

## **The Characteristic of Applying Military Operation Exercises that Support Environmental Sustainability**

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**Abstract.** Up to now, there is no military operation exercise yet in TNI that applies environmental preservation, even though the rule of commander-in-chief of TNI No. 62/IX/2010 at article 21 contains military operation exercises that support environmental sustainability. The purpose was to know the characteristics of applying military operation exercises that maintain environmental preservation. The research method used descriptive with case study design in military operation exercise in the Indonesian Navy. The results of the characteristic of military operation exercises that supported support environmental sustainability were 1) choosing the exact location that completed by the environmental licensing; 2) collaboration with the local and national government before and after implementation; 3) point to the person in charge that responsible for the damaged replacement result of military operation exercise; 4) predict the environment capacity of the exercise's area to next exercises; 5) rehabilitation of the damaging of exercise's area. The recommendation was Commander-in-Chief of TNI must make a new rule and the new Body that responsible for military operation exercises that support environmental preservation.

Keywords: TNI, Environmental Preservation, Military Operation Exercises

### **1. Introduction**

Military operation exercises of the Indonesian Armed Forces headquarter have made the rule of the game that is conducted by every unit routinely and systematically and continuously. Every military operation exercises have the goal to strengthen soldiers physically and the readiness of the weapons system and apply the strategies of war. So that it could mobilize them every time. Before doing military operation exercises, they must have military operation exercise planning (MOEP) or Operation Planning (RO). For example, the Indonesian Navy military operation exercise of Armada Jaya (AJ) is the highest level of military operation exercises in the Indonesian Navy.

If RO of Armada Jaya has signed by the chief of staff of the Indonesian Navy, so The commander of Armada Jaya military operation exercises can execute it. Indonesian Navy should have environmental sustainability that followed already established by Commander-in-chief of TNI the spirit of the rule of commander-in-chief of TNI Nomor:62/IX/2010 and Law No.32 of 2009. However, in rules of the Indonesian Naval Staff Chief is not still include this Perpang. So, on the fact, every military operation exercises were more prioritize the goal of operation with looking

the potential of the threatening area, in this case, it was defeating the enemy and mastering the target area by using many kinds of the weapon than environmental preservation.

Because military operation exercises did not list the principle of environmental sustainability, so we will conduct military operation exercises without regard to terrible effects after exercises. I could do fire support in the Armada Jaya exercise from the Republic of Indonesia Ship (KRI), and amphibious tanks.

Every military operation exercise should be concern about: 1) how extensively damaged areas resulted from fire support of Republic of Indonesia Warship (KRI), and amphibious tanks?; 2) they resulted in how extensive of damaged land and beach and scrubs from traveling of amphibious tanks from beach to target area?; 3) soldiers used how many scrubs and leaves to camouflage?; 4) how extensive of damaged land and plants used to make command post and bastion?; 5) how is to count the cost of the damage?; 6) how the cost of rehabilitation effects will pay the result of exercises to water, land, flora, fauna, and social communities?; 7) who handles reimburse rehabilitation of exercise's effect?

However, most of the units in The Indonesian Navy ignored the 7 questions in the previous paragraph. So that way researcher wants to know how far the applying of environmental preservation in the military operation exercises, and whichever is appropriate and whichever is not appropriate.

## **2. Research Purposes**

The specific objectives of the study were to:

Describing the characteristics of military operation exercises that accordance with environmental sustainability in the Indonesian Armed Forces?

## **3. Research Methodology**

This study was to describe the characteristic of applying military operation exercise in the Indonesian Navy (Creswell, 2016). It could be an example in the frame of making the characteristic of military operation exercises that used a literature review method with a case study design. To meet the objectives of this study, used books, and internet channels to search related journals, articles, and other comprehensive reports from the year 2000 up to March 2020, and also using the regulations and laws that related to the research purposes.

