



JLPH: Journal of Law, Politic and Humanities

E-ISSN: 2962-2816
P-ISSN: 2747-1985<https://dinastires.org/JLPH> ✉ dinasti.info@gmail.com ☎ +62 811 7404 455DOI: <https://doi.org/10.38035/jlph.v5i2>
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Analysis of the Environmental Impact of Using Sunblock on Gili Air Island, West Lombok

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Abstract: Environmental destruction in the Gili Air area has reached an alarming phase, with many business actors throwing their kitchen waste into the sea, climate change and illegal fishing activities. The level of damage to coral reefs caused by human actions can be categorized as serious damage, because the public's perception of environmental awareness is still low. There is exploitation of coral reefs to fulfill the economy in the short term. One of the problems with environmental damage is the use of sunblock. Although, sunblock Very beneficial for the skin, but in reality it actually brings disaster to marine life. Some countries have even banned its use sunblock made from these chemicals, considering that their impact is quite large in environmental damage. This research is about the smart regulation approach as a new perspective in observing environmental damage which is doctrinaire by using conceptual studies regarding the nature of the environment and the practice of using sunblock. The research results explain First, Hawaii created a law (UU) that prohibits distribution sunblock containing one of these chemicals. Coming into force on January 1 2019, this is the first law in the world to prohibit its use sunblock which contain chemicals that damage the environment in marine tourism areas.

Keyword: Marine Life, Sunblock, Environment, Society.

INTRODUCTION

Coral reefs are a common habitat in tropical waters such as Indonesia (especially the Gili Matra area). With its existence, it has excellent productivity value, economic function and ecological function for humans and the surrounding ecosystem. According to Wilkinson, in the next 40 years the world will lose at least 70% of coral reefs caused by human hands and other threats such as climate change (climate change) which causes sea surface temperatures to rise (English et al., 1997). Environmental destruction in the Gili Air area has reached an alarming phase, with many business actors throwing their kitchen waste into the sea, climate change and illegal fishing activities (Interview with Gili Air fishermen), actually resulting in greater environmental damage.

The level of damage to coral reefs caused by human actions can be categorized as serious damage, because the public's perception of environmental awareness is still low. There is

exploitation of coral reefs to fulfill the economy in the short term. Such as research conducted by Netty Dahlan Uar who conducted research analyzing environmental damage to coral reefs in the Ngurbloat Ohoi Ngilngof Beach area, North Maluku Regency, has proven that coral bleaching (coral bleaching) occurs due to human participation with minimal awareness, knowledge and control in society, resulting in coral bleaching happened on a large scale (Uar et al., 2016).

Apart from that, the role of ships carrying goods (barges) also plays a part in environmental destruction, both because the goods they transport contain pollution that threatens coral reefs (ex: coal) and anchors the size of coconut trees lowered by these ships can damage the survival of coral reefs. and living ecosystems of marine biota (interview with Gili Air fishermen). This article is a continuation of research on the policy of prohibiting the use of compressors as a fishing tool for fishermen in the Gili Air area. At that time, researchers tried to collect data through interviews with fishermen and village heads in the Gili Air area. What was surprising was that environmental damage was actually caused by tourism actors. snorkeling (diving) around the Gili Trawangan area. The people of Gili Air basically already have environmental awareness, because if they catch fish they use destructive tools (destructive Fishing) will actually damage the livelihoods of the majority of whom are involved in the tourism sector, because fishing activities are the impact of the decline in tourism activities caused by the Covid-19 Pandemic.

The literature studied in this research, namely exploring laws and regulations and research studies related to environmental issues and environmental chemistry studies, will be constructed as follows:

Review of laws and regulations or policies:

1. Law Number 32 of 2009 concerning Environmental Protection and Management (hereinafter referred to as "Environmental Law"), in this law there is a spirit to realize nature conservation, so that the relevance of the issue regarding sunblock namely discussing how environmental protection mechanisms for marine areas are intertwined in the Environmental Law.
2. Law of the Republic of Indonesia Number 27 of 2007 concerning Management of Coastal Areas and Small Islands (hereinafter referred to as "Law on Management of Coastal Areas and Small Islands"), this regulation explains the process of planning, utilization, supervision and control of Coastal and Small Island Resources so that there needs to be cooperation between various sectors stakeholder both from the central government, regional government and local communities to monitor and maintain environmental sustainability, especially those caused by toxicity sunblock.
3. Law Number 6 of 2023 concerning the Stipulation of Government Regulations in Lieu of Law Number 2 of 2022 concerning Job Creation into Law (hereinafter referred to as "Job Creation Law"), in the Job Creation Law several rules and regulations regarding sustainability and Environmental Impact Analysis (AMDAL) have changed in such a way, so that related to environmental issues we can analyze which legal regime works through the Job Creation Law (optional and the issue will be explored further because because many media are reporting on environmental damage and deforestation after the Job Creation Law).

The study of reading materials in this research is dominated by studies of environmental issues and comparisons of policies related to usage prohibitions sunblock in other countries:

1. Baseline monitoring of organic sunscreen compounds along South Carolina's coastal marine environment, in this journal explains research on the impact of sunscreen on nature conservation carried out in the coastal region of South Carolina, United States (USA), thereby helping the author to compare the coastal region and the small island of Lobar Regency.

2. Gulf of Mexico coralline algae are robust to sunscreen pollution, in this journal explains the potential for contamination sunblock on the environment, so that it can help researchers to analyze impacts sunblock on the environment and the survival of coral reefs.

3. Sunscreen use and awareness of chemical toxicity among beach goers in Hawaii prior to a ban on the sale of sunscreens containing ingredients found to be toxic to coral reef ecosystems, in this journal explains legal awareness and prohibitions on use sunblock which was implemented on the island of Hawaii so that it can help researchers to explore the extent of public awareness of the environment in other countries and compare it with Indonesia.

4. Mitigating damaging behaviors of snorkelers to coral reefs in Puerto Rico through a pre-trip media-based intervention, in this journal explains research on the damage to coral reefs due to tourism activities snorkeling which was carried out in Puerto Rico, so that it can be used as a reference and comparison regarding snorkeling tourism behavior in the Gili Air area.

At the heart of smart regulation is a series of regulation design principles, adherence to which would enable policymakers to take advantage of a number of largely uncognised opportunities, strategies and techniques for achieving efficient and effective environmental policy. These design principle include :

- The desirability of preferring complementary instrument mixes over single instrument approaches, while avoiding the dangers of ‘smorgasbordism’ (that is, wrongly assuming that all complementary instruments should be used rather than the minimum number necessary to achieve the desired result)
- The virtues of parsimony: why less interventionist measures should be preferred in the first instance and how to achieve such outcomes.
- The benefits of an escalating response up an instrument pyramid (utilising not only government, but also business and third parties) to build in regulatory responsiveness, to increase dependability of outcomes through instrument sequencing and to provide early warning of instrument failure through the use of triggers.
- Empowering third parties (both commercial and non-commercial) to act as surrogate regulators, thereby achieving not only better environmental outcomes at less cost but also freeing up scarce regulatory resources, which can be redeployed in circumstances where no alternatives to direct government intervention are available
- Maximising opportunities for win-win outcomes by expanding the boundaries within which such opportunities are available and encouraging business to go ‘beyond compliance’ within existing legal requirements.

METHOD

This research uses the smart regulation approach as a new perspective in observing environmental damage which is doctrinaire by using conceptual studies regarding the nature of the environment and the practice of using sunblock. It is necessary for sunblock entrepreneurs to have self-awareness to make their products environmentally friendly, especially without damaging coral reefs. This interdisciplinary study is a "hybrid" of major studies on legal science and legal sciences from a societal perspective that were born previously. The need to explain legal issues in a more theoretically meaningful way fuels this study. Meanwhile, practically, this study is also needed to explain the operation of law in the daily lives of community members. Working law in community life is a manifestation of law as a tool of social engineering (social tools engineering). According to Roscoe Pound, he emphasized that law functions as a means of regulating change and renewal in society.

Rules for Implementing Sunblock Bans on Gili Air

According to information from fishermen and indigenous communities, one of the contributors to coral damage is not only caused by fishing activities. However, due to the development of

fishermen and the activities of barges transporting building materials and not to mention the size of anchors the size of coconut trees which are dropped when the ship is about to dock, apart from that there is also a lot of waste from hotels and restaurants whose pipes lead into the beach, making the beach area a polluted by waste from ships carrying materials and hotel waste and restaurant (restaurants) around the beach area (interview with Gili Air fishermen). Tourism development snorkeling There are also concerns that it could potentially damage coral reef ecosystems, due to anthropogenic pressure originating from tourism activities (Insafitri et al., 2021). Tourist activities snorkeling Things that can damage coral include: fins kick (fin kick), sit-stand-kneel (sitting, standing and sitting around the coral area), silting hand touch (carelessly touching), pick up marine life (taking marine life) and harass marine life, collect objects or animals (damaging, saving underwater objects or animals), as well as body brush (rubbing the body around marine objects) all of which can cause serious damage to coral (Webler & Jakubowski, 2016, p. 223).

Apart from that, many tourists use swimming and diving in marine areas sunblock (sunscreen) to protect them from the sun's Ultraviolet (UV) rays so they don't get skin cancer (interview with fisherman and Gili Air village head). Nevertheless though sunblock very beneficial for the skin, but in reality it actually brings disaster to marine life. Some countries have even banned its use sunblock made from these chemicals, considering that their impact is quite large in environmental damage. Oxybenzone content in Sunblock can cause bleaching of Coral Planula (the initial stage of coral when it is a larva), disrupt coral endocrine which causes hardening of the planula and envelops all planula in its own skeleton (Downs et al., 2016, p. 267).

One area that is aware of the issue of danger sunblock It is Hawaii in the United States that has taken the initiative to prohibit tourists from using it Sunblock materials that damage the environment. Oxybenzone and Octinoxate found in sunblock is a substance that can make coral turn white, which if left to continue can kill coral. On May 1, 2018, Hawaii enacted a law prohibiting distribution sunblock containing one of these chemicals. Coming into force on January 1 2019, this is the first law in the world to prohibit its use sunblock which contain chemicals that damage the environment in marine tourism areas (SEKARTADJI et al., 2023, p. 3).

On May 1, 2018, the Hawaii legislature introduced a bill that would ban the sale of sunscreens containing Oxybenzone and Octinoxate, two chemicals proven to be harmful to coral reef ecosystems. These chemicals can damage coral DNA in high enough concentrations, cause deformities in young corals, increase the likelihood of viral infections, and make corals more susceptible to bleaching. Thus, bleaching increases the threat to ecosystems already threatened by pollution, climate change, and other factors that make corals more vulnerable to bleaching. However, whether sunscreen concentrations typically reach sufficiently toxic concentrations outside a laboratory setting remains a subject of debate (Levine, 2020, p. 1).

Oxybenzone content (BP-3; benzophenone-3; 2-hydroxy-4-methoxyphenyl phenylmethanone; CAS No. 131-57-7) is often used as an active ingredient in cosmetics such as lotions sunblock, shampoo and conditioner, lip balm, bath/dishwasher soap. Since 2005, there have been 6,000 to 14,000 tons of lotion released into the coral reef area every year, up to 10% threatening corals globally and 40% threatening corals in coastal areas. One of the regions that prohibits the use of Oxybenzone is the Mexican Marine Ecopark (Downs et al., 2016, p. 266). According to the Head of the Hamlet (Kadus) and Gili Air fishermen, there is a lot of tourism, fishermen and people both local and abroad who do not yet have environmental awareness, one of which is when foreigners sunbathe using sunblock they immediately swim towards the beach area, not to mention the divers who use it sunblock due to sunburn in the middle of the sea area (Interview with Kadus Gili Air). The Gili Air Village Head has actually made efforts to prevent people from using it sunblock for swimming and diving, one way is to offer an environmentally

friendly alternative to sunscreen, namely using natural saliva or coconut oil to make it more environmentally friendly. In this case, the people of Gili Air, especially those who are fishermen, have followed this recommendation and do not even use sunscreen for diving, because their skin has also adapted to the beach environment so there is no need to use it. sunblock (Interview with Kadus Gili Air).

One of the international diving associations (PADI) which is located in the Gili Air area also actually encourages environmental awareness by prohibiting diving to touch and catch fish or what is known as the "principle"no touch no catch" (interview with Egyptian instructor divers Gili Air), it is very ironic that the diver's goal, which is to enjoy and love the environment, actually makes the diver also inadvertently contribute to environmental damage by using sunblock which threatens fish. My interview with one of the diver instructors named Musa admitted that sunblock it does damage the environment because it is a chemical that enters the sea, and corals are very sensitive to it chemical (chemicals), but efforts to limit use sunblock It is still difficult to do because there is no awareness from the tourism sector.

