



ETAR 2014

## Conflict Resolution Analysis Of Waste-Based Power Generation Construction Plan's Conflict In Gedebage, Bandung City Using Graph Model For Conflict Resolution (GMCR)

A.Ihdalhusnayain<sup>1</sup>, DiniTuripanam Alamanda<sup>2\*</sup>

<sup>1,2</sup>Telkom University, Indonesia.

---

### Abstract

The purpose of this study is to analyze the conflict resolution in PLTSa construction plan in Gedebage using the Graph Model for Conflict Resolution (GMCR). This conflict is motivated by the government plan that want to build PLTSa to overcome the problem of waste in the city. However, the plan has not been agreed by the various parties and resulting a conflict. In this research, the data was collected through interviews and questionnaires using purposive sampling method and from literature review. The players of this study are PT Cempaka Arum permai Estate, Government, residents of Griya Cempaka Arum (GCA), Wahana Lingkungan Hidup (WALHI) as NGOs and environmental experts. The result shows that scenario 13 is the ideal solution when government builds the PLTSa, the developer does not provoke residents to reject PLTSa. GCA residents do not do demonstration but implement 3R, WALHI do not file PLTSa refusal to DPRD and environmental expert open the danger of PLTSa to media.

© 2014 The Authors. Published by Global Illuminators. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

Peer-review under responsibility of the Scientific & Review committee of ETAR-2014.

*Keywords* : Graph Model, Conflict Strategy, PLTSa Gedebage, Real Estate Business.

---

### Introduction

The rapid growth of population and tourists had direct impact on increasing the volume of waste in the city. Data from Local Environmental Impact Control Agency (Bappedalda), shown that 8418 meter<sup>3</sup> waste is produced everyday. From those amounts of waste, only 65 percent can be treated, while the rest cannot be processed (<http://bandung.okezone.com>, accessed on December 20, 2012). The increasing of waste

---

\*All correspondence related to this article should be directed to , DiniTuripanam Alamanda, Telkom University, Indonesia.  
Email: [aturipanama@gmail.com](mailto:aturipanama@gmail.com)

volume is not in line with the vision of the Bandung city to be Worth Service City (Clean, Prosperous, Obedient and Friendly), so it is necessary to solve the waste problem.

Currently, the government plans to build a waste-based energy generation (PLTSa) to overcome the waste garbage (Kuncoro, 2011). Learned from Europe, America, Japan, the Netherlands and other countries, the government plans to use the PLTSa technology as a solution in processing municipal waste. PLTSa is a power plant that utilizes waste as primary fuel, both organic and an organic dition and the background of PLTSa construction in Bandung city is to avoid the occurrence of disasters, such as landslides that occurred in 2005 in Final Disposal (TPA) Leuwigajah Cimahi which was caused by the accumulation of garbage (<http://news.detik.com>, accessed on November 17 2013).

PLTSa will be built around of Griya Cempaka Arum (GCA) residential area beside the Bandung Lautan Api Stadium (BLA). Government needs 10 hectares to build it, 3 hectares will be used for power generation facilities, while 7 hectares will be used as a green area that surrounds the power generation facilities (the map of conflict area shown on Figure 1). However, the government plan has not been supported by several players such as GCA developer, GCA residents, Non-Governmental Organizations (NGOs) and environmental experts. So the construction plan of PLTSa in the city causes conflicts that occur for almost 7 years.



Figure 1. The Map Of Conflict Area (Gede Bage Bandung)

Source: [bpmpt.bandung.go.id](http://bpmpt.bandung.go.id)

The conflict originated from the rejections of the construction by residents and NGOs which were shown through demonstration as a form of fierce resistance to the construction of PLTSa (Wawan, Agustus 29<sup>th</sup> 2013). The rejection of GCA residents was based on the potential danger as the result of PLTSa, which can produce harmful to human nerve. In

addition, PLTSa will also create water pollution derived from water of lindi incinerator. GCA Residents also revealed that PLTSa was not suitable to be used in Bandung because the area is a basin. Moreover, they also argue that the results of burning will not be windswept, far differ with Singapore which PLTSa is placed offshore (<http://m.pikiran-rakyat.com>, accessed on November 17 2013). In addition, this plan also affects the business activities of GCA developers because of decreasing value of their land about 30%. Currently, the average price of type 36 is 70 million IDR but after PLTSa construction plan, the price is only 30-40 million IDR (Fitriawan, R.A, April 1<sup>st</sup> 2008).

