Chapter 6

Internal and External Factors in the Development of Regional Waste Cooperation in the Greater Bandung Region

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Chapter 6

Internal and External Factors in the Development of Regional Waste Cooperation in the Greater Bandung Region

Enri Damanhuri[30]

Abstract:

The development of spatial and residential areas, especially in urban areas, results in an increase of municipal solid waste (MSW) that cannot be managed by individual districts or cities. In Indonesia, the cooperation between districts and cities as an aspect of regional autonomy aims to accelerate the realisation of people's welfare goals by improving services and community empowerment. The West Java province began the implementation of regional MSW management in 2006 with the operation of the Sarimukti regional landfill (TPK–Sarimukti) facility for three districts and cities. The West Java provincial government established an institution to manage this sharing facility, namely the Regional Waste Management Agency (BPSR) as a structural institution in the province. The tasks of the BPSR were then extended beyond managing the TPK–Sarimukti to those in other locations in the province. One of them was the Waste Treatment and Final Processing Legok Nangka (TPPAS Legok Nangka) facility for the Greater Bandung Region (Bandung City, Cimahi City, Bandung District, West Bandung District, Garut District, and Sumedang District). This chapter is a continuation of a previous paper entitled 'Waste Management in the Prospective Cooperation between Local Governments in Indonesia'. This chapter focuses on the results of a SWOT analysis on the effectiveness of the role and function of the BPSR as a regional waste management initiative, and how the TPPAS Legok Nangka will later play a role as a joint waste management facility in the region. The results of the SWOT analysis will be considered to maintain the sustainability of regional cooperation. The strategy to be implemented by the West Java provincial government will determine the factors involved in the sustainability of this sharing facility.

Keywords: solid waste management, regional cooperation, internal-external factors, SWOT analysis

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6.1. Introduction

Cooperation between districts and cities as part of regional autonomy in Indonesia aims to accelerate the realisation of people's welfare through service improvement and community empowerment. Some of the common problems related to public services are their low quality, unclear standards, and low accountability. Regional autonomy provides an opportunity for the respective regions to improve people's welfare by exercising the authority to regulate their own regions. In the context of municipal solid waste (MSW) management, Law No. 18/2008 encourages collaboration between regional governments when addressing waste problems, especially in the construction and operation of joint facilities that function as final treatment and disposal facilities.

This chapter is a continuation of a previous paper entitled 'Waste Management in the Prospective Cooperation between Local Governments in Indonesia *(*Damanhuri, 2019). This chapter focuses on the results of a SWOT analysis on the effectiveness of the role and function of the Regional Waste Management Agency (BPSR) and how the TPPAS Legok Nangka will later play a role as a joint waste management facility in the region. The institutional development of the BPSR is required to anticipate developments in the regional waste management system in West Java province.

The BPSR is the coordinator in regional waste management in the Greater Bandung Region and was formed by the West Java provincial government due to the use of the Sarimukti landfill facility. It functions as an institution for coordinating the use of the Sarimukti facility by Bandung City, Cimahi City, and West Bandung District. West Java has taken a coordinating role in regional waste management cooperation in several other regions since. The BPPSR institution was further developed to manage the waste treatment and final processing (TPPAS) Legok Nangka, which will be developed as a joint facility after the Sarimukti landfill site is closed.

6.2. West Java Province

West Java is a province in Indonesia that consists of nine cities and 18 districts. The capital is Bandung City. West Java is in the western part of Java Island. It is bordered by the Java Sea to the north, Central Java to the east, the Indian Ocean to the south, and Banten Province and Special Capital Region (DKI) Jakarta Province to the west (Figure 6.1).

The total population of West Java in 2016 was 48.6 million, including those living in urban areas, which accounted for as much as 66% of the total population. The population distribution by district and/or city varies from the lowest at 0.41% in Banjar City to the highest at 11.08% in Bogor District.

