

SOCIETY PARTICIPATION MODEL OF THE DEVELOPMENT OF MINING TOURISM AT THE MINING AREA OF SAWAHLUNTO

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ABSTRACT

Mining resources has another potential beside its mining material, which is tourism. In Indonesia, the regional government that conducted some efforts to create its region as a mining tourism city was Sawahlunto City. In 2001, the government of Sawahlunto created a vision and mission stated in Regional Regulation No. 2, 2001 that the city wanted to be a cultured mining tourism city in 2020. The coal mining area of Sawahlunto and its surrounding areas have potential to be developed as a mining tourism area; however, the areas have not been managed well. The economic potential of coal mining area can be productively developed through identification of geophysics, socio-culture and socio-economic. The aim of the research was to study the characteristic and preferences of tourist and to develop a participation model of mining tourism development in coal mining area of Sawahlunto. Method of analysis used to answer the aim of the research was supply and demand analysis with dynamic system approach. Research result found that the characteristics and preferences of the tourists were that the tourists were dominated by age group of 21-30 years and mostly came from Sawahlunto and the surrounding areas; the average expense for recreational activity was between Rp. 50.000,- to Rp. 300.000,-; the main motivation to visit the tourism mining area of Sawahlunto was vacation (93%), business (5%) and enjoying nature (2%); and the frequency of visiting the area was more than one time with 38.6% of tourists visited the area more than five times. Visitor management and society participation were used in formulating a model for mining tourism development in coal mining area. The development was conducted in two scenarios, existing and alternative scenarios. The development of Sawahlunto mining tourism was part of tourism activities directed to non-mass tourism activity. The number of tourist and society participation in alternative scenario was bigger than that of existing scenario.

Keywords: Coal Mining, Systems Dynamic, Mining Tourism, Sawahlunto

1. INTRODUCTION

Mining resources has another potential beside its mining material, which is tourism. In Indonesia, the regional government that conducted some efforts to create its region as a mining tourism city was Sawahlunto City. In 2001, the government of Sawahlunto created a vision and mission stated in Regional Regulation No. 2, 2001 that the city wanted to be a cultured mining tourism city in

2020. The vision is described in form of a mission that a potential mining tourism sites are excavated, grown, developed, preserved and presented as a tourism package. The implementation of the mission is developed in an agenda in realizing a cultured mining tourism city (Agenda 2002-2020) by determining four policies factor to be developed (Pemda Sawahlunto, 2001) i.e.: institutional capacity, regionals cooperation and the

improvement of city quality and product quality as well as tourism areas.

The background for the Sawahlunto Government to create its city as mining tourism city was the decrease in coal mining production at Sawahlunto in the early 2000s thus the government looked for other opportunities to improve their regional income. Coal was their main basic capital for development and it was their main pedestal for regional income; however, the reserve was decreasing.

Mining tourism is one of ways for conservation of geological diversity and it is also related to the conservation of flora and fauna in the area. In addition, mining tourism can be used as one of alternatives of sustainable mining management where the mining sites can be used as tourism object. Sawahlunto mining area has environmental damage issue caused by coal mining. Sawahlunto City is an area known as its coal mining; however, the reserve is decreasing. Thus, the Government of Sawahlunto tries to develop the area into a mining tourism area.

2. PROBLEMS FORMULATION

Coal mining area of Sawahlunto has huge potential to be developed as mining tourism object since it has various geological and mining sites. The area and other ex-coal mining areas at Sawahlunto have area of approximately 15.451,02 Ha. The area consists of Tanah Hitam, Kandi, Sapan Dalam and Kumanis that are excavated in open mining system and Sawah Rasau, Sawah Luwung, Sigalut, Waringin and Sugar areas that are excavated in deep mining system (PT. BA, 2003). The tourism potential of the areas includes old city tourism object and coal mining that still operated and closed. Mining tourism object offers unique tourism attraction thus Sawahlunto has its own attraction compare to other areas.

The attractiveness has attracted tourists to visit the coal mining area at Sawahlunto. It can be seen from the increasing number of tourist every year. The number of tourist visiting the tourism area at Sawahlunto in 2007 to 2012 was 427.640 to 735.052 (BPS Sawahlunto, 2011). Tourism has big contribution to the regional income of Sawahlunto and the number is increasing every year. In 2007, the income received from Kandi Tourism Park was

Rp.96.233.500, and it increased in 2008 to Rp.153.279.500, in 2009 was Rp. 575.959.500, in 2010 was Rp. 1.061.108.000 and it increased again in 2011 to Rp.1.978.897.500.

Even though the mining tourism area has potential, however the area had some issues including the absence of integrated area management and only certain tourism development that attract tourist visit. In addition, the issues were less participation from the society to develop the area due to the low human resources and no inventory on the potential area of mining tourism including result of supply and demand analysis. The reason for these issues to exist was that no identification has been conducted on the potential of the area regarding geophysics, socio-culture and socio-economy as well as tourist typology and supply and demand potential of the mining tourism. In addition, there was no policy on area conservation in order to develop mining tourism based on environmental protection, local society welfare and education.

3. RESEARCH PURPOSE

1. To study the characteristics and preferences of tourist on mining tourism object of Sawahlunto.
2. To formulate a model of society participation in mining tourism development in coal mining area of Sawahlunto

4. LITERATURE REVIEW

Tourism of Mining Industry Heritage

Edwards and Coit (1996) saw industrial heritage tourism in general way or in broader frame. Their typological frame is said as appropriate for any case regardless the nation or culture and it brings them to an understanding of three types of typical issues to be faced in making a mining as tourism object. The issues are expensive maintaining cost due to the size of mining sites, pollution and damage in its surrounding areas and remote location of the area. Edward and Coit (1996) concluded that the success in building tourism of industrial heritage is likely to occur if the mining site is part of the larger tourism attraction in a housing area. It means that environment, such as infrastructure, other attractions and most of the local societies, is big contributor for the success of mining tourism.

Wanhill (2000) supported the opinion of Edward and Coit where in a case study on mining in South Wales it was found that the biggest success factor was the potential of becoming world heritage site. He stated that it will create a possibility to develop a whole heritage purpose instead of only one attraction.

Another case study by Rudd and Davis (1998) contributed to the appraisal that all purposes or areas are the important success factor for every site of mining industrial heritage. They claimed that a location should be the important consideration for them whom planning to create a site of mining industrial heritage. In addition, available accommodation, tourism-supporting environment, easy and updated access give contribution to the popularity of the tourism object (Rudd and Davis 1998). The finding was the most general approach compare to other researches that focus more on the sustainability of mining tourism (Jonsen and Verbeke 1999). The importance of society participation was stressed specifically by Jonsen and Verbeke (1999) stating that the success will depend on local societies in preserving their cultural identity.

Tour

The definition of tour according to UU No. 10, 2009 on tourism is a travel activity or part of it conducted voluntarily and temporary in nature to enjoy the object and tourism attraction; tourist is people who do tourism activity; tourism is anything related to tour including object enterprise and tourism attraction and other related businesses.

According to Pendit (2002) in its operational the Government of Indonesia defines tourism as one who leaves the house to travel without earning a living in the place he/she visit while enjoying the visit.

The Development and Approach of Mining Tourism Management

According to Conlin and Jolliffe (2010), in the whole world, mining has been a basic for the development of industrial society. Currently, a new trend exists in the mining industry, which is the conversion of mining for industrial interest with mining value of mining heritage aspect and tourism aspect. As social values and societies related to the change in mining, the new aspect related to heritage

tourism industry has been developed including the creation of tourism attraction related to the mining.

There are four types of mining activity heritage that could be presented and developed as tourism attraction (Kuswartoyo, 2001 *in* Papua, 2008) i.e:

1. A mining site in the surface or underground, a hole, a cave or ex-mine excavation
2. The processing of mining production
3. The transportation of mining production, infrastructures and transport equipment
4. The product of socio-culture by mining activities, tools, equipment, housing, the history of mining workers, etc.

The purpose of mining tourism is to encourage the opportunity of tourism development impacting the increase in economy while at the same time making sure the conservation and/or the protection of mining heritage attribute. In this case, the role of stakeholders becomes important since they are considered as the owner of the mining site feature. The group consists of local society and other society groups that include tourism industry, planner and investor, protected area administrators, non-governmental organization for conservation, local society and tourist. Tourist participating in a tour usually interacts with the society to see the nature scenery and geological feature and other mining sites (Newsome et al., 2012).

Dynamic System Analysis

A system is a group of related and organized components in order to achieve a goal or a group of certain goal and a system contains various sub-systems (Hartisari, 2007). Another definition stated that a system is a whole interaction among elements of an object in certain environmental limit and works to achieve goal (Muhammadi et al., 2001)

The thought of system is looking for integration between sections through a thorough understanding; thus, a new frame of thought known as a system approach is needed (Eriyanto, 1999). The basic fact of the issue faced is complexity. Therefore, one or two specific method is not enough to solve a complex issue. In this case, system theory questioned that system is a meta-discipline where processes across disciplines can be integrated. System approach is a thorough or holistic perspective focusing on integration and link

between components and it can change the perspective and mindset in solving problem using a model that is a simplification of a system (Hartrisari, 2007).

System approach explains that a study of an issue should fulfill the following characteristics: 1) complex, where interaction between elements is complicated; 2) dynamic, means that there are factors that change according to time and there exist future estimation; 3) probabilistic, means that opportunity function is needed as well as inferences or recommendation. It is explained that in management application, system technique required various quantitative basic theories consisting of: 1) mathematic model; 2) function analysis of mathematic model used; 3) control theory; 4) estimation theory and 5) decision theory (Eriyanto, 1999).

5. RESEARCH METHOD

1. Analysis of Mining Site Object

2. Supply and Demand Analysis

Supply and demand analysis of mining tourism in Sawahlunto coal mining area was conducted by comparing supply and demand condition of the area based on the result of field observation, questionnaire by respondents from the administrators and questionnaire by tourist respondents. Variables to be compared were main variables influencing the development of mining tourism.

3. System Approach

System approach method was conducted to produce operational model of the development of mining tourism. Some analysis stages conducted by the research in system approach were: need analysis, problem formulation, system identification, model formulation, model verification and validation and model application.

Place and Time of Research

The research was conducted in mining area and ex-coal mining and other geological sites in Sawahlunto. Sawahlunto is located between 0.34° – 0.46° south latitude and 100.41° – 100.50° east longitude with area of 27,344.7 ha or about 0.65% of the area of West Sumatera Province. Most of the land, about 63.95%, was community land and 32.99% owned by mining authority, PT Bukit

Asam Unit Pertambangan Ombilin (PT. BA UPO). The research was conducted in May, 2013 to April, 2015.

6. RESULT AND DISCUSSION

Characteristics and Preferences of Tourist toward Tourism Objects

Number of Tourist

The number of tourist in a tourism destination area can be used as a benchmark for the level of tourist satisfaction in the area. An optimum satisfaction can be indicated by the increasing number of tourist visiting the area. Result of survey indicated that the majority of tourist visiting the areas came from Sawahlunto and its neighboring province, especially Sawahlunto City, Padang, Solok as well as outside West Sumatera area such as Riau and Jakarta. The number of tourist in 2009 to 2013 is presented in Table 1. Table 1 indicates the dynamic of the growth of number of tourist from 2009 to 2013. It indicates the dynamic in the achievement of optimum satisfaction level of tourist in mining and ex-mining areas of Sawahlunto. Factors influencing the optimum satisfaction level of tourist consisted of attraction, amenity and accessibility that influence the acceptable minimum recreational experience (Shelby and Heberlein, 1986). However, it is quite difficult to determine the definition of acceptable minimum recreational experience of tourist. Therefore, identification was needed regarding issues influencing the perception of tourist and tourist expectation when visiting Sawahlunto City for mining tourism.

Tourist Profile

The tourist profile based on questionnaire and interview is presented in Table 2. The profile was dominated by tourist in the age of 21 – 30 years and most of them came from Sawahlunto and its surrounding areas. According to the tourists the mining and ex-mining areas of Sawahlunto were an interesting tourism destination due to its beautiful natural scenery and they were affordable in term of location and cost with expenditure of Rp. 50,000 – Rp. 300,000 for the recreational activity.

Based on the profile, the development of tourism

product in Sawahlunto can be directed toward tourism product that accommodates tourism recreation for young people and for family or group of tourist. Based on the information aspect of tourism product, the tourist got the information on Sawahlunto as a mining tourism destination from other people. Other promotional media, such as brochure, internet and so on, were considered less effective to persuade people to visit Sawahlunto.

Tourism Motivation

Result of analysis with questionnaire to tourist indicates that the main motivations to visit mining tourism area of Sawahlunto were vacation (93%), business (5%) and enjoying the nature (2%). The frequency of tourist visiting Sawahlunto was mostly more than one time with 38.6% of respondent visited the area more than 5 times.

The purpose of tour activity was achieved; however, identification was needed on the importance factors that according to the tourist could increase their satisfaction in visiting the mining tourism area of Sawahlunto. The important factors identified were: cleanliness, the beauty of the area, safety, price level, local culture, easy access to transportation, environmental education, preservation of ex-mining areas with historical value and conservation education, bio diversity, local culinary, and the adventure value obtained during the visit.

The above Figure 2 shows that cleanliness and easiness to reach the tourism location were the main factors in increasing the satisfaction of visitor with 100% tourist (respondent) agreed to the factor. It followed with easy access to transportation to reach the location with 100% tourist agreed to the factor. 98% of tourist agreed that protection of conservation area of geological mining could increase their satisfaction. Factor with the lowest percentage in influencing the satisfaction level of tourist was adventure with 59%.

Model of Mining Tourism Development at Coal Mining Area

The development of mining tourism was directed to non-mass tourism activities. The dynamic system

model developed in the research was limited to things related to the interaction between society, tourist, mining tourism administrator and government policy regarding the management of ex-mining area. The scenario illustrated the level of tourist growth and the economic benefit. The scenario made for correction action of the management of mining tourism of Sawahlunto was a management action of number of tourist and management of conservation and economic growth. The action of management of conservation was conducted by developing geological mining site into a tourism object. The scenario was used to look for efforts in distribution of the tourist and increasing the number of tourist that produce indicator for economic growth as conservation area and tourism destination.

Model Specification

The model dynamic or conceptual model was broken down into stock and flow diagram. In this stage, stock and flow were quantified in order to be simulated by computer using dynamic system software. Following are the model specification:

1. Sub-model of Tourist

The sub-model describes the dynamic of the number of tourist in the mining tourism area of Sawahlunto. Several variables influencing the dynamic of number of tourist were amenity, attraction, capacity, satisfaction and level of tourist growth. Tourist growth was influenced by the satisfaction of tourist to the tourism product offered in term of attraction and number of tourism object.

2. Sub-model of Society Participation

The utilization of mining tourism area of Sawahlunto as tourism destination gave positive impact to the societies in the area, among other, it gave opportunity for society participation in term of employment opportunity in fields directly related to the tourism activities in the area. The system behavior in term of the number of employment needed along with the dynamic of tourist growth is illustrated in the following sub-model.

Based on the scenario model, the management of mining tourism area of Sawahlunto was developed based on model conceptual. In the model conceptual there were two management actions i.e. tourist management. Based on the management action, two scenarios were developed in order to optimize management actions. The two scenarios were existing and alternative scenarios.

Existing Scenario

Existing scenario is a scenario built based on assumption that management is conducted based on the existing condition. Existing scenario can be used as a comparison reference toward other management action scenarios. The condition of action in the existing scenario was conducted through tourist management. Tourism attraction offered was in accordance with the existing condition. The aspect of tourism objects and attraction offered consisted of Goedan Ransoem Museum, Train Museum, Water Boom, Wisata Kandi Resort, Lubang Mbah Suro and Galery Info Box, Tour Train, and Tourism Village of Rantih. Amenity as a facility and infrastructure supporting the tourism area was in good quality that needs only maintenance and no new facilities were developed. There were no systematic and progressive efforts regarding accessibility aspect, especially on the delivery of information on product and route to the mining tourism area of Sawahlunto.

The management of the number of tourist and tourist distribution was not conducted in specific way. The impact was an accumulation of tourist during weekend and holiday and at certain tourism objects in mining tourism area of Sawahlunto. In turn, it has caused a decrease in tourist satisfaction.

The most likely implication of existing scenario of the applied management based on the result of model analysis was that the existing scenario will resulted in tourist growth and caused an increase in society participation and income although the growth of income was decreasing. Detailed is illustrated in Figure 6.

Alternative Scenario

Alternative scenario was built based on assumption that the policy of management was to increase the number of tourist, society participation and income through the development of mining tourism area of Sawahlunto, the increase in conservation and economic growth and support the policy of the development of the area as tourism area with sustainable development concept. The development of the area was conducted through analysis on the potential of tourism object and attraction development. The development of tourism object was done by increasing conservation by opening mining tourism object that active inside and outside. The

active mining has existed in the mining tourism area of Sawahlunto; however, it has not been used as tourism object. The development of attraction was conducted by adding attraction on the existing tourism object, such as camping ground at tourism object of Rantih Village. Until now, there was no entry ticket for the tourism object of Rantih Village. The development of attraction in form of camping ground was expected to give positive impact on economic growth through an increase in society income and the absorption of society participation. Another development was through the increase in information, facilities and infrastructures to the mining tourism area of Sawahlunto.

In this alternative scenario, management action was conducted in form of the management of the number of tourist. The management was aimed to avoid accumulation of tourist during weekend and holiday and the uneven distribution of tourist in various tourism objects of mining tourism area of Sawahlunto that could decrease the satisfaction level of the tourist. The management of tourist could increase the average of tourist growth up to 30 percent per year. Figure 7 illustrates the situation.

Scenarios Comparison

The comparison of the performance of scenario simulation result system was used as a consideration for administrators to determine the appropriate strategy for the management of mining tourism area. The impact of both scenarios was compared based on income. It can be seen that the alternative scenario was able to increase income; the increase, however, was lower than that of alternative scenario. Society income was gained from other services offered by the societies of the surrounding area.

The impact of both scenarios could be compared based on two indices i.e. tourist and society participation. The impact on tourist is presented in Figure 5.5. Alternative scenario indicated an increase in the number of tourist than existing scenario that relied on the existing tourism object. It was due to the offer of various and new tourism objects, in this case was active and open mining tourism. In addition to the addition of tourism object option, the increase was also related to the addition of attraction, which was ground camping

in Rantih Tourism Village. The increase in the number of tourist in alternative scenario presented in Figure 8 was shown in 2018 after the development of tourism object and attraction. Tourist satisfaction was optimum with the distribution of tourist due to the development of tourism object and attraction.

Figure 9 explains that the indicator of society participation was an indicator for the number of society in the mining tourism area of Sawahlunto employed in the work field related to the tourism activities in the area, directly or indirectly. The implication of scenario of management of society participation was better if there were more people employed since it meant an increase in the society welfare. A comparison of simulation result of both scenarios shows that alternative scenario through the increase in conservation and economic growth showed higher level of society participation than existing scenario. In detail, the comparison was between existing and alternative scenarios.

CONCLUSION

1. The characteristics and preferences of tourist were that tourist was dominated by age group of 21-30 years and most of them came from Sawahlunto and its surrounding area with range of income for recreational activities was Rp. 50,000 – Rp. 300,000. The main motivation to visit the mining tourism area of Sawahlunto was vacation (93%), business (5%) and enjoying nature (2%). The frequency of tourist visiting Sawahlunto was more than one with 38.6% of respondents visited the area more than five times.
2. The model of mining tourism development in coal mining area was economic management. The development of mining tourism of Sawahlunto was tourism activity directed to non-mass tourism activity. The development was conducted through two scenarios, existing and alternative scenarios. The number of tourist and society participation in alternative scenario were higher than that of existing scenario.
- 3.

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Table 1. Number of Tourists at Tourism Object of Sawahlunto 2009-2013

No	Tourism Object	Number of Visit				
		2009	2010	2011	2012	2013
1	Gudang Ransum Museum	6.381	5.640	8.014	9.359	14.000
2	Train Museum	2.069	2.477	2.569	4.034	4.842
3	Water Boom	157.436	150.392	167.073	170.305	158.747
4	Wisata Kandi Resort	85.139	128.084	279.958	302.566	262.334
5	Lubang Mbah Suro and Galery Info Box	3.307	2.801	3.891	6.560	10.279
6	Train Tour	40.456	42.854	38.648	10.471	11.507
7	Tourism Village of Rantih	-	865	907	3.377	5.307
	Total	294.788	333.113	501.060	506.672	467.016

Source: Tourism Regional Department of Sawahlunto 2014

Table 2. Tourist Profile at Tourism Object of Sawahlunto

			Percentage
			(%)
1	Sex	Male	77
		Female	23
2	Age	17-24 years	34
		25-34 years	32
		35-44 years	25
		>45 years	9
3	Education	Elementary School	4,6
		Junior High School	13,6
		Senior High School	63,6
		Diploma	-
		Bachelors' Degree	18,2
4	Origin Of Residence	Sawahlunto	50
		Padang	36,4
		Solok	6,8
		Bukittinggi	3
		Riau	2,3
		Jakarta	1,5
5	Occupation	Student	15,9
		Civil Servant	9

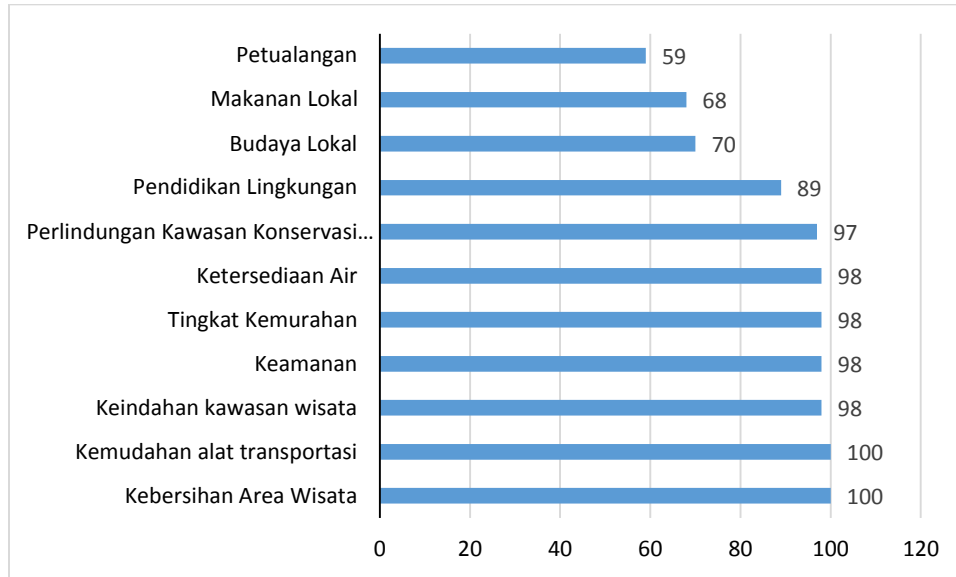
		Employee	54,5
		Employee of State-Owned Enterprises	-
		Other	20,6
6	Income	< Rp 1000.000	36,4
		Rp 1000.000 - 2.500.000	47,7
		Rp 2.600.000 – 4.000.000	15,9
		> Rp 4.000.000	-
7	Go in a tour	By one's self	2,3
		With another person	9
		In a group	31,8
		With family	56,9
8	Transportation	Public transportation	2,3
		Motor	36,4
		Car	31,8
		Bus	29,5
		Other	-
9	Information On tourism	Friend	70,5
		Brochure	-
		Internet	-
		Travel Agent	-
		Tourism Guide	2,3
		Other	27,2

N = 130

Table 3. Motivation of Tourist Visiting Mining Tourism Area

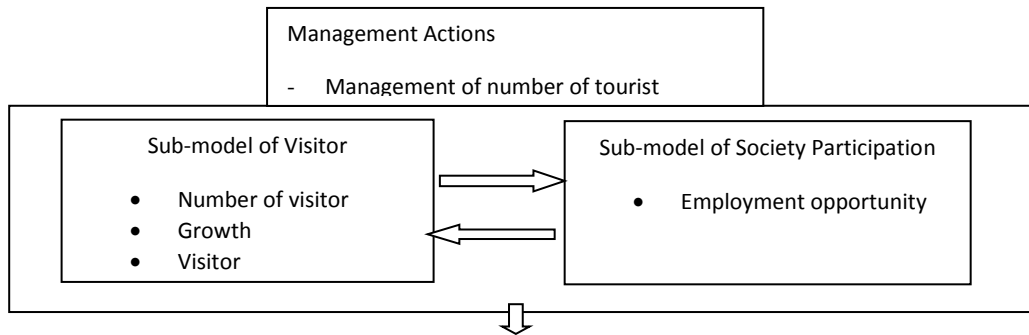
No	Motivation to Visit	Percentage (%)
1	Vacation	93
	Business	5
	Enjoying the nature	2
2	Frequency of Visit	
	First time	18,2
	2-3 times	24,2
	4 – 5 times	11,4
	> 5 times	38,6

N= 130



Source: Result of Field Research

Figure 2. The Important Factors that Increase the Satisfaction Level of Visitor at Mining Tourism of Sawahlunto (Percentage)



Indicator of Tourist, Society Participation, Society Opinion.

Figure 3. The Dynamic of Management System of Mining Tourism Area of Sawahlunto

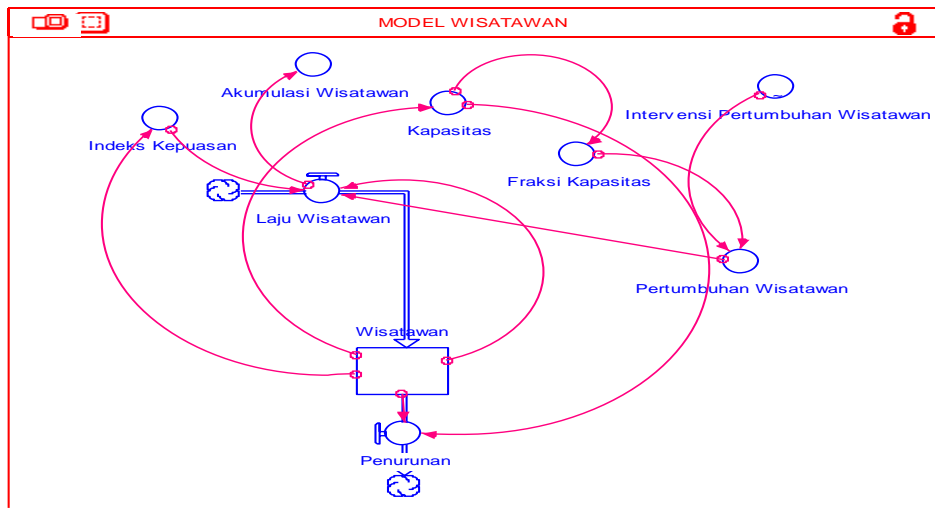


Figure 4. Sub-model of Tourist of Mining Tourism of Sawahlunto

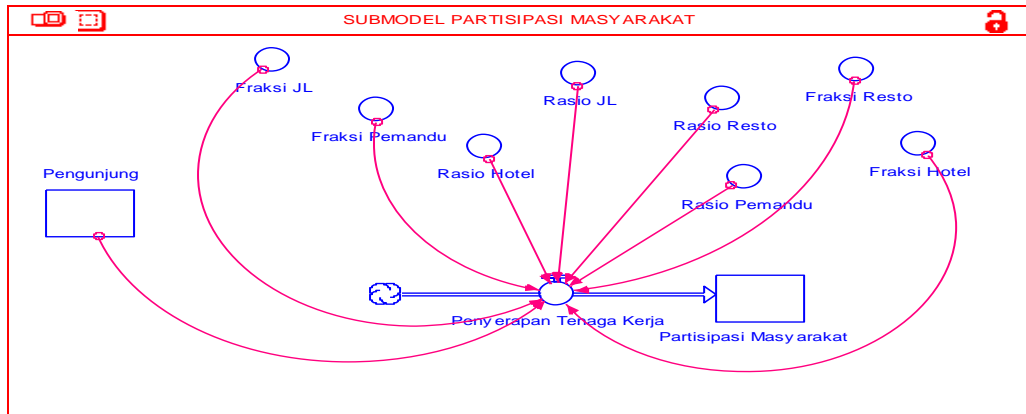


Figure 5. Sub-model of Society Participation of Mining Tourism of Sawahlunto

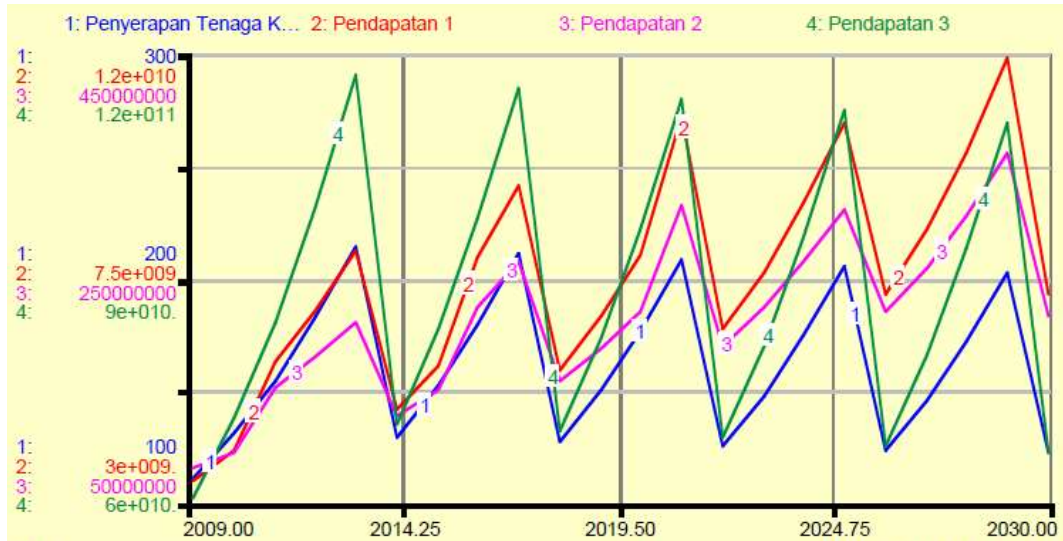


Figure 6. The Implication of Existing Scenario of Society Participation and Income

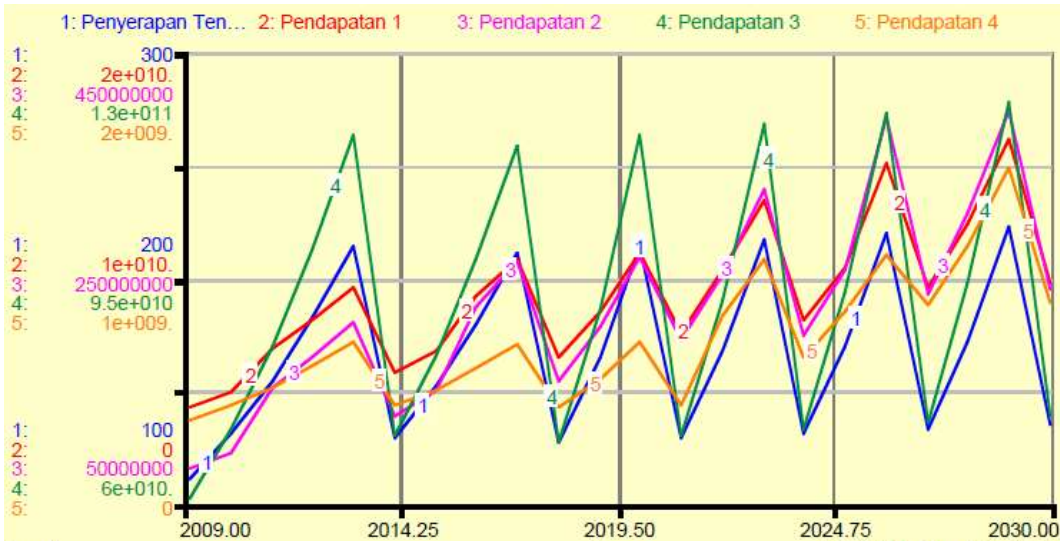


Figure 7. The Implication of Alternative Scenario of Society Participation and Income

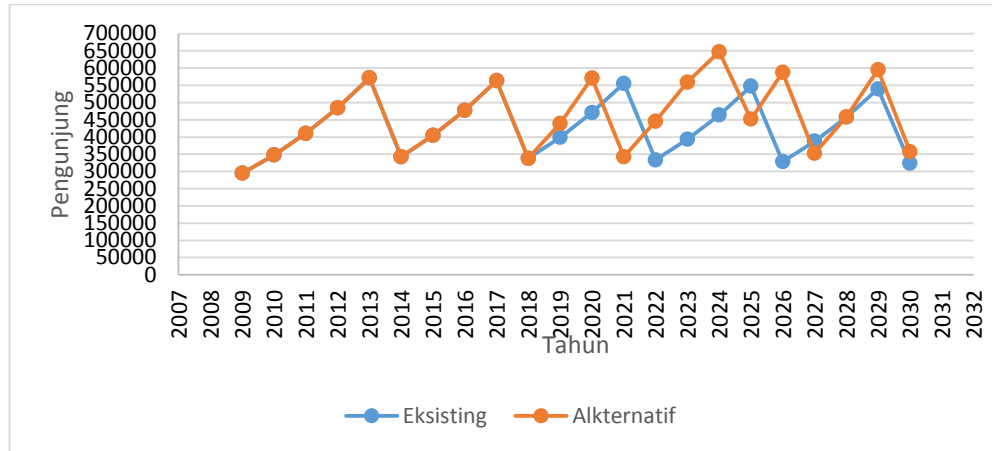


Figure 8. The Comparison of Tourist Management Scenarios

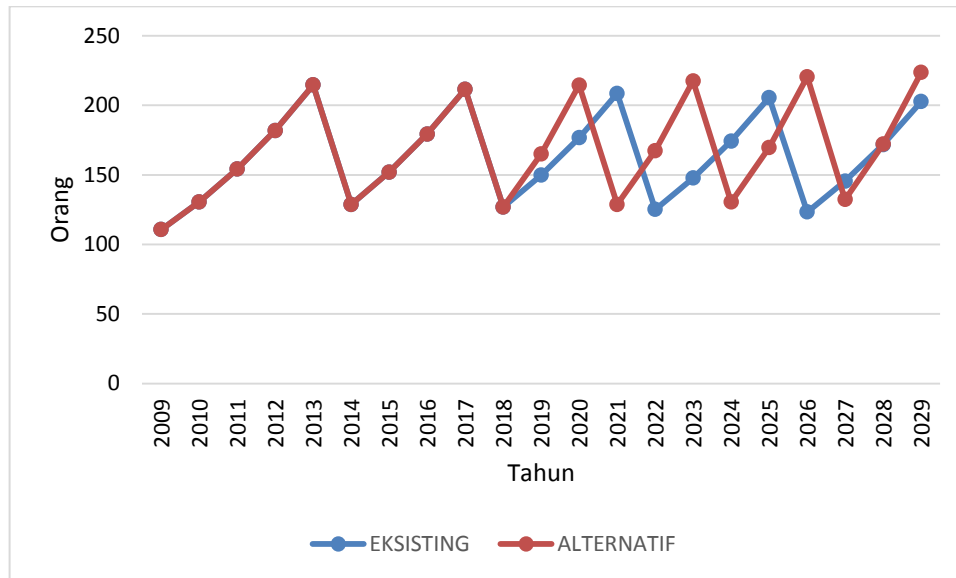


Figure 9. Comparison of Scenario of Society Participation