Strategic partnership design in the development of a domestic waste-to-renewable energy industry

A Solihat*, I Permana, R Setiawan, S Nugraha and N A Hamdani
Entrepreneurship Faculty Universitas Garut, Garut, Indonesia

*asrisolihat@uniga.ac.id

Abstract. Based on Government Regulation No 79 of 2014 about National Energy Policy that the Indonesian government is committed to developing a renewable energy mix of 23% in 2025 however its utilization in 2019 is only 3%, these condition encourage the efforts of the Garut government to commit to developing renewable energy by utilizing domestic waste into electricity. To implement, the government of Garut is supported by private industries from South Korea and Japan. The purpose of this study is to design a partnership strategy so this project can give benefit for both parties by mapping the role of each stakeholder and analysing the impact of this project on the surrounding community. The survey was conducted by collecting secondary data from Department of Environment, Hygiene and Landscaping and Central Bureau of Statistics of Garut and conducting interviews with related parties. The results of the study indicate that the limitations of technology by government can be transfer by the involvement of the private sector from South Korean and Japanese investors as operation management. A model of partnership strategy can help to realize the project that can increase the use of renewable energy in Indonesia.

1. Introduction
At present the energy and environmental crisis is the main issue being faced by Indonesia and the world, the energy crisis marked by an increase in the amount of energy consumption is inversely proportional to the depletion of energy reserves estimated to amount to 191 million tons of fuel per year and is expected to continue to increase with economic growth [1], whereas for the environmental crisis occurs due to an increase in the amount of debris and household waste as population increases, it is estimated that there are still 24% of Indonesia's waste which is currently not managed and utilized. To overcome these two problems, one alternative solution is to use waste as a renewable fuel in the form of electricity. because biomass energy including waste has a potential of 49,810 MW, so far only 4,200 MW has been utilized [2]. The advantage of using electrical energy from biomass has high feasibility as a substituent of fossil energy [3]. The hope is that using waste to be renewable energy can overcome both problems at once.

As a manifestation of the solution, the Indonesian government did not take silence through government policy No. 79 of 2014 concerning national energy security, stating that Indonesia is committed to developing 23% mixed renewable energy in 2025. The implications of this policy make the Garut government participate in supporting and trying to develop renewable energy (waste to energy). there are several factors that make the Garut regency government try to develop renewable energy including: an increase in Bajing sand landfill which makes Garut Regency included in the category of Garbage Emergency, it is estimated that an increase of 20% per year the amount of garbage
discharge, 40% of garbage fleet is not feasible then there the management solution for waste utilization is considered very appropriate to be utilized.

In the practice of its realization in the development of waste to energy, the North Sumatra government seeks to build a Waste Steam Power Plant (PLTUs) by involving the private sector, namely Japan and South Korea. hence this study aims to analyze the partnership strategy as well as analyze several stakeholders who are affected by paying attention to the social impacts that will be caused by the existence of the project if it has been realized.

2. Methodology

2.1. Collecting data to BPS and environmental agencies
Collecting some of the secondary data needed as well as conducting incentive interviews and individuals so that they get perspective, validating project planning qualitatively in several related parties so as to obtain qualitative data [4].

2.2. Stakeholder analysis
Stakeholder analysis uses the method of Reed et al., by mapping based on the level of importance and influence, stakeholders will be classified into 4 parts in the quadrant including [5]:

- Key players: Have high importance and influence
- Subject: Has high importance and low influence
- Context Setter: Has low interests and high influence
- Crowd: Has a low interest and influence

The x and y axes are filled with attributes of interest and influence [6,7], the assessment of the involved stakeholders can be assessed from the relationship of cooperation, coordination, interview communication while examining the document matrix of relationships between stakeholders [8].

2.3. Partnership analysis
The partnership analysis is carried out by collecting secondary data by gathering some information related to the Public Private Partnership, where the partnership scheme is designed or built between the interests of achieving the stated goals, mutual benefits and high mutual dependence [9].

3. Result and discussion

Figure 1. Stakeholder analysis.
### Table 1. Stakeholder.

| Stakeholder                                                                 | x  | y  |
|------------------------------------------------------------------------------|----|----|
| International Standard for Carbon Certification (ISCC)                      | 9  | 10 |
| Ministry of Environmental                                                   | 10 | 11 |
| Directorate General of New Renewable Energy and Energy Conservation Ministry | 10 | 11 |
| Energy and Mineral Resources                                                |    |    |
| Ministry State Owned Enterprises                                            | 9  | 12 |
| West Java Province Government                                               | 11 | 15 |
| Garut District Government                                                    | 11 | 15 |
| Garut Regional Owned Enterprise                                             | 11 | 13 |
| West Java Investment Coordination Board                                     | 12 | 13 |
| Indonesian Investment Coordination Board                                    | 12 | 13 |
| National Standardization Agency                                             | 11 | 10 |
| Department of Environment, Hygiene and Landscaping of Garut Regency         | 10 | 13 |
| Department of Environmental, West Java Province                             | 10 | 13 |
| Local Development Planning Agency                                           | 8  | 14 |
| PT PLN                                                                       | 8  | 10 |
| Pasibajing landfill                                                         | 11 | 12 |
| Investor from South Korea (Private sector)                                  | 12 | 12 |
| Investor from Japan (Private sector)                                        | 12 | 12 |
| local people                                                                 | 4  | 7  |
| Bank                                                                         | 7  | 8  |
| Insurance                                                                    | 5  | 6  |
| Legok Nangka landfill                                                       | 10 | 12 |
| WWF : Global Environmental Conservation Organization                         | 10 | 7  |
| WALHI                                                                        | 10 | 7  |

3.1. **Partnership analysis**

The results of the study indicate that the limitations of technology by government can be transfer by the involvement of the private sector from South Korean and Japanese investors as operation management.

3.2. **Social impact analysis**

- Open recruitment for local people.
- Infrastructure and access transportation.
• Provide income for local people (open canteen, market mini or etc. in area industry.
• social conflict.

4. Conclusion
The results of the study indicate that the limitations of technology by government can be transferred by the involvement of the private sector from South Korean and Japanese investors as operation management. A model of partnership strategy can help to realize the project that can increase the use of renewable energy in Indonesia.

References
[1] World Bank 2010 The World Bank Data: Indonesia [online]. Retrieved from: http://data.worldbank.org/country/indonesia.
[2] Pranoto B, Pandin M, Fithri S R and Nasution S 2016 Peta Potensi Limbah Biomassa Pertanian dan Kehutanan Sebagai Basis Data Pengembangan Energi Terbarukan Ketenagalistrikan dan Energi Terbarukan 12(2) 123-130
[3] Korhaliller S 2010 The UK’s Biomass Energy Development Path (UK: International. Institute for Environment and Development (IIED))
[4] Boyce C and Neale P 2006 Conducting In-Depth Interviews: A Guide Designing and Conducting In-Depth Interview for Evaluation Input (Watertown (USA): Pathfinder International)
[5] Reed M S, Graves A, Dandy N, Posthumus H, Hubacek K, Morris J, Presll C, Quinn C H, Stringer L C 2009 Who’s in and why? A typology of stakeholder analysis methods for natural resource management Journal of Environment Management 90 1933-1949
[6] Mitchell R K, Agle B R and Wood D J 1997 Toward a theory of stakeholder identification and salience: defining the principle of who and what really counts Academy of Management. 22 853-886
[7] Ackermann F and Eden C 2011 Strategic management of stakeholders: theory and practice (Long Range Planning) 44 179-196
[8] Biggs S and Matsaert H 2004 Strengthening Poverty Reduction Programmes Using an Actor-Oriented Approach: Examples From Natural Resources Innovation Systems Agricultural Research and Extension Network Paper 134
[9] Mohr J R Spekman 1994 Characteristics of partnership success: partnership attributes, communication behavior and conflict resolution technique Strategic Management Journal 15 135 - 152