Global sustainability

Capacity Building for the Efficient Use of Biomass for Bioenergy & Food Security in the GMS (TA7833)

Project Description & Inception Phase Findings

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Greater Mekong Subregion Regional Cooperation Program

Sectors

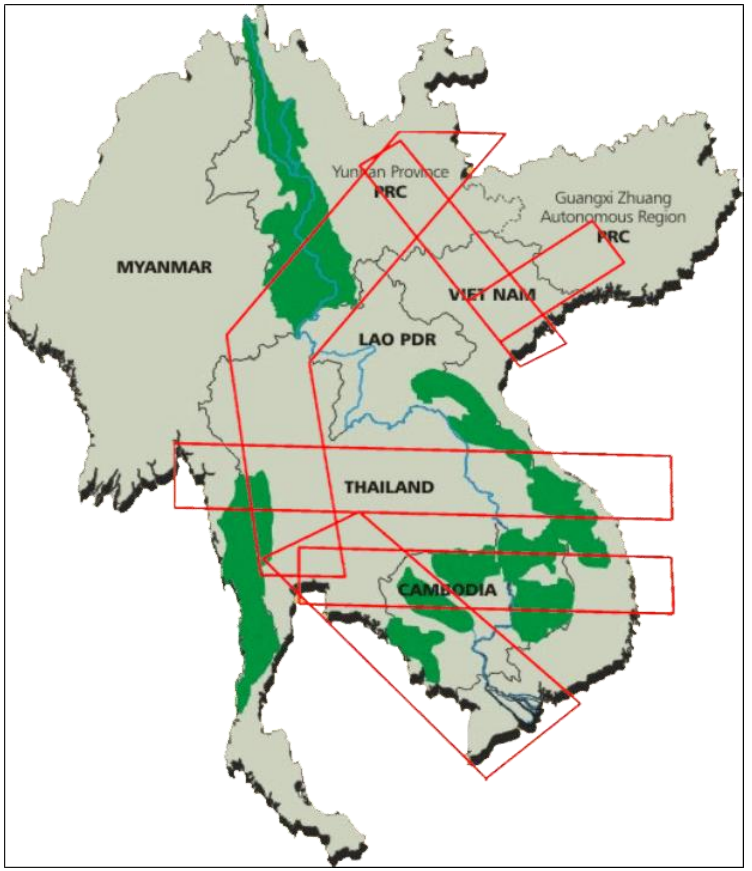
- Agriculture
- Energy
- Environment
- Human Resource Development
- Telecommunications
- Tourism
- Trade and Transport

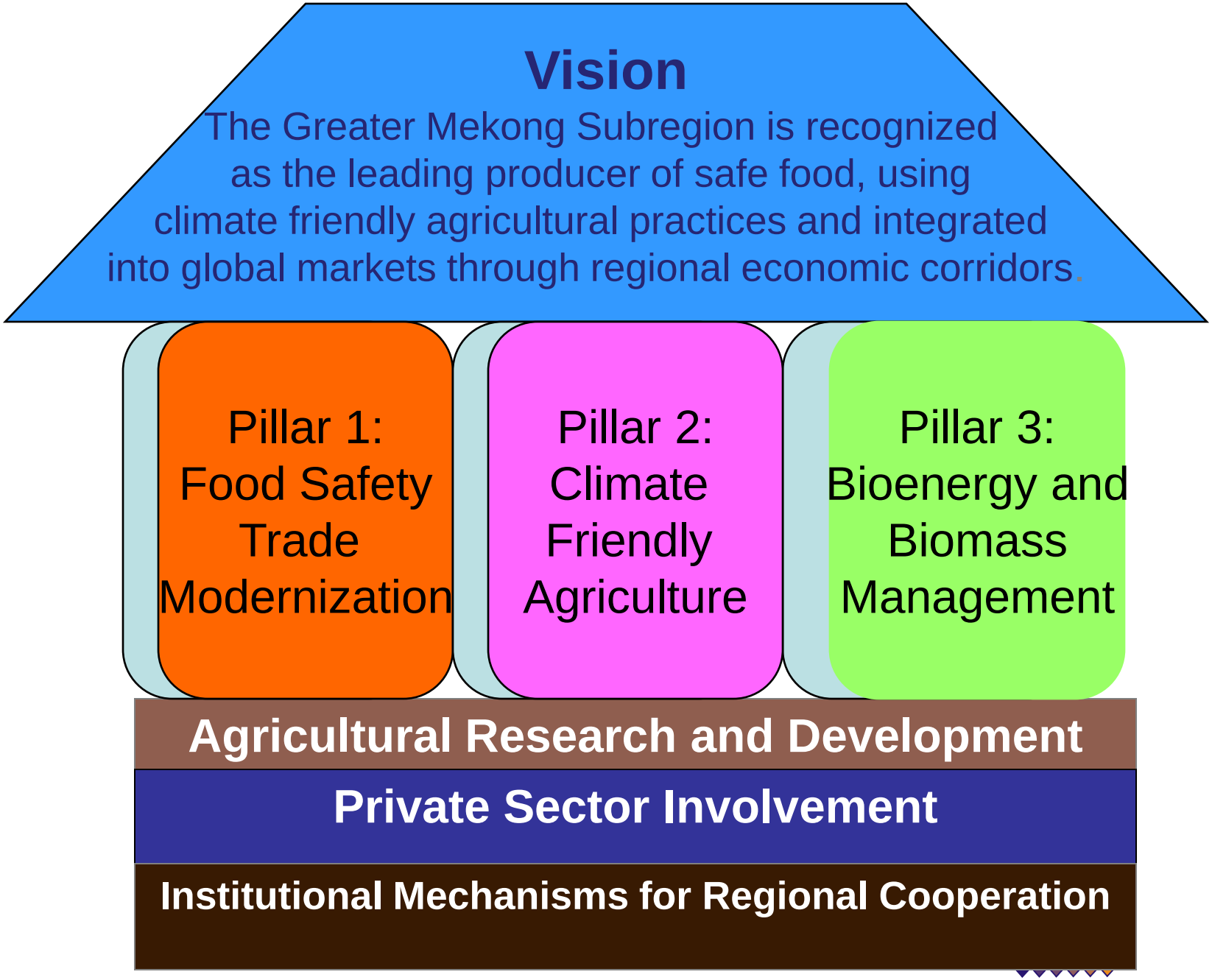
Working Group for Agriculture (WGA)

