

CHAPTER I INTRODUCTION

1.1 Background

Nature has long been part of the representation of many literary works. It often becomes not only the background for fictional stories in literary works, but also the main theme in the literary works. The choice of diction such as water, trees, rivers, waves, clouds, mountains, and other words related to nature shows that nature is used by writers to describe the background or content in the literary works. Writers often use nature to convey the atmosphere, image, setting, or major themes in their works. The existence of the relationship between nature and literary works raises a concept of ecological problems in literature among literary critics. The term ecocriticism is used as a term regarding the concept of literary criticism related to nature and the environment.

If nowadays people are busy raising environmental issues, sea and air pollutions, deforestation, and the extinction of certain species of living things due to the destruction of ecosystems, literary writers have always warned about the importance of friendship with nature since ancient time, or the importance of returning to nature, especially in the romantic age.

The topic of nature has been mentioned in many literary works since ancient times. Through poetry, fiction, and other literary works, ecocriticism has been shown through literary texts. According to Harsono (2008), ecocriticism has a basic paradigm that every object can be seen in an ecological network and ecology can be used as an auxiliary science in this critical approach.

Some Indonesian writers make nature and the environment an important part of their works. Almost all fiction writers use natural objects as a medium of language

and figure of speech. One of the Indonesian novels that vividly explores nature is Andrea Hirata's *Rainbow Troops*. *Rainbow Troops* is Andrea Hirata's first novel, which was first published in 2005 by the publisher Bentang Pustaka, Yogyakarta. The novel is the first book in the *Rainbow Troops* tetralogy. The next three novels are *The Dreamer*, *Edensor*, and *Maryamah Karpov*. In the two years since its publication, September 2005—November 2007, *Rainbow Troops* had been reprinted fourteen times. The novel was able to attract attention and received a lot of praises, even the novel reached a best seller in Indonesia.

In 2008, *Rainbow Troops* was adapted into a film with the same title. The shooting location for the film is Belitung Island, according to the setting of the story in the novel. As a literary work written based on a true story, the author dedicates this novel to his teachers and friends who are important characters in the novel, namely Ibu Muslimah Hapsari, Bapak Harfan Effendi Noor, and ten of his childhood friends who are referred to as members of "Rainbow Troops". They are called "Rainbow Troops" by their homeroom teacher because of their love for rainbows. As one of the most widely read literary works, this novel is not only often referred to for writing theses but also has developed as a reading with rich literary values.

Andrea Hirata reflects such conditions clearly in *Rainbow Troops*. *Rainbow Troops* mandates that education is an act of giving hearts to children and not just giving instructions or commands because every child has superior potential that will grow into brilliant achievements in the future if given the opportunity and example by people who understand the meaning of good education. In addition, it is vividly reflected in the novel that poverty is not always correlated with stupidity or genius. In the struggle to achieve these goals, the most successful hero is Ikal—the character who identifies the author.

In addition to the deep messages expressed by Andrea Hirata in the novel, Andrea Hirata also describes that Belitung Island is one of the areas that is very rich in natural resources, namely tin. Belitung Island is the largest tin producer in Indonesia since the Dutch era, which after independence was taken over by PN Timah which absorbed massive workforce in Belitung in order to maximize the company's activities. However, the bureaucracy keeps the natives from enjoying it, leaving most of them poor and some even unemployed. Most of the men ended up working for the state-owned tin company PN Timah. School-age children from poor households are stereotyped as children who have no future and who will end up working as lowly laborers there. Moreover, the natural wealth owned by Belitung Island is not in line with the life of the people in the area who live below the poverty line on average. This is clearly illustrated by Andrea Hirata with a description of the existing facilities and infrastructure in Belitung such as education, health, transportation, and others that are far from feasible. In the novel Andrea Hirata also clearly reveals that there has been a massive scale exploitation of tin there. Andrea Hirata also described the ecological and social impacts caused by the overexploitation of natural resources. Andrea Hirata in this case certainly wants to remind on the importance of preserving and protecting natural resources and the need to love the earth with all its natural beauty. Andrea Hirata directly invites us as readers to reflect on how beautiful the earth we inhabit and always protect it from greedy passions that can destroy it.

In this novel, the author clearly describes how the exploitation of natural resources, especially the exploitation of tin in Bangka Belitung, has been carried out on a massive scale and can be considered as overexploitation. This of course has a negative impact on the environment and the social environment for the population in

the area. Therefore, the author feels it is important to conduct this research because this research is believed to be able to develop human awareness as well as understanding, especially people who have the power to determine policies on nature protection and the importance of nature conservation for the sake of sustainable ecosystems for future generations. As Worster (1993) explains we are facing a global crisis today, not because of how ecosystems function but rather because of how our ethical systems function. Getting through the crisis requires understanding our impact on nature as precisely as possible, but even more, it requires understanding those ethical systems and using the understanding to reform them. Historians, along with literary scholars, anthropologists, and philosophers, cannot do the reforming, of course, but they can help with the understanding.

To carry out the analysis in this study, the approach used is the ecocriticism approach. Gerrard (2004) states that ecocriticism includes the study of the relationship between humans and non-humans, human history and culture related to critical analysis of humans and their environment.

1.2 Problem Identification

From the presentation above, the writer formulates the problems as follows:

1. What are the natural resource exploitation and its negative impacts reflected in Andrea Hirata's *The Rainbow Troops*?
2. How are the natural resource and its negative impacts revealed in the novel?

1.3 Objective

The objectives of this research are based on the identification of the problems presented above, which are formulated as given in the following.

1. To reflect the natural resource exploitation and its negative impacts in Andrea Hirata's *The Rainbow Troops*.
2. To reveal how the natural resource exploitation and its negative impacts are reflected in the novel?

