Research Article

Modeling environmental regulations in regional green economy efficiency of Halimun Salak: Empirical Evidence from National Park

Nadiroh[1], M Ahman Sya[2], Emilkamayana[3*], Jonny Holbert Panjaitan[4]

[1]State University of Jakarta, Environmental Education Department, Indonesia
[2]State University of Jakarta, Geography Education Department, Indonesia
[3]State University of Jakarta, Environmental Education Department, Rawamangun Muka, East Jakarta, Indonesia
[4]Research and Development Center for Bogor Forest Plant Hatchery Technology,
The Agency for Research Development and Innovation in the Environment and Forestry,
The Ministry of Environment and Forestry, Indonesia.

ABSTRACT

This study aims to explain Environmental Regulation Modeling in the Halimun Salak Regional Green Economy Efficiency: Empirical Evidence from the National Park which is expected to be a sustainable solution in supporting the creation of a balance between the economic and environmental concepts, especially in the Halimun Salak national park area, Bogor, Indonesia. The research method used is a qualitative method with a grounded theory approach. The results show that the current environmental regulatory modeling has not been successful in implementing green economy efficiency in the salak forest area. This is evidenced by the findings that there are overlapping regulations, low economic income, the increasing population in the salak forest area, and the lack of resolution of legal protection cases. As well as the implementation of environmental policies to date is still in the form of command and control, which causes discrepancies between the parties that are interrelated. As a result, it is necessary to change the environmental policy model for forest areas, namely by using the rational choice theory model. This policy model will become a new solution in implementing increasingly dynamic policies following changes in human behavior and technological developments. Environmental policies that are made must be a role model in an open and dynamic implementation.

Key words: Modeling Environmental Regulation, Green Economy, Halimun Salak National Park

INTRODUCTION

Shmelev (2017) states that economists' lack of awareness of the role of energy and the basic principles of thermodynamics has led to strong criticism in the concept of economics. As in the concept of growth limits, which states that technology substitution and natural resources are increasingly scarce from year to year. Then coupled with an environmental problem called the tragedy of the collective property (Hardin, 1968). This happens and a change solution is needed in dealing with the economic growth that occurs without damaging the environmental conditions. As a result, a green economy is a right solution to become a new concept in progress made by the government itself. Bergius, et al., (2020) also stated that one example of a country implementing a green economy in Tanzania. The country itself is rearranging the space significantly, especially in terms of land conflicts that have occurred very often for a long time. The concept being developed is agricultural capital investment combined with environmental policy narratives to improve environmental conservation around the area in collaboration with local farmers and contract farmers. Over time, the presence of a combination of such narratives has occurred to encourage the growth of the conservation and agribusiness sectors of capital investment. With the arrival of the green

economy to Tanzania, it has reduced risks and environmental degradation with intensive efforts that are continuously being developed to conserve the environment and make room for investment in agriculture. Mealy and Teytelboym (2020) state that countries with a high ranking in marketing environmentally friendly products tend to have higher environmental patents, lower CO2 emissions, and stricter environmental policies even after controlling for per capita GDP. Then the country's potential to be able to transition into a country producing environmentally friendly products in the future will be a competitive advantage in the concept of green industrialization with the accumulation of green capabilities. Then other findings also suggest that the policy implications are important in supporting the reliance of roads for green diversification earlier and aggressively to build the green production capabilities needed in a future green economy. Cabernard and Pfister (2020) state that the importance of environmentally expanded multi-regional input-output analysis (MRIO) plays a key role in providing information towards a greener economy about global environmental impacts. More concrete action is needed to move towards a greener economy globally, particularly through supply chain management. Then to capture the global impact of value chains, green consumption-based accounting has been

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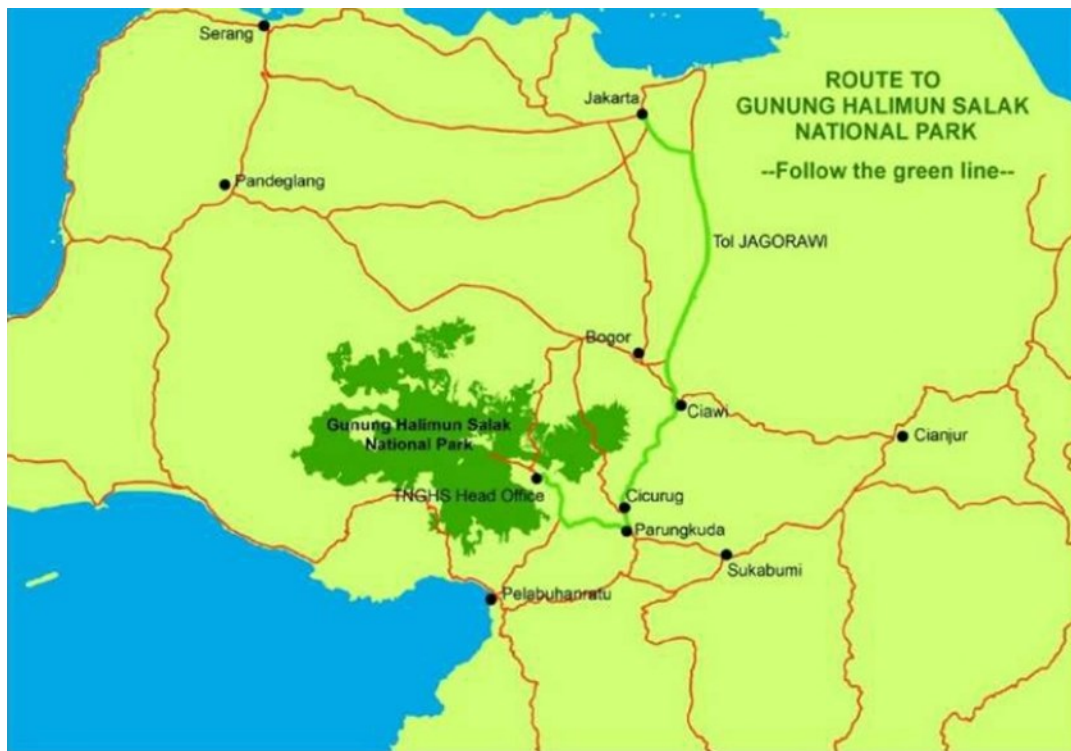*Corresponding Author's E-mail: emilkamayana@gmail.com*

Figure 1. Route Map of Halimun Salak National Park (Halimun Salak National Park,2017)

suggested to complement traditional environmentally friendly production-based accounting. This will allow an assessment of the cumulative environmental impact of a country's consumption, including the impact overseas due to imports. Thus, consumption-based impacts, which are also called "footprints", address the importance of being managed in supply chain management. This effort will be combined with the findings of a multi-regional input-output analysis (MRIO) on an ongoing basis to continue to support the creation of a green economy. Jones, et al. (2016) also added that a key aspect in the evolution of the green economy concept is a combined response that regulates economic and environmental challenges as a full policy paradigm that is responsible for the welfare of its citizens.