Technical Assistance	Amount (in Mil US $)	Implementation Period
3 RETAs	3	June 2003-2013
RETA 7833	4	July 2012-2015
RETA 8163	7.5 +	Sept 2012-2017

Vision for the GMS Agriculture Sector

The Greater Mekong Subregion is recognized globally as the leading producer of safe food, using climate-friendly agricultural practices and integrated into global markets through regional economic corridors.

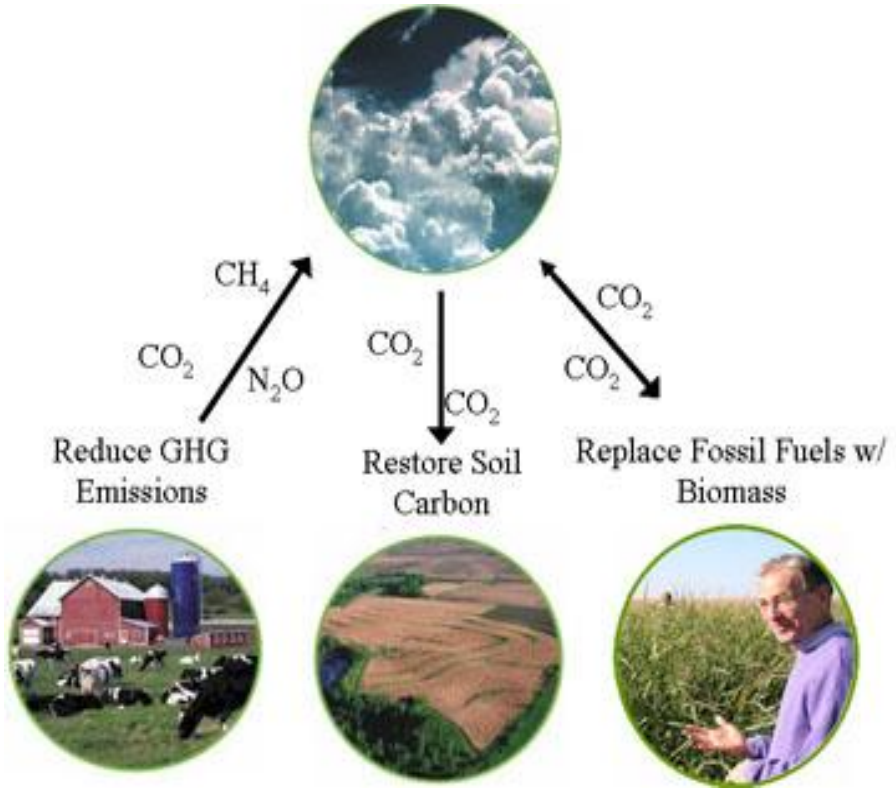



Vision
The Greater Mekong Subregion is recognized as the leading producer of safe food, using climate friendly agricultural practices and integrated into global markets through regional economic corridors.
Pillar 1: Food Safety Trade Modernization
Pillar 2: Climate Friendly Agriculture
Pillar 3: Bioenergy and Biomass Management
Agricultural Research and Development
Private Sector Involvement
Institutional Mechanisms for Regional Cooperation