Fierce resistance of PLTSa construction plan in Gedebage was not only came from GCA residents and developers, but also from NGOs namely Wahana Lingkungan Hidup (WALHI). The reason of PLTSa construction refusal from WALHI was because the government had not set up procedures of PLTSa construction project. It could be seen that the local government had not formulate regulations governing PLTSa cooperation, furthermore service fee (tipping fee) for waste management which is expensively charged to the society, and from environmental aspects, PLTSa that used incinerator technology is harm the human nervous system because it contains dioxin, like a case of PLTSa failures that occurred in Harrisburg, Pennsylvania, USA, which has raised the financial crisis of that city (Ispranoto, T., Agustus 29<sup>th</sup> 2009).

Some of the reasons expressed by GCA residents and WALHI, about their rejection to PLTSa construction were supported by experts. Some experts confirmed that the construction of environment PLTSa may cause dioxins hazards. Moreover, the availability of water for PLTSa is very vital, if the water supply is reduced, there will be heavy metal waste and hazardous (Pikiran Rakyat, April 2008 edition). So that environmental experts suggest that the government should review the PLTSa construction plans (<http://news.detik.com>, accessed on November 17 2013).

Although PLTSa construction plan received some protests from various Players, but the government would continue the plan more serious. The government prepare a special committee (Pansus) V to handle PLTSa issue. The government also guarantees that PLTSa is safe to use because already check the feasibility by a team of Institute of Technology Bandung (ITB) in 2007 (<http://www.bandung.go.id>, accessed on November 17 2013).

Conflict about PLTSa construction plan in Gedebage has been happening since 2007 until today, so all players need a resolution to make conflict end. In the development of science, Fang, et.al (1993) used game theory for modeling the conflict resolution called Graph Model for Conflict Resolution (GMCR) which is suitable to analyzed environmental management conflict,

The purpose of this study is to use GMCR to identify the equilibrium conditions that may occur in the conflict based on players's preferences. The combination of preferences of players will result some scenarios which can be analyzed. The results are expected to be considered decisions to produce a win-win solution for all players involved.

## Literature Review

A strategic conflict is an interaction of two or more independent decision-makers (players) that can make choices then together determine the state of conflict and has preferences over possible solutions (Kilgour and Hipel, 2005). Conflict analysis and resolution play an important role in government and business industry where disputes and negotiations about various issues are in the norm (Skowron et al., 2006). There are many mathematical formal models of conflict situations that have been proposed and studied in strategic negotiation (Nakamura, A., 1999; Kraus, S., 2001; Lai et al., 2004). A conflict model is a systematic structure for encapsulating the main characteristics of a strategic conflict and after formulating the model; we can employ it as a basic structure within which the possible strategic interaction among decision makers can be extensively analyzed in order to ascertain the possible compromise resolutions or equilibria (Hipel, K.W et al., 2011).

According to Hipel, K.W et al. (2011) A graph model for a conflict is comprised of a directed graph and a payoff function for each decision maker (player) who can affect a dispute. Let  $N$  denote the set of players and  $U$  the set of states or possible scenarios of the conflict. A collection of finite directed graphs,  $D_i = (U, A_i), i \in N$ , can be used to model the course of the conflict. The vertices of each graph are the possible states of the conflict and therefore the vertex set  $U$ , is common to all graphs. If player  $i$  can unilaterally move (in one step) from state  $k$  to state  $q$ , there is an arc with orientation from  $k$  to  $q$  in  $A_i$ .

Player  $i$ 's graph can be represented by  $i$ 's reachability matrix,  $R_i$ . Which displays the unilateral moves available to player  $i$  from each state. For  $i \in N$ ,  $R_i$  is the  $u \times u$  matrix defined by:

$R_i(k, q) = \begin{cases} 1 \\ 0 \end{cases}$  if player  $i$  can move (in one step) from state  $k$  to state  $q$ . Where  $k \neq q$ , and by convention  $R_i(k, k) = 0$ .

A unilateral improvement, UI, from a particular state for a specific player is any preferred state to which the player can unilaterally move. To represent unilateral improvements, player  $i$ 's reachability matrix can be used to define  $i$ 's UI matrix  $R_i^+$ , according to

$R_i^+(k, q) = \begin{cases} 1 \\ 0 \end{cases}$  if  $R_i(k, q) = 1$  and  $P_i(k) > P_i(q)$  otherwise 0

Similarly, player  $i$ 's reachable list,  $S_i(k)$ , can be replaced by  $S_i^+(k)$ , defined by  $S_i^+(k) = \{q \in S_i(k) : R_i^+(k, q) = 1\}$ . Thus,  $S_i^+(k)$  is called the unilateral improvement list of player  $i$  from state  $k$ .

The Graph Model for Conflict Resolution (GMCR) is described in full in Fang et al. (1993). There are four components of GMCR, namely: First,  $N$ , the set of players, where  $2 \leq |N| < \infty$ . So,  $N = \{1, 2, 3, \dots, n\}$ . Second,  $S$ , the set of states, satisfying  $2 \leq |S| < \infty$ . Symbol of  $S_0$  means status quo state. Third, for each  $i \in N$ , player  $i$ 's directed graph  $G_i = (S, A_i)$ . The arc set  $A_i \subseteq S \times S$  has the property that if  $(s, t) \in A_i$  then  $s \neq t$ ,  $G_i$  has no loops. The entries of  $A_i$  are the state transitions controlled by player  $i$ . Fourth, a complete binary relation  $\succsim_i$  on  $S$  that specifies player  $i$ 's preference over  $S$ . If  $s, t \in S$ , then  $s \succsim_i t$  means that player  $i$  prefers  $s$  to  $t$  (indifferent).

And then Fang et. al (1993) explained about equilibrium of the model. An equilibrium is a state that is stable for every players in the conflict. The equilibria are the predicted resolutions of strategic conflict. There are many stability definitions in Graph Model but in this research, we only using Nash stability (Nash) and Sequential Stability (SEQ). State  $k$  is the Nash Stable for player  $i$  iff  $i$  cannot improve his payoff by changing his own strategies  $S_i^+(k) = \{\phi\}$ . And state  $k$  is Sequentially Stable for player  $i$  iff for every  $k_1 \in S_i^+(k)$ , there exists  $k_2 \in S_j^+(k_1)$  with  $P_i(k) > P_i(k_2)$ .

GMCR developed by Fang et.al (1993) is a methodology to frame an interactive decision, or conflict, which can produce stability analysis. GMCR served as a good strategy assessment tool for conflict resolution, which also serves as a means of interaction and behavior of decision makers and can be used in the preparation of mediation and negotiation. It has been applied across a wide range of application areas such as environmental management (Kilgour et al, 2001; Obeidi, 2006; Noakes et al, 2003; Hamouda et al., 2004; Li et al., 2006; Noakes et al., 2006). Conflict Management on utilization of Gages Water Resources Between Bangladesh and India (Hagihara. Y and Maiko. S, 2004). In Indonesia, GMCR has been used in a variety of case study example case of collaboration Coca-Cola and Carrefour by Handayati et. al (2009), a case of management of street vendors (PKL) by Alamanda (2010), and the case of procurement of Trans Metro Bandung (TMB) by Alamanda et al. (2010).

### Research Model

Based on the purpose, this study is an exploratory research. The data were analyzed using the Graph Model for Conflict Resolution (GMCR). GMCR is used to describe the optimal solution will be obtained in conflict Gedebage PLTSA construction plan, based on the preferences of each of the Players involved in this, such as PT Cempaka Arumpermai Estate (Player 1), government (Player 2), Griya Cempaka Arum residents (Player 3), WALHI (NGOs) as Player 4 and environmental expert (Player 5). The Government consist of local government (Pansus) V and the environmental experts are experts from Bandung Institute of Technology (ITB)..

Each Player that involved in this conflict has the desire formulated into options (alternative options) and are coded as a number (1,2,3 and so on). In this study, there are six options that can be combined to generate the scenario. The number of generated scenarios formulated by  $2^n$ , where 2 is the possibility of "Yes" (Y) and "No" (N) and n filled by a number of available options. Thus, the total scenario obtained is  $2^6$  or 64 scenarios, but only 20 feasible states in total. Scenarios and options each of the Players can be seen in Table 1.

Table 1. Existing Condition

Option and Players	Scenario																				
	1*	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
<b>Developer (PT Cempaka Arumpermai Estate) (1)</b>																					
Provoke residents to reject PLTSa(1)	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	
<b>Government (Bandung) (2)</b>																					
Build PLTSa (2)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
<b>Griya Cempaka Arum Residents(3)</b>																					
Demonstration refused PLTSa (3)	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N
Implement 3R (4)	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N	
<b>Wahana Lingkungan Hidup (WALHI) (4)</b>																					
Filed suit PLTSa refusal to the DPRD(5)	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N
<b>Environmental Expert (5)</b>																					
Publish PLTSa danger to the media (6)	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	N	Y	Y	N	N

\*) Existing Condition

Feasible scenarios were sorted by each player in the conflict. Then stability was analyzed using the concept of Nash stable (r), sequential stable (s) and unstable (u). Nash stable (r), when the player does not switch his position because other positions are not as higher as the current position. Sequential stable (s), when the player does not change his position because considering the opponent step and the payoff of opponent is not better than his payoff in the current position. Unstable (u) happens when the player switch his position to

better position (higher payoff). The stability analysis showed that the equilibrium scenario that could be accepted by all players.

The process continued with the sensitivity analysis. Sensitivity analysis is the analysis conducted to determine what will happen if the player moves from Equilibrium scenario to the other equilibrium scenarios. There are simultaneous improvement (SI), Simultaneous disimprovement (SdisI), Uniterally improvement (UI), and Uniterally disimprovement (UdisI). Simultaneous improvement (SI), the movement performed by multiple players simultaneously where the movement results provide a better payoff than the payoff ever. Simultaneous disimprovement (SdisI), the movement performed by multiple players simultaneously, but the resulting payoff is not better than the previous payoff. Uniterally improvement (UI), the movement made by the player where the result of the movement gives a better payoff than the payoff ever. Uniterally disimprovement (UdisI), the movement made by the player but the resulting payoff is not better than the previous payoff. The model of this research shown on Figure 2.

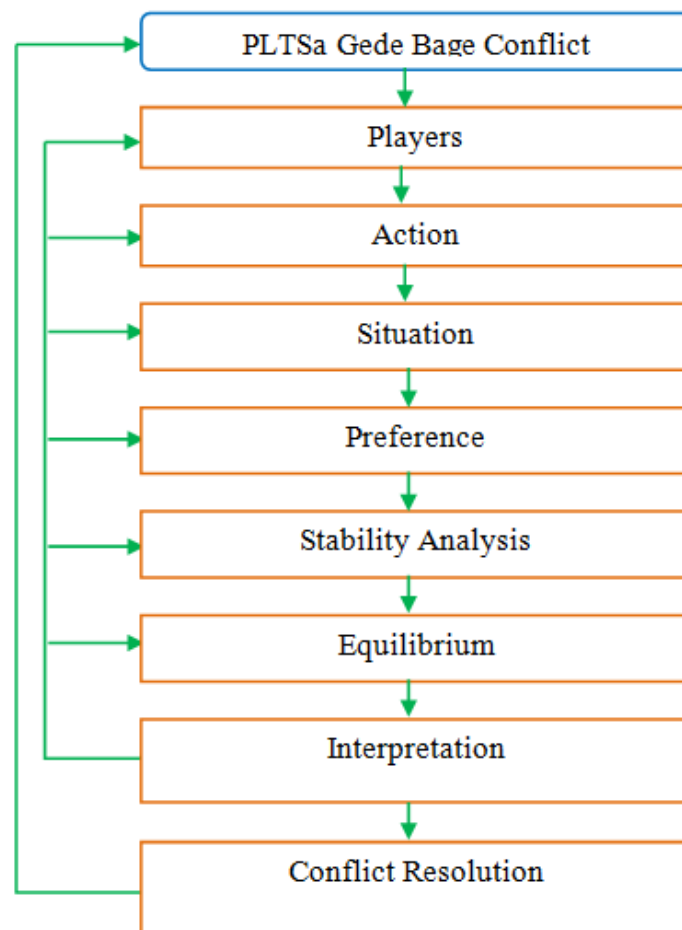


Figure 2. Research Model

Source: Fang et al, 1993

The data gathered using purposive sampling method. The Players data are listed on Table 2.

Table 2. Data of Players (sample)

No.	Player	Initial	Position
1.	Developer perumahan GCA	DV	Marketing Manager of PT Cempaka Arumpermai Estate
2.	Government of Bandung City (Pansus v)	TS	Chief of Pansus V DPRD Kota Bandung
3.	Resident	MT	Coordinator of the People's Reject Coercion Alliance, PLTSa in Estate (ART-P2SP)
4.	WALHI	DR	Executive Director of Wahana Lingkungan Hidup Indonesia (WALHI)
5.	Expert	<a href="#">Prof. Dr.Ir. ED</a>	Profesor of ITB

### Result And Discussion

At that time, players, their relative options and the status quo (existing condition) are listed on Table 3 and Figure 3. The PT Cempaka Arumpermai's ranking state from most preferred to the least preferred was 16 >15> 14 >13 > 20 >19> 18> 17> 12> 11> 10> 9 >8 >7 >6 >5 >2> 1> 4 >3.