` Zhou and Deng (2019) added that the urgency of efforts to narrow the gap between regional economies in building a friendly environment is the main topic at this time. As a result, the role of environmental policies is an important supporter of creating this green economy concept. Therefore it is important for policymakers to promote green areas and low carbon development in their regions with a focus on improving the quality of economic development by cooperating with each of these parties. Yuan and Xiang (2017) also found the role of environmental regulation in encouraging green manufacturing development through the promotion of green innovation. This is consistent with the findings of a panel data research on the Chinese manufacturing industry during 2003-2014 which states that in the long term, environmental regulations have succeeded in encouraging R&D investment. Meanwhile, in the short term environmental regulations have also boosted labor productivity, energy efficiency, and the environment, including green total factor productivity (GTFP). Vasile, *et al.*, (2013) stated that a green economy represents a transformation of the production process, enabling more

efficient use of natural resources and reducing adverse environmental impacts. The essence of a green economy is placed on the use of renewable energy sources, their efficiency, and organic farming which aims to eliminate the use of chemicals or at least reduce them to a minimum. Due to the current state of the economy in crisis and the perception that the politics of sustainability cannot be applied efficiently, politicians must put their hopes in greening the economy. However, there are major problems with the goals and strategies associated with this concept. In particular, if political, economic, and cultural constraints are not considered, then green economy strategies will not succeed in their goals of ending environmental degradation and poverty reduction.

As a result, the balance between political, economic, and cultural aspects is an interrelated unit in supporting the creation of a green economy to support governance. One of the efforts to improve the economy sustainably is by implementing a green economy, especially in Indonesia itself which is a developing country. This effort is made to minimize the gap that occurs between the income of local farmers who are often marginalized and create prolonged conflicts. As a result, one of the applications carried out is in the city of Bogor, especially in conservation forest areas. One such forest area is the Halimun Salak National Park. The Mount Halimun area was designated as a national park through the Decree of the Minister of Forestry number 282 / Kpts-II / 1992 dated 28 February 1992 with an area of 40,000 hectares.

Furthermore, based on the condition of forest natural resources that are increasingly threatened with destruction and pressure from parties who care about nature conservation, in 2003 the Halimun area was added by including the forest area of Mount Salak, Mount Endut, which was previously forest. limited production
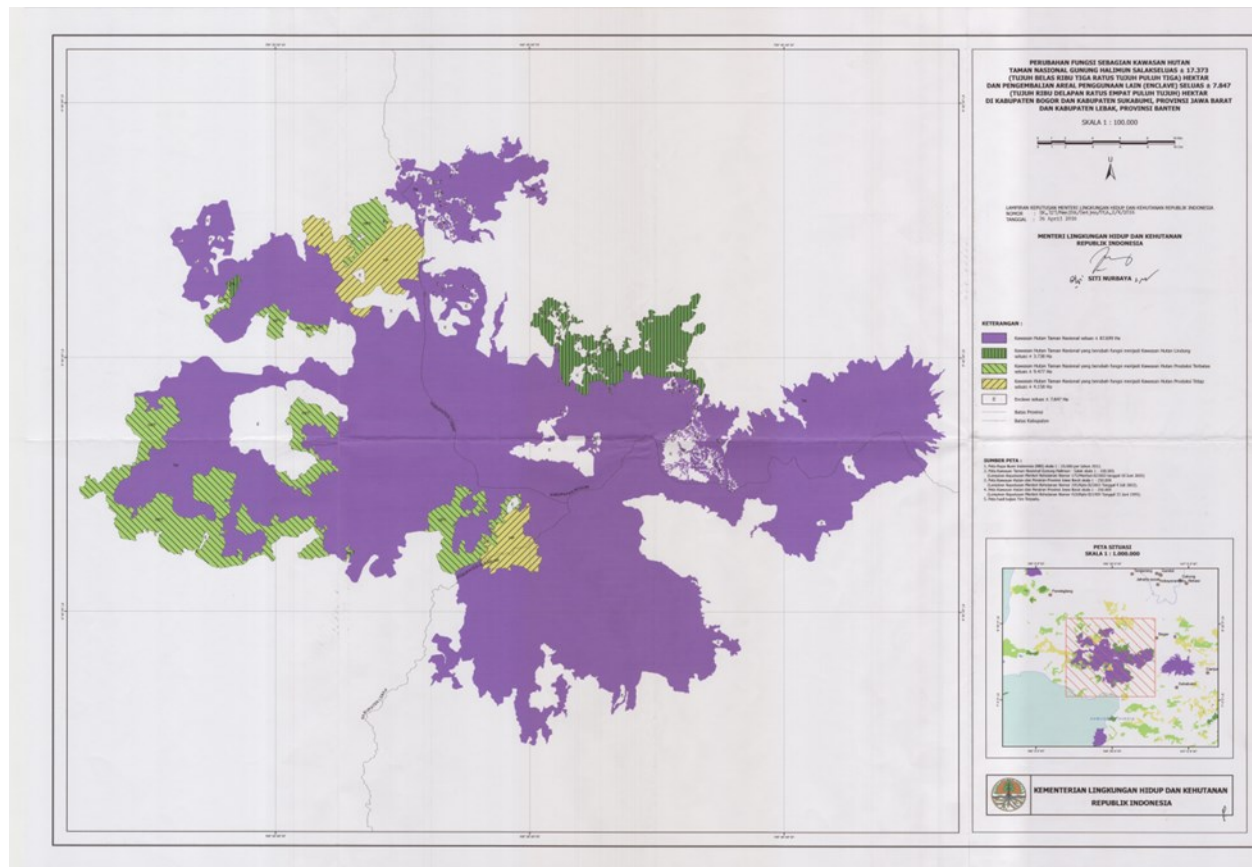
Figure 2. Zone Map of Halimun Salak National Park (Halimun Salak National Park,2019)

and protected forest managed by Perum Perhutani changed its function is to become a conservation forest, incorporated into one unit the conservation area of Mount Halimun Salak National Park (TNGHS) through Decree of the Minister of Forestry number 175 / Kpts-II / 2003 with a total area ± 113,357 ha on 10 June 2003. In 2016, the total area TNGHS has again changed to + 87,699 ha accordingly with the Decree of the Minister of Environment and Forestry Number 327 / Menlhk / Setjen / PLA.2 / 4/2016 dated 26 April 2016 concerning Changes in the Function of Part of the Halimun Salak Mountain National Park. Some of these areas have been converted into protection forest, permanent production forest, and limited production forest and have returned to use areas other (enclave) (Figure 1).

Mount Halimun Salak National Park itself is managed using a zoning system that consists of a core zone of 36,189.33 Ha (41.27%), the jungle zone of 19,228.40 Ha (21.93%), utilization zone 15,383.64 Ha (17.54%), rehabilitation zone 8,952.44 Ha (10.21%), traditional zone 708.60 Ha (0.81%), special zone 7,230.66 Ha (8.24%) and a cultural zone of 5.93 Ha (0.01%) (Figure 2). The location is at an altitude with still forest conditions good to make the area as a water catchment area, more of the 115 rivers and tributaries originating from within the area. The northern part of Mount Halimun Salak has 3 important watersheds, namely rivers Ciberang (Ciujung), Cidurian and Cikaniki (Cisadane) rivers. In the south there are 9 important river watersheds, namely: Cimadur, Cihara, Cisiih, Cibareno, Cisolok, Cimaja, Cikasomayang, Citepus and Cimandiri (Cicatih / Citarik). These rivers flow across the Bogor area, Tangerang, Rangkasbitung, Palabuhan

Ratu and Bayah. There are more than 700 species of flowering plants living in the area, covering 391 genera from 119 tribes. Meanwhile, the types of animals are living in the area recorded 70 species of mammals, 276 species of birds, 30 amphibians, 49 types of reptiles, 50 types of fish, and various types of insects.