Pillar 1. Building Global Competitiveness by Promoting Food Safety

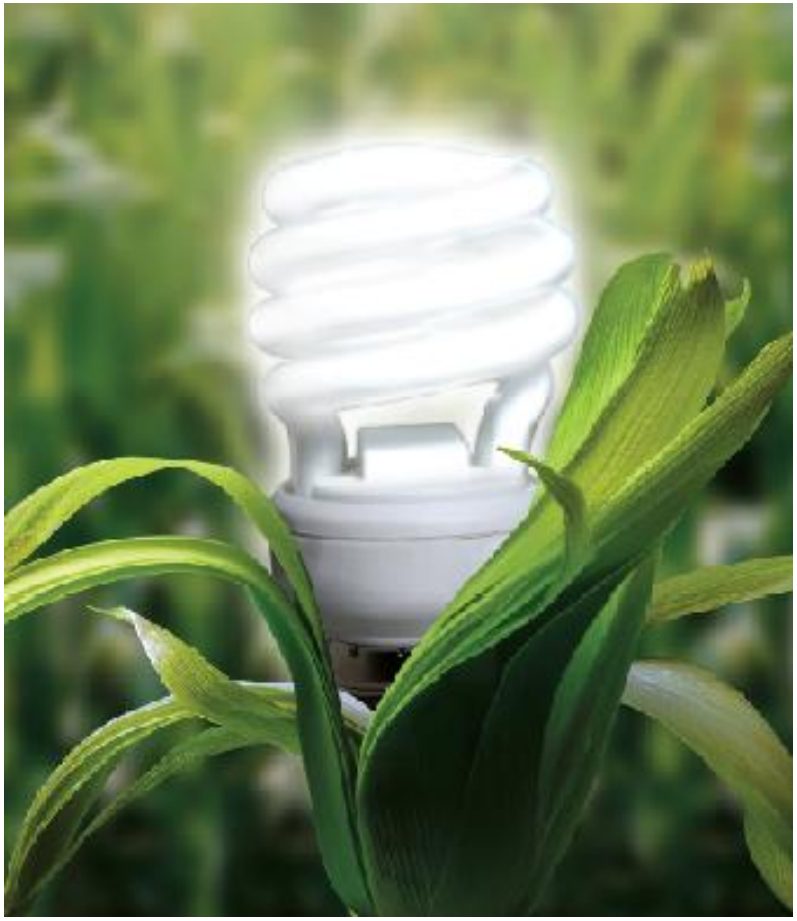
- Enhance trade infrastructure
  - Harmonize food safety standards
  - Food traceability system
  - Capacity building for formal and informal certification systems, including PGS
- Promote regional sourcing for critical mass

Pillar 2: Promote Climate-friendly Agriculture and Natural Resource Management



- Reward farmers for their ecosystem services i.e. carbon credit for biochar
- Risk management system i.e. weather-based risk insurance
- Protection from diseases and invasive species

Pillar 3: Promote Agriculture as Leader in Providing Rural Renewable Energy



- Regional legal and regulatory framework for biomass and biofuel
- Promote agro-processing using renewable energy and eco-labeling
- Promote FDI of eco-friendly supply chain for 3Ps: **P**eople, **P**lanet, **P**rofit

Problems to be Addressed in GMS Bioenergy & Food Security

- Energy is essential for economic growth, particularly inclusive growth;
- Rural population in the GMS faces both energy and food insecurity: C 20%, L 24% & V 7%;
- Inefficient and unsafe use of biomass as fuel can lead to health hazards;
- Low efficiency of biomass use may lead to high amounts of biomass to be taken from forests and fields → soil nutrient deprivation, deforestation → sustainable food security;
- Inefficient utilization of biomass as bioenergy disproportionately affects women and children.

Aim of the project

To contribute to the improvement of the use of biomass in Cambodia, Lao PDR, and Viet Nam by piloting efficient biomass use projects through regional, national and local initiatives.

Methodology

Promoting an ***increased dialogue*** *between regional actors (top-down), as well as the* ***scaling-up of*** *local community-based* ***initiatives*** *(bottom-up).*

- *At the regional level, the project f**acilitates high-level dialogue** on a common approach to bioenergy development balanced with food security issues, for pro-poor climate change mitigation and energy self-sufficiency.*
- *The project works through Agriculture Ministries in Cambodia, Lao PDR and Viet Nam and other interested stakeholders to put in place **human and institutional capacity to increase investments** that will help promote the efficient use of biomass to benefit the poor while enhancing food security.*

Three Pathways

- Converting biomass into clean energy and organic fertilizers (biogas, biochar, compost);
- Promoting non-food biofuel crop(s) in small-scale integrated farming systems for biofuel;
- Improved cook stoves to reduce fuel demand and emissions

Four Key Technologies under TA7833

- Biogas and efficient use of bioslurry
- Biochar and clean charcoal
- Improved cook stoves
- intercropping oil seed crops: SVO, biodiesel

ADB's Bioenergy-Food Security Policies

- Feedstock use is not a food crop,
- Land cannot be used for food crops,
- No deforestation is associated with development,
- Net energy balance is positive.