Table 3. *Preference of Players*

Players	Preference																			
	16	15	14	13	20	19	18	17	12	11	10	9	8	7	6	5	2	1	4	3
PT Cempaka Arumpermai Estate	16	15	14	13	20	19	18	17	12	11	10	9	8	7	6	5	2	1	4	3
Government (Bandung)	16	14	15	13	8	6	7	5	12	10	11	9	4	2	3	1	20	17	18	19
Griya Cempaka Arum Residents	17	18	19	20	9	11	10	12	1	2	3	4	13	14	15	16	5	6	7	8
Wahana Lingkungan Hidup	18	17	19	20	1	3	2	4	9	11	10	12	5	6	7	8	13	14	15	16
Environmental expert	19	20	18	17	3	1	4	2	11	9	12	10	7	5	8	6	15	13	16	14



After determining the preferences of each player, then the next step is to analysis the stability. The concept of stability analysis used in this study consist of Nash stable (r), sequential stable (s) and unstable (u). The results of the stability analysis in PLTSa Gede Bage conflict can be seen in Table 4

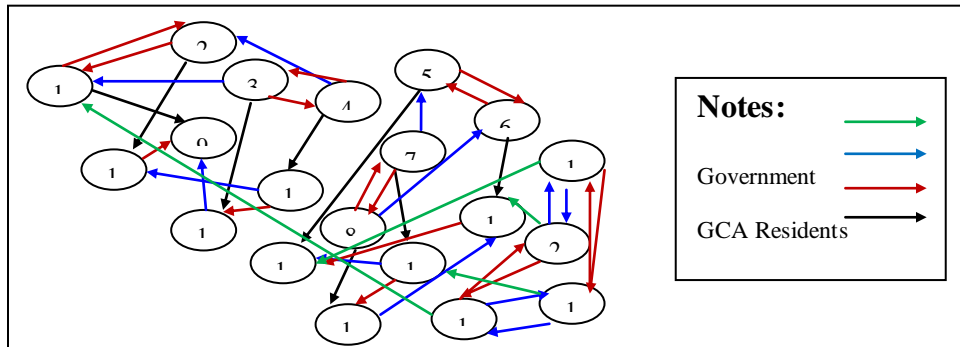


Figure 3. The movement of players

Table 4. Stability Analysis

PT Cempaka Arumpermai Estate																				
				E								E								
Stability	r	r	r	r	r	r	r	r	r	r	r	r	u	u	u	u	u	u	u	
State Ranking	16	15	14	13	20	19	18	17	12	11	10	9	8	7	6	5	2	1	4	3
Uis													16	15	14	13	10	9	12	11
Government (Bandung)																				
				E								E								
Stability	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	u	u	u	u
State Ranking	16	14	15	13	8	6	7	5	12	10	11	9	4	2	3	1	20	17	18	19
Uis																	16	14	13	1
Griya Cempaka Arum Residents																				
					E								E							
Stability	r	r	s	s	r	u	r	u	r	r	u	u	r	r	u	u	r	r	u	u
State Ranking	17	18	19	20	9	11	10	12	1	2	3	4	13	14	15	16	5	6	7	8

<i>Uis</i>			18	17		9		10			1	2			13	14			5	6
<b>Wahana Lingkungan Hidup (WALHI)</b>																				
									E								E			
<i>Stability</i>	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r
<i>State Ranking</i>	18	17	19	20	1	3	2	4	9	11	10	12	5	6	7	8	13	14	15	16
<i>Uis</i>																				
<b>Environmental expert</b>																				
										E								E		
<i>Stability</i>	r	s	r	s	r	r	s	s	r	r	u	u	r	r	s	s	r	r	u	u
<i>State Ranking</i>	19	20	18	17	3	1	4	2	11	9	12	10	7	5	8	6	15	13	16	14
<i>Uis</i>		19		18			3	1			11	9			7	5			15	13

In Table 3, it can be seen that there are two scenarios that equilibrium (stabil) for all the players so that two scenarios could possibly be used as a resolution of conflict. The equilibrium scenarios are scenario 9 and 13. In scenario 9, government build the PLTSa, the developer does not provoke residents to reject PLTSa, so GCA residents do demonstration to refuse PLTSa and implement 3R, WALHI filed refusal to the DPRD (local house of representative) and the environmental expert open the danger of PLTSa to the media.