## **4. Results and Discussion**

Results and discussion of study elaborate about characteristics of military operations exercise that support environmental sustainability. Military operation exercises are the implementation of agenda-setting or planning of action (Dunn, 1994; Stufflebeam et al., 200). After implementation was carried out, that needed evaluation (Mazmanian and Sabatier, 1983 in Nugroho, 2007). Because every military operation depends on the last results. We want to know the output and outcome evaluation, then we can choose integrative policy analysis (Dunn, 2004). We can analyze the results of military operation exercises retrospective and prospective as once. I mention it integrative policy analysis. Analysis of prospective and retrospective can develop and manage benefits and effects of military operation exercise for the next day.

According to Putt & Springer (1989), we should get every policy-making from gathering data of a study. It would complete the results of the study with many kinds of rules or laws. The rules or laws needed all the rules that relate to its study. The rules that support comprises this study are: a) Law No. 32 of 2012. Whereas articles

that relate to law No.32 of 2012 are: (1) article of 21: management of natural resources and artificial resources must have been conducted by preservation, diversities and productivities principally; (2) article of 22: every enterprise and or activities that will have important impact to natural resources must have environmental impact analysis; (3) article of 45: an environmental and People's Representative Council center and local must allocate the budgeting for management and control natural resources and environmental sustainable program; (4) article of 49: every enterprise or activities that rise high risk impact must have an environmental audit; (5) article of 54: everyone conduct activities that impact of pollution or damaging of natural resources must do recovery comprises stopping resources of pollutant, remediation, rehabilitation, restoration or other ways that is supported by knowledge and technology; 6) article of 109: everyone who does enterprise or activity without environment and social assessment and environment management and monitoring reports will convict by at least 1 year and the longest imprisoned 3 years or fined at least Rp. 1.000.000.000,00 (one billion rupiahs) and at most Rp. 3.000.000.000,00 (three billion rupiahs); b) Commander of Chief Armed Forces decree No. Perpang/62/IX/2010 about The Primer Guidelines Book of Armed Forces Military Operation Exercise have accommodated at paragraph (i) about principle environmental sustainable.

Several things that include the characteristics of military operation exercises that maintain environmental were:

a. Choosing the exact area.

The exact area that chooses far away from communities. It can give the opportunity Indonesian Republic Warship/KRI to giving fire supporting with anchor position and to amphibious tank to landing to the beach and marine soldier's attack the enemy on the land. Besides that, it is better if every land of military operation exercise has legal ownership of TNI and they conducted it far from people and animals. Since 1970, the Governor of East Kalimantan has given to the TNI Sekerat area to be the location of military operation exercise. But legally TNI did not manage promptly yet by TNI.

Especially in the Armada Jaya Exercise of 2012, we choose it to surround Sekerat, Sangatta because it has military-strategic values to attack the enemy and also has the same characteristic area. Here, if it sometimes could happen, it would be able to warship move and anchor, whereas amphibious tank moves and rotate fastly. The condition of beach and land allow soldiers to attack enemy go into as far as possible.

b. Collaboration with the local and national government.

Collaboration with local government in form of permit area use, surveying of the area, making environmental impact analysis (Amdal), doing environment audit before conducting, and it did not interrupt by the daily activities of its surrounding communities. Not only to local government, but Maritime Potential Development Services/Asisten Potensi Maritim (Aspotmar) must also collaborate with local government on how to approach communities especially public figures in the exercise area. The public figure would be very helpful to move and reimburse and take part in the frame of rehabilitation of forest.

Collaboration with the national government relates to the status of the area (Law No.23 of 2009). It must be clear and just for military operation exercises. Besides that, collaboration is also to count budgeting to reimburse rehabilitation after exercises to communities and the natural environment. For example, In the Armada Jaya Exercise of 2012, the area is still not only for military operation

exercises but also it can benefit communities and benefit to or needed by the local government. It did not make yet certificate for all land, Amdal, or environment audit and evacuation of communities 4 weeks before conducting the exercise (Rule of Environment Ministry No.11 of 2006).

c. The person in charge that responsible for the damaged replacement result of the military operation exercise.

The Commander-in-chief of TNI must point to especially the environment body that manages environment sustainability before conducting. This body must make planning activities from beginning till the completion of exercises. One of the important things is to count the environmental damage after exercising and how to reimburse. They call this rehabilitation to communities, housings, animals, land, water, beaches, plants, and social behavior harassment. That is important so that the area must be clear from surrounding communities. For example, in Armada Jaya 2012, in Sangatta, after exercising the Indonesian Navy must reimburse several houses that damaged and complain of communities because of feeling disturbance with fire supporting sounds.