Project activities

Project activities

A) Recognition and streamlining of **sustainable standards, certification systems** and other mechanisms in order to **facilitate and ensure regional cooperation** on bioenergy and food security issues;

Project activities

B) **Implementation of pilot projects to up-scale**

- the testing and demonstration of technologies,
- delivery models,
- financing approaches, and
- other mechanisms

that are conducive to a wider scaling-up of biomass investment projects for bioenergy and food security.

This will guide forthcoming investment projects in Cambodia, Lao PDR and Viet Nam;

Project Activities

C) Provision of **regional capacity building support** for project stakeholders engaged in biomass, bioenergy and food security initiatives, including government agencies, donors, NGOs, and the private sector.

Project Activities

D) **Delivery of appropriate knowledge products** such as manuals, technical briefs, policy briefs and information packs as well as awareness campaign, to build knowledge, interest and demand for appropriate mechanisms for utilizing biomass for bioenergy and food security in the GMS Subregion.

Inception phase completed

1. Existing implementation structures mapped for efficient utilization of biomass for bioenergy and food security.
2. Recommendations of organizations to carry out specific work packages under the TA established.
3. Recommendations on the advantages and disadvantages of both existing and new implementation structures provided.
4. Challenges and how they can be addressed or mitigated outlined.
5. Capacity issues, and how they can be addressed or mitigated outlined

1st GMS Forum on Harmonization of *Bioenergy and Safe Food Standards*

- In Nanning, China from 1 to 5 July 2012, the first regional stakeholder meeting organized by the project with the full participation of the ADB, the NFPs, TFPs and Standards Focal Points (SFPs) from Cambodia, Lao PDR and Viet Nam, along with the Consultant TA team members.
- Results: preliminary proposals and mutually agreed criteria for selection of pilot projects and studies on the four key-technologies.

Status of TA 7833 Activities

- Kick off meetings in December 2011
- National stakeholder workshops in February & March 2012 in CLV
- Three WGA-TA7833 office spaces set up in CLV
- First regional meeting with nominated governmental National and Technical Focal Points CLV in China – July 2012
- Regional Workshop on Household Bioenergy and Food Security Policy in China – July 2012
- Start of pilot projects for up-scaling expected for January 2013

