

National Dissemination Seminar of Asian Regional Research Programme in Energy, Environment and Climate

Barriers to Selected Biomass Energy Technologies

Objectives

- 1. To identify and analyse the barriers to the adoption of BETs in Thailand.**
- 2. Ranking the barriers.**
- 3. To propose the measures to overcome the key barriers.**

Barriers to the Selected BETs

Selected BETs are

- **Biomass combined heat & power (CHP).**
- **Improved biomass cooking stoves.**
- **Biomass gasification for process heat.**

General barriers to CHP

- Lack of successful references
- Seen as complicated to operate
- The quality of biomass as a fuel is not homogeneous
- Energy not a core business of potential users
- Risk of being the first to fail
- Lack of institutions giving information and advice
- Lack of awareness among users and incentives
- Not enough technical and economic information
- Structure of the industry: Size, Transportation, Seasonality
- Uncertainty of biomass supply
- Policy, legal and government issues
- Financial barriers

General barriers to biomass improved cooking stoves

- High initial cost
- Lack of financing mechanism
- Lack of local availability of high performance devices
- Lack of performance assurance or product standard
- Lack of local expertise or know-how or skills
- Lack of co-ordinate among government agencies
- Subsidy for fossil fuel or electricity

General barriers to biomass gasification for process heat

- Failure of past projects
- Lack of incentive to implement high investment project
- Risk of being the first to fail
- Perception of BETs
- Finite size of BETs

Methodology for Prioritization Process:

AHP Model for Prioritization of Barriers

AHP is known as a pair-wise comparison method.

Level 1: Goal

Ranking of barriers to biomass energy technology

**Level 2: Stake
-holder**

Stake-holder 1

Stake-holder 2

Stake-holder 3

Stake-holder 4

Level 3: Criteria

Impact of removal

Effort required for removal

Level 4: Barriers

Barrier 1

Barrier 2

Barrier 3

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Barrier n

Methodology for Prioritization Process:

AHP Model for Prioritization of Barriers

Stakeholders and Number of Questionnaires

62 sets of questionnaires were distributed to
(returned from) 4 groups of stakeholders:

1. Policy makers
2. Researchers
3. Manufacturers & investors
4. Users & NGOs.

Ranking of barriers to CHP of all stake-holders

The three most significant barriers to the adoption of CHP are:

1. **Lack of Techno-Economic Information for Decision Making**
2. **Lack of Information Disseminating Institutes**
3. **Lack of Successful References**

Ranking of barriers to biomass improved cooking stoves of all stake-holders

The three most significant barriers to the adoption of biomass improved cooking stoves are:

- 1. Lack of High Performance Devices Locally**
- 2. Lack of Product Standards or Performance Assurance**
- 3. High Initial Cost**

Ranking of barriers to biomass gasification of all stake-holders

The three most significant barriers to the adoption of biomass gasification for process heat are:

1. **Negative Perception Regarding BETs**
2. **Risk of Being the First to Fail**
3. **Failure of Past Projects**

Removing Barriers to Biomass-Based Combined Heat and Power (CHP)

Lack of Techno-Economic Information for Decision Making

- Demonstration projects, Energy Conservation Fund to promote research and development, supporting mechanism for designated factories and feasibility studies.

Lack of Information Disseminating Institutes

- Demonstration projects of BETs funded/studied by DEDE, Experts from Univ. & ECCT can help resolve technical problems, Pool information of renewable energy network, Forum & Cooperation by Government.

Lack of Successful References

- Promotion of reliable CHP plants, dissemination of information.

Removing Barriers to Improved Biomass Cooking Stoves

Lack of High Performance Devices Locally

- Promote rural training program for potters, Dissemination and promotion at targeted region by DEDE and expand to other region.

Lack of Product Standards or Performance Assurance

- Establish stove standards, Demonstration of construction, testing and performance by DEDE, Monitor target groups to help solve problems.

High Initial Cost

Financial support for rural pottery training, Identify suitable incentives for widespread adoption, community fund, soft loan.

Removing Barriers to Biomass Gasification for Process Heat

Negative Perception Regarding BETs

- Improved funding environment to encourage development and demonstration of BETs.

Risk of Being the First to Fail

Technology guarantee by suppliers, spare-part availability.

Failure of Past Projects

- Past failure should be analysed, R&D to overcome shortcomings, Explain the past mistakes to avoid in future.



Thank you