Figure 6.1: West Java Province

Source:https://gor.wikipedia.org/wiki/Jawa_Barat#/media/Berkas:Map_of_West_Java_with_cities_and_regencies_names.png

The north coast region consists of lowlands in the middle of a mountain range, which is part of a series of mountains stretching from west to east Java. The highest point is Ciremay Mountain, which is located southwest of Cirebon City. Citarum River and the Cimanuk River are important rivers that flow into the Java Sea. The climate in West Java is tropical, with temperatures of 9°C on the summit of Mount Pangrango and 34°C on the north coast. The rainfall averages 2,000 millimetres per year, but in some mountainous regions can reach between 3,000 and 5,000 millimetres per year. The main characteristic of West Java is the volcanic island arc (active and inactive), which runs from the northern tip of the island of Sumatra to the northern tip of the island of Sulawesi. The land can be

distinguished by the steep mountains in the south with an altitude of more than 1,500 metres above sea level.

According to Government Regulation (GR) No. 26/2008 concerning National Spatial Planning, the Greater Bandung Region consists of five cities and districts:

1. Bandung District
2. Bandung City
3. Sumedang District
4. Cimahi City
5. West Bandung District

6.3. Greater Bandung Region

GR No. 26/2008 on the National Spatial Planning stated that the Greater Bandung Region is one of the National Activity Centres (PKN) in the province of West Java. The PKN functions as an urban area with service coverage on an international, national, and multi-provincial scale. Following up the GR No. 26/2008, the Government of West Java Province issued West Java Regulation No. 22/2010 regarding the West Java Spatial Planning. According to this regulation, the Greater Bandung Region consists of five districts and cities: Bandung City, Cimahi City, Bandung District, West Bandung District, and parts of the Sumedang District.

The West Java Provincial Government strengthened the existence of the development of a regional waste treatment and final processing site (TPPAS) in accordance with the projected population growth, and the associated development of urban and economic activities. The development of the regional TPPAS system as planned by the West Java government in Legok Nangka will later manage the treatment and final disposal of waste from all districts and cities in the Greater Bandung Region plus Garut District because the TPPAS Legok Nangka is located on the border of Garut District.

6.4. TPK Sarimukti

Since 2005 when a landslide occurred at the Leuwigajah Cimahi landfill site, the Greater Bandung Region still uses the Sarimukti landfill as an 'emergency' site for final waste disposal. This landfill facility is the only regional landfill facility in the Greater Bandung Region, which is shared by Bandung City, Cimahi City, and West Bandung District for waste disposal. Bandung District, Garut District, and Sumedang District did not want to dispose of their waste there and prefer to use landfill facilities within their administrative areas.

The Sarimukti landfill facility is located in Sarimukti village, West Bandung District. The Sarimukti landfill area is 25.2 hectares in total consisting of 21.2 hectares owned by the Indonesia State Forest Enterprise (PERHUTANI) Unit III West Java Banten and 4 hectares owned by the city of Bandung and the city of Cimahi. The Sarimukti landfill facility has been operating since 28 May 28 2006 and offers waste disposal facilities for Bandung City, Cimahi City, and West Bandung District.

The incoming waste is dominated by organic matter, which has a potential for composting that has been applied since the beginning of this landfill site. However, based on interviews with local officials, not all organic waste can be processed directly into compost, especially if it has been mixed with other types of waste. Therefore, the only organic waste that can be processed into compost is waste transported from several traditional markets in the city of Bandung. The potential for composting in the Sarimukti landfill facility reaches 7 tons per day and compost is used by the PERHUTANI to fertilise its plantation areas.

The Sarimukti landfill site procurement was based on a memorandum of understanding between West Java and PERHUTANI. This agreement was made due to West Java's need for land to dispose of their waste and PERHUTANI's need for compost for its forests. Based on this agreement, the main function of the Sarimukti site was as a location for composting processes, so it was named Sarimukti Compost Processing Site (TPK Sarimukti). In fact, the waste transported to the Sarimukti site was sizable and not all of it could be processed into compost. Currently, only about 5–10% of the total waste entering the site can be processed into compost, and the rest is managed using a controlled landfill system.