Indonesian Navy already has Maritim Potential Development Services/Asisten Potensi Maritim (Aspotmar). This service can responsible for plan, conduct and evaluate military operation exercises. Especially how to design the military operation exercise that supports environmental sustainability. So that way Maritime Potential Development Services/Asisten Potensi Maritim (Aspotmar) must make new rules about military operation exercises that support environmental sustainability for level 1 up to 4. The important thing is calculating how many armaments and munitions that used and how many weapons are tested.

Beginning before exercise to take care of making choosing the location, making environmental impact analysis, environmental audit, rehabilitation and reimburse, calculating a budget, and predict the effect of exercises after that. About location must be measured correctly that tailored to the range shooting of every weapon and it must prepare how extensive if the weapons exit out of the exercise area. And how to move human beings, dan animals before exercises even though for a while. They have conducted the act to avoid the worse effect that inhabits the moving tank and soldiers at this exercise's area.

d. Predict the environment capacity of the exercise's area.

The best activities can count and predict how long they could use the area of exercises the next time? The damaging of land, water, and it must count correctly plants in mountains (Wali et al., 2010). With supporting laboratory results we can see the content of pollutant chemistry or substance harmful heavy metal and then predict the damage on the next time. We can use it to predict the pollution values with the loud pollution index (LPI) and geo accumulation index (Igeo). For example, normal standards of Plumbun, Cuprum, Zinc, Cadmium are  $LPI < 1$  and  $Igeo < 1$ . For Armada Jaya 2012 got a concentration of land were: arsenic = 0,002 ppm (normal= 3,5 ppm), mercury =0,0002 ppm (normal= 0,3 ppm, cadmium =0,0001 ppm (normal=, plumbun=2,27 mg/kg (normal = 5-25 mg/kg). All of them contain normal concentrations (Rosmarkam & Yuwono. 2002).

Another condition was soil water for example the concentration of fero  $< 0,5$  mg/L. Whereas the condition of the ground around its area was still flat. The beach that crossed by the tank was normally limited. Many kinds of an animal around mountains and also pets animal, were still alive, or no animal death. The damaging of plants in the mountains were also normally limited. (Yankee et al, 1999).

The effect of heavy metal on human being depends on the concentration theoretical. We can find the normal concentration of cuprum in our body, it is the range between 75 till 150 mg. The benefit of cuprum in our body is to be an enzyme of ceruplasmin that changed to be ferri, preventing anemia and facilitate to synthesis hemoglobin. If the concentration over 150 mg in our body that can be inhibit the synthesizing of fero and become a carcinogenic agent (Medical News Today, 2021). The concentration of nitrate in water or seaside must be in normal condition. The normal concentration of nitrate in water is 0,2 mg/l. If the concentration of nitrate over 5 mg/l, it could be the pollution sign, and the worse condition is making eutrophication in the water, so that interrupt cycle of life of fish and another animal, and even plankton.

We can also calculate the standard quality of seawater by using Bioconcentration Factor Value (BCF) that the quotient of contents of heavy metal within plankton (KB). The formula of BCF is the heavy metal within plankton (KB), divided by contents of heavy metal within seawater ( $BCF = KB/CW < 1$ ). The concentration, which is less than 1 is normal (Rosmarkam & Yuwono, 2002).

To predict how long is the critical point of concentration of the heavy metal in the military operation area, we can use a statistic test of multiple linear regression. With over 2 variables, for example, temperature, pH, Cd, oxygen saturation, and others.

For the formula of prediction, we can use multiple linear regression formula.

$$Y = a + b_1X_1 + b_2X_2 + b_3... b_n + X_n + e.$$

Adjunct:

Y = dependent variable (score of pollution)

a = constant

X = independent variable

b = coefficient of variable

This formula can predict the Y variable (dependent) if X variables (independent) will measure a parameter of heavy metal content in planktons (Pratisto, 2004).