Cambodia

Japanese kiln for making biochar donated to the MAFF

Cambodia

Plastic bio-digester manufactured by a company near Phnom Penh

Cambodia

On-going biochar trials at MAFF using rice husk biochar

Lao PDR

Piles of rice husk by a rice mill with no current application

Lao PDR

A rice husk gasification cook stove, Vientiane Province

Vietnam

Low cost BGP and gas storage

Vietnam

Brick dome construction BGP

Vietnam

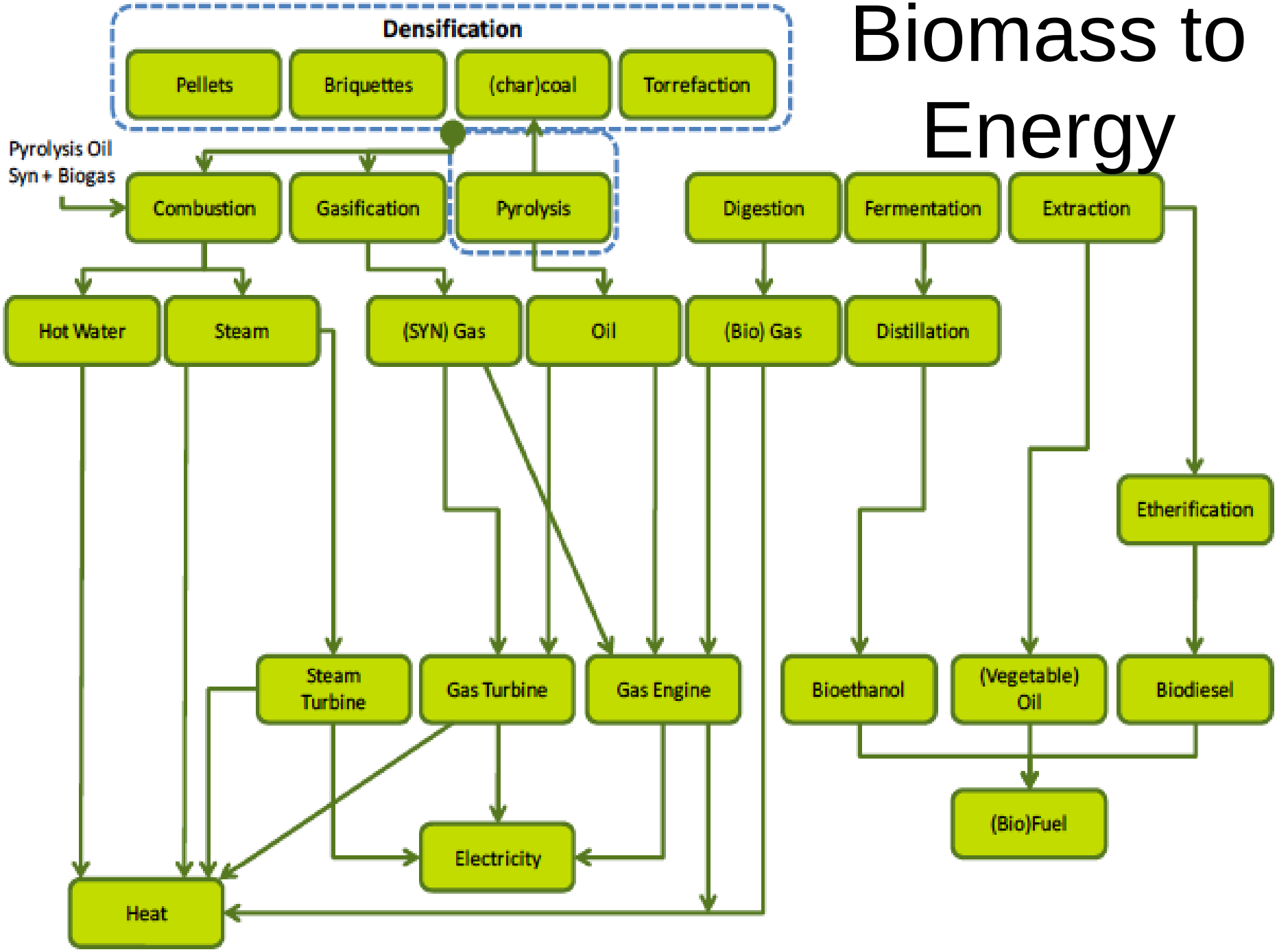
Prefabricated Household BGP

Vietnam

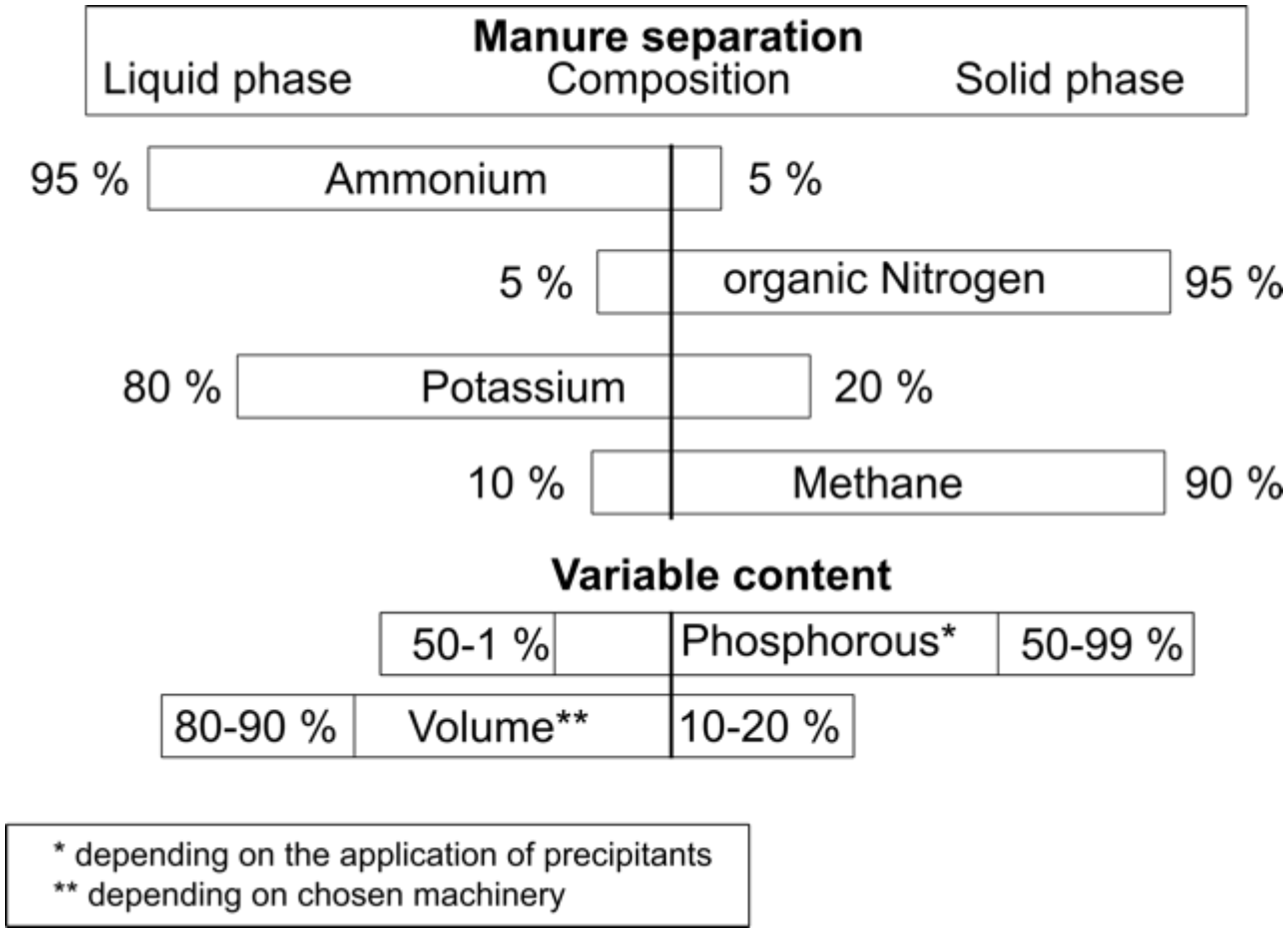
Stove for cooking and making biochar, Hanoi

Thank you very much
for your kind attention!