1.4 Scope

Based on the background of the research above the scope of this research is limited to the analysis of the natural resource exploitation and its impacts found in the novel under the study. At the same time the researcher analysed how the negative impacts of the natural resource exploitation are represented. The researcher will not discuss other things other than the focus of this research so that other researchers, especially those who are interested in doing researches on Andrea Hirata's *Rainbow Troops* have broad opportunities to carry out their researches on them.

1.5 Significance

The significance of the study is formulated into two types: theoretical significance and practical significance. Theoretically, the results of this study can be useful to develop knowledge about the theory of eco-criticism in particular. This research is also expected to provide information for the reader about basic knowledge of the theory of eco-criticism which is really very important for other researchers to make other researches in the same field. Besides, it can also be a guide that literary works would be interesting and of much use analysed using eco-criticism. The last, it can increase knowledge and insight of the reader especially in understanding the eco-literature in Andrea Hirata's novel, *The Rainbow Troops*.

Practically, this analysis is expected to give some recommendations to the readers or other researchers in order to understand green literary works as there are

many good lessons, they can get from reading literary works focusing of natural resources. This research is also expected to give some contributions to people in general that it is very important to sustain natural resources and to avoid overexploitation to natural resources so that the sustainability of natural resources can be possible, and life would certainly be beautiful if human beings can get along well with environment.

CHAPTER II LITERATURE REVIEW

This chapter consists of reviews of the theories, which would be applied in the analysis of the data, and some complementary theories related to the subject matter of this research.

2.1 Ecoliterature

Ecoliterature is not simply nature's writing. This is not a romantic poem or just a work of fiction or romantic drama. This is not just a literary work that tells about how humans live in the forest, in the mountains or in the beach. In such literary works, writings will only be a realistic depiction, as in other human environments. Ecoliterature describes and digs deeper into the description of how environmental degradation causes people's suffering. It is also about how the exploitation of nature is the result of economic and political exploitation that overturns human life and destroys the environment so that nature or the environment becomes unfit for future life.

Ecoliterature is also known as green literature. Murti (2019) underlines that green literature is different from the literary works that only make nature as the background and its content only, simply aimed worship the beauty of nature. Green literature is further than that. Green literature offers the solution to natural destruction and how humans respond to it. Subramanian (2017) claims that ecoliterature includes the whole gamut of literary works, including fiction, poetry and criticism, which lay stress on ecological issues. Cli-fi (climate fiction), which deals with climate change and global warming, is logically a sub-set of ecoliterature.

Literary works belonging to the ecoliterature genre describe human activities, both individuals and corporations, in treating nature badly and even slowly killing nature. Writers who focus their literary works on ecology use their literary works as an effort to arouse the reader's sense of urgency towards actions to save the environment, or, if they are able to leave a deep impression on humans who are aware of their role in saving the earth. However, writers in the ecoliterature genre maintain that their works are not merely a tool for propaganda, but also carry deep literary values. Ecoliterature writers continue to instill "moral values" that inspire readers to do what is and shouldn't be done to the environment, and this is done in a subtle way through structured "moral" stories.

Many writers are concerned with the destruction of nature and the negative consequences that occur, and this is caused by crimes committed by human beings. One of the negative consequences that occur due to overexploitation by humans on the natural world is the number of ecological species that are threatened with extinction or continue to shrink and some have even become extinct, floods, water, air, and soil pollutions. Illegal large-scale fishing has resulted in the erosion of marine biodiversity. Large-scale deforestation worldwide has led to the displacement of tribal populations and, as a result, the loss of their cultures and languages.

Based on the facts about the ongoing destruction of nature, many writers feel the need to focus their literary works on the effects of ecological disasters on the environment and humans; such as how large-scale tribal populations lost their habitat to make way for giant industries, and how human activities were shamelessly insensitive to other living species in the environment.

In the era of industrial development which is increasingly advanced, massive natural exploitation is unavoidable. Recognizing this phenomenon and contemporary

issue, green writers who care about the conservation and protection of nature and its resources appear with rich green literature as a form of demonstration and an effort to inspire and remind people about the importance of nature for human life and the dangers of natural damage for human survival and other creatures in this world. Green writer is a term for writers who are determined to call for the protection and preservation of nature. This movement is behind the emergence of ecocriticism. Green literature is a critique of natural exploitation activities and about nature conservation and it seeks to promote nature and protect nature.

2.2 Ecocriticism

Literary criticism has recently undergone diverse growth. One school of literary criticism appealing most in America nowadays is ecocriticism. Theoretically, ecocriticism grew out of awareness of the interdependence of literature on environment (Harsono, 2008). He further states that ecocriticism has a broad object of study, namely literature, art, culture, and others. Glotfelty and Fromm (1996) defines ecocriticism as the study of the relationship between literature and the physical environment. Just as feminist criticism examines language and literature from a genderconscious perspective, and Marxist criticism brings an awareness of modes of production and economic class to its reading of texts, ecocriticism takes an earth-centred approach to literary studies. Kerridge (1998) suggests a broad cultural ecocriticism: The ecocritic wants to track environmental ideas and representations wherever they appear, to see more clearly a debate which seems to be taking place, often part-concealed, in a great many cultural spaces. Most of all, ecocriticism seeks to evaluate texts and ideas in terms of their coherence and usefulness as responses to environmental crisis. Mambrol (2016) supports the definitions by stating that

ecocriticism is the study of literature and environment from an interdisciplinary point of view where all sciences come together to analyze the environment and brainstorm possible solutions for the correction of the contemporary environmental situation. Mambro (2016) further claims that ecocriticism investigates the relation between humans and the natural world in literature. It deals with how environmental issues, cultural issues concerning the environment and attitudes towards nature are presented and analyzed. One of the main goals in ecocriticism is to study how individuals in society behave and react in relation to nature and ecological aspects. In line with Glotfelty's & Fromm's, and Mambrol's definitions of ecocriticism, Garrard (2004) states that ecocriticism explores the ways in which we imagine and portray the relationship between humans and the environment in all areas of cultural production, from Wordsworth and Thoreau to Disney and BBC nature documentaries. It is inspired by, but also critical of, modern environmental movements. Besides, Garrard (2004) claims that ecocritics generally tie their cultural analyses explicitly to a 'green' moral and political agenda. In this respect, ecocriticism is closely related to environmentally oriented developments in philosophy and political theory. Developing the insights of earlier critical movements, ecofeminists, social ecologists and environmental justice advocates seek a synthesis of environmental and social concerns. Furthermore, Garrard (2004) highlights that from the point of view of academics, ecocriticism is dominated by the Association for the Study of Literature and the Environment (ASLE), a professional association that started in America but now has significant branches in the UK and Japan. It organises regular conferences and publishes a journal that includes literary analysis, creative writing and articles on environmental education and activism. Many early works of ecocriticism were characterised by an exclusive interest in Romantic poetry, wilderness narrative and

nature writing, but in the last few years ASLE has turned towards a more general cultural ecocriticism, with studies of popular scientific writing, film, TV, art, architecture and other cultural artefacts such as theme parks, zoos and shopping malls. As ecocritics seek to offer a truly transformative discourse, enabling us to analyse and criticise the world in which we live, attention is increasingly given to the broad range of cultural processes and products in which, and through which, the complex negotiations of nature and culture take place.

From the description above, it is clearly emphasized that ecocriticism constitutes an environmental study in literary works which describes how human beings treat the environment with the aim of getting good solutions to prevent environmental damage or find ways to preserve the environment. This stream of criticism has recently received a lot of attention due to its more serious focus or emphasis on environmental damage due to technological development, and its consequences on nature and social life. This school of criticism also emphasizes ways to analyze and interpret literary texts by bringing a new dimension, namely an ecological approach to the field of literary studies and theory.

According to Glotfelty and Fromm (1996), some questions that ecocritics and theorists usually ask are How is nature represented in this sonnet? What role does the physical setting play in the plot of this novel? Are the values expressed in this play consistent with ecological wisdom? How do our metaphors of the land influence the way we treat it? How can we characterize naturewriting as a genre? In addition to race, class, and gender, should place become a new critical category? Do men write about nature differently than women do? In what ways has literacy itself affected humankind's relationship to the natural world? How has the concept of wilderness changed over time? In what ways and to what effect is the environmental crisis

seeping into contemporary literature and popular culture? What view of nature informs U.S. Government reports, corporate advertising, and televised nature documentaries, and to what rhetorical effect? What bearing might the science of ecology have on literary studies? How is science itself open to literary analysis? What cross-fertilization is possible between literary studies and environmental discourse in related disciplines such as history, philosophy, psychology, art history, and ethics?

Despite the broad scope of inquiry and disparate levels of sophistication, all ecological criticism shares the fundamental premise that human culture is connected to the physical world, affecting it and affected by it. Ecocriticism takes as its subject the interconnections between nature and culture, specifically the cultural artifacts of language and literature. As a critical stance, it has one foot in literature and the other on land; as a theoretical discourse, it negotiates between the human and the nonhuman. Ecocriticism can be further characterized by distinguishing it from other critical approaches. Literary theory, in general, examines the relations between writers, texts, and the world. In most literary theory "the world" is synonymous with society—the social sphere. Ecocriticism expands the notion of "the world" to include the entire ecosphere.

In *The Comedy of Survival: Studies in Literary Ecology*, Meeker (1972) introduced the term literary ecology to refer to "the study of biological themes and relationships which appear in literary works. It is simultaneously an attempt to discover what roles have been played by literature in the ecology of the human species." The term ecocriticism was possibly first coined in 1978 by William Rueckert in his essay, *Literature and Ecology: An Experiment in Ecocriticism*. By ecocriticism Rueckert meant "the application of ecology and ecological concepts to

the study of literature." Rueckert's definition, concerned specifically with the science of ecology, is thus more restrictive than the one proposed in this anthology, which includes all possible relations between literature and the physical world. Other terms currently in circulation include *ecopoetics*, *environmental literary criticism*, and *green cultural studies*.

In the opinion of Glotfelty and Fromm (1996) regarding various questions commonly asked by ecocritics and theorists, it is clear that there are several questions in a straight line related to literary research as seen in the following:

1. How is nature represented in literature?
2. What might ecological science have in the study of literature?
3. In what ways does literature affect human relations with nature?
4. In what ways and to what effect, does the environmental crisis look into contemporary literature and popular culture? and,
5. How is science itself open to literary analysis?

Based on the idea proposed by Glotfelty and Fromm (1996) above, the researcher conducts his research on the exploitation of natural resources and its negative impacts on the ecology and socio-economics of the Belitung people as pictured in the novel, *Rainbow Troops* by Andrea Hirata.

2.3 Natural Resources

Natural resources are everything that can be taken or utilized from nature because it has a useful value to meet human needs. In addition, natural resources are also important as human habitation. While referring to the Cambridge Dictionary, the definition of natural resources is something like excavations (mines), forests, and other natural resources in a place that can be utilized by humans. Natural resources

themselves consist of several types and can be used for many purposes. Even so, natural resources should not only be used for granted, but also for the preservation of responsible human beings. Natural resources are divided into two, namely renewable natural resources and non-renewable natural resources.

Renewable natural resources are types of natural resources that can be replenished, renewed in a relatively short time, and can be cultivated. These renewable natural resources consist of biological and animal natural resources, such as animals, plants, microbes, water and soil. Most organic renewable resources—plants, animals, and related products and waste—are biodegradable. For example, a forest, if forest products are taken, will be able to recover if it is maintained (replanted or plants are preserved).

Non-renewable natural resources are types of a natural resource, the supply of which is very limited and cannot be replaced. If it can be replaced, it takes a very long time and is not exactly the same as what is currently available. This means that they exist in fixed numbers on earth. Rocks, minerals, metals, uranium, and fossil fuels such as petroleum, coal, and natural gas are all non-renewable resources. These resources took thousands or millions of years to form. They are considered non-renewable because people use them faster than they can form.

Natural resources have a very important role for human survival. Many of the things we use today are made using materials from natural resources. Quoting from the book, *Keindahan Negeriku (The Beauty of My Country)* by the Ministry of Education and Culture of Indonesian Republic, there are several benefits of natural resources, namely:

1. Sources of energy and fuel, such as petroleum
2. Power generation, such as petroleum and sunlight

3. Meet the needs of humans and animals, for example animals and plants
4. For a place to live, for example trees
5. To maintain the balance of nature
6. Supplying oxygen (plants)
7. The country's foreign exchange reserves

According to the Ministry of Education and Culture's book, *Alamku Melimpah (My Nature is Abundant)*, preserving nature is the principle of managing natural resources. One of them is by way of sustainable development. The book also states that sustainable development is development that is carried out while still meeting the needs of the present and without compromising its ability to meet the needs of future generations. The principles of sustainable development are equity, economy, energy, ecology, and participation.

1. Equity

This equity is considered able to reduce inequality in society and equalize access for the community. Thus, between one region and another must get a balanced development.

2. Economy

In addition to increasing the capacity of competitiveness, the economic principle referred to here is also the development of basic infrastructure, for example, housing, lanes, to information infrastructure.

3. Energy

In the energy aspect, energy saving is a highly recommended way. Examples of energy savings are utilizing sunlight as natural lighting, and so on.

4. Ecology

In this aspect, the use of mixed land as much as possible is one strategy that can be done, for example: limiting excessive urban expansion, providing lots of Green Open Space.

5. Participation

The intended participation is the implementation of sustainable development that involves the participation of the community.

2.4 Natural Resource Exploitation

Exploitation is the arbitrary or excessive use of a subject for purely economic purposes without considering the sense of propriety, justice and welfare compensation. If the outline is drawn, then exploitation is an action that aims to take advantage or take advantage of something excessively and arbitrarily. The main purpose of exploitation is the use for self-interest which can exploit others beyond the limits of propriety. The main target of exploitation is the control or use to dredge and exploit the potential of resources, both natural resources and human resources. This action results in harm to other parties, both to humans and the environment.

Exploitation of natural resources usually results in severe damage to the environment as well as global warming anomalies and extreme weather. Gutti, Aji and Magaji (2012) state that exploitation of natural resources is an essential condition of human existence, throughout the history of mankind; humans have manipulated natural resources to produce the materials they needed to sustain growing human populations. This refers primarily for food production and economic development but many other entities from the natural environment have been extracted.

Exploitation of natural resources is the act of taking natural resources in excess for the maximum benefit that is used to meet human needs. In this research, the natural resource exploitation discussed is tin resource in Bangka environment as pictured in the novel entitled *Rainbow Troops* by Andrea Hirata.

The exploitation of tin in Bangka has been going on for a long time. Historians note that the excavation of tin in Bangka has started from the 1st century. However, this extractive industry started to become massive when Chinese coolies were hired to increase production. For hundreds of years, tin has become a strategic commodity, for hundreds of years the environment has been neglected (Muhammad, 2021). Further, Muhammad (2021) highlights that in the past, Bangka Island had various names, starting from Vanka (Wangka), Monopin, Mayit-Dong, China Bato, and Banka. The names are inscribed on the 1st century Hindu literary book *Millndrapantha* and a Hindu-Buddhist holy book called *Nidessa*. Historian George Cœdès also mentions that before the first century, many sailors from India came to Wangka—in Sanskrit it means lead. So it is strongly suspected that tin excavation has existed in Bangka since the beginning of the first century. After centuries, ancient kingdoms also kept records of tin in Bangka. Like the Sriwijaya Kingdom with the discovery of the Kota Kapur inscription which tells about tin mining on Bangka Island in the 7th century. The use of tin at that time was for bartering media and for inscriptions. However, the tin excavation is still on a small scale with very simple tools.

It was only during the Palembang Sultanate under the leadership of Sultan Mahmud Badaruddin I in the 1730s to 1740s that tin mining on Bangka Island was carried out on a large scale. Miners were imported from China, Siam and Chocin. Instantly the production of tin mines increased dramatically so that the coffers of the

Palembang Sultanate increased. The Sultanate employed Chinese people not without reason. In addition to being more disciplined and powerful than the natives, they had an "under" system in mining. They brought hoe technology that was not yet known by the natives in 1733. Because of this success, the Palembang Sultanate brought in more contract laborers from South China, who were brought in waves, especially the Khek people, who were brought in as bachelors who eventually intermarried with the natives. The Sultan of Palembang at that time became the richest man in the east because of the sale of tin. The tins were then sold to the VOC trading partnership. In 1811 the British occupied Bangka. The Palembang Sultanate under Sultan Najamuddin handed over Bangka and Belitung to the British. However, in 1814 the Treaty of London I emerged, requiring England to hand over Bangka to the Dutch Colonial Government so that in 1816 the Dutch took full control of Bangka. Three years later in 1819 the Dutch formed Banka Tin Winning Bedrijf (BTW), a Dutch state-owned tin company as well as selling tin with a brand called BANKA.

The Dutch still took tin miners from the Chinese. It is stated that in 1816 there were 2,528 Chinese miners and 2,123 other Chinese residents who spread across Bangka Island. The Netherlands also made progress on mining mechanization, namely a water pump system with steam power called a locomotive. Then it came the spray power to mine the tin field.

Time passed and the regime changed, Japan entered and took control of Bangka in 1942. The tin mining was taken over by Mitsubishi Kabushiki Kaisha (MKK). But the Japanese era of tin mining is not as sweet as before. Its production experienced a drastic decline because Japan only knew war and was lacking in tin mining matters.

Japan lost in World War II in 1945. Allied troops landed in Bangka via Muntok in 1946. The Dutch, on the back of the Allies, tried to regain control of the tin mining. Banka Tin Winning Bedrijf re-started the exploitation of tin in Bangka.

Wars occurred everywhere, including in Muntok to Pangkal Pinang during the chronic phase of the Indonesian revolution. The Dutch gave up control of Indonesia. Tin mining was also handed over to the Indonesian government in 1953. The Dutch tin company was merged at that time, its name changed to PN Tambang Timah Bangka and later became PT. Timah Tbk in 1976.

Entering the era of President Suharto, Muntok became a tin smelting center. This commodity has become a strategic item with strict safeguards. Anyone who smuggles or takes tin illegally would be imprisoned. In those days, people could not mine because all things related to tin mining in Bangka were fully controlled by PT. Timah Tbk. until the times changed when Suharto no longer served as President of the Republic of Indonesia in 1998. Tin mining appeared everywhere. Anyone can mine freely and the term unconventional mining that is not managed by the state appears. This is because tin is no longer a strategic item.

Many people became rich suddenly because of tin. The gardens that were previously used as agricultural land and plantations were replaced by tin mining in the 2000s. A lot of land that has turned into under pits can be found everywhere. Whoever had money at that time can be sure that he must be a miner. Mining businesses mushroomed at the beginning of the reform era.

The proliferation of tin miners was accompanied by strict regulations issued by PT. Timah Tbk related to tin disposal and reclamation waste. However, this rule was ignored by the people who did a lot of tin mining activities, and did not make waste disposal. As a result, tin waste was dumped into rivers, and ex-mining lands

that were no longer producing were left alone. In fact, ex-tin minings of PT. Timah Tbk that had been reclaimed were also reopened by illegal miners.

Illegal mining that did not dispose of waste carelessly by dumping waste into rivers made the rivers in Muntok polluted with tin waste. The color of the river water in Muntok became brownish due to sand deposits and it made the water volume increase too. This resulted in disruption of the flow of river water so that during the rainy season, the Muntok area became flooded. On the other hand, during the dry season, people in Muntok lacked clean water due to massive mining activities.

Mining activities from the beginning of the reform until now have made almost no new tin fields. Even if there is a new mine, it does not necessarily produce a lot of tin. Many miners are having a hard time because their mining land is no longer producing. This has caused tin mining to be no longer in demand as it is in its heyday at the beginning of the reformation.

Because land is already difficult, a new phenomenon has emerged in Muntok, namely mining at sea or known as floating mining. Most of them are immigrants from Palembang who have the ability to dive to find tin locations in the ocean. However, this activity is opposed by fishermen because it interferes with their livelihoods.

The old miners are aware of this difficult time. Some of them have turned their former mines into tourism, plantations, agriculture, restaurants and fish ponds. In addition to trying to do alternative businesses, some miners believe that this is a solution to preserve the previously damaged environment. Another solution to overcome the current problem of tin mining in Muntok is to take advanced minerals that are disposed of in tin waste (tailings). It is believed that the price of the secondary minerals is much more expensive than tin.

These advanced minerals include Quartz, Zircon, Rutile, Ilmenite, Siderite, Xenotime, Monazite, and Tourmaline. They are called associated minerals because these minerals were formed simultaneously with the geological process of the formation of cassiterite (SnO_2). In the washing process, separation is carried out based on specific gravity so that the associated minerals are caught in groups according to their specific gravity. The mineral Monazite, for example, is a reddish-brown mineral consisting of phosphates containing rare earth metals as sources of cerium and thorium. This mineral contains radioactivity which can be used for electric car batteries.

The presence of investors with renewable technology is believed to be able to accommodate these associated minerals. If this is implemented, it is believed that it will have a good impact on the environment because tin waste is not wasted. It is hoped that in the future the community will have new jobs as seekers of these minerals.

2.4.1 The Impacts of Natural Resource Exploitation

De Lara and Doyen (2008) are of the opinion that nowadays, environmental issues including air and water pollution, climate change, overexploitation of marine ecosystems, exhaustion of fossil resources, and conservation of biodiversity are receiving major attention from the public, stakeholders and scholars from the local to the planetary scales. It is now clearly recognized that human activities yield major ecological and environmental stresses with irreversible loss of species, destruction of habitat or climate catastrophes as the most dramatic examples of their effects. In fact, these anthropogenic activities impact not only the states and dynamics of natural resources and ecosystems but also alter human health, well-being, welfare and economic wealth since these resources are support features for human life. The

numerous outputs furnished by nature include direct goods such as food, drugs, energy along with indirect services such as the carbon cycle, the water cycle and pollination, to cite but a few. Hence, the various ecological changes in our world is undergoing draw into question our ability to sustain economic production, wealth and the evolution of technology by taking natural systems into account.

The concept of sustainable development covers such concerns, although no universal consensus exists about this notion. Sustainable development emphasizes the need to organize and control the dynamics and the complex interactions between man, production activities, and natural resources in order to promote their coexistence and their common evolution. It points out the importance of studying the interfaces between society and nature, and especially the coupling between economics and ecology. It induces interdisciplinary scientific research for the assessment, the conservation and the management of natural resources.

Over the past few decades, environmental concerns have received growing attention. Nowadays, climate change, pollution control, over-exploitation of fisheries, preservation of biodiversity and water resource management constitute important public preoccupations at the local, state and even world scales. Crises, degradation and risks affecting human health or the environment, along with the permanency of poverty, have fostered public suspicion of the evolution of technology and economic growth while encouraging doubts about the ability of public policies to handle such problems in time.

Over-exploitation brings negative impacts not only for ecology but also for social life of human beings. The negative impacts that can occur due to environmental damage on ecology are the disruption of the provision of food sources, increased health hazards due to pollution and the risk of natural disasters,

and many more. While the negative influence on social life, the occurrence of inequality in welfare in human social life and exploitation of children as supporting labor to launch exploitation activities carried out. Degraded ecosystems may be slow to recover or may not recover naturally and even after exploitation has ceased. As a result, the availability of natural resources such as food, clean air, and other ecosystem services, may be adversely affected for a long time if the ecosystems that provide these resources are damaged.

Groom, Meffe & Carroll (2006) highlight that the exploitation of ecosystems by humans has long-lasting consequences for the future provision of natural resources and ecosystem services. According to Klawitter (2004), in the struggle for survival and development, man creates a lot of negative impacts on the environment, these impacts ranges from over-exploitation of resources, destruction of ecosystem and pollution. Often the exploitation of nature has been done in a non-sustainable way, which is causing an increasing concern, as the non-sustainable exploitation of natural resources ultimately threatens the human existence. In line with Klawitter's idea, Gutti, Aji and Magaji (2012) claim that natural resource exploitation, exploration, mining and processing have caused different types of environmental damages which include:

1. ecological disturbances,
2. destruction of natural flora and fauna,
3. pollution of air, water and land,
4. instability of soil and rock masses,
5. landscape degradation,
6. desertification, and
7. global warming.

2.4.1.1 Environmental Impacts

According to One Planet Network, unsustainable consumption and production practices not only deplete natural resources through the use of material inputs, but also cause environmental impacts as a result of the extraction, processing, manufacturing, consumption and waste disposal at every stage of a product or service lifecycle. These environmental impacts of unsustainable consumption and production are driving the three planetary crises we are currently facing: climate change, biodiversity loss, and pollution.

Climate Change

One of the most well-known environmental impacts of unsustainable production and consumption is climate change, which is primarily caused by burning fossil fuels like coal, oil and gas to create the energy that powers economic activity. This energy is used for heavy machinery for mining and industrial farming; factories for processing and manufacturing products; trucks, ships and planes for transporting products; energy related to consuming products and services; as well as the energy to power the necessary disposal and treatment of waste leftover from production and consumption.

In addition to energy, climate change is also caused by the extraction and production of certain materials, which can release greenhouse gases as a result of chemical processes like in making steel for buildings and infrastructure. The production of food and agricultural products is also a major source of greenhouse gases, through the use of fertilisers containing nitrogen, as well as the raising of livestock which excrete methane, and the clearing of land for farming and grazing cattle which reduces the amount of carbon that can be captured and stored by trees and vegetation and increases the amount of CO₂ in the atmosphere.

Biodiversity Loss

The ever-increasing amount of land that needs to be used for production and consumption, such as for agricultural, raw material extraction, forestry, or buildings and infrastructure, means clearing the land and removing all natural trees and vegetation. This destroys the biodiversity of the plant life on that land, and also harms animal and insect life through the loss of their habitats. The consequences of this biodiversity loss are dire and are already damaging the life-supporting systems of food, water and air on which all living things on Earth depend.

Pollution

The amount of pollution that is created as a result of unsustainable production and consumption is also causing great damage to the planet's life-supporting systems of food, water and air, and as a result harming human health and the health of the planet. While rubbish in the form of packaging or disused products is a major issue that harms both life in the oceans as well as on land, pollution doesn't just happen at the end of a product or services' lifetime. Pollution takes places at every stage of the value chain of a product or service, during the extraction of raw resources, the processing and manufacturing of goods, as well as distribution and consumption.

The consequences of these environmental impacts caused by unsustainable consumption and production can have a rebound effect that further reduces the quality and quantity of natural resources available. For example, unsustainable use of fertilisers in farming can end up reducing the quality of soil and water that is needed for future farming and fishing. These environmental impacts are also deeply interconnected and affect one another, for example pollution contributes to climate change, and biodiversity loss is exacerbated by both climate change and pollution.

2.4.1.2 Socio-economic Impacts

Natural-resource use and environmental impacts from unsustainable consumption and production also have socio-economic impacts for people around the world.

1. Loss of natural resources and environmental damage can threaten livelihoods, especially of the more than one billion farmers in the world, leading to food and economic insecurity as well as nutritional issues.
2. In addition to nutrition, pollution in land, air and water from unsustainable consumption and production also cause major health problems, especially for people living in poor countries.
3. Loss of availability of natural resources and the livelihoods that depend upon them is also a major cause of conflict and war, which can jeopardise human rights, further damage the environment, destroy livelihoods and harm human health.

These socio-economic impacts caused by unsustainable consumption and production are also felt unequally throughout the world, thereby worsening inequality.