Table 1. The Comparison of the Military Operation Exercises Impact among Indonesian Navy, US Navy, and RAN

Items	US Navy	RAN Australia	TNI AL
Location of Exercise's Area	Vieques Island in Puerto Rico	Javier Bay	Sangatta Beach
Lenght of Exercise's Area	for 40 years	for 90 years	for 10 years and temporary
Pollutans Agent	Arsenic, merkuro, plumbun, zinc, nitrit, and cause of cancer diseases	Never happened pollution	Toxic agent in normal limit
Community's Attitude	Demonstration to closing	Accepted	Accepted

Source: McCaffrey, Katherine T. (2006) and Kurniadi (2013)

e. Rehabilitation of the damaging of exercise's area.

They should conduct several kinds of the rehabilitation program in the frame of fulfilling community when they move to a temporary place, the damaged house, animal, plants, and any accident; 2) the damaging of plants and scrubs then how to make reforestation; 3) the damaging of land and street; 4) polluted water. At the Armada Jaya military operation exercise gave compensation to the community. Even though according to my dissertation results, the damaging of forest (flora and fauna), land, and water were on the normal limits. For example, flora in Sekerat Mountain could be counted at about 0,00017 % that damaged from 87.968 m<sup>2</sup> of plants (Kurniadi, 2013).

So there was to reimburse the damaging of housing and plant of communities surrounding. The damaging of the forest did not grant because there was not budgeting allocation to flora and fauna (Rule of Government No. 27 of 1999). The results of the Armada Jaya military operation exercise could still maintain environmental preservation at the location area. We can compare it with Royal Australian Navy (RAN). RAN is one of the best countries that has applied military operation exercises that supported environmental preservation was Royal Australian Navy (RAN). RAN has used Javier Bay for 90 years and there are no adverse effects on the environment. And even up to now Javier Bay has become a recreation destination tourist from Australia and other countries for Saturday and Sunday (Australian Defence, 2021).

However, we have no good example from the armed forces of the US. US Navy had engaged Vieques Island in Puerto Rico since 1941 and for 40 years later caused the pollution of this area and even worse results in this area were many people suffer from cancer diseases especially at surrounding communities. Because many people hold demonstrations for several days and they demand the government and US navy to close the location of Vieques island for military operation activities. Finally, US Navy gave up and close this area from military activities in 2001 and reinstate the Puerto Rico government (McCaffrey & Katherine, 2006).

The experiences from US Navy and RAN Australia should be a good example for the Indonesian Armed Forces. Because up to now, no rule arranges military operation exercises that support environmental preservation, so that, it becomes an obligation to Commander of the chief of Headquarter of TNI for making a rule that is easy to do by 3 forces, Indonesian Army (TNI AD), Indonesian Navy (TNI AL) and Indonesian Air Force (TNI AU). Before Three forces conduct a military operation exercise that supports environmental sustainability, it needed to send officer Indonesian Armed Forces to study in RAN Australia how to manage military operation exercises that support environmental preservation (Sarwono, 1999).

If the Indonesian Armed Forces could complete military operation exercises that support environmental sustainability, automatically we have joined international countries to maintain global warming that results from pollution from water, soil, and air (Smith and Smith, 2009). Finally, we get two benefits; (1) we support and follow to succeed the government environmental program; and also (2) we will have a joint to prevent the ozone layer hole in order not to be wider.

## **5. Conclusion**

The characteristics of military operation exercise that supported environment sustainability were:

- a. Choosing the exact area that is far away from communities.
- b. Collaboration with local government in form of permit area use, surveying of the area, making environmental impact analysis (Amdal), doing environment audit.
- c. The person in charge that responsible for the damaged replacement result of the military operation exercise.
- d. Predict the environment capacity of the exercise's area.
- e. Rehabilitation of the damaging of exercise's area.

## 6. Recommendation

Recommendations in this articles were:

Defence Minister and Commander-in-Chief of TNI must make a new Body that responsible for military operation exercises that were environmental sustainability so that can conduct by the Indonesian Army (TNI AD), Indonesian Navy (TNI AL), and Indonesian Air Force (TNI AU).

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