The Sarimukti landfill facility is also equipped with leachate and methane gas processing. Of the landfill area, 60% is divided into three active zones to dispose of incoming waste.

Based on the memorandum of understanding between the West Java provincial government and PERHUTANI mentioned above, the Sarimukti landfill site could be used until 2017. After the Sarimukti landfill site had been used up, the final waste processing site for the Greater Bandung Region will move to the waste treatment and final disposal area at TPPAS Legok Namgka. However, the TPPAS Legok Nangka has not yet become operational, so that the TPK Sarimukti is still being used by three local governments.

The West Java Provincial Government has proposed an extension to the use of the TPK Sarimukti until 2023 to PERHUTANI.[31] According to PERHUTANI, the cooperation

[31] (https://news.detik.com/berita-jawa-barat/d-4419537/operasional-tpa-sarimukti-akan-diperpanjang-hingga-2023)

agreement with the West Java Provincial Government has expired since January 2018.[32] PERHUTANI is aware that the existence of this site is a solution for Bandung Raya before the TPPAS Legok Nangka is operated. PERHUTANI has submitted an application for approval from the Ministry of Environment and Forestry to extend the use of Sarimukti.
The largest amount of waste dumped in the Sarimukti landfill site comes from Bandung City at 68%, or 1,310 tonnes per day (tpd), while Cimahi City contributes 270 tpd (14%,) West Bandung District as much as 140 tpd (8%), and Bandung District around 200 tpd (10%). Based on data obtained from BPSR, the amount of waste that enters the Sarimukti landfill site stands at 1,816 tpd.

6.5. BPSR as a Cooperative Regional Waste Management Facility

In 2003, the Ministry of Public Works and the West Java provincial government agreed to implement the West Java Environmental Management Program as a staged response to the regional waste problem in West Java. To implement the programme, two collaborative efforts were held between districts and cities in West Java:

1. **Jabodetabek Waste Management Cooperation**

   This cooperation agreed on regional waste management for Bogor City, Bogor District, and Depok City. The agreed landfill sites are located in Nambo village Bogor District. TPPAS Nambo has a land area of around 55 hectares with 40 hectares belonging to the West Java-Banten Regional Office of PERHUTANI and 15 hectares belonging to Bogor District.

2. **Bandung Waste Management Cooperation**

   This is a type of cooperation that has agreed to regional waste management in the Greater Bandung Region. Initially, the West Java provincial government and the District/City Government agreed that two landfill sites could serve the Greater Bandung Region, namely the Leuwigajah landfill site in Cimahi City and the Legok Nangka landfill site in Bandung District. The scope of services has been divided into two zones, with the Leuwigajah landfill site serving the western zone of Bandung City, Cimahi City, and West Bandung District, whilst the Legok Nangka site will serve the eastern zone of Bandung District, Garut District, and Sumedang District. However, based on the results of a feasibility study, the Leuwigajah landfill site can no longer function due to surrounding social conflict, so the development of a

[32] (https://pojoksatu.id/news /national-news/2019/11/07/Perhutani-correct-status-agreements-agreements-tpas-sarimukti-status-quo/)

landfill facility for the Greater Bandung Region has been agreed at the Legok Nangka landfill site for now.

During the implementation of this framework of cooperation, the West Java Waste Management Center was formed. The establishment of this institution is regulated by Governor Regulation Number 31/2007. In 2009, the West Java Waste Management Center was upgraded to the Regional Technical Implementation Unit under the BPSR.
The BPSR became a regional waste management coordinator in 2006 and has evolved to deal with the expansion of services beyond the Greater Bandung Region. Some questions have arisen including:

- Is the BPSR able to provide the management required in accordance with the needs of the regency/city being served?
- Is the participation of the regency/city in collaboration with the BPSR based on system needs or coercion, because there are no other landfill sites that comply with statutory regulations?
- Is it appropriate to develop the duties and functions of the BPSR as a regional facility manager in West Java province?