2.5 Review of Related Research

This section presents several previous studies related to environmental studies in literary works. This aims to sharpen the analysis of the research and to show that the current research is different from the previous researches. Besides, it is also to show that there is novelty in this research. The following are some previous researches related to this research.

1. Verma (2018) conducted his research on Concept of Eco-Criticism in T S Eliot's Poetry.

In his research he highlights that Eco-criticism and "green study" is a rising field of scholarly investigation that considers the relationship that people have with the earth and its environment. 'Eco-Criticism is the investigation of the connection amongst literary writings and the physical condition.' The word 'ecocriticism' first showed up in William Rueckert's article, *Writing and Ecology: An Experiment in Ecocriticism* in 1978. Furthermore, it appeared when Cheryll Glotfelty got the term in the Western Literature Association meeting in 1989 and worked for its utilization which from now on had been utilized as 'the investigation of nature composing'. The term 'ecocriticism' looks for joins between abstract investigations and natural activism, amongst human and sociologies and ecological aspects. The paper amplifies crafted by T S Eliot that acknowledges ecocriticism and furthermore investigates the semantic and artistic embodiments of the earth. T.S. Eliot's utilization of scholarly experimentation inside an urban setting speaks to a noteworthy advancement in nature composing that modernizes the class and makes it significant to the substances of present-day life. The paper magnifies the works of T.S. Eliot that appreciate ecocriticism and also explores the linguistic and literary exemplifications of the environment. T.S. Eliot's use of literary experimentation within an urban context represents a major innovation in nature writing that modernizes the genre and makes it relevant to the realities of modern life. The paper focuses on the depiction of urban and rural landscapes in *The Waste Land* and *Four Quartets*: arguing that each poem demonstrates a clear development in Eliot's environmental consciousness and provides vital insights into modernist anxieties

regarding the changing relationship of people to place in the first half of the twentieth century.

This research is related to Concept of Eco-Criticism in T S Eliot's Poetry. The paper magnifies the works of T.S. Eliot that appreciate ecocriticism and also explores the linguistic and literary exemplifications of the environment. The theory applied in this research is the same as that I did in my research, i.e. ecocriticism. However, the theory in my research is supported by the theory proposed by Gutti, Aji and Magaji (2012). The difference lies on the source of the data in the researches. The data in Verma's research were taken from T.S. Eliot's poetry entitled *The Waster Land* and *Four Quartents*, while those of my research were taken from Andrea Hirata's *Rainbow Troops*. Verma's paper focuses on the depiction of urban and rural landscapes in *The Waste Land* and *Four Quartets*: arguing that each poem demonstrates a clear development in Eliot's environmental consciousness and provides vital insights into modernist anxieties regarding the changing relationship of people to place in the first half of the twentieth century, while the focuses of my research were on the tin exploitation and its negative impacts on ecology and socio-economics.

2. Nuramila (2020) conducted his research on Ecological Analysis of Literature Short Story *Harimau Belang* by Guntur Alam.

The researcher is of the opinion that nature is often not just a setting for a fictional story in a literary work, but can also be the main theme in a literary work. The existence of the link between nature and literature raises a concept of ecological problems in literature among literary critics. The term ecocriticism is used as a term regarding the concept of literary criticism related to nature and the environment. One of the writers who explored nature in literary works was Guntur Alam. One of his

works is the short story *Harimau Belang*. Short story *Harimau Belang* by Guntur Alam discusses ecological aspects related to the importance of protecting the forest and the importance of not behaving greedy in utilizing natural resources in the forest so that the animals in the forest can live and breed well. Based on this, the writer is interested in analyzing the short story *Harimau Belang* by Guntur Alam using literary ecological studies. This study used descriptive qualitative method. The data analysis technique used in this research is descriptive qualitative. The technique is concretized with the ecocritical study method specifically regarding the problem of the relationships and interactions of the figures with the environment and the natural surroundings. Based on the results of the study, the natural ecology in the short story *Harimau Belang* is reflected in the form of relationship between human beings and nature as a source of human life and with efforts to preserve nature. Whereas the cultural ecology contained in the short story *Harimau Belang* is a belief in myth, mutual cooperation, and related livelihoods.

Nuramila's research discusses ecological aspects related to the importance of protecting the forest and the importance of not behaving greedy in utilizing natural resources in the forest so that the animals in the forest can live and breed well. Whereas, my research were on the tin exploitation and its negative impacts on ecology and socio-economics. The similarity found on Nuramila's research and mine was on the theory applied in which both of our research applied ecocritical studies or ecocriticism. Nevertheless, the theory in my research is supported by the theory proposed by Gutti, Aji and Magaji (2012). The dissimilarity of our researches was also lied on the source of the data in the researches. The data in Nuramila's research were taken from Guntur Alam's *Harimau Belang*, while those of my research were taken from Andrea Hirata's *Rainbow Troops*. Besides, my research would also reveal

the negative impacts of the natural resource exploitation on ecology and socio-economics in the novel.

3. Mustikawati (2015) carried out her research on Natural Resource Exploitation: The Cultural Ecological Analysis of Two East Kalimantan Short Stories.