Among these animal species, some species are threatened extinct namely the Javan leopard (*Panthera pardus melas*), the forest cat (*Prionailurus bengalensis*), Javan gibbon (*Hylobates moloch*), Surili (*Presbytis comata*), Javan langur (*Trachypithecus auratus*), Ajag or coyote (*Cuon alpinus javanicus*) and Skunk (*Mydaus javanensis*), Ekek Geleng (*Cissa thalasina*), Poksai horse (*Garrulax rufifrons*), White starling (*Sturnus melanopterus*). Some species with Endangered status such as Eagle Java (*Nisaetus bartelsi*), Ciung-mungkal Java (*Cochoa azurea*), Celepuk Java (*Otus angelinae*) and Luntur gunung (*Harpactes reinwardtii*) (Figure 3 and 4).

Seeing the various potentials of high biodiversity and their role aswater catchment area, the vision to be achieved in the management of the Salak National Park in supporting the creation of a green economy is very important to be implemented properly and efficiently. However, it is very unfortunate that in fact there are still disparities that have caused a decrease in the quality of the forest area.

Especially deforestation which causes damage to habitats and ecosystems significant in the salak forest area. Then the cumulative damage to habitat and ecosystems is caused by various illegal activities and natural disasters that have occurred frequently in recent years. Illegal activities that occur include such as gold

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Figure 3. Animal Species in Halimun Salak National Park. A. *Nisaetus bartelsi,* B. *Panthera pardus,* and C. *Hylobates moloch* (Halimun Salak National Park,2019)
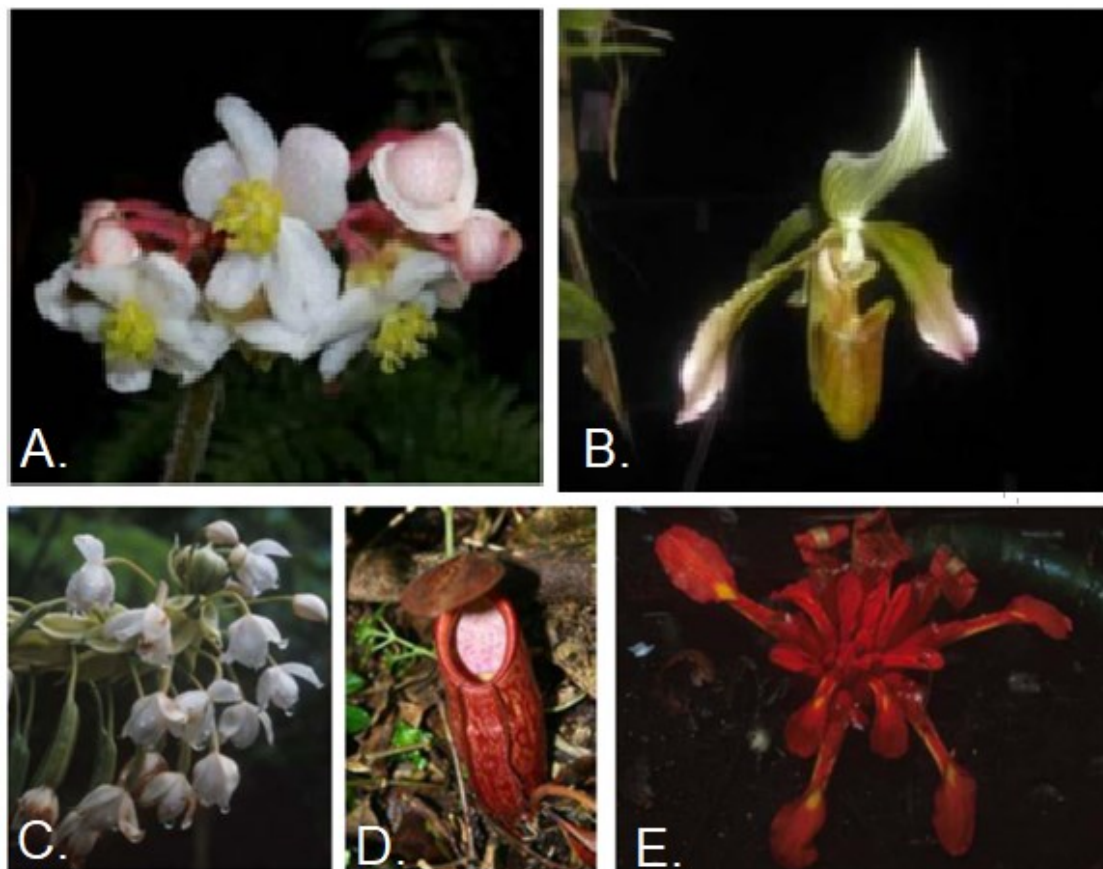

Figure 4. Flowering Plants. A. *Begonia* Sp., B. *Paphiopedilum javanicum, C. Spathoglottis aurea,* D. *Nepenthes gymnamphora,* and E. *Amomum* Sp. (Halimun Salak National Park,2019)

mining activities without a permit, forest cutting illegal, hunting of wild animals and exploitation of flora with economic value high, as well as encroachment, especially the expansion of land use for settlement, agricultural land, and other needs. Then for natural disasters in the forest area of Mount Salak include forest fires, landslides, and floods. Several cases of landslides and flooding in this area were reported has a close relationship with gold mining activities and illegal logging. In addition, the existence of illegal mining activities in the areas found in all regions causes it to exist degradation of environmental quality, especially with contamination of soil and water. Besides that, illegal activities have the potential to cause the occurrence of landslides and floods in the presence of encroachment activities uncontrolled most of which are in the expansion area existed before the area was designated as the Salak National Park area.

Figure 5. Unemployment Percentage in Sukabumi Regecy 2015-2020 (BPS Sukabumi Regency,2020)

Then another problem that often occurs is the low economy of the people around the area. The low economy of the communities around the Salak National Park is indicated by the number of poor households in villages that are in or around the area (Figure 5). In Sukabumi District, the number of poor people in 2012 was 234,000 (BPS Sukabumi Regency,2013), at Bogor district, totaling 446,040 people (BPS Bogor Regency,2013), while in Lebak Regency there were 115,200 people (data from the Ministry of Development of Disadvantaged Regions and BPS 2013). Forest ecosystem degradation occurs in many villages in and around the Salak National Park area and is thought to be closely related to the low economic capacity of the community.

One of the efforts made to preserve the area is to implement economic improvement program for communities around the area through establishment and strengthening of institutions as well as business assistance economy, with the hope that the economic capacity of the community increase, the level of dependence on forests will decrease. Jin and Li (2013) add that humans cannot solve problems related to the environment and natural resources stagnant, so do humans achieve sustainable development in a broad economic growth model ignoring resource and environmental constraints. As an example of the difficulty of environmental problems in China. The difficulty of China's environmental protection lies in the balance of the relationship between regulatory reforms regulating resources and the environment as well as the international competitiveness of China's industrial sector, in particular, the balance of the relationship between environmental protection and economic growth. China's industrialization practices show that the country's industrial sector itself has the potential to help promote increased efficiency

Figure 6. Halimun Salak Forest Park (Halimun Salak National Park,2019)

in resource use and the environment. But at the same time, however, it can use up significant resources, leading to inevitable environmental degradation. Industrial processes can have negative environmental impacts, but industrial development can play a positive role in environmental protection and enhancement from a global and long-term perspective. It would be impossible for China to solve problems related to resources and the environment without developing industrial entities. On the other hand, the pressure on resources and the environment can only be recovered by more advanced and strong industries. Therefore an environmental regulation is needed that has the potential to help achieve improved environmental performance and increased business competitiveness in the context of building resources through a green economy concept that develops a growth pattern for environmental resource conservation and balanced economic growth to achieve sustainable development in an economic growth model. extensive which does not ignore environmental conditions. On this basis, the authors conducted a study of articles on Environmental Regulation Modeling in the Halimun Salak Regional Green Economy Efficiency (Figure 6): Empirical Evidence from National Parks which is expected to be a sustainable solution in supporting the creation of a balance of economic and environmental concepts, especially in the Halimun Salak National Park Area Bogor, Indonesia.

