

**LAO PEOPLE'S DEMOCRATIC REPUBLIC**  
**PEACE INDEPENDENCE DEMOCRACY UNITY PROSPERITY**

Prime Minister's Office

No. xx/PM

Vientiane Capital, dated xx

**DECREE**  
**ON BIOMASS GASIFICATION**

- Pursuant to the Law on the Government of Lao PDR, No 02/NA, dated 6 May 2003;
- Pursuant to electricity Law of Lao PDR, No 03/NA, dated 08 December 2008;
- Pursuant to Renewable Energy Development Strategy (hereinafter-REDS);
- Based on Letter of Recommendation of the Minister for Energy and Mines, No. xx/MEM, dated XX.

**Prime Minister issues the Decree:**

**Section I**

**General Provision**

**Article 1. Objectives**

This Decree defines the principles, rules, and measures on the implementation, operation, regulation and supervision of biomass gasification business, to promote biomass-based power generation development, including the on-grid and off-grid option and to develop domestic small and medium size biomass gasification digester, for increasing cleaner energy for self consumption, effective agro-forestry-livestock wastes treatment aiming at creating economically and technically viable promotion mechanism for biomass technology in Lao PDR.

**Article 2. Definitions**

The terms used in this Decree shall have the following meaning:

- **Biomass:** biomass is biological material derived from living, or recently living organisms. In the context of biomass for energy this is often used to mean plant based material, but biomass can equally apply to both animal and vegetable derived material.

- **Type of biomass:**
  - 1) vergin wood (fast growing, specially planted trees for energy purposes)
  - 2) energy crop (short rotation energy crops, grasses and non-woody energy crop, agricultural energy crop, aquatic)
  - 3) Agriculture residues
  - 4) Urban organic wastes
  - 5) Industrial waste and co-products
  
- **Biomass conversion technology.** There are a number of technological options available to make use of a wide variety of biomass types as a renewable energy source. Conversion technologies may release the energy directly, in the form of heat or electricity, or may convert it to another form, such as liquid biofuel or combustible biomass.
  
- **Biomass Thermal conversion technologies.**

These are processes in which heat is the dominant mechanism to convert the biomass into another chemical form. Thermal conversion of biomass basically consists of the following types:

  - **Combustion.** Combustion is the process by which flammable materials are allowed to burn in the presence of air or oxygen with the release of heat. Heat can be used many ways: space heating, water boiling, steam-raising for electricity generation or motive force.
  - **Gasification** is a partial oxidation process whereby a carbon source such as coal, natural gas or biomass, is broken down into carbon monoxide (CO) and hydrogen (H<sub>2</sub>), plus carbon dioxide (CO<sub>2</sub>) and possibly methane (CH<sub>4</sub>).
  - **Pyrolysis** is the precursor to gasification, and takes place as part of both gasification and combustion. It consists of thermal decomposition in the absence of oxygen. It is essentially based on a long established process, being the basis of charcoal burning. The products of pyrolysis include gas, liquid and a solid char, with the proportions of each depending upon the parameters of the process. Applications for pyrolysis includes (1) biomass energy densification for transport or storage; (2) Co-firing heat or power; (3) Feedstock for gasification;
  
- **Biomass gasification** converts biomass materials into gaseous component. The results of gasification is the producer gas, containing carbon monoxide, hydrogen, methane and some other inert gases. Mixed with air, the producer gas can be used in gasoline or diesel engine with little modifications.
  
- **Biomass gasification system classification**

Based on the design of gasifiers and type of fuels used, different kinds of gasifiers exist:

- Portable gasifiers: mostly are used for running vehicles or small scale energy needs
- Stationary gasifiers combined with engines are widely used in rural areas of developing countries for many purposes including generation of electricity and running irrigation pumps.
- Waste disposal gasification. Waste gasification has several principal advantages over incineration: (1) production of syngas; (2) much cheaper power generation in engines and gas turbines; (3) chemical process can produce other synthetic fuels; (4) waste gasification can treat ash from heavy metals
- **Feedstock for Biomass gasification:**
  - Theoretically, almost all kinds of biomass with moisture content of 5-30% can be gasified, however, not every biomass fuel can lead to the successful gasification. Most of the development work is carried out with common fuels such as coal, charcoal and wood.
- **Applications of Biomass gasification**
  - **Gasifier-engine system** combined with generator provides electrical energy for lighting, and other household purposes. Small-scale gasifier system (10-30 kWe) would be appropriate and suite multitudes of remote rural village applications in Lao PDR
  - **Combined heat and power (CHP):** the **market potential of biomass CHP** is unlimited. Worldwide however there is an increasing interest in this form of energy supply. One of the major issues in implementing this as a regular source of energy supplementation or full provision is making it usable on a smaller scale.

**Article 3. Principles for biomass gasification production.**

Biomass gasification production shall be based on the following principles:

1. comply with National Renewable Energy Development Strategy
2. social and rural development interest
3. environmental sustainable development
4. energy diversification
5. economical and business development
6. use of local resources

**Article 4. Scope of application**

This Decree applies to all individuals and organizations that invest in biomass gasification system for non-commercial and commercial use within the Lao PDR.

**Section II**

**Types of Biomass Gasification System**

**Article 5. Types of Biomass Gasification System**

Based on supply destinations, biomass gasification systems for energy production consists of two types as followed:

1. Non commercial biomass gasification system for self-consumption;
2. Commercial Biomass gasification systems are counted from small scale electricity generation (capacity from 30 kWe) up to large scale combined heat and power generation.

**Article 6. Non commercial Biomass Gasification System**

Non commercial biomass gasification system is a production of gaseous energy from biomass material for meeting domestic needs in heat (such as cooking, drying and small scale process heating), or for electricity generation.

**Article 7. Biomass Gasification System for Commercial Purpose**

Biomass gasification system for commercial purpose is a system that can generate heat and electrical power to be sold to the grid system of distribution company or other buyers.

Biomass gasification system for commercial purpose shall be subject to licensing and regulation procedures as provided for in this Decree.

**Section III**

**Installation, Utilization and Supervision of  
Non commercial Biomass Gasification System**

**Article 8. Declaration of Installation**

Individuals or communities willing to install biomass gasification unit for household and on farm use shall declare the project proposal to District Office of Energy and Mines for registration and assistance.

**Article 9. Approval and Registration of the installation**

The installation of a non commercial biomass gasification facility shall be approved and registered by the District Office for Energy and Mines.

**Article 10. Technical Instruction for Installation**

The installation of non commercial small scale biomass gasification system from the initial phase shall be subject to the technical instruction and guidelines provided by the Ministry of Energy and Mines.

The Ministry of Energy and Mines in collaboration with Ministry of Science and Technology and other parties concerned shall issue a technical instruction or guidelines for the installation of non commercial small scale biomass gasification system.

When such technical instruction or guideline exists, all non commercial biomass gasification systems shall be installed in compliance with these instruction and guidelines.

**Article 11. Standard Technical and Safety Requirement**

The operation of non commercial biomass gasification unit shall comply with the technical and safety standards as issued by the Ministry of Energy and Mines. The owner shall be responsible for the management, operation, maintenance and safety of the system.

When such technical instruction or guideline exists, all non commercial biomass gasification units shall be operated in compliance with these instruction and guidelines.

**Article 12. Technical Supervision**

District Office for Energy and Mines may undertake technical supervision of non commercial biomass gasification unit.

## **Section IV**

### **Licensing and Regulation**

#### **of Biomass Gasification System for Commercial Purpose**

##### **Article 13. Approval of biomass gasification facility**

Developers, individuals or legal entities, who wish to invest in a biomass gasification unit with commercial purpose shall first submit an application consisting of a short description of the proposed installation to the Provincial Department of Planning and Investment for consideration and approval.

The Provincial Department of Planning and Investment shall issue the approval to the applicant within fifteen (15) working days starting from the date of submission of the application in accordance with this Decree.

##### **Article 14. Operation Licensing Authority**

The Authority with power and authority to issue license for installation or construction and operation of biomass gasification projects for commercial purpose shall be:

- The Provincial Department of Energy and Mines for facility with treatment capacity of less or equal to 30 tons per day;
- The Ministry of Energy and Mines for facility with a treatment capacity higher than 30 tons per day.

##### **Article 15. Licensing Conditions**

Developers who wish to install a biomass gasification system for commercial purpose shall submit an application to the relevant licensing Authority as specified in Article 14. The application shall include the following documents:

1. Brief project description; including proposed site location;
2. Business Plan or Feasibility Study;
3. Technical Design
4. Technical and Safety Measures;
5. Environmental Certificate;
6. Operation and Maintenance Plan.

**Article 16. License Terms and Conditions**

The Ministry of Energy and Mines shall develop a standard license terms and conditions for licensing, regulation and supervision of biomass gasification system for commercial purpose including regulation and supervision procedures that shall be implemented and complied with by the operation licensing authority.

**Article 17. Consideration of the Application**

The Provincial Department of Energy and Mines shall issue the Operation License to the applicant within fifteen (15) working days starting from the date of receipt of complete application in accordance with this Decree.

When the licensing Authority is the Ministry of Energy, the delay to issue the Operation license to the applicant is extended to thirty (30) working days starting from the date of submission of complete application in accordance with this Decree.

In case of rejection, the licensing Authority shall provide written reasons for its decision.

Should the licensing Authority fail to reply during the period of consideration and in absence of a written notification to the applicant that the period of consideration is extended, the authorization is granted.

**Article 18. Technical and Safety Requirement for the Utilization**

The biomass gasification facility shall be operated in accordance with the technical and safety standards issued by the Ministry of Energy and Mines and all other legal requirements.

**Article 19. Technical Supervision**

After commercial operations have commenced, the operators shall submit quarterly reports to the Provincial Department of Energy and Mines.

The operator shall provide access to the biomass gasification facility to the staff of the Provincial Department of Energy and Mines for inspection purpose whenever required, either regular or risk-based inspection. The inspector's visits shall take place during normal business hours and shall be subject to prior notice whenever possible.

Supervision of biomass gasification system shall at least cover the followings:

1. Compliance with the requirements of the relevant laws and regulations;

2. Compliance with terms and conditions of Operation License;
3. Compliance with Technical and Safety Measures;
4. Compliance with terms and conditions of Environmental Certificate or Environmental Management Plan;
5. Compliance with Business Plan;
6. Compliance with Operation and Maintenance Plan.

**Article 20. Principle on Price Determination**

Determination of price for biomass gasification product or energy shall be based on market principles in the Lao PDR. The State will intervene only if there is a need to regulate the price of product or energy to support the socio- economic development in rural and remote areas where people have no access to grid system.

**Section V**

**Access to Technical and Financial Assistancess**

**Article 21. Technical Assistance**

Ministry of Energy and Mines and its relevant Departments and Offices shall put effort to develop technical guideline and provide technical assistant to interested parties, both individuals and legal entities from public and private sectors to promote them to develop systems for biomass gasification both for household use and commercial use.

**Article 22. Conditions for Financial Assistance from the Rural Electrification Fund**

Developers and investors in biomass gasification system may apply for financial assistance from Rural Electrification Fund (REF) when the following conditions are met:

1. Facility located in a remote off grid area with no forecast for connection to the grid in a near future or other better alternatives of energy supply;
2. The system has a sustainable or reliable operation
3. Availability of fund from the REF;



**Article 23. Other Funds likely to be mobilized to support biomass gasification industry**

In addition to the fund from REF, developers and investors may apply for financial assistance from other financial sources such as: Poverty Reduction Fund, SME Development Fund, Renewable Energy Fund and other financial sources.

**Article 24. Application for Investment Incentives under the Law on Investment Promotion**

Biomass gasification developers shall be eligible to obtain all investment and other fiscal incentives defined in the law on investment promotion of the Lao PDR.

**Article 25. Additional Incentives defined by the Government**

To promote the development of biomass industry, the Government will make recommendations to the National Assembly or its Standing Committee for consideration of approval of additional investment incentives under the principles defined in Article 59 of the Law on Investment Promotion 2009 and such additional investment incentives shall be published and made available to all developers or investors in renewable energy.

**Article 26. Access to carbon finance and issuance of green certificates**

The biomass gasification developers are encouraged to access carbon finance through the intermediation of the Designated National Authority.

MEM shall issue necessary certification required for accessing carbon finance following the procedure in place.

In addition, green certificates shall be issued by the Ministry of Science and technology upon request by the developers and in accordance with procedures in place.

**Section VI**

**Supply of Biomass Gasification Product or Energy**

**Article 27. Supply of Biomass Gasification Product or Energy**

Biomass gasification system developers for commercial purpose may supply product or energy to neighboring users or to a distribution company.

The terms and conditions of such supply shall be negotiated and agreed between the investors or operators and the distribution company or neighboring users.

**Article 28. Conditions for Supply**

The conditions for the supply of biomass gasification product or energy are the following:

1. Meeting the demand of the neighboring users or buyers;
2. Be financially competitive;
3. Meeting the neighboring users or the distribution company technical standards and energy requirements.

**Section VII**

**Administration of Biomass Gasification System**

**Article 29. Roles of Ministry of Energy and Mines**

Ministry of Energy and Mines centrally and uniformly administrates the development and construction of biomass gasification system throughout the country.

**Article 30. Powers and Duties of Ministry of Energy and Mines**

In the administration of installation and construction of biomass gasification system, the Ministry of Energy and Mines has the following powers and duties:

1. To elaborate on the strategic plan relating to the development of biomass gasification system;
2. To draft a master plan regarding the development of biomass gasification, including short term, medium term and long term plans for the development of biomass gasification;
3. To consider applications and approve the establishment of biomass gasification systems for commercial purpose for which the Ministry of Energy and Mines is licensing authority;
4. To issue operation license for biomass gasification systems for commercial purpose for which the Ministry of Energy and Mines is licensing authority,

5. To develop technical instructions and guidelines for installation and construction of biomass gasification system;
6. To organize provision of technical assistance and training support on installation and construction of biomass gasification system to its Provincial Departments or District Offices for Energy and Mines;
7. To coordinate and cooperate with international organizations and foreign authorities for the development and promotion of biomass gasification system development;
8. To summarize and report the status of the development of biomass gasification system in the country to the Government;
9. To coordinate with other sectors and concerned local authorities for the management of the biomass gasification business;

**Article 31. Powers and Duties of the Provincial Department of Energy and Mines**

In the administration and inspection of biomass gasification system, the Provincial Department of Energy and Mines has the following powers and duties:

1. To elaborate own biomass gasification industry development in accordance with the Ministry of Energy and Mines' master plan;
2. To consider applications and approve the establishment of biomass gasification systems for commercial purpose for which the Provincial Department of Energy and Mines is licensing authority;
3. To issue operation license for biomass gasification systems for commercial purpose for which the Provincial Department of Energy and Mines is licensing authority,
4. To proceed to technical inspections of biomass gasification facilities;
5. To suspend or remove operation license when developers materially breach the license terms and conditions;
6. To provide technical instruction for biomass gasification investment within its scope of responsibility;
7. To gather and prepare information on potential and feasibility of biomass gasification project development in the province;
8. To coordinate with other sectors and concerned local authority for the management of the biomass gasification business;
9. To gather data on feasible commercial biomass gasification projects and report to MEM

**Article 32. Powers and Duties of the District Office for Energy and Mines**

In the administration and inspection of biomass gasification system, the District Office of Energy and Mines has the following powers and duties:

1. To provide technical assistance and support for non commercial biomass gasification system.
2. To disseminate and provide training on technical guidelines or instructions of the Ministry of Energy and Mines to non commercial biomass gasification system owners.
3. To disseminate strategic policy and plan of the Ministry of Energy and Mines regarding the development of biomass gasification;
4. To regulate and supervise the non commercial biomass gasification units.
5. To summarize and report the status of development of biomass gasification to the Provincial Department of Energy and Mines.
6. To exercise other rights and other duties related to biomass gasification system as assigned by the Provincial Department of Energy and Mines or defined by laws and regulations of the Lao PDR.

**Section VIII**

**Awards and Sanctions**

**Article 33. Incentives towards outstanding business operation**

Individuals, organizations or legal entities that have had an outstanding performance in implementing this Decree, mainly in development of biomass gasification system and related environmental protection shall receive rewards and other incentives accordingly to the laws and regulations.

**Article 34. Measures against the Violators**

Individuals, organizations or legal entities that violate this Decree shall be subject to measures depending on the seriousness of the violation in the form of education, discipline, fine, damage compensation or penalties accordingly to the laws and regulations.

## **Section IX**

### **Final Provisions**

#### **Article 35. Implementation**

The Ministry of Energy and Mines and other relevant ministries, organizations and parties concerned have the duty to efficiently implement this Decree.

#### **Article 36. Effectiveness**

This Decree is effective from the date of its signature.

Any regulations and provisions which are contradicted with the provisions of this Decree shall be cancelled.

Prime Minister of the Lao PDR

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