For this reason, a study was conducted to evaluate the BPSR as a management coordinator of waste facilities in West Java province, and to develop its tasks and functions according to regional service needs based on the authority determined by law.
A group of respondents were chosen that represented institutions from the central government, the West Java provincial government, local government, private parties, and experts from universities who understand the problem of MSW in Indonesia.
Summaries of questions asked are as follows:

Regulatory aspects:

- adequacy of laws and regulations to accommodate the operational needs of regional waste management;
- adequacy of laws and/or activity program plans to regulate the duties and functions of the BPSR as a regulator or operator; and
- the need for changes in legislation and/or the formulation of new legislation in support of the institutional development of the BPSR.

Human resources aspects:

- availability and competence of the human resources possessed by the BPSR to manage regional waste disposal operations;
- availability and competence of human resources possessed by the BPSR should institutional development be required; and
- the need for changes in legislation and/or the preparation of new laws and regulations in the context of providing more competent and professional human resources.

Funding mechanism aspects:

- adequacy of the current financing mechanism to accommodate the operational needs of regional waste management;
- adequacy of the financing mechanism currently being implemented to regulate the duties and functions of the BPSR as regulator and operator; and
- the need for and/or preparation of new financing mechanisms to finance a professional, environmentally friendly, and sustainable regional waste management system.

Technical aspects of operations:

- expert respondents' perceptions of the operational and technical conditions at the TPK Sarimukti.

The results of interviews revealed that 75% of the respondents believed existing laws and regulations were sufficient to organise regional waste management institutions. However, it was also noted that more detailed and technical regulations of institutional waste management were needed at both the central and regional levels. Only 25% of the respondents said that new regulations were needed in addition to the regulations mentioned earlier.

From a human resources perspective, 50% of the expert respondents stated that the current conditions in the BPSR were sufficient to meet the human resource needs of the existing regional waste management system. However, it would not be adequate if institutional development was implemented. The remaining respondents stated that human resources at the BPSR were inadequate, primarily related to their poor ability to use waste processing technology. Furthermore, the potential for developing the quality of human resources through existing collaborations with various parties should be considered, including universities and research institutions in relevant ministries.

When asked about finance, 75% of the respondents thought that existing funding mechanisms could not meet the operational needs of the regional final disposal site (TPA) because it still uses government financing, which is constrained by limited resources, time, and model of accountability. The remaining 25% of respondents stated that the financing mechanism was sufficient to accommodate the operational needs of the regional waste disposal facility, because it was supported by a cooperative agreement that regulates the division of tasks between the providers and users of the TPK–Sarimukti services. Another opinion was that the current financing mechanism was sufficient to implement its function as a regulator, but not adequate for an operator's role. A budget was needed to support operations every day, throughout each month of the year. The current mechanism for funding operational costs was constrained at the start of the fiscal year because there was no budget for operations at the beginning of the year.

As the only regional landfill facility in the Greater Bandung Region, 50% of respondents believed that the operation of the TPK–Sarimukti was not yet optimal. The reasons provided by respondents included:

- The capacity of each operational unit was inadequate for the amount of waste that must be managed.
- The application of the sanitary landfill method was not yet optimal due to budget sufficiency, operational consistency, and maintenance of facilities and infrastructure.
- Existing operation and maintenance standards have not been implemented optimally.
- 50% of other expert respondents thought that TPK–Sarimukti operations were sufficient because there was a fairly good role sharing system between stakeholders that supports a more functional landfill system than in other regions.

The initial SWOT matrix can be seen in Table 6.1. Going forwards, this can be used for developing strategies to optimise the role and function of the BPSR in regional waste management.