MATERIALS AND METHODS

This article uses a qualitative method with a grounded theory approach. This approach is carried out because of the findings of researchers that the environmental policy model carried out to date has command and control characteristics, so that this theory will be examined to understand the findings in the field. For this purpose, a systemic process is needed in finding a new theory that is suitable or not by the real conditions in the future findings, therefore this grounded theory approach is considered the most appropriate for understanding environmental policy models related to the green economy in the salak fog area. Noble and Mitchell (2016) also state that grounded theory is a theory that reveals things such as social relations and social behavior that take place in these communities so that this approach can be said to be related to policy research because social actors play an important role in the implementation of the policy. which have been set. The research process itself starts from December 2018-2020 at the location of the Halimun Salak National Park. Key informants in this study were the Research and Development Center for Bogor Forest Plant Hatchery Technology, The Agency for Research, Development, and Innovation in the Environment and Forestry, Directorate General of Natural Resources and Ecosystem Conservation, Halimun
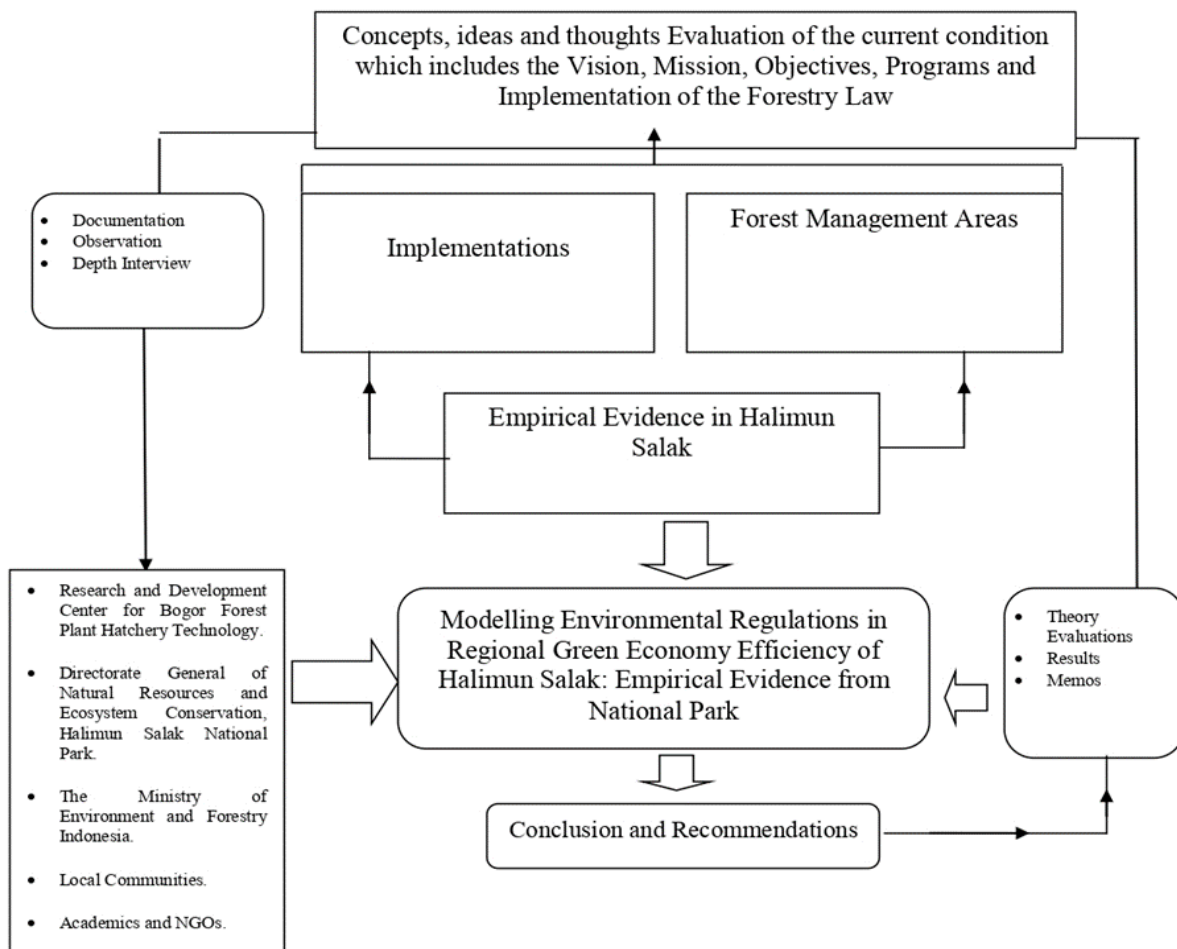

Figure 7. Conceptual Framework Halimun Salak National Park (Researchers,2020)

Salak National Park, The Ministry of Environment and Forestry Indonesia, Local Communities, Academics, and NGOs. For more details, the following is a conceptual description of the research framework proposed in this study (Figure 7).

There are three stages in data analysis, namely first; open coding which involves line-by-line coding in which concepts and key phrases are identified and highlighted then moving to sub-categories, then categories. This will break down the data into conceptual components and the researcher can begin theorizing to understand the results of the data obtained. Second; axial coding is the stage for connecting or identifying between categories and identified connections in more depth. Third: selective coding which involves identifying the core categories and methodically connecting them with other categories. The relationship must be authenticated and categories refined. As a result, the categories are comprehensively integrated with the findings of the grounded theory. The analytical notes that are carried out will facilitate the mindset related to data analysis to find new theories resulting from the integration of previous findings.

RESULTS AND DISCUSSION

The following are some of the field findings obtained from key informants based on direct observations in the salak forest areas:

Overlapping Regulations

The GHSNP area is state forest land which is under the authority Ministry of Environment and Forestry. TNGHS, following Law no. 5/1990, is a Nature Conservation Area (KPA). However, there are still some overlapping regulations encountered, among others: Mining Business Permit (IUP) PT. Antam, Tbk. Bogor issued by the Ministry of Energy and Mineral Resources, which covers the area TNGHS, there is no clear Regional Regulation on indigenous peoples in the region Lebak Regency, Banten Province is mainly related to internal mechanisms its implementation as well as the Regional Government Spatial Planning (RTRW) Lebak Regency has not yet accommodated the salak areas area based on a decree. 327 of 2016. However, related to the IUP of PT. Antam, Tbk Bogor, based on the letter In the aforementioned decree, the area that is included in the IUP changes its function to protected forest.

Low Economic Income

The economic capacity of the communities around GHSNP tends to be low, though most of them are not included in the category of poor households (RT). Generally, the number of poor RTs in the community in the Sukabumi Regency area is 198,746 RTs or 8.13% of the total population (Sukabumi Regency, 2017), in the Regency Bogor amounts to 493,367 RTs or 8.83% of the total population (Bogor Regency, 2017), while in Lebak Regency amounted to 111,210 RT or 8.69% of total population (Lebak Regency, 2017).

Forest ecosystem degradation occurs in many villages located in and around it the GHSNP area and is thought to be closely related to low economic capacity Public. Community livelihoods are very dominated by the agricultural sector, while other sources of livelihood are from illegal mining activities (PETI) as well tapping pine and resin.

The increasing number of people in the forest area of Salak

The working area is located within 28 sub-districts, of which 9 are included in the Bogor Regency area, 8 sub-districts are included in the Regency area Sukabumi and 11 sub districts are included in the Lebak Regency area. In total there are 123 villages where part / all of their territory is inside and/or directly adjacent to a forest area. Furthermore, based on village surveys conducted by GHSNP MP-JICA in 2005 and 2007, It is recorded that 343 villages are located in and around the forest area. Turning to the population growth rate, the

Table 1. Poverty Line, Number and Percentage of Poor People (BPS Sukabumi Regency,2020)

Years	Poverty Line(Rupiah/Capita/Month)	Number of Poor People	Percentage of Poor People
2017	284603	197,1	8,04
2018	302213	166,3	6,76
2019	309676	153,3	6,22

Table 2. Percentage of Total Population (BPS Bogor Regency,2020)

Subdistrict	Percentage of Total Population	Population Density per sq.Km
Gunung Putri	5,5231	4264
Citereup	4,1242	2817
Gunungsindur	2,0853	1984
Rumpin	2,6082	896
Cigudeg	2,4267	642
Sukajaya	1,2474	375
Jasinga	2,0607	670
Tenjo	1,3758	777
Parungpanjang	2,1256	1400
Cileungsi	5,0111	3337

population growth rate in each districts in 2015 - 2016 respectively amounting to 0.83% in Lebak Regency (BPS Lebak Regency, 2017), 0.87% in Bogor Regency (BPS Bogor Regency, 2017), and 0.47% in Sukabumi Regency (BPS Sukabumi Regency, 2017). Need tt is noted that these figures are specific to the villages around the salak forest area for the Bogor and Lebak areas, as well as for all districts in Sukabumi District.

The lack of settlement of cases of protection and settlement of legal cases of forest violations

The handling of new forest crime cases in the current year can be resolved at least 50%. Action plans that can be followed up include the collection of materials and information, intelligence operation, routine operation, joint operation, mobile operation, operation on-call, coordinating forest safeguards, supervising the implementation of operational activities, investigation and investigation up to case degree activities. 10% of legal cases of forest encroachment are resolved. Action plans that can be followed up include data collection and information, investigation and investigation, coordination and cooperation in forest protection with related parties as well as law enforcement efforts, coordination with related legal institutions.

DISCUSSION

The application of environmental policy models in the Salak area is currently unable to fully implement the proposed green economy aspects such as sustainable energy, green buildings, sustainable transportation, water management, waste management, and land management. This is due to obstacles from a social perspective, such as full support from the community, from a political perspective where policies overlap between the central and regional governments, and also from a policy perspective that plays a major role in the implementation of the management of the salak forest area.
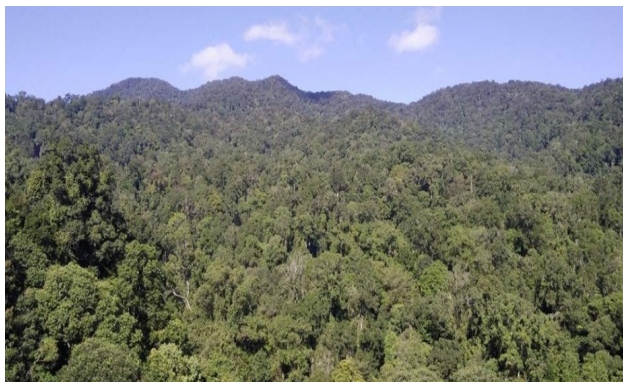

Figure 8. Halimun Salak Forest National Park (Halimun Salak National Park,2019)

Until now, the implementation of environmental policies is still in the form of command and control, which causes discrepancies between the parties that are interrelated. Ge, et al., (2020) added that with regard to the impact of the loss of efficiency of environmental regulation on inclusive growth. For example, the relationship between environmental sustainability and inclusive development is very closely related. For development to be sustainable, development must be inclusive, and for inclusive development to be sustainable, development must be sustainable. It is on this basis that the

relationship between the two of them must run positively in order to create sustainable development. However, if policymakers are not equipped with valid and credible instruments to deal with policy issues that are in accordance with these two components, there will be friction between the application of related regulations. For example, a policy instrument must be able to mitigate the potential negative impacts of environmental degradation on inclusive development. Jones, et al., (2016) also stated that green economy theory is a transition management theory. This is because this theory explains how economic conditions can change and innovate in a sustainable manner. Like how the industry can turn into a green industry that is more environmentally friendly and beneficial to the surrounding environment. The transition theory seeks to move to a green economy as a co-constitution through the co-evolution of the social, economic, political, and scientific subsystems. This 'socio-technical' approach does not see economics as easily broken down from society, politics, institutions, or culture and therefore aims to adopt a holistic theoretical approach of how a green economy can develop.

So, the environmental policy model that should be applied should not only be command and control, because it will cause more overlapping in regulations, both central and regional. The application of this model will increasingly make policies carried out will be stagnant and unable to adapt to changing times and technology. Therefore, this policy model can be changed dynamically and adaptively to suit the demands of the times and conditions in today's society. The policy model that should be taken is like the rational choice theory because it will become a new solution in implementing increasingly dynamic policies in accordance with changes in human behavior and technological developments. The policies made must be a role model in an open and dynamic implementation.