In fact, according to fishermen's statements, when compared with a place where fishermen catch fish, it is actually a tourist place snorkeling which actually becomes a space that is not conducive to environmental conservation, as stated by Mr. Suhanan who said that the blue coral in the tourism area has actually been completely damaged, in contrast to the blue coral in the fishing area which is still maintained, even though blue coral is a wealth of which there are only two in the world. one of them is Karabia and Gili Trawangan.

Regulations Regarding the Implementation of Policies Prohibiting Use Sunblock in the Sea Area

Protection of the marine climate is basically regulated in Article 3 of Law Number 32 of 2014 concerning Maritime Affairs (hereinafter referred to as "Maritime Law") one of the aims of which is to create a sustainable and safe sea as a living space for the Indonesian people as stated in Article 3 Paragraph c, but a safe space to realize marine sustainability will not be possible if there is no participation and awareness of the community to realize the environment safe and sustainable seas. In Hawaii itself there is public awareness of the toxicity of chemicals Sunblock among visitors and tourism has begun to take shape, Overall, beachgoers stated that they were well aware of the harmful effects that chemical sunscreens can produce. To the question, "Are you aware that certain chemicals in some sunscreens (such as Oxybenzone and Octinoxate) are harmful to coral reefs, fish, and other marine life?" 75 percent of participants said yes." (Levine, 2020, p. 2)

Foreign visitors have the lowest level of awareness of this issue (64%), while Hawaii residents have the highest level of awareness (92%). Awareness of beachgoers varied by location, but most respondents were aware of the issue in Waialea/Puako Bay, which also has the highest proportion of Hawaiian residents (Levine, 2020). In Indonesian regulations the regulations prohibit use sunblock In fact, it is not discussed and has not become a priority for legislators in Indonesia, resulting in a legal vacuum (vacuum of power) regarding usage sunblock even though it has a real effect on the environment. In this case, the commitment to the government does not appear to be serious in dealing with the problem of environmental damage and focuses only on fishermen, even though environmental damage occurs more in waste disposal activities, especially waste. sunblock.

In reality, the dissemination of information about danger sunblock on coral reefs is still not widely distributed, information regarding impacts sunblock It turns out that corals are still only known by a handful of people (academics and several nature lover organizations) so they are not widely known by the general public. Based on the results of questionnaire research conducted by Sekartadji, as many as 60.7% of the public do not know the impact of the dangers caused by sunblock to the environment (SEKARTADJI et al., 2023, p. 3). Even though there

is a lack of environmental awareness in the community, it is different from Gili Air where it turns out the people already understand and are aware of the environment. Efforts to provide alternative solutions for replacement sunblock local communities do this to protect their natural areas, because without coral it would damage their livelihoods. This researcher is trying to explore legal awareness in the Gili Air community, which apparently has created its own law through common habits and consensus not to use sunscreen when carrying out fishing activities and daily life on the coast. Then we will conduct interviews with local communities, government and tourism actors to look for common threads between society and environmental awareness. This research will also take lab test samples from sunblock which is used by tourism for diving and swimming within the surface of the beach, thus encouraging legislators to draft regulations regarding the ban sunblock the.

RESULTS AND DISCUSSION

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Theoretical and Conceptual Framework

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- Maximising opportunities for win-win outcomes by expanding the boundaries within which such opportunities are available and encouraging business to go ‘beyond compliance’ within existing legal requirements.

CONCLUSION

The research results concluded that Hawaii created a law (UU) that prohibited distribution sunblock containing one of these chemicals. Coming into force on January 1 2019, this is the first law in the world to prohibit its use sunblock which contain chemicals that damage the environment in marine tourism areas. However, Indonesia itself does not have regulations regarding prohibitions on the use of sunblock, making it difficult to prevent or enforce the use of sunblock, which of course will pollute marine biota in Indonesia.

Second, protection of the marine climate is basically regulated in Article 3 of Law Number 32 of 2014 concerning Maritime Affairs (hereinafter referred to as "Maritime Law") one of the aims of which is to create a sustainable and safe sea as a living space for the Indonesian people as stated in Article 3 Paragraph c, but a safe space to realize marine sustainability will not be possible if there is no participation and awareness of the community to realize the environment safe and sustainable seas. In Hawaii itself there is public awareness of the toxicity of chemicals Sunblock among visitors and tourism has begun to take shape. Overall, beachgoers stated that they were well aware of the harmful effects that chemical sunscreens can produce.

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