HUMAN BEHAVIOUR AS DRIVER OF ENVIRONMENTAL DEGRADATION AND CLIMATE CHANGE IN JOYA'S *THE LAST FISHING BOAT* AND OJIOFOR'S *THE BOY WHO HARNESSED THE WIND*

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ABSTRACT

The term 'Anthropocene' calls our attention to rethink the role of human-caused climate change which is altering the earth's environmental conditions. This article is concerned with highlighting the impact of human behaviour as driver of environmental degradation and climate change as portrayed in Ojiofor's 'The Boy who Harnessed the Wind' and Joya's 'The Last Fishing Boat.' The research is qualitative in nature. An Ecocritical approach is applied to the analysis of the texts alongside close reading. The focus is on various thematic concerns of Ecocriticism, particularly on how these two film scripts depict human behaviour as driver of environmental degradation and climate change. This research is concerned with how film scripts reveal how Malawians are depicted using various endowments of the environment signifying how humans rely on the environment for essential resources. At the same, the article is also interested on how the two films' portrayal of how humans are at the mercy of nature, suffering the consequences of their actions which serves as a rich and multifaceted metaphor that invites reflection on environmental responsibility, human hubris, and the intricate relationship between humanity and the natural world. The article argues that the two film scripts' portrayal of human action as the leading cause of environmental degradation thereby contributing to climate change, emphasises that while individuals enjoy the endowments of nature, ironically, they are the main culprits of destructors of the environment. In this case, the two film scripts contribute to sustainability narratives by showcasing characters and communities in Malawi engaging in practices that destroy the environment which if addressed may help in mitigation of environmental harm.

Keywords: *Anthropocene, human action, environmental degradation, climate change, ecocriticism, African ecocriticism, Malawian film script.*

INTRODUCTION

This article focuses on highlighting how human behaviour is a leading cause of environmental degradation and climate change as portrayed in Ojiofor's *The Boy who Harnessed the Wind* (2019) and Joya's *The Last Fishing Boat* (2010). A crucial concept describing the impact of human behaviour on the environment is "the Anthropocene". In the article entitled "The Anthropocene" published in *IGBP Newsletter* (2000), based on empirical evidence for a great negative human influence on the biological, chemical and geological processes on Earth, the atmospheric chemist

Paul J. Crutzen and the ecologist Eugene F. Stoermer proposed in 2000 that a new geological epoch should be added to the geological timescale, and be called Anthropocene,

> Considering these and many other major and still growing impacts of human activities on earth and atmosphere, and at all, including global, scales, it seems to us more than appropriate to emphasise the central role of mankind in geology and ecology by proposing to use the term anthropocene for the current geological epoch. (Crutzen and Stoermer, 2000, p. 17)

The major growing impacts and human activities which prompted Crutzen and Stoermer to come up with the proposition that earth's system is in a new epoch as outlined in the article "The Anthropocene" include: the expansion of mankind, both in numbers and per capita exploitation of Earth's resources.

Since the Anthropocene is an interdisciplinary concept, it has found its way in literature and the humanities. For instance, Vermeulen (2020) in the book titled *Literature and the Anthropocene* critically surveys how the Anthropocene is enriching the study of literature and inspiring contemporary poetry and fiction. Engaging with topics such as genre, life, extinction, memory, infrastructure, energy, and the future, Vermeulen (2020) makes a compelling case for literature's unique contribution to contemporary environmental thought.

Literature and the Anthropocene pays attention to literature's imaginative and narrative resources, and also to its appeal to the emotions and its relation to the material world. As the Anthropocene enjoins us to read the signals the planet is sending and to ponder the traces we leave on the earth, it is also, Vermeulen (2020) argues, a literary problem. *Literature and the Anthropocene* maps key debates and introduces the often difficult vocabulary for capturing the entanglement of human and nonhuman lives in an insightful way.

In the analysis of film, studies of the Anthropocene are also being carried. For instance, Lopez and Nicosia (2022) in the book titled *Cinema, Disasters and the Anthropocene* underscore the vital role of documentaries and cinema in helping us to think differently about the role of humans in our physical world. These editors and the respected authors that have contributed to the book have produced a fantastic contribution that will be instrumental in promoting ways to promote positive change. One of the greatest strengths of this specific volume is that it covers a wide variety of topics from many different contexts and perspectives. For instance, *Cinema, Disasters and the Anthropocene* examines how documentaries and films interpret and sound the alarm on how people jeopardise the environment through the overuse and misuse of natural resources, deforestation, desertification, the emission of pollutants, careless development and urbanisation, the construction of dams, reliance on technology, among others.

Cinema, Disasters and the Anthropocene is also broad in the sense that it incorporates perspectives from developed and developing nations, and includes case studies related to China, Jamaica, India, Italy, Nigeria, the United States, and former USSR. The discussions of past or current decisions and actions illustrate significant impact on communities, indigenous populations, displaced persons, and the environment in the form of climate change, floods, nuclear plant accidents, diseases, and other types of disasters and catastrophes. *Cinema, Disasters and the Anthropocene* calls for more reflection on our understanding of the impact humans have on the environment and the potential errors associated with our current application of science and technology.

Fay (2018) in the book titled *Inhospitable World: Cinema in the Time of the Anthropocene* argues that film, like the Anthropocene, is a product of the industrial revolution, but arises out of a desire to preserve life and master time and space. It also calls for the creation of artificial worlds, unnatural weather, and deadly environments for entertainment, scientific study, and devising military strategy. According to Fay (2018) filmmaking stages, quite literally, the process by which worlds and weather come into being and meaning, and it mimics the forces that are driving this new planetary inhospitality. Cinema, in other words, provides an image of "nature" in the age of its mechanical reproducibility. Fay argues that cinema exemplifies the philosophical, political, and perhaps even logistical processes by which we can adapt to these forces and also imagine a world without humans in it.

Inhospitable World: Cinema in the Time of the Anthropocene poses the following two critical questions: What are the implications of ecological inhospitality? What role might cinema and media theory play in challenging our presumed right to occupy and populate the world? According to Fay (2018) as an art form, film enjoys a unique relationship to the material, elemental world it captures and produces. Through it, we may appreciate the ambitions to design an unhomely planet that may no longer accommodate us.

According to "Climate change and human behaviour" (2022):

> In the late 19th century, the scientist (and suffragette) Eunice Newton Foote published an article suggesting that a build-up of carbon dioxide in the Earth's atmosphere could cause increased surface temperatures. In the mid-20th century, the British engineer Guy Callendar was the first to concretise the link between carbon dioxide levels and global warming. Now, a century and a half after Foote's work, there is overwhelming scientific evidence that human behaviour is the main driver of climatic changes and global warming (p. 1441).

"Climate change and human behaviour" (2022) buttresses the significance of human behaviour as one of the primary drivers of environmental degradation and climate change. It is the interest of this chapter to highlight the impact of human behaviour on the environment and climate change as a cause of environmental degradation as portrayed in Ojