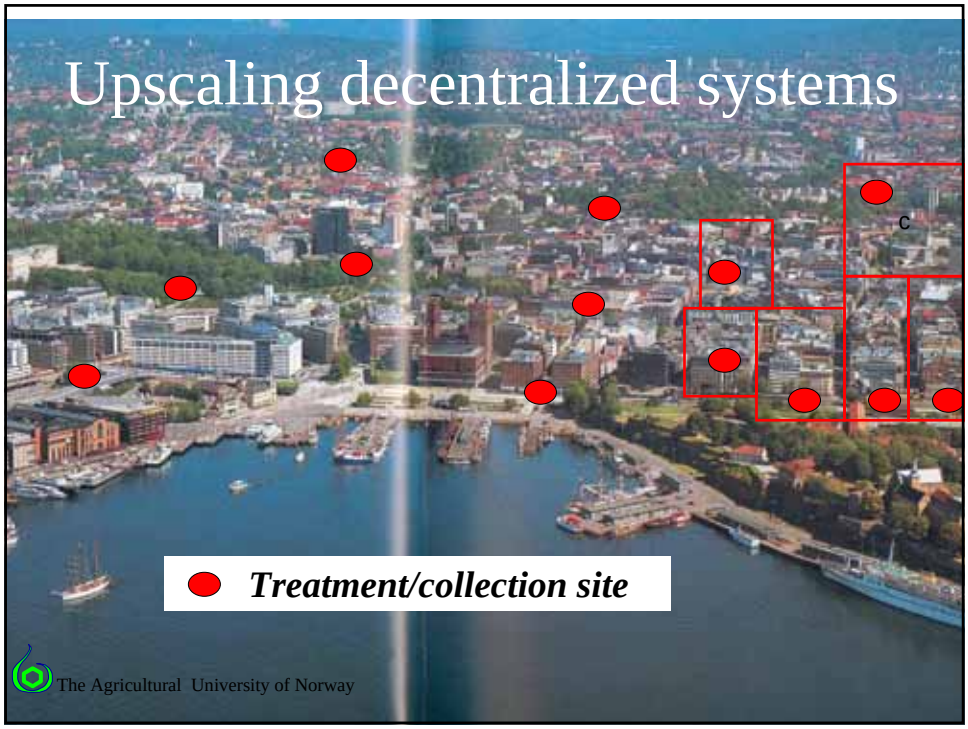
Horisontal
subsurface
flow CW

- 33 apartments
- 100 persons
- Area 1m^2/person

Greywater treatment at Klosterenga Oslo

Effluent values:

Fecal coliforms:	0
Total-N:	2,5 mg/l
Total-P:	0,02 mg/l



合併処理浄化槽

- 水質基準

  全国一律の基準ばかりでなく
  都道府県での上乗せ基準は考えられないか
  ＢＯＤだけでよいか
  総量規制制度との連携による公共用水域の水質改善

- 未規制小規模事業場排水をどう考えるか

合併処理浄化槽

- 水質検査制度
- 検査機関の第三者認証制度は

- 単独処理浄化槽をどうするか
- ５００万基にものぼる単独浄化槽の放流水はこれまでと同じように野放しでよいか
- 転換を図るための方策は

おわりに

- 設置者･製造者･工事者･保守点検者･清掃者･国･地方自治体････････　の連携

- 放流水水質による課徴金制度は

- 公共財でもある水域を保全することと公衆衛生の向上に果たす役割を認識する