Oppenheimer (2012) states that each individual's rights and when their behavior becomes of greater importance to others when government boundaries do not match the limits of group benefits for the public interest. As in the concept of a rational choice theory which states that it allows beneficiary groups to build local authority to the public interest with distributive justice notification. This is reflected in the perception that everyone wants to be respected for their opinions and given support for their basic needs. This is also a democratic concept that is partly legitimized through meetings with its citizens. The right choice based on a common view will determine whether or not the policy will be implemented efficiently. Especially the claim of knowledge that has been understood from each individual is very different so that to become an understanding it requires a rational and logical view that in the long run, the policies taken are dynamic. For example, in the development of models in the application of rational choice theory, for example, we are given two choices, the case given is what is the use of water? Here we are given two choices, the first is water that is for self-interest, the second is water to be shared with others. This theory considers decisions to be the result of conscious choices made by individuals to advance the realization of their own preferences. This raises some definition problems. If one works only to satisfy someone's own preferences is one always attracted to oneself? We'll say "No." A person may have a preference for helping others: he may prefer to fix others than himself. In such a case, he
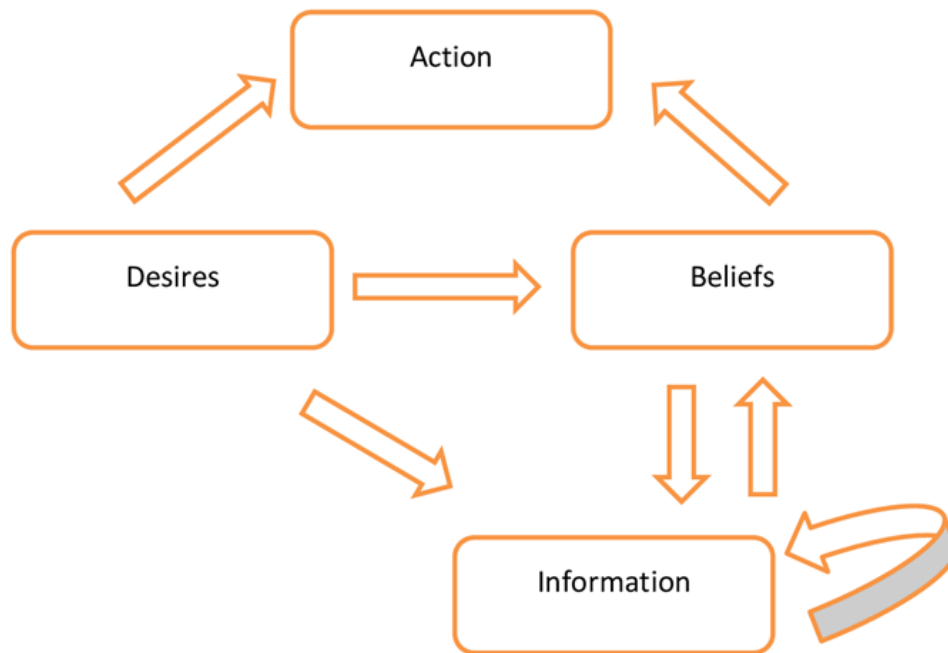
Figure 9. Rational Choice Theory Models (Elster,2009)

has preferences that are not selfish or about other things. But she does have preferences and if she chooses to use them, she makes her choice according to these preferences. Rational choice theorists are useful in adding another presumption to the core ideas of rational choice theory so as to conclude more precisely what kinds of choices will be made in a different context. This additional assumption includes personal interests, an assessment of the expected value of the alternative which has probabilistic results, etc. As we have to clarify the notion of rational choice and a good place to start my return to self-interest. Our definition of self-interest doesn't care about the welfare of others when their welfare doesn't affect your life. Then selfish behavior will become so motivated behavior someone will not spend money to help (or hurt) anyone, except doing so would yield some of the expected benefits for itself. This theory is influenced by two important aspects, namely "Preference" which means a relationship that is forced on someone as an alternative in which he will choose or place the results. The second meaning "Choice" is a judgment of choice by an individual who is deemed to follow his preferences but can engage in a way that reflects the expected value. Therefore, in applying this theory, we must be able to make conscious choices and preferences that are determined by rational choices based on the predictions of the choices we have made.

Askari *et al.*, (2019) also adds that rational choice theory tries to explain the behavior of people who behave wisely and seek maximum profit. This theory of choice seeks to explain the behavior of people who behave wisely and consider the advantages or disadvantages of others in addition to individual gains. Uzonwanne (2016) found that rational decision-making has been defined as a more advanced type of decision-making model, emphasizing the characteristics of thorough research and logical evaluation, choosing among possible choices based on reasons and facts. The basic idea of rational choice theory is based on the assumption that cumulative social behavior results from the behavior of individual actors, each of whom makes their individual decisions to always be highlighted by the crowd.

Elster (2009) also states that the main purpose of rational choice theory is to determine what is rational for an agent to do in a given situation and to explain the agent's behavior with the hypothesis that he follows that prescription (Figure 9). As shown in Figure 8 above, rational choice is defined in terms of the relationship between actions, desires, beliefs and information. For this reason the importance of understanding the "choice" they mean only counts for agents based on their consequences. Also, they ignore the conceptual problem that people who don't care about the future will not be motivated to take action to make them care more about the future.

If this model is associated with environmental policies in supporting a green economy, such as Desires to support the creation of a green economy in the Halimun Salak area, will make behavioral changes with the belief that the development of green economic benefits for all related aspects and also supported by the collection of information obtained will further strengthen these desires. As a result there is a change in the behavior of each member in the community group. However, it is important to remember that the desire that is realized must be understood for the benefits of the common natural environment, not just personal interests as in the early concepts of classical economics in this theory. For example, the consequences of disposing of hazardous waste in rivers will lead to contamination of river water resources which results in humans not being able to consume river water. This is one of the behavioral choices made by humans themselves. If they are more concerned with personal interests, it will have a negative impact on the common interest itself, especially the surrounding natural environment.You could say this is one of the basic shortcomings in the application of Rational Choice Theory Models. For this reason, it is necessary to understand carefully that the drawbacks in this model should be overcome by comprehensive self-reflection. As it is known that the understanding of humans as rational beings, they will always have certain goals (goal seeking/goal oriented) that reflect

what is considered important for their own interests. The perpetrators of this Rational Act produce the possibility of forming selfish and arrogant tendencies because they feel more correct with the assumption that the choice they choose is the most rational even though the action actually violates applicable norms or ethics.

Smith, *et al.*, (2010) also stated that environmental damage is a major problem in this century, this is because in the long term it is detrimental to human welfare and contributes to poverty. As a result, people live in poverty that suppresses remaining forests, water resources, fish stocks, agricultural land, and wildlife.

For this reason, it is necessary to change the environmental regulatory model that will guarantee the welfare of the community in the long term and in the future. Changes in the policy model are needed to create sustainable innovation as well as promoting green technology as a supporting component of the creation of a green economy. The government's role is not only as a facilitator and supervisor but as a bridge that continues to connect the aspirations of ideas and suggestions for all components of society involved in it. The implementation of green economy efficiency will not be carried out if all components in it do not unite to carry out innovation changes as a whole both from social, political, legal, and cultural aspects. The role of the state is to become an institution that guarantees law and order over the control of the country in accordance with the aim of the welfare of its citizens. Therefore, the decision making to determine the policy must be carried out appropriately so that the benefits are not only for the environment but also for the community around the forest area. The application of the green economy becomes a meeting point in balancing all the components compiled in environmental policies in support of the creation of good welfare in forest areas. The previous model of environmental policy which was command and control must be changed to create economic sustainability for the progress of the country itself. Such as efforts that can be made to synergize activities, namely; First, protection of the area; Second, an inventory of area potential; Third, research and development in supporting regional functions; Fourth, adjustment of programs between forestry and mining in forest areas to be mined. They also make cross-sector coordination in overcoming overlapping use of forest areas. Routine coordination should be carried out by deliberation to reach consensus to create sustainable solutions so as to reduce overlapping of policies and activities that have already taken place.

In forest area management, it is necessary to carry out mutual cooperation and develop the principle of Co-Ownership, namely that the forest area is jointly owned which must be protected collectively. For this reason, there are community rights that must be recognized, but protection must be carried out jointly: the principle of Co-Operation or Co-Management, namely that joint ownership requires forest management to be carried out jointly by all components of society and the principle of Co-Responsibility, namely that the existence of forest areas is a shared responsibility because forest area management is a common goal.