While the scenario 13, government builds the PLTSa, the developer does not provoke residents to reject PLTSa. GCA residents do not do demonstration but implement 3R, WALHI do not file PLTSa refusal to DPRD and environmental expert open the danger of PLTSa to media.

However from the point of view of PT Cempaka Arumpermai Estate, the expected scenario to occur is scenario 13. Because in that condition, residents do not do demonstration although PLTSa built someday, so this condition will create the comfortable situation in Griya Cempaka Arum.

To define conflict resolution scenario, we use sensitivity analysis. Some of the concepts used in the sensitivity analysis are Uniterally Improvement (UI), Uniterally Disimprovement (UdisI), Simultaneous Improvement (SI) and Simultaneous Disimprovement (SdisI). The results of the sensitivity analysis can be seen in Table 5

Table 5 Results of Sensitivity Analysis

	Scenario 1	to	Scenario 9		Scenario 1	to	Scenario 13	
<b>Developers</b> Provoke residents refuse PLTSa	Y	→	N		<b>Developers</b> Provoke residents refuse PLTSa	Y	→	N
<b>Government</b> build PLTSa	Y	→	Y		<b>Government</b> build PLTSa	Y	→	Y
<b>GCA residents</b> Demonstration refused PLTSa Implement 3R	Y Y	→ →	Y Y		<b>GCA residents</b> Demonstration refused PLTSa Implement 3R	Y Y	→ →	N Y
<b>WALHI</b> Filed suit to the DPRD	Y	→	Y		<b>WALHI</b> Filed suit to the DPRD	Y	→	N
<b>Environmental expert</b> Publish PLTSa danger in the media	Y	→	Y		<b>Environmental expert</b> Publish PLTSa danger in the media	Y	→	Y

Based on result in Table 4 it can be seen that scenario 9 is more easily happen to conflict resolution because only requires UI (unilaterally improvement) from the developer that the displacement of scenario 1 (existing condition) into scenario 9. In this scenario, developers stop provoking residents to reject PLTSa but residents still do demos rejection because PLTSa will be built.

While the scenario 13 (happy ending) is more difficult to achieve because it requires SdisI (simultaneous improvement) of the GCA residents and WALHI, the displacement of scenario 1 (existing condition) scenario to scenario 13. In scenario 13, residents do not do demonstration although PLTSa will be built, so this condition will create the comfortable situation in Griya Cempaka Arum. We can say that scenario 13 is a better scenario than the scenario 9. However, simultaneous improvement of GCA residents and WALHI can be occurred if GCA residents and WALHI get benefit such as compensation from other Players such as PT Cempaka Arumpermai Estate or government. The compensation can be provided to residents and WALHI are:

- a. Increase the standardization of PLTSa (incinerator) to reduce to fear of residents

- b. Developers should invite representatives resident and WALHI to be independent supervisory during the project of PLTSa so the residents do not doubt the function of incinerator machine.
- c. Delaying the process of construction until get feasible funding to build PLTSa. During this delay, the government may be trying to have more investment.
- d. Developer can be a communication media / channel of communication between local government and residents.
- e. If all of these conditions (a-d) can occur, the scenario 13 can occur as a resolution of the conflict. Otherwise, the scenario 9 (bad ending) scenario for PT Cempaka Arum Permai Estate is the only stable scenario.

Through this study, the authors expect to contribute a research in the field of urban conflict management using the Graph Model for Conflict Resolution (GMCR) as a tool in conflict resolution. Conflict resolution that obtained from this study are expected to be useful for PT Cempaka Arum Permai Estate for addressing the development of PLTSa in Gedebage and to be useful as a reference material for the government to resolve the conflict on building PLTSa in Gedebage. This study can also be a reference in dealing with similar cases, so it can also help to solve another case in the future.

