

# Development of Post-Installation Services within National Biogas Programme of China

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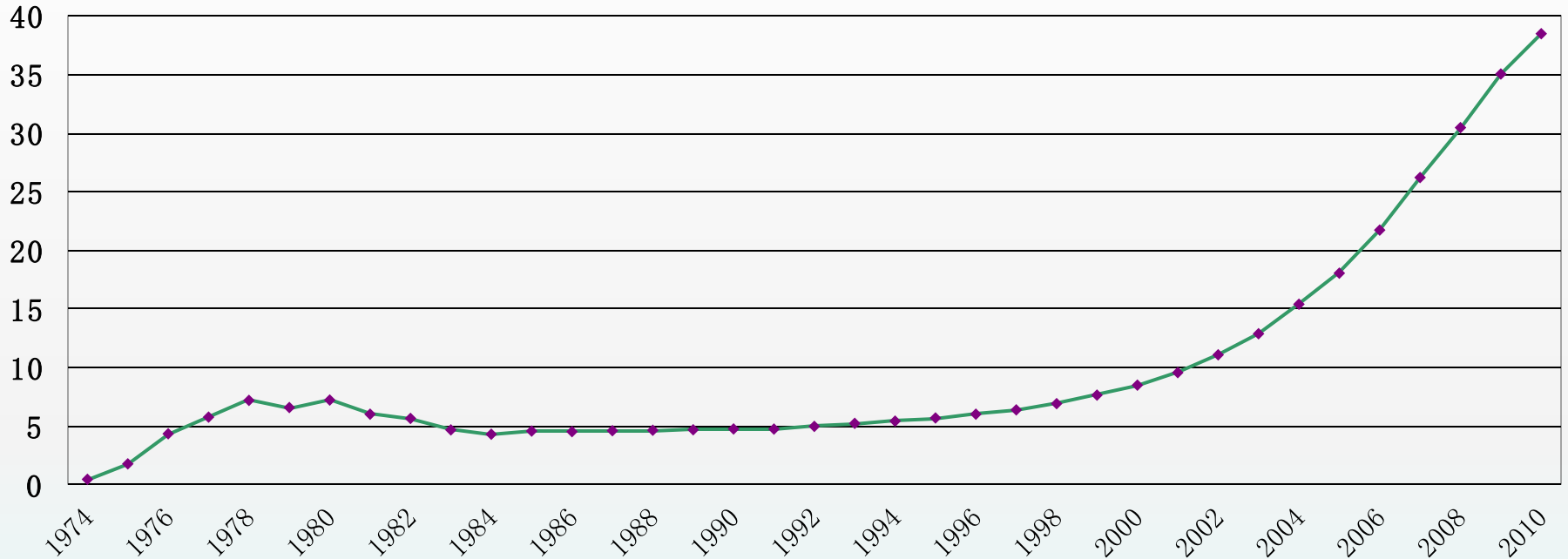
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# GENERAL BACKGROUND



# Figures Update

**Number of Domestic Biogas Plants in China (in million units)**



- ❖ total biogas users in China reached 40 million HH, benefiting 155 million people (about 1/3 of the total households appropriate for biogas installations)
- ❖ domestic biogas plants: 38.51 million units (more than half installed during the past 5 years from 2006-2010)
- ❖ medium and large biogas systems(>20 cubic meters each): 72.7 thousand units

# New Development Trends

## ❖ Increased Government Investment

- Grant to domestic biogas plants increased by 30% to about USD200/250/300 each installed digester in the eastern/central/western region - about 60% of the biogas installation costs (USD365-525) or 25% of the biogas-kitchen-toilet-pigpen improvement costs (USD525-1,350);
- Grant to M&L biogas systems set at 25-45% of total investment costs with a ceiling of CNY1-2 Million (about USD160K-320K) each system

## ❖ Changes in Emphasis

- From “rapid scaling up biogas project to cover more households” to “better balanced efforts on scale expansion and the functioning of the existing installations”

# Emerging Issues

- ❖ New challenges to traditional ways of domestic biogas management
  - urbanization and labor migration (labors and biogas technicians on migration jobs out of home villages)
  - changes on livestock raising patterns (from individual HH to centralized cattle farms, resulted in availability problems of animal wastes for biogas production to individual HHs )
- ❖ Malfunction due to inadequate maintenance
  - Normal functioning of biogas plants relies 30% on construction quality, but 70% on post-installation management

# Strategies on Post-Installation Services

- Enhance institutional setup – establishment of nationwide biogas service networks (initiated by the government in 2007)
- Provide incentives for private sector engagement (Public-Private Partnership; Fee for Services...)
- Specialized services in biogas sector, targeted at biogas households (operation and maintenance, feeding and slurry discharge, construction ...)