Bhuyan *et al.*, (2019) also found that orientation tendencies that separate individuals (i.e., humans) from their natural environment, pose a significant ideological barrier for workers to cope with climate change. The importance of an ecological approach in the work emphasizes how the destruction of the natural environment will have a negative impact on ecological sustainability but also on the psycho-social well-being of the community. Workers here can take part in examining and challenging the social and political processes that generate environmental crises and injustices through global capitalism, industrialization, urbanization, and neocolonial power structures, including the ability of multinational corporations to modify nature for maximum profit. As well as to learn from the principles of ecological justice.

That's why the change efforts are being made today with real efforts towards green transformation. Amundsen and Hermansen (2020) found that differences in approach or level of change, in deep transformation and gradual change can be represented by three-stage change. In the first stage of change, the status quo is protected, and only minor adjustments are made. At the second level, gradual adjustment occurs, which may be an important step towards transformation. The third stage is transformation. Gradual change occurs in the current system, whereas transformative change challenges and shifts society.

The condition for this is transformational Pluralism, arguing that 'rather than just one major green transformation, it is more likely that there will be many transformations that will intersect, overlap and conflict in unexpected ways.' It highlights the need to consider change across multiple interconnected areas (e.g. social, institutional, political, ecological, technological, cultural) in a contextually relevant way that values the potential for co-evolutionary and non-linear outcomes. As a result, three important points in the implementation of this green transformation are; First, the consistent findings are that the concept requires reducing emissions from fossil fuels, and the gradual elimination of fossil products and raw materials; in short, the transition from non-renewable sources to renewable sources. Second, green shift is seen as a process to which all sectors need to contribute. At the same time, actors in all sectors provide arguments why their sectors should not contribute more than others. They define their own sector as part of the solution because their core activities concern renewable resources and understand their own sector is inherently green. Third, no actor sees green transformation as something fundamentally new; rather it will be brought about by gradually tweaking existing practices, where using new technologies will play a key role. Finally, all actors focus on the opportunities that green transformation can bring to their sector.

Ogiemwonyi and Harun (2020) also stated that the importance of change is also fully supported by green behavior. Green behavior adds an extra dimension to urbanization and city management. This brings long-term sustainability across the demand for connecting knowledge to a broader set of benefits that include the positive externalities of sustainable consumption. However, it is a complex concept, especially for industrial cities that are listed in the green sustainable policy on the benefits of green investment for cost savings on environmental convenience and health. This concern is associated with urban consumers who have low cultural or social values and poor education or awareness orientation. Poor awareness orientation refers to the possibility that urbanites are economically dependent on resource extraction, thus valuing economic growth is more important than environmental protection. For example, deforestation occurs for various reasons, including housing developments/hypermarkets, construction of Light Rail Transit (LRT), dams and roads, expansion

of oil palm plantations leading to the destruction of 'flora and fauna'. This, in turn, causes endangered animals to lose their natural homes due to urbanization, which ultimately leads to the extinction of the animals. For policy makers, the best approach is to raise social awareness about the relevance of embracing and adopting green behavior. Ecological awareness is useful, not only for promoting environmental citizenship but also because it opens up great possibilities for expressing green behavior. Engaging consumers in environmental action can also facilitate more sustainable change, especially among young people who are quick to adopt new practices and approaches.

Kiik (2018) also added that it is important to understand how to be emotional with each other in managing forest conservation. To understand the interplay of emotional, institutional and cosmological encounters that nature conservation requires requires anthropology to focus not only on how groups of people are affected by external forces such as conservation, but also on how relationships are created and maintained between indigenous populations and conservationists.

Terada, *et al.*, (2021) also stated that poverty alleviation and biodiversity conservation are interrelated and need to be tackled together. However, it is difficult to integrate conservation and development, and there are many projects that have not been very successful. Sometimes they can even have a negative impact on the surrounding community because they damage social relations and strengthen social differences among local communities. To avoid such negative impacts on local communities, it is important for project design and implementation to be rooted in a broader perspective based on an in-depth understanding of local communities. The importance of integrated management of rural landscapes based on multi-purpose and multisectoral approaches to local development and conservation. The vulnerabilities of local communities must be addressed through coordination between various related sectors, such as agriculture, local development, conservation, tourism, and even research. Such an integrated approach is essential for formulating interventions to reduce tradeoffs and promote co-benefits between development and conservation.

Umar and Kapembwa (2020) find that it is important to carefully balance the need for environmental justice and ecological justice. This is because the local community's participation and economic benefits have not created an ethical of wildlife conservation but instead instilled a focus on economic benefits among parks adjacent to the community. The study found that residents match resources, including poaching wild animals from national parks by blatant disregard for national wildlife regulations. They were not allowed to engage in some livelihood strategies due to their proximity to the park. This limited their livelihood strategies and further deteriorated their well-being as some of the livelihood strategies that they were allowed to engage in, such as crop production and livestock raising, were adversely affected by wild animals through culling. Community members are on the losing end and their actions can also demonstrate contestation of laws that have removed traditional rights and claims to natural resources.

As a result, the government's role as the main power holder must be a credible and integrated facilitator in providing full support, especially for local communities. Increase the interests of citizens in protecting the environment and encourage companies or other institutions to "green" their production processes and products. Local governments should invest in sustainable development policies to satisfy citizens and benefit companies and act with other companies or institutions as partners to increase resilience and sustainability (Filho *et al.*, 2017).

Musvoto *et al.*, (2018) states that in fully supporting the implementation of a green economy, actions taken to achieve economic goals must promote social and environmental development, just as actions taken to meet social and environmental objectives must strengthen and develop the economy. This should be reflected in green economy laws, governance, and policies at various levels (national, local and sectoral). To keep from reverting to the entrenched practice of pursuing economic goals at the expense of the environment and society, environmental green economy governance must include incentives and disincentives to ensure that implementation is aligned with green economy ideals. Incentive and disincentive measures should be empowered by an appropriate mix of legislation, institutional tracking mechanisms, third party monitoring, and funding mechanisms to allow rewards to be offered and legal mechanisms for sanctions where appropriate.

Brears (2018) also adds that the three main goals of a green economy include: (1) Increasing the efficiency of resource use: a green economy is an economy that is efficient in the use of energy, water and other material inputs. (2) Ensuring ecosystem resilience: also protecting the natural environment, its ecosystem, and its ecosystem flows. (3) Promote social equality: promote human well-being and equitable sharing of burdens throughout society.

As a result, conservation itself inspires collaboration among scientists, businesses, forest dwellers, state regulators, the public and non-humans, while all these actors have different goals. The importance of moving the 'discussion beyond' the perpetual stalemate between opposing interest groups (eg, south and north; rich and poor), with a single mission and vision, but not because it considers a group compromise (the other group's self-interest). Negotiation is an important point in creating a mission to avoid failure in the compromise. The government here must be neutral and open in discussing various environmental problems that occur, especially in the Halimun Salak Forest area. Changes in environmental policies are needed as a new step in green transformation to achieve the balance of the green economy.

