

## IMPLEMENTATION OF KARST DAMAGE PREVENTION POLICY IN WEST BANDUNG, WEST JAVA INDONESIA

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### ABSTRACT

*Citatah karst region - located in the district Rajamandala Cipatat, West Bandung regency. In Geo hidrology point of view, most of the area is the water catchment areas with productive aquifers that were widespread distributed in small local deployment, as local productive aquifer. Due to utilization the space which are usually for mining and industry (processing limestone) that exceeds the specified space, the area is feared to be damaged quickly. Symptoms of the damages in the region are: the missing several springs, the scrape of barren limestone hills and steep, and some area that have been destroyed, the site Pawon Cave is threatened, and social conflict as the result of those damages. The problem is the weakness of Policy of West Java Province No. 2 of 2002 on Geological Environmental Protection, and West Java Provincial Regulation No. 2 Year 2006 concerning Management of Protected Areas was not enough to stem the damage in this region, Monitoring policy implementation and licensing procedures that are oriented to regional revenue that led to the protection of karst area became neglected.*

Keywords: Policy, Oversight, karst areas, mining areas, protected areas

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### Introduction

Citatah karst area on Highway Cipatat, West Bandung regency, potentially a terrestrial park West Java, Indonesia, and even the world. There, millions of years ago was part of the sea and prehistoric human settlements. Unfortunately, only about 30% of karst region that has not been damaged. The rest, limestone mining activities there have eroded. Landforms and rocks from Bandung Basin laden history pockmarked and chipped. This zone is unique in geology, biological and cultural. If the mining companies are not disciplined then chalk geo park plan is difficult to materialize, it should also be conserved Karst and extend the protective zone. The Government can divert livelihood of citizens (limestone mining) into agriculture, livestock, tourism and creative economy. Travel empowerment could be the formation of the cultural village, trail or activities related to karst limestone hills *Sangkuriang* legend.

Threats to the sustainability function as a karst aquifer water comes from human activities. The most substantial contribution in this regard is the karst surface exploitation activities carried out by the mining sector. It is inevitable that the limestone karst areas that make up an instant economic value that is easily obtainable. As we know, during these limestone tones that contain carbonate minerals become one of the main raw material in the cement industry. Limestone is also used in the scale pretty much the cosmetics industry, the manufacture of glassware and the agricultural industry.

In the industrial sector, as the limestone excavated material has value only as a class-C, not much different from the sand. In fact, lime stones which have evolved and become an integral part of karst region is a non-renewable natural resources. To become a karst area, an area of limestone took millions of years and under certain conditions. Ironically, there are many who are not willing to understand this. There are still many who think that there are karst areas that can still be used for the mining industry.

Another threat that a significant impact on the life also emerged from fauna hunting activity is synonymous with karst area, namely bats. Karst cave by the hundreds (or even thousands in Indonesia) is the original habitat of insectivorous bats. In one cave alone, bats living can reach thousands and even millions of individuals. Bats have a range of up to 9 kilometer radius from the place of residence. This means that each colony of bats was able to keep 245 square kilometers surrounding agricultural area of insect pests. Insectivorous bats have the ability to prey on insects up to a quarter of his body weight, with an average weight of 17 grams / fish every bat is able to eat insects insect weighing 4.25 grams, the equivalent of 800 animals insects (Wiyantoro, 2006).

All the activities of supervision is to assure and guarantee work has been carried out accordance with the plan that has been outlined. Policy and orders (rules) given (Siagian, 2003: 112). To ensure that all the work that has been given by the leadership to his subordinates can go according to according to plan, then a leader must have the ability to guiding, demanding, guiding, motivating, driving the organization, establish good communication networks, resource monitoring, as well as to bring his followers to target the intended accordance with the provisions, time and planning (Kartono, 2002: 81).

Supervision is a step once organic function of management is very important to say so because through supervision investigated whether listed in performing well or not. Kartini Kartono (2002: 153) giving meaning supervision is generally can work well together towards the achievement of common goals and objectives of the organization monitoring to measure the work and avoid

deviations - deviations if necessary immediately take corrective action against irregularities. Siagian (2003: 112) says the supervision of an observation process of implementation throughout the organization to ensure that all the work being carried out goes according to plan yan g predetermined.

According to E. Utrecht found if regulators which do not generally prohibit an act, but they also provided that allowed him to be held in the manner prescribed for each concrete terms, the act of state administration which allow the act to be a license. Permit is a basis of the approval of the ruling Air Act or regulations in certain circumstances to deviate from the provisions of laws (Sutedi Adrian, 2011.167 to 168).

In connection with the explanation Spelt and ten Berge (in Sri Pudyatmoko, 2009: 7) argues that: permission is an approval from the authorities based legislation or regulations in certain circumstances to deviate from the provisions of prohibition legislation (permits in the narrow sense). Based on what was said by Spelt and Ten Berge, the licenses can be understood that a party can not do anything unless authorized. That is, the possibility for a person or a closed party unless authorized by the government. Thus tying the government role in the activities undertaken by the persons or parties concerned.

Function And Purpose Permit Granting function and purpose, as written by (Adrian Sutedi, 2010: 193, 200), that the provision on licensing has:

serves as a policing function and as a regulator. As policing function, intended for any form of community activities do not conflict with one another, so the order in every facet of people's lives can be Realized. Permit serves as the setting is the spearhead of legal instruments in governance. Norma cover in a series of legal norms. The realization of this provision one of which is the license. Based on the types of provision, permits including axles constitutive provisions, namely provisions which give rise to new rights previously owned by a person whose name is listed in that provision, or *beschikkingen tevoren welke niet iets wat toestaan geoorloofd* (statutes that allow something previously not allowed). Permit the provision, made with terms and conditions that apply, namely: (1) requirements, (2) the rights and obligations, (3) the procedure (procedure), (4) the applicable period, (5) the time of service, (6) costs, (7) a complaint mechanism and a settlement of disputes, and (8) sanctions, (Sutedi Adrian, 2010: 180).

Purpose of licensing is to control and government oversight of activities in certain things that provisions containing guidelines to be implemented by both concerned or by the competent authority. Purwanto and Sulistyastuti (2012: 21), "the point is the implementation of activities to distribute the policy output (to deliver policy outputs) conducted by the implementor to the target group (target group) in an effort to realize the policy". According Agustino (2008: 139), "implementation is a dynamic process, where the implementers perform an activity or activities that are likely to get a result that is consistent with the objectives or goals of the policy itself". Ripley and Franklin (in Winarno, 2014: 148) states that the implementation is what happens after the legislation is adopted which provides authority programs, policies, profit (benefit), or a type of real output (tangible output). Implementation includes actions by as actors, particularly the bureaucrats that are intended to make the program run. Grindle (in Winarno, 2014: 149) gives his views on the implementation by saying that in general, the task of implementation is to form an association (linkage) which facilitates policy objectives can be realized as a result of a government activity.

Thomas R. Dye (in Agustino, 2008: 7) defines public policy is an effort that is chosen by the government to do or not do in the form of targets or objectives of government programs. Meanwhile, according to Carl Friedrick (in Agustino, 2008: 7), public policy as a set of proposed actions a person, group or government within a given environment, the threats and opportunities that exist. The proposed policy is intended to exploit the potential and overcome the existing obstacles in order to achieve certain goals.

Budiadjo (in Ali, et al, 2012: 12) states that the policy is a set of decisions taken by a principal or a political group in an attempt to pick-purpose objectives and ways to achieve the goal. W.I. Jenkins (in Wahab, 2004: 14) to formulate the policy as "assets of interrelated decisions taken by a political actor or group of actors concerning the selection of goals and the means of Achieving Them whitin a specified situation where seicions Reviews These should, in principle, be within the power of Reviews These actors to Achieve "(a series of interrelated decisions taken by a political actor or group of political actors with regard to objectives that have been selected along with ways to achieve them in a situation where the decisions were in principle still be within the limits of the authority of the power of the actors).

Chief J.O. Udoji (in Wahab, 2004: 15), defines the policy as "an sanctioned course of action addresses to a particular problem or group of related problems that Affect society at large" (an action that directs on a particular issue or group of issues directed on a particular issue or group of inter-related problems affecting the majority of citizens).

In Keban (2008: 60-61), Shafritz and Russell provide that the definition of public policy, namely "whateever a government decides to do or not to do, while Chandler and Plano argues public policy is the strategic utilization of the resources that exist to solve problems -Problem public. Furthermore Paterson argues that public policy is generally seen as government action in dealing with the problem, by directing attention to "who gets what, when and how", citing Paterson proposed definition of public policy and opinion Anderson BG Peters.

Alfatih (2010: 2) states public policy is any decision or action that was made intentionally and unauthorized by the government that aims to protect the public interest, addressing public problems, to empower the public, and create public welfare.

As the region has special characteristics with sufficient significant area, with diverse flora and fauna that inhabit it, the karst area is an ecosystem that is an important part of the regional ecosystem in which the region is located. The main function of the karst

region is its ability to be a clean water aquifers. The physical properties of limestone that has many cracks allow karst region serves as a catcher, storage and supply of water for all living organisms within and surrounding environment.

In the visible, surface conditions karst region dry and barren impressed. This is what distinguishes karst aquifer with aquifers in other areas. In addition to the rock pores, karst region utilizing micro-sized cracks as a store of water, even in a more servings. The area near the surface has cracks percentage more than the area at the bottom, so that the percentage of water savings were more numerous in the area near the surface. Most water storage area in a karst area known as epikarst zone, located at a depth of 0-50 meters from the ground. Epikarst zone thickness varies between 10-15 meters (Klimchouk, 2003).

Water stored in epikarst zone is then released slowly into the springs (spring) are generally perennial or permanent throughout the year. Water saving is partly accumulated into streams underground rivers that are often found in karst caves. This process can simply be observed through droplets of water through the stalactites in the cave which never stopped even at the peak of the dry season. Research on the existence of the zone is also simultaneously confront epikarst earlier theories that explain that the top of the karst area is an area of dry (without water content) that can be exploited to a certain extent before it reaches the water-saturated zone.

Almost every exploitation of phosphate there was never any control system from the competent authority and tend to be excessive (over exploitation). So that the damage to be exceptional to the caves are the site of phosphate mining. Floor and ornaments cave being crushed, leaving holes as deep as dozens of meters. Usually these caves become dangerous to enter because of human activity makes the cave excavation cave floor is no longer stable and often triggers the release of methane gas is then trapped in the halls of the cave. Because it was hidden, the damage from guano mining activity is difficult to detect. This activity is rampant in Gunungsewu Karst region, Karst Sukolilo even in the heart of Tuban are included in one of the parks conservation areas managed by the government.

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State as the party most responsible for the preservation of natural resources both biological and non-biological, have made clear regulations on the protection of the karst region. After removing the EMR Decree No. 1456 / K20 / MEM / 2000 on the governance of the karst region, the Government in 2008 issued PP 26 of the National Spatial Plan which requires every local government to enter the karst region as a Protected Area. Karst region as a whole is regarded as an asset geological landscape has unique, distinctive and have a water storage function. The existence of caves, flora and fauna in the karst region is also referred to explicitly in the regulation as one of the conditions is met karst region as a protected area.

However, the implementation of government regulations to protect the function of karst areas in Indonesia apparently still met with resistance from many quarters. Still rampant mining (both large and small scale) in a number of areas to be real evidence that the weak enforcement of regulations related to the protection of the karst region. One obvious example is still the number of mining activities in the area of Kars Gunungsewu, Yogyakarta. Especially in areas that are believed to function as a water catchment area for the two largest hydrological system in this region, Goa and Goa Seropan Bribin (second cave is a focus for meeting water needs of 80 thousand people through the pipeline by the government). In other karst areas, such as in Grobogan, Kebumen, Cilacap, Blora and Pati (Central Java) unrelenting investor insisted establish cement plants over the objections of thousands of farmers.

In other parts of Indonesia, karst areas also experienced similar threats. The interior of East Kalimantan, stretching cement investor activity also began to be heard, as well as in South Sumatra, Lampung, South Sulawesi even to Papua. Not infrequently this condition create horizontal conflicts among communities, because it always appears the pros and cons of each plan to plant large-scale investment in an area. Massive needed cross-sectoral network and effort to protect the karst ecosystem of "plunder" the hands of irresponsible.

Heavy duty raise awareness about the importance of the karst region back to life the long term was not longer just reserved for people living in the karst region. Rescue task karst region becomes heavier as karst as economic commodities instant (class-C) eventually also anesthetize the policy makers in the government, investors, even unscrupulous academics and those working in conservation activities ever karst itself. Obviously with the lure of material achievement of a better life. (Text and photos AB. Rodhial Falah - This article has been published in the Bulletin Conservation DIY BKSDA 2011)

### **Methodology**

This study uses survey, by interview using a questionnaire (questionnaire). Sampling method in this research is done by using purposive sampling, the sampling technique with a certain consideration. The method can be used if the sources or respondents interviewed are people who are experts or working in a field, for example research on food then the data source or resource person is the person (Sugiyono 2010). Purposive sampling method or judgment, in which the determination of sample obtained from consideration of the interviewer, with a note that the respondents who were interviewed are people who are experts or working in the field of research that is being studied or the late respondent meets the criteria specified by the interviewer (Fauzi 2001).

The data used in this research is primary data and secondary data. According to the governor in Yuliriane (2012), the primary data is data obtained directly from study subjects using a measuring device or appliance makers as a source of information of

data such as interviews, questionnaires, or observation. Secondary data were obtained with a literature study of the relevant agencies. Primary data were obtained from the respondent in this case fishermen households involved directly with fishermen household activities, while secondary data obtained from relevant agencies such as the Central Bureau of Statistics (BPS), the Department of Energy and Nature Resource, and the books that are relevant to the research.

Data obtained from the results of the study were analyzed using quantitative descriptive method. Descriptive method aims to tell and interpret data with respect to the situation in a systematic, factual and accurate information on the facts and the relationship between variables to get the truth, whereas quantitative methods aimed at raising the facts, state variables, and the phenomena that occur when Current and present what their (Sugiono 2003). As for the criteria that should be analyzed in this study are described in the next section.

In Arikunto (2002: 146) to find out the questionnaire validity of the instrument by using the formula Pearson Product Moment Correlation (Pearson Product Moment Correlation). According Sugiyono (2012: 233) Pearson Product Moment Correlation formula as follows:

$$r_{xy} = \frac{N \sum xy - (\sum x)(\sum y)}{\sqrt{\{N \sum x^2 - (\sum x)^2\} \{N \sum y^2 - (\sum y)^2\}}}$$

Structural equation model to be tested take the form of

$$Y = \rho y x_1 X_1 + \rho y x_2 X_2 + \rho y \epsilon$$

According Sugiyono (2012: 275) multiple regression equation is shown as follows:

$$Y = a + b_1 X_1 + b_2 X_2 + \epsilon$$

**Results And Discussion**

By using SPSS note that the multiple correlation coefficient between Supervision ( X1 ), Licensing Policy ( X2 ), and Karst Protection ( Y ) as follows : multiple correlation coefficient of 0.617 means that the relationship between Supervision ( X1 ), Licensing Policy ( X2 ) and Karst Protection ( Y ) is a fairly close . R2 = 0 , 617 means that changes in the Karst Protection of 61.70 % due to changes in the Licensing Policy ( X2 ).

Based on the correlation data that the influence of variables Supervision ( X1 ) on Karst Protection ( Y ) is calculated with a correlation coefficient of 0 , 617 or ( rxly ) = 0 , 617. This shows the effect quite tight. As for the size of the contribution declare variables X1 to Y variable or determinant coefficient = r2 X 100 % or ( 0 , 617 ) 2 x 100 % = 38.07 % while the remaining 61.93 % is determined by other variables . Then to find significant levels of correlation coefficients X1 to Y with methods of one side ( one tailed) of output Measured probability ) to produce 0.00 figure . Because the probability is much below 0.05 , then the influence of Supervision on Karst Protection is significant

Table 1 Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	7.700	10.372		3.742	.465		
Supervision	-.048	.125	-.060	1.381	.707	.899	1.112
Licensing Policy	.783	.184	.666	4.261	.000	.899	1.112

a. Dependent Variable: Karst Protection

From the coefficient table illustrates that simple regression as follows:

$$\hat{Y} = a + b_1 x_1 = 7.700 + 0.617 X_1$$

Constants for 7700 states that there is no increase in the value of the variable Supervision ( X1 ), then the value of Karst Protection ( Y ) is 7,700 . Regression coefficient of 0 , 687 states that any additions ( as the sign + ) of the scores or grades Supervision will give rise to a score of 0.617 Basis for decision making : by comparing the value of t with a value of t table. Decision : Because the value of t count > t table value , or 3,742 > 2,052 , then Ho is rejected seen in the column sig (significant ) sig coefficient 0,000 or less than the probability of 0.05 or 0.05 o > 0,000 , then Ho is rejected and ha accepted means of regression coefficient is significant. Supervision thus significantly affect the Karst Protection.

Based on the table correlation that the influence of variables License Policy (X2) on Performance (Y) which is calculated by the correlation coefficient is 0.685 or ( rx2y = 0.685). This indicates a strong influence among the Supervision of the performance. While the size of the contribution to state X2 to variable Y or coefficient determinant = r2 X 100% or (0.685) 2 x 100% = 46.92%, while the remaining 43.08% is determined by other variables. Then to determine the level of X2 to significant correlation coefficient Y with methods of one side (one tailed) of output Measured probability) produces 0.00 figure. Because the probability is much below 0.05, then the influence of Licensing Policy on Karst Protection is significant.

F test on the table anova<sup>b</sup> to test the significance of the constants and the dependent variable (Karst Protection). Test criteria regression coefficient of variable Supervision and Licensing Policy for Protection Karst is as follows:

Table .2. ANOVA<sup>b</sup>

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	391.994	2	195.997	19.749	.000 <sup>a</sup>
Residual	437.635	24	18.235		
Total	829.630	26			

a. Predictors: (Constant), Supervision, Licensing Policy

b. Dependent Variable: Karst Protection

Taken from the table anova<sup>b</sup> F count = 19 749 . Basis for decision making : by comparing the value of F arithmetic with F table value , Decisions : Turns F count> F table , or 19 749 > 19.45 then Ho is rejected and Ha accepted so Supervision ( X1 ) and Licensing Policy ( X2 ) simultaneously - equally significant influence on Karst Protection. ( Y )

### Conclusion

And discussion of research findings indicate various conclusions relating to :

1. That there is a relationship / a fairly close correlation between variables Supervision (X1) and Licensing Policy ( X2 ) with Karst Protection in Citatah , Padalarang West Bandung District
2. That there is significant influence of variables on Karst Protection Supervision in Citatah , Padalarang West Bandung District
3. That there is significant influence of variables Licensing Policy ( X2) on Karst Protection in Citatah , Padalarang West Bandung District
4. That there is significant influence of variables Supervision and Licensing Policy ( X2) on Karst Protection in Citatah , Padalarang West Bandung District.
5. Based on the research that has been discussed , The proposed models are : Karst region Citatah supervision carried out by an independent non-governmental organizations , as well as the authority to report irregularities licensing and supervision continue. It is responsible to the Government of West Bandung Regency and always report administratively to the Provincial Government of West Java . All operational funding supervision impose on Budget Regional Government of West Java Province , as well as the institutional set by West Java Governor Decree

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