# NATIONAL INITIATIVE ON BIOGAS SERVICE SYSTEMS & NETWORKS



# Rural Biogas Services Initiative (1)

- Initiated by the central government in 2007
- Financial incentives include provision of equipment for the establishment of biogas service outlets at village and township level
- Aimed at more market-driven service provision and sustainable operations

# Rural Biogas Services Initiative (2)

## Initial Targets

- ◆ Set up county level service stations to backup village-based service outlets;
- ◆ Cover 70% of biogas townships with interconnected network
- ◆ Property-like management to ensure average service life of biogas plants over 15 years and over 80% of bio-slurry effectively used

# Rural Biogas Services Initiative (3)

## How It Works

- ◆ Government makes funding available for application (funding size currently at USD4,000-7,000 each service outlet, primarily for the purchase of tools and equipment)
- ◆ Funding opens to individuals, companies, institutions, associations or biogas cooperatives...
- ◆ Basic requirements: 1) each outlet serves 300-500 biogas HHs; 2) established with feeding and discharging equipment and feedstock and/or effluent storage, if necessary; repair toolkit; stock of spare parts; measurement and testing set; and agreement with biogas HHs

# Rural Biogas Services Initiative (4)

## Progress so far

- ◆ Over 79,200 village level service outlets set up;
- ◆ 756 county level service stations established
- ◆ Training bases set up in 8 provinces
- ◆ Central government grant funding amount to CNY2.54 billion (USD400 Million)
- ◆ Various business models developed
  - ◇ full entrustment and partial entrustment
  - ◇ biogas user's associations
  - ◇ biogas service companies (individual or share-holding)
  - ◇ non-profit organizations for public welfare

# Biogas Service Models – Common Features

## Entrust-Based Services

- Providing services based on contracts between biogas users and service providers
- Contract terms regulated by the government

## Market-Based Operations

- Users pay for services – installation and/or operation by service providers
- Government provides partial grant at the initial stage for the establishment of the service outlet and, in some cases a minor operational subsidy depending on the number of served HHs
- Commercial operation – cost recovery or profit making

# Sample Business Model

## – Full or Partial Entrustment

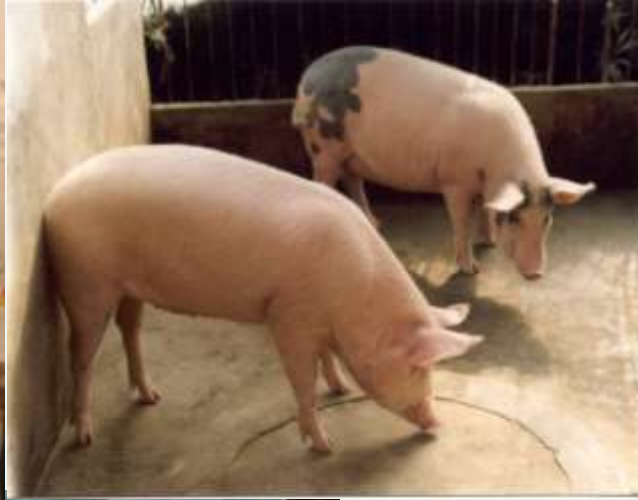
- Property-Like Management
- Service provider in charge of biogas plant installation and/or operation & maintenance (feeding, slurry discharge, repair...)
- Village-based service outlets with regular contacts with users and readily available on call
- Local government may opt to provide minor financial support at USD1-2 per year for each served HH
- Serve new biogas plants and reactivation of dysfunctional biogas plants

# Full Entrustment Business Model – Case of Linzhang County

- Biogas user HHs pay CNY1,000 (USD160) for turn-key services (excavation, construction, installation, digester feeding, and start-up)
- Monthly payment of CNY40 (USD6) for operational services of 8 months each year (cooking 3 meals a day)
- Contract based and time-bound services (fix problems within 8 hrs –3 days, provide LPG for cooking during repair period)
- Performance based staff contract and rewarding system (40 fulltime employees and 200 persons contracted)
- Entrusted biogas plants 100% functioning and bio-slurry for fertilizer at vegetable production base

# OBSERVATIONS

1. Full or partial entrusting services help increase the functional rate of domestic biogas plants
2. Cost recovery and profit making possible with services on rural biogas plants
3. Public financing plays important catalyzing roles to the establishment of more market-based biogas services
4. Subsidizing biogas service providers at operational stage is not necessary, but may be required in some cases for the sustainable operations







**Thanks for Your Attention**