CONCLUSSION

The environmental policy model currently adopted is still command and control in nature so that it still causes imbalances in the implementation of these environmental policies. As a result, the nature of this policy seems impractical and stagnant. Therefore, a policy transition management that is dynamic and adaptable by the related components is needed. The right choice in the policy model theory that can be taken is the rational choice theory. This is because the choice of each people's perceptions will be the determinant in making the right decision. Policies that are carried out can also be conditioned according to the conditions in the existing area according to the real needs of the community so that the existing policies can move dynamically according to the changing times. Peng (2020) adds that the strategic interaction of

environmental regulations between regions is also important as a characteristic of local government which is realized by changes in green productivity. The efficiency of green technology will support the creation of environmental regulations between regions in supporting the creation of sustainable development. Then with good environmental governance will continue to reduce the transfer of pollution and promote green innovation to other regions in achieving sustainable and high-quality economic development. Zhang, *et al.*, (2020) added that targeted environmental regulations will play an important role in balancing economic progress and environmental pollution in supporting green innovation. Environmental regulation is generally understood as the concretization of sustainable development and environmental protection strategy. Especially if environmental regulations are made according to conditions in the field. All the policy made will provide guidelines for withholding and coordinate environmental perceptions, uses, and goals- objects that are arranged. As well as effectively improving the environmental quality, while also offsetting the regulatory costs that arise from pollution control. Wu, *et al.*, (2020) also explained that energy efficiency and environmental regulation are two things that are interrelated to regulate the creation of a balance in energy consumption and keep environmental conditions under control. The role of environmental regulation as a driver for increasing energy efficiency in the industry will support the industry's long-term goals by providing compensation for green industries that have proven to be successful and will support them in continuing to innovate green. Rocha and Salomao (2019) also state that the impact of social reputation and environmental compliance will be an advantage in implementing environmental regulations. This is because the positive image received by investors will further enhance the company's performance positively, and vice versa. If the company receives a negative reputation, it will result in a product boycott or fines incurred by investors or auditors. For example, if the company is inspected and declared non-compliant, it will result in losses for the company itself. Izquierdo, *et al.*, (2019) also added the importance of comprehensive knowledge from various aspects of policymaking to protect threatened species. For example, if policymakers only look at one or two aspects, the results of the decisions obtained will experience deficiencies in their implementation because they are only based on a few aspects. It is also important to implement a holistic environmental policy that takes into account demographic aspects such as population, population density, and the ratio of the elderly and young population. This is because this aspect includes socio-cultural aspects that are related to the formation of efficient environmental policies that can be applied or not in the country (Malzi, *et al.*, 2020). Ramanathan, *et al.*, (2016) also stated that 'flexible regulation' (also referred to as 'innovation-friendly' and 'smart' regulation) is considered an important driver of positive outcomes for all stakeholders. As a result, it relies heavily on human resources and the ability to adopt dynamic and innovative policy approaches to take proactive behaviors in managing environmental performance that can have a positive impact on long-term sustainability. Swainson and Mahanty (2018) state that a green economy is the most effective approach to implementing sustainable development, this is because it is a profitable solution for the parties concerned. An integrated cross-sectoral management system will change the view of the economy to become a top priority, where there are still

sustainability efforts that are prioritized to provide all the social and environmental costs of economic activities in the best interests of the community. Saum, *et al.*, (2019) stated that the importance of perception in differentiating the concept of a green economy with the right targets in the long-term compatibility between sustainable economic growth and environmental protection. The main key is environmental policy as a driver of economic growth that supports this green economy. Pitanen, *et al.*, (2016) also added that the transition to a green economy requires negotiations between potential exchanges between various objectives and the interests of various stakeholders. Mutual benefits can be communicated through valid impact assessments and integration of R&D into practical implementation. Hence the challenge with the practical application of a green economy can only be met with patient, careful and farsighted planning of green economy initiatives to learn continuously from past experiences. Environmental policy models that are in line with the principles of a green economy carried out will be closely related to the compliance carried out by industry or related groups in creating a green economy in a sustainable manner and based on comprehensive basic knowledge preferences. Then the role of the Government as a connecting bridge in balancing the creation of these conditions with an environmental policy model that is dynamic and adaptive to be accepted by all related components so that the environmental policy model implemented can be a reference for the progress of the country as evidence of the success of sustainable development. Correct understanding of The relationship between the strategic interaction of the regulatory environment and green growth is seen not only as a rational design and environmental optimization but also linked to sustainable development and high-quality development of the Indonesian economy. The development of green innovation must also be continuously encouraged by designing an effective and efficient environmental regulatory model that encourages the country's green transformation.

In the next few decades, it is estimated that the Indonesian economy will still depend on the natural resources sector. In an unstable economy, clouded by many practices of corruption, collusion and lawlessness, it is a major threat to the current Indonesian economy and the preservation of natural resources and the environment. One of the problems in the management of natural resources today is the perspective on natural resources that is still fragmented and not integrative so that it gives birth to very sectoral policies, this is a serious threat to the ecosystem and the surrounding community. To bridge these problems, an appropriate and comprehensive policy model is needed that is able to optimize the development of the forestry sector, as well as being 'friendly' to the environment, namely the Rational Choice Theory Model.

Ogu (2013) adds that there are many benefits to using rational choice theory, including: (1) General; This means that a set of assumptions relating to each type of actor in a given situation corresponds to a set of structural assumptions about the environmental setting in which the actor is located. (2) thrifty; General knowledge of rationality assumptions, isomorphic utility function assumptions and self-regarding, when combined with rational optimization models, allows rational choice theory to treat variations in choices among actors and by actors over time as entirely their structural function. positions. Preferences and beliefs are only considered as the only relevant variables to determine

the action. (3) Predictive; The assumptions of rational choice models have been used to produce a wide variety of decisive theories, the predictions of which are measurable real-world phenomena overriding a series of outcomes much larger than what is generally accepted to be impossible. The firmness of rational choice theory depends on the structural assumptions as well as the assumptions of individual actors.

Rational choice theory as described above assumes the near impossibility of 'all things being equal', and on this basis, individuals make choices and decisions that they see as rational, regardless of the circumstances and situations in which these decisions were made. Therefore, rationality is subjective, because individuals can be rational and irrational in making decisions from time to time. The concept of this rational choice theory when examined with environmental problems that, in overcoming forest conservation problems from one country to another must be different. We cannot equal one solution to solving environmental problems to be used continuously, because conservation environmental problems are very important. complex and dynamic. For this reason, in choosing and determining environmental policies, it must be in accordance with existing conditions and rationality. For this reason, changes in environmental policies will later be expected to provide consistency, clarity, and coordination from the government to all relevant stakeholders in it so as to make a positive contribution to the development of the area around the Halimun Salak forest conservation area.

RECOMMENDATIONS

Based on the findings of the discussion and conclusions above, several recommendations can be found that can be considered to be developed and implemented in the management of the Halimun Salak forest area, especially for the Government of Bogor Regency, Sukabumi Regency and Lebak Banten Regency, including:

1. The importance of establishing a real action strategy in the development of local institutions is carried out by providing support in the form of promotions, facilities, mentoring programs, and environmental education in order to increase capacity so that local institutions are able to plan, implement and supervise every institutional activity at the community level.

2. Must understand that the institution is a systematic, regular and mutually supportive working relationship between several institutions, both similar and dissimilar and bound by a set of values and norms that have been mutually agreed upon in order to achieve one or more beneficial goals. all parties within the institution itself and benefits for parties outside the institution. As a result, the institutional concept will become a method of restoring, improving, and increasing the synchronization of working relations within the institution with the ultimate goal of increasing the progress of government performance.

3. Must follow the development of socio-cultural phenomena that occur in the community, especially in the Halimun Salak forest area itself, local communities must play an active and dynamic role in supporting the creation of an integrated forest area. The community is not only considered as the object of development, but they are the most dominant development subject so that if the community has sufficient provisions, then they will actually be the determinant of the success of the forest conservation area itself.

CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

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