#### Conclusion And Further Research

Based on the results, it can be concluded that two scenarios are finally stable (equilibrium). The bad ending is scenario 9 when government build the PLTSa, the developer does not provoke residents to reject PLTSa, so GCA residents do demonstration to refuse PLTSa and implement 3R, WALHI filed refusal to the DPRD (local house of representative) and the environmental expert open the danger of PLTSa to the media. And the highest payoff is scenario 13 government builds the PLTSa, the developer does not provoke residents to reject PLTSa. GCA residents do not do demonstration but implement 3R, WALHI do not file PLTSa refusal to DPRD and environmental expert open the danger of PLTSa to media. The implications of this study

For further research, we expect to use drama theory to consider the dilemmas that occur between players and using SMART (Simple Multiple Attributed Rating Technique) to make better consideration of players preferences.

## References

- Alamanda, D.T, Utomo,S.P, Pri, H& Dhanan, S.W. (2010). Model Grafik dengan Rating Multi Atribut (GMMR) dalam Resolusi Konflik Trans Metro Bandung (Graph Model with Multi-Attribute Rating (GMMR) in Trans Metro Bandung Conflict Resolution). *Journal of Technology Management*, 9(2), 212-225
- Alamanda, D.T. (2010). Pemodelan Matematika Berbasis Grafik untuk Menganalisis Konflik Bisnis Perkotaan. Studi Kasus: Manajemen Pedagang Kaki Lima Bandung (Graphical Modelling for Analyzing Urban Business Conflict. Case Study: Street Vendor Management of Bandung). *Proceedings of Forum Manajemen Indonesia 3*
- Budiana, O.R. (2012, September 26). Dada Rosada: Siapa saja Walikota Bandung PLTSa Harus Dibangun (Dada Rosada: Whoever Mayor of Bandung City PLTSa sould be built). Retrieved from <http://news.detik.com/bandung/read/2012/09/26/010103/2036514/486/dada-rosada-siapa-saja-walikota-bandung-pltsa-harus-dibangun>. [accessed on 17 November 2013]
- Fang, L, Keith. W.H, and D.M Kilgour (1993). *Interactive Decision Making – The Graph Model for Conflict Resolution*. NY: John Wiley and Sons
- Fitriawan, R.A (2008, April 01). Koalisi Advokat Gugat Walikota Bandung (Advocates Coalition sued the Mayor of Bandung City). Retrieved from <http://www.tempo.co/read/news/2008/04/01/058120160/Koalisi-Advokat-Gugat-Walikota-Bandung>[accessed on 23 Desember 2013]
- Hagihara. Y and Maiko. S. (2004). Conflict Management on Utilization of the Gages Water Resources Between Bangladesh and India. *Annual of Disas. Prec. Res. INST., Kyoto Univ., No. 47*. <http://www.dpri.kyoto-u.ac.jp/nenpo/no47/47b0/a47b0t04.pd>
- Hamouda, L., Kilgour, D.M., and Hipel, K.W., "Strength of Preference in the Graph Model for Conflict Resolution", *Group Decision and Negotiation*, Vol. 13, pp. 449-462, 2004
- Handayati.Y, Togar M. S, R. Sridharan. (2011). An analysis of collaboration between Coca-Cola and Carrefour using drama theory. *International Journal of Value Chain Management* 01/2011; 5(1):1-24. Retrieved from [http://www.researchgate.net/profile/Togar\\_Simatupang/publications](http://www.researchgate.net/profile/Togar_Simatupang/publications).
- Hariyanto, A. (2008, September 17). Kadisbudpar Usulkan PLTSa Jadi Eco Wisata (Head of culture and tourism Suggest PLTSa become Eco Tourism).Retrieved from <http://news.detik.com/bandung/read/2008/09/17/185609/1008075/486/kadisbudpar-usulkan-pltsa-jadi-eco-wisata>. [Accessed on 17 November 2013]
- Hipel, K.W, D.M Kilgour, and L. Fang. (2011).The Graph Model for Conflict Resolution. *Encyclopedia of Life Support Vol 2*
- Ispranoto, T. (2013, Agustus 2009). Aktivis Tolak Pembangkit Listrik Tenaga Sampah di Gedebage (Activists Reject Waste Based Power Generation in Gedebage). Retrieved from <http://bandung.okezone.com/read/2013/08/29/526/857381/redirect>. [Accessed on 17 November 2013]