Table 6.1. Internal–external Analysis the Role of BPSR

Internal Factors Analysis (IFAS)	External Factors Analysis (EFAS)
Strengths	*Opportunities*
• Regulations for implementing waste management • Regulations of authority for waste management	• Support from experts in drafting and/or changing regulations • Potential development of human resource capabilities through cooperation and partnership

Internal Factors Analysis (IFAS)	External Factors Analysis (EFAS)
• Possibility of drafting and/or changing regulations • Flexibility of employment status • Wage flexibility • Regulation of financial management flexibility • Cooperation agreement with related district/city government • Has compiled a SOP for waste management in TPK Sarimukti • Request for regional TPPAS service needs *Weaknesses* • Difficulties in procuring goods according to operational needs • Procedure for drafting and/or changing regulations • Non-governmental personnel as annual contract workers • KJP payment by transfer between regional cash accounts • There is no clarity on the function of BPSR as a regulator or operator • Weaknesses in the implementation of the sanitary landfill operating system	• Potential sources of cross-government financing • Private sector interest in cooperating with the management of regional TPPAS • Availability of waste processing technology *Threats* • An incorrect perception of the role of the provincial government in waste management remains • District/city government perceptions of the quality of human resources • Limited capacity and/or priority of government funding • Inaccurate information about private party financing • Community/environmental activist resistance to the implementation of waste processing technology

SOP = standard operating procedure, KJP = services compensation fee, TPK = composting processing site, TPPAS = waste treatment and final processing site at Legok Nangka.
Source: Perdana (2016).

According to Table 6.1, it could be concluded that the institutional development of the BPSR is required to anticipate developments in the regional waste management system in West Java. Various internal and external factors indicate that there are strengths, weaknesses, opportunities, and challenges that must be considered when developing the tasks and functions of the BPSR, including:

— The lack of clarity about the function of the BPSR as a regulator and operator was the weakness most highlighted by respondents in addition to human resource factors and institutional forms.

- The flexibility of financial management and employment status were internal strengths that must be optimised. At the same time, the process of procurement of government goods and services was a weakness that must be overcome in financing regional operational facilities.
- The private sector's interest in cooperating with the management of regional landfill sites is an opportunity that has to be exploited, while an incorrect perception of the role of the West Java provincial government in regional waste management remains a threat that must be minimised.
- Aspects of waste management were strongly influenced by non-technical factors. An institution that can manage various non-technical problems including human resource capacities and policymaking mechanisms should be developed.
- A system for increasing human resource capacities is required to ensure that career development can be adjusted to meet institutional development needs in terms of workload and use of technology.

6.6. TPPAS Legok Nangka

The BPSR as the coordinator of regional waste management in the Greater Bandung Region was formed by the West Java provincial government due to the use of the Sarimukti TPA (BPSR West Java Province, 2009). It functions as an institution coordinating the use of the Sarimukti facilities by Bandung City, Cimahi City, and West Bandung District. West Java has since taken a coordinating role in regional waste management cooperation in several other regions. The BPSR institution was further developed to manage the Legok Nangka TPPAS, which will be developed as a joint facility after the Sarimukti landfill site is closed. The cities and districts involved will be wider: Bandung City, Cimahi City, West Bandung District, Bandung District, Sumedang District, and Garut District.

On 4 April 2014, Cooperation Agreement No. 658.1/62/ot.daksm/2014 on the management of waste treatment and final processing at the Legok Nangka site in the Greater Bandung Region and the surrounding area was signed between the government of West Java and those six cities and districts. The TPPAS Legok Nangka is organised and operated by the government of West Java to facilitate regional needs as one waste management solution because the process of providing landfill sites in accordance with Law No. 18/2008 in each region will not be easy, and requires a lot of funding. Collaboration between regions in waste management is expected to reduce the 'personal' interests of each region and prioritise the interests of the Greater Bandung Region as a whole.

Some important points agreed in the cooperation agreement are related to (West Java Province, 2017):

- treatment and final processing of regional waste;
- construction of facilities and procurement of TPPAS Legok Nangka equipment;
- operation and maintenance of regional sewage treatment systems;
- arrangements for transporting waste from the district/city area in the Greater Bandung Region to the location of the Legok Nangka TPPAS;
- institutional management of TPPAS Legok Nangka;
- finance management system at the TPPAS Legok Nangka;
- negative impact compensation fee (KDN); and
- cooperation with business entities.