In her research, Mustikawati claims that two short stories from East Kalimantan, namely *Banjirkap* and *Batun Kokoq* tell about the exploitation of Kalimantan's forests. The exploitation of the forest has an impact on the lives of the surrounding community. She attempts to reveal the exploitation process and the adaptation process of the community after that by using cultural theory and cultural ecology approaches. Changes as a result of exploitation are not only in the form of environmental changes, but also cultural changes which include livelihoods, social, namely the lifestyle and behavior of the people. Humans try to adapt in various ways after the changes in nature. The theory used in the research is a cultural theory that includes cultural elements proposed by Koentjaraningrat (1983). There are seven elements of Koentjaraningrat culture, which are a summary of the universal cultural elements that exist in the world. According to Koentjaraningrat the seven elements the culture has represented the elements culture that can be found all over the world. The seven elements of culture are language, knowledge system, social organization, living equipment system and technology, livelihood system, religious system, and art. The method used is the method qualitative. The approach taken in this paper is cultural ecology, which is a research approach, proposed by an American scholar named Julian H. Steward. Two short stories with a background of forest destruction in Kalimantan, namely *Banjirkap* and *Batun Kokoq* provide description of forest exploitation that affects the culture of the surrounding community. *Banjirkap*, which tells of the massive felling of trees in the forest, resulting in changes in the culture of

the people has changed the community livelihoods in parts of Kalimantan. People prefer to be loggers rather than farmers because the money they make as loggers is much more. In addition to the changes in livelihoods, changes in lifestyle and behavior also affect people who suddenly have a lot of money. They become consumptive and hedonists. Meanwhile, the short story *Batun Kokoq* which tells the story of forest exploitation due to HPH projects and illegal logging has an impact on the people around Batun Kokoq who can hardly adapt to the damaged forest. Most people can only surrender because of their source of life; the forest has been destroyed and can no longer be used.

Mustikawati's research and my research focus on the same discussion that is Natural Resource Exploitation. However the theory applied in Mustikawati's research and in my research is different. Mustikawati's research applied the theory of cultural ecology, while mine did on ecocritical literature (ecocriticism) supported by the theory proposed by Gutti, Aji and Magaji (2012). In addition, my research would also disclose the negative impacts of the natural resource exploitation on ecology and socio-economics in the novel. Besides, the sources of the data in our researches are also different. Mustikawati's data were taken from Two East Kalimantan Short Stories entitled *Banjirkap* and *Batun Kokoq*, while those of my research were taken from Andrea Hirata's *Rainbow Troops*.

4. Upe, A., Salman, D., & Agustang, A. (2019) carried out their research on *The Effects of the Exploitation of Natural Resources towards Risk Society Construction in Southeast Sulawesi Province, Indonesia*.

In their research they highlight that exploitation of mining everywhere including gold mining in Bombana Regency, Southeast Sulawesi basically always showed two dilemmatic things. On the one hand, it was expected to have a positive

contribution in increasing social welfare. On the other hand, it also aroused the risk society. This research aimed to express a variety of risks that happened as the effect of gold mining exploitation in Bombana Regency. This research used qualitative research, a variant case study that was meant to describe profoundly and holistically the effect caused by the mining exploitation. These findings showed that the exploitation of gold mining in Bombana Regency has an impact on the aspect of human and environmental life, namely ecological and socio-economic effects. The above-mentioned complexity of effect constructed a condition called risk society, covering the risk of socio-economic and natural material structures. The effects of gold mining exploitation in Bombana Regency are in the forms of environmental contamination, agricultural area destruction, and social conflict. The exploitation of gold mining in Bombana Regency has destroyed the order of ecological structure so realistically, for example, the destruction of natural morphology, water crisis for the farmer, and the threat of mercury contamination towards sea and fishpond waters. Using dangerous chemicals like mercury has brought about health disturbance as well as the symptom of itchy rash. Meanwhile, the effect of mining exploitation from socio-economic aspect is that there is socio-economic imbalance and marginalization of the local community from its natural resources. The conflict of land between the company and society also frequently happens as the consequence of the mining land tenure in the area which is claimed by the citizen as their land or their ancestor's inheritance. The effort of citizen's opposition towards their rights even generates the act of violence by the security apparatus. Thus, a variety of effects caused by the gold mining exploitation in Bombana Regency represents a hazardous condition of society. The expectation of the society's welfare and regional development from the management process of gold mining in Bombana Regency has not shown significant

result yet, but even generates new condition, i.e. the emergence of risk society, covering the risk of socio-economic and natural material structures. The exploitation of natural resources that are expected to increase the society's economic condition in Bombana Regency, but conversely Bombana Regency even includes in the category of a backward region in 2015-2019 from 122 backward regions established by the government. For that reason, it can be stated firmly that if it is not carried out the whole structuring from various stakeholders, so the people's welfare through the exploitation of gold mining that has so far been discoursed by the regional government will become the sole utopia discourse. Therefore, it is expected to the regional government to apply the continual partnership model in managing natural resources potential. The model of a partnership meant it is building collective commitment from the whole stakeholders by giving the priority three pillars as the base of continuity, namely: ecological, social, and economic continuity (triple bottom line). This is intended in order that the mining activity incurs the welfare for the societies in totality and continually through the community development and corporate social responsibility programs. This idea will be achieved if all stakeholders have collective consciousness based on the synergicity of the three pillars mentioned above.

The focus of Upe, Salman, & Agustang's research is somewhat similar to mine. Their research focuses on the effects of the exploitation of natural resources towards risk society construction in Southeast Sulawesi Province, Indonesia, while my research does on the revelation of natural resource exploitation and its negative impacts on ecology and socio-economics in Andrea Hirata's *Rainbow Troops*. The natural resource exploited in Upe, Salman, & Agustang's research is gold, while in my research is tin. The theory I applied in my research is ecocriticism supported by

the theory proposed by Gutti, Aji and Magaji (2012), but Upe, Salman, & Agustang did not state the theory they applied. Besides, the sources of the data in our researches are also different, Upe, Salman, & Agustang's data were taken from the field survey and interview from respondents in in Bombana Regency, Southeast Sulawesi, Indonesia, while my data were were taken from Andrea Hirata's *Rainbow Troops*.