- Ke, Yi Ginger. (2007). *Preference Elicitation in the Graph Model for Conflict Resolution*. Thesis Masters Program University of Waterloo, Ontario, Canada
- Kilgour, D.M, K.W Hipel, L. Fang and X. Peng. (2001). Coalition Analysis in Group Decision Support. *Group Decision and Negotiation* 10(2) 159-175
- Kilgour and Hipel. 2005. The Graph Model for Conflict Resolution: Past, Present, and Future. *Group Decision and Negotiation* 14:441-460. DOI: 10.1007/s10726-005-9002-x
- Kuncoro, Kukuh Siwi. (2011). *Studi Pembangunan Pembangkit Listrik Tenaga Sampah 10 Mwe di Kota Medan dari Aspek Teknis, Ekonomi dan Lingkungan (Development Study of Waste Based Power Generation 10 Mwe in Medan Based on Technical Aspects, Economic and Environmental)*. Thesis at Institute of Technology Surabaya.
- Lai, G., Li. C, Sycara, K., Giampapa, J, J. (2004). Literature Review on Multi-Attribute Negotiations, Technical Report CMU-RI-TR-04-06 1-35.
- Li, K. W., K.W. Hipel, D.M. Kilgour and D.J Noakes. (2006). Integrating Uncertain Preferences into Status Quo Analysis with Application to an Environmental Conflict. *Group Decision and Negotiation*.
- Kraus, S. (2001). Strategic Negotiations in Multiagent Environment. The IMT Press. <http://jasss.soc.surrey.ac.uk/6/1/reviews/sallach.html>. Accessed on 1 November 2014
- Nakamura, A: Conflict Logic With Degrees. In Skowron. A, Sheela. R, and James F.P. *Conflict Analysis and Information Systems: A Rough Set Approach*. 2006 34 [Accessed on 14 October 2014]
- Noakes, D.J, L. Fang, K.W Hipel and D.M. Kilgour. (2003). An Examination of the Salmon Aquaculture Conflict in British Columbia Using the Graph Model for Conflict Resolution. *Fisheries Management and Ecology* 10,1-15
- Noakes, D.J., L. Fang, K.W and D.M Kilgour (2006). The Pacific Salmon Treaty: A Century of Debate and an Uncertain Future. *Group Decision and Negotiation*
- Obeidi, A. (2006). *Emotion, Perception and Strategy in Conflict Analysis and Resolution*. Thesis Masters Program University of Waterloo, Ontario, Canada
- Obeidi, Amer, D.Marc Kilgour & Keith W.Hipel. (2009). *Perceptual Graph Model Systems*. Springer
- Pemerintah Kota Bandung. (2008). Kajian FS Tim ITB Teknologi PLTSa Aman dan Mampu Mereduksi Polutan CO<sub>2</sub>, 300.00 Ton per Tahun. Retrieved from <http://www.bandung.go.id/index.php?fa=berita.detail&id=586>. [Accessed on 16 November 2013]
- Pikiran Rakyat. (2010, Oktober 31). Warga GCA Kembali Tolak PLTSa (GCA Residents Reject PLTSa again). Retrieved from <http://www.hupakuan.com/fullpost/bermartabat/1377861803/walhikammidan-warga-gede-bage-berunjuk-rasa-menolak-pembangunan-pltsa.html>. [Accessed on 17 November 2013]

- Pikiran Rakyat. (2008, April 02). Tim Amdal Harus Koreksi Studinya (The EIA team should be evaluated this study). Retrieved from <http://www.tekmira.esdm.go.id/currentissues/?p=181>. [Accessed on 17 November 2013]
- Rahayu, R.N. (2013, Januari 30). Sampah, Tantangan Klasik Bagi Kota Pariwisata (Waste, Classic Challenge for Tourism City). Retrieved from <http://bandung.okezone.com/read/2013/01/30/526/753911/sampah-tantangan-klasik-bagi-kota-pariwisata> [Accessed on 20 Desember 2013]
- Skowron. A, Sheela. R, and James. F.P. 2006. Conflict Analysis and Information Systems: A Rough Set Approach. Lecture Notes in Computer Science. Volume 4062, 2006, pp 233-240. [http://link.springer.com/chapter/10.1007%2F11795131\\_34](http://link.springer.com/chapter/10.1007%2F11795131_34) [Accessed on 14 October 2014]
- Wawan. (2013, Agustus 29). Walhi, KAMMI dan Warga Gedebage Berunjuk Rasa Menolak Pembangunan PLTSa (Walhi, KAMMI and Residents are Demonstrating for reject PLTSa construction plan). Retrieved from <http://www.hupakuan.com/fullpost/bermartabat/1377861803/walhikammidan-warga-gede-bage-berunjuk-rasa-menolak-pembangunan-pltsa.html>. [Accessed on 17 November 2013].