Biomass to Energy



Basic knowledge



Nutrient Distribution

Some farms apply secondary treatment measures on the effluents resulting from anaerobic digestion in the biogas plants.

(a) controlled fertile-irrigation of agricultural fields after seasonal storage,

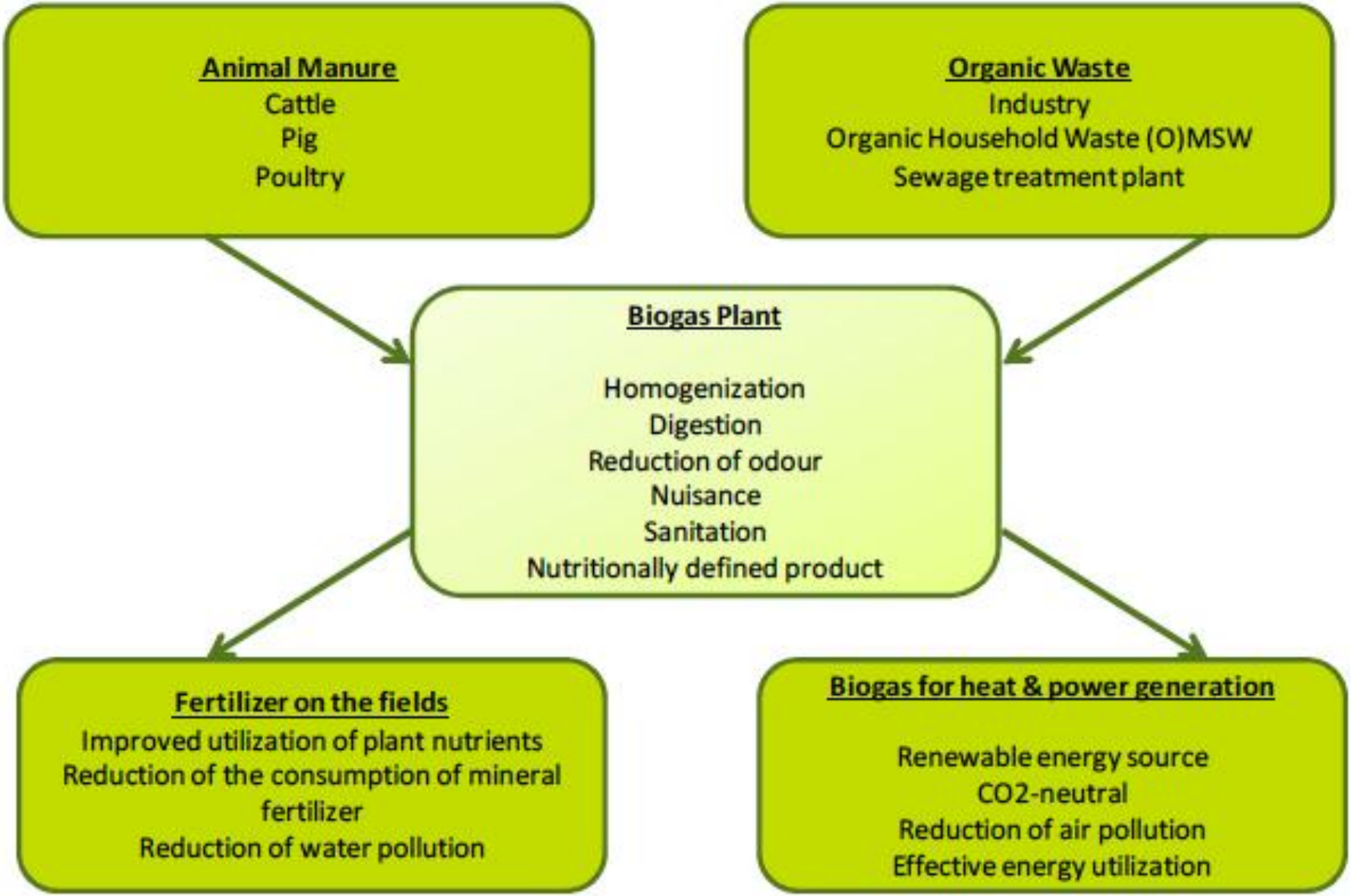
(b) aerated or shallow aerobic lagoons and ponds,

(c) use of constructed wetlands,

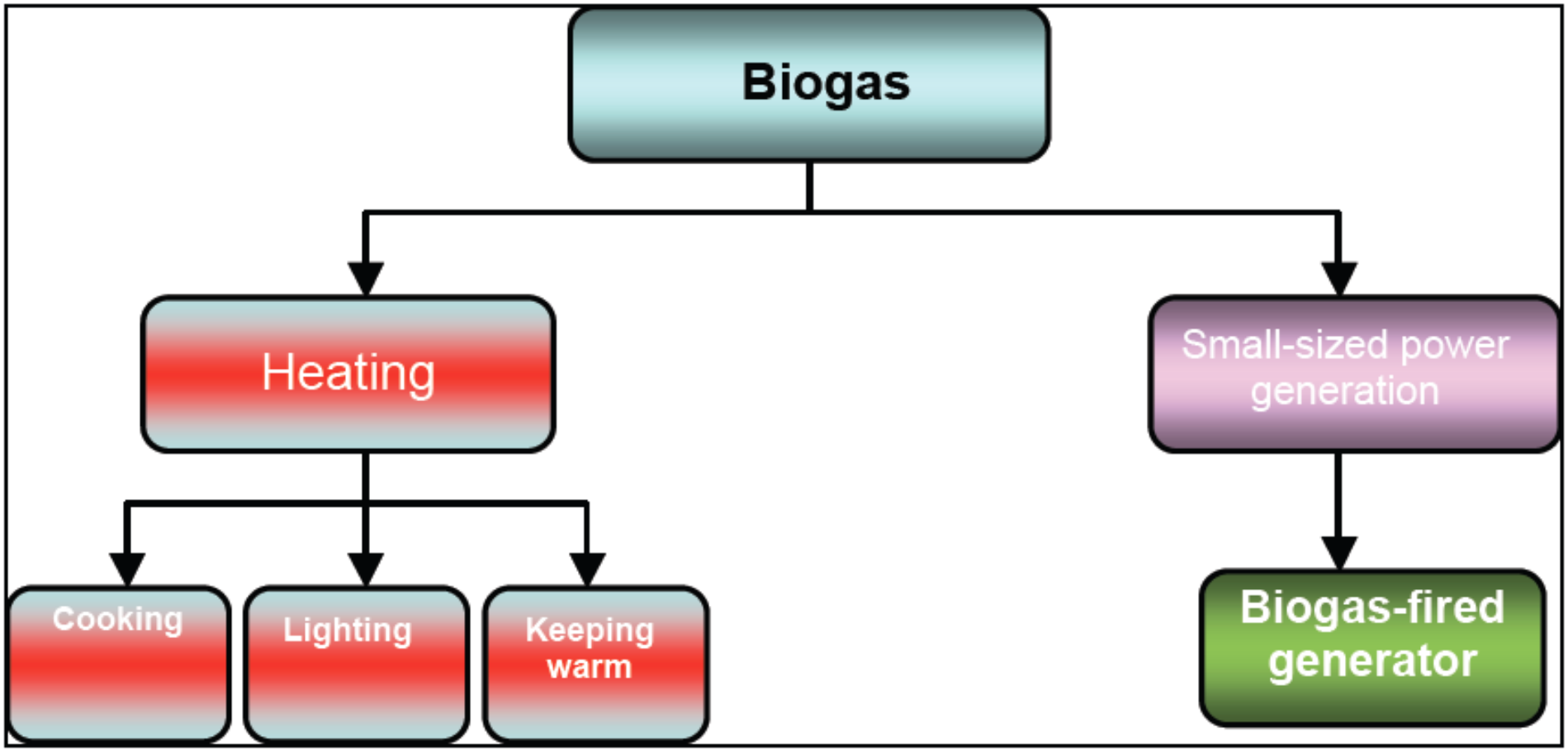
(d) fish ponds,

(e) drying and composting of sludge.

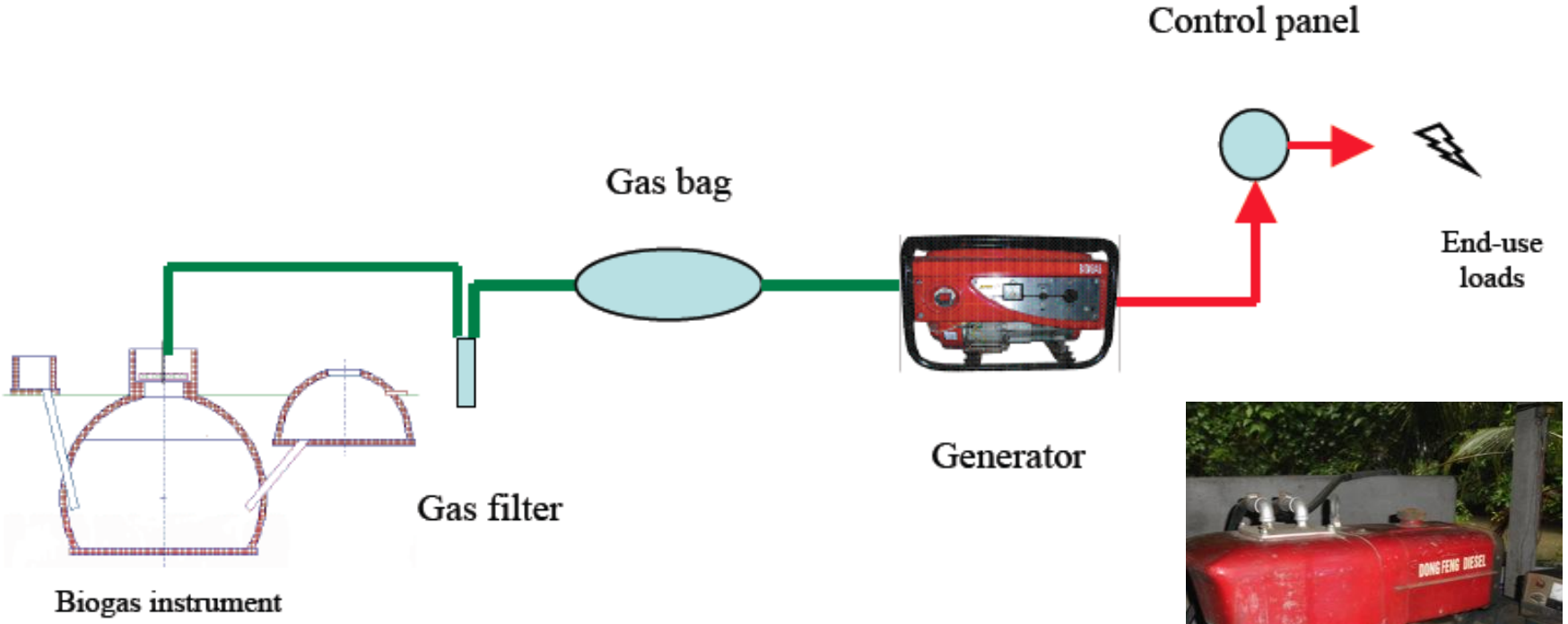
Rice husk CHP


Animal Manure
Cattle
Pig
Poultry
Organic Waste
Industry
Organic Household Waste (O)MSW
Sewage treatment plant
Biogas Plant
Homogenization
Digestion
Reduction of odour
Nuisance
Sanitation
Nutritionally defined product
Fertilizer on the fields
Improved utilization of plant nutrients
Reduction of the consumption of mineral fertilizer
Reduction of water pollution
Biogas for heat & power generation
Renewable energy source
CO2-neutral
Reduction of air pollution
Effective energy utilization

Current use of biogas

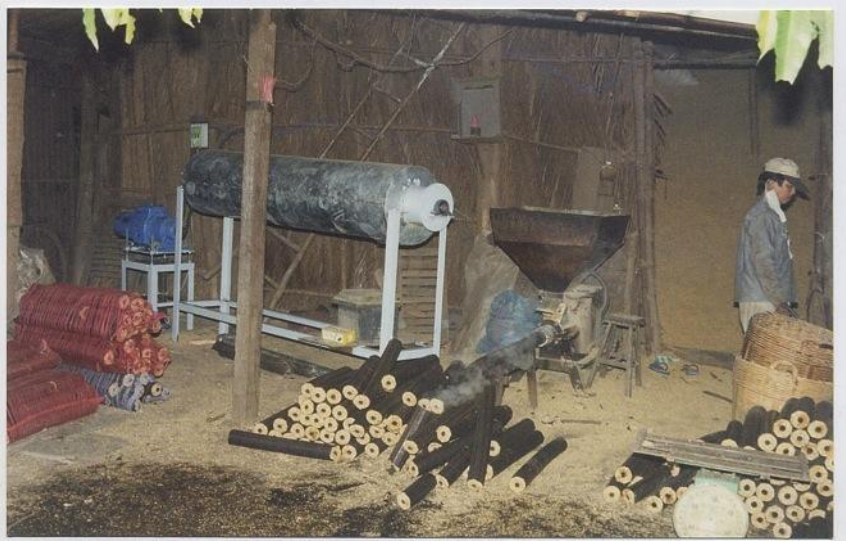


Household biogas power



	Pellets	Briquettes	Charcoal	Torrefaction	Combustion	Gasification	Pyrolysis	(An)aerobic (co-) digestion	Biodiesel Bio ethanol
Bamboo			X	?	X	X	X		
Cassava									X
Coconut (Coil and Pith)	X	X	X	?	X	X	?		
Coffee Pith	X	X			X	?	X		
Corn (Cobb and Stob)		X		?	X	?		?	
Jatropha									X
Manure								X	
Manure (poultry)					X	X	X	X	
OSW					X			X**	
Rice Straw				X	X		X	X*	
Rice Husk					X	X	X	X	
Sugar Cane Bagasse				X	X	X	X		
Sugar Cane Molasse									X
Wood	X	X	X	X	X	X	X		

Vietnam



Biomass briquetting / torrefaction