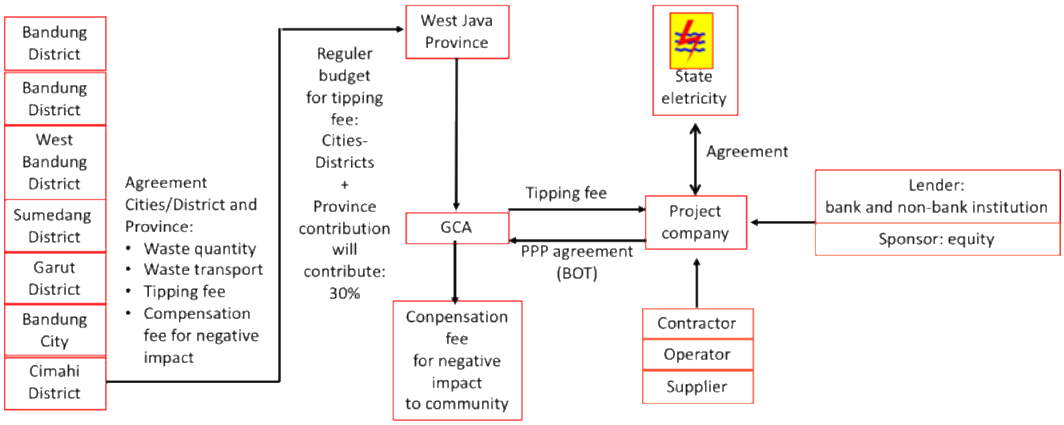
In 2018, the President of Indonesia enacted a regulation to accelerate the development of the waste-to-energy (WTE) programme through President Regulation (PR) No. 35/2018. The central government selected twelve cities under this regulation, including Bandung city. The West Java provincial government was given responsibility for the programme's execution and will manage the waste generated from Greater Bandung Region. This facility is located in Legok Nangka village, as mentioned above.

The six districts and cities in the Greater Bandung Region already have local regulations that support MSW management in accordance with established norms, standards, procedures, and criteria. The MSW management mandated in Law No. 18/2008 has been used as the basic reference to the district/city regulations as follows:

1. Bandung City regulation No. 9/2011
2. Cimahi City regulation No. 16/2011
3. Bandung District regulation No. 21/2009
4. West Bandung District regulation No. 12/2011
5. Garut District regulation No. 4/2014
6. Sumedang District regulation No. 2/2014

This cooperation stipulates how districts and cities in the Bandung area should act as users of the Legok Nangka TPPAS facility for disposing and processing the MSW generated daily by their respective regions. The private sector is the third party that will process the MSW that enters the Legok Nangka TPPAS. The linkage of West Java Province with cooperating districts and cities is presented in Figure 6.2.

Figure 6.2. Scheme Cooperation for Waste-to Energy Development in TPPAS Legok Nangka



BOT = build–operate–transfer, transfer, GCA = government corporate agency, PPP = public-private partnership.
Source: Modified from West Java Province (2016).

TPPAS Legok Nangka has been planned with a clear division of roles between stakeholders. It acts as a regulator, a service provider, supervises the cooperation between regions, and also organises partnerships with the private sector. Each district/city uses the TPPAS Legok Nangka facility as a place for processing and final processing of waste generated from each region. The private sector here is a partner of the West Java provincial government BPSR, which acts as the waste processing operator.

The main infrastructure development of TPPAS Legok Nangka is funded by the central government budget and expenditure (APBN), while the West Java province regional revenue and expenditure budget (APBD) finances land acquisition and the development of supporting infrastructure. Districts and cities are obliged to pay a service compensation fee (KJP) and a negative impact compensation fee (KDN) to their respective district/city APBDs for waste management services. The private sector partner will invest fully in waste management and is responsible for the construction of waste treatment facilities and infrastructure. These conditions indicate that the capital funding for developing TPPAS Legok Nangka originates from the provincial government, while the contract with the investor is for waste processing technology only. It is expected that each district/city government will transport its waste to the TPPAS Legok Nangka and pay compensation fees for waste management.

To understand the problems that occur with regional waste management in West Java, it is necessary to identify the internal and external inter-regional cooperation factors that lead to opportunities and threats that affect the sustainability of waste management cooperation at TPPAS Legok Nangka. The important question was ‘does the regional waste

management cooperation in TPPAS Legok Nangka suit the needs of districts and cities in the Greater Bandung Region?'

A group of respondents were selected who represented agencies from the central government, the West Java provincial government, and local governments involved in the development of the Legok Nangka TPPAS. The issues raised were related to:

- regulation and policy
- organisation and institutional matters
- technical and operational matters
- financing
- community and private involvement
- environmental issues

The questions respondents were asked included:

- What is the role of the central government in waste management practices in districts/cities following the implementation of Law Number 18 Year 2008?
- What are the district/city targets in the waste sector?
- How does the division of authority between the central government and regional governments (provincial, district, city) organise waste management cooperation at TPPAS Legok Nangka?
- What proportion of the APBN supports the construction of infrastructure facilities and the operationalisation of the TPPAS Legok Nangka?
- Do you think the concept of waste management cooperation between districts/cities in Greater Bandung will run effectively?
- What is the history of the development of cooperation between local governments in Bandung Raya?
- Who originally proposed the idea of implementing this collaboration?
- What are the roles of the central government, provincial government, and district/city governments in the implementation of this cooperation?
- What proportion of the APBN and APBD of West Java province is allotted to waste management in TPPAS Legok Nangka?
- Does the provision of TPPAS Legok Nangka fulfil the BPSR's vision of final waste processing that is environmentally friendly, sustainable, and independent?
- What cooperation arrangements exist between districts/cities in Greater Bandung that will jointly use TPPAS Legok Nangka during the final stage of waste management?

- What has to be arranged to implement cooperation between waste management districts/cities in the Legok Nangka TPA?
- What process determines sanctions for regions that violate agreements?
- How are conflicts that can occur between districts/cities mediated?
- If there is a force majeure condition (for example, the district/city government is unable to meet its obligations to implement cooperation), how to overcome it?
- What efforts are being made to anticipate any negative impacts on the environment around the Legok Nangka TPA?
- What types of waste treatment technology will be built at TPPAS Legok Nangka?
- Is there a partnership waste management plan with the private sector in TPPAS Legok Nangka?
- What is the form of financing (tipping fee) that must be paid by the West Java provincial government to the private party that processes waste in the Legok Nangka TPPAS? What is the percentage increase in tipping fees per year?
- How much does the region pay to bring its waste to the TPPAS Legok Nangka?
- What is the division of tasks and authority for each district /city involved in this collaboration?
- Is the concept of cooperation in district/city waste management in the Legok Nangka TPA in accordance with the wishes of each district/city?
- What motivates the area to participate in waste management cooperation at TPPAS Legok Nangka?
- Have the regions been actively involved in discussions or meetings related to decision making such as the maturation of the technical concept of waste management in a landfill?
- Are efforts being made to anticipate any negative impacts on the environment around the Legok Nangka TPPAS?
- What compensation costs are applied to waste management at TPPAS Legok Nangka? Do you agree with the fee amount?
- How much will it cost to overcome negative impacts?
- What is the condition of the landfill owned by the region? Can it accommodate the mandate of Law Number 18 of 2008? If not, what will the local government do to overcome the problem?
- Are there any efforts being made by local government to reduce waste at source before the waste is disposed of at the landfill?

The description below makes some important points about the study results:

1. Respondents from two districts stated that the dissemination by the BPSR was only conducted during preparation, after that the districts were not always involved until the agreement was signed. It seems that the cooperation agreement was a decision-making process at the relevant regional head level, so cooperation would be a commitment only.
2. The six districts and cities in the Greater Bandung Region already had local regulations that supported solid waste management in accordance with established norms, standards, procedures, and criteria.
3. Each district/city already had a waste management institution in accordance with regulations.
4. The motives for cooperating with waste management at TPPAS Legok Nangka were not the same. Interview results stated:
   - for two local governments the limited land for landfill meant the cooperation became an urgent need;
   - for the other four local governments the motive for cooperation was based on a commitment that had been agreed between their district and city heads and the provincial governor.
5. In this cooperation, the role and authority of the parties were determined as follows, namely the BPSR acting as a waste service provider and simultaneously as a regulator that also coordinates the cooperation between six districts and cities, and partnerships with the private sector. Meanwhile, districts and cities participate as users. The BPSR is an extension of the government of West Java province, which will invite the regionally-owned enterprises (of West Java province.
6. The technological concept that will be applied to the Legok Nangka TPPAS is processing waste to energy. The waste capacity transported by each city/regency is regulated by this cooperation agreement. Each region is required to reduce their waste in their respective areas so that the waste transported does not exceed the quota.
7. In the cooperation agreement, the stipulated service compensation fee (KJP), which is the amount paid by each district and city must be budgeted (APBD) by each related district and city. At the time this research was conducted (2016), the amount of KJP was Rp.123,000/ton. Interviews found that four local governments disagreed with this amount, while the other two regional governments agreed.

8. In addition to KJP, the districts and cities have agreed to provide a KDN with a 10% proportion of the total KJP, which will be given to Bandung District (TPPAS location) and Garut Regency (which borders the TPPAS location) to compensate people who are negatively affected.
9. Transporting waste from each district and city to the Legok Nangka TPPAS is the responsibility of each district and city government. Interviewees stated that several districts felt the distance to the TPPAS location was further than before, thus requiring a reallocation of funds for transportation vehicles and fuel.

The SWOT matrix in Table 6.2 forms the basis for developing the strategies needed to optimise the TPPAS Legok Nangka.

Table 6.2: Internal-external Analysis of TPPAS Legok Nangka Cooperation

Internal Factors Analysis (IFAS)	External Factors Analysis (EFAS)
Strengths • Processing and final processing of waste at Legok Nangka uses thermal processes and sanitary landfill sites. • Thermal processes can produce electricity. • BPSR manages sanitary landfill sites directly. • The land at Legok Nangka belongs to the government • Development activities at Legok Nangka have been completed with environmental permits. • BPSR is experienced at managing regional scale waste at Sarimukti landfill.	*Opportunities* • District/city regulations support cooperation between regions. • There are SKPD waste/cleanliness managers in each district /city. • The development of the Legok Nangka site infrastructure is supported by central and provincial government budgets • The operation and processing of waste is conducted in partnership with the private sector. • Community involvement with the formal workforce was conducted at Legok Nangka.
Weaknesses • Not all districts and cities participated in preparing cooperation plans. • The effectiveness of processing waste by thermal processing depends on the amount of waste supply entering each day. • The amount of waste that can be transported to the Legok Nangka is	*Threats* • The effectiveness of KDN distribution depends on the decision of the Heads of Bandung District and Garut District. • Four district and city governments object to the amount of KJP and KDN. • Lack of waste management budget in the district and cities.

Internal Factors Analysis (IFAS)	External Factors Analysis (EFAS)
determined in the cooperation agreement	• Estimated distance to Legok Nangka requires larger transportation budgets.

BPSR = Agency for Regional Waste Management, KJP = services compensation fee, KDN = negative impact compensation fee, SKPD = regional work unit.
Source: Farahdiba (2016).

6.7. Conclusion

The results of this study could be used as a reference for improving regional waste management institutions in other regions in Indonesia since the problems faced are similar. However, it will be necessary to review the culture of cooperation between provincial and district and/or city governments that may have different characteristics.

The cooperation between districts and cities in the Greater Bandung Region in TPPAS Legok Nangka has been motivated by the limited land available for landfill. The commitment of each regional head to realising sustainable regional waste management is very important.

It is expected that sustained cooperation in managing inter-district and/or city waste disposal at the Legok Nangka facility will develop into an example of good regional cooperation in Indonesia. Cooperative waste management between districts and cities in the Greater Bandung Region is also expected to develop new sustainable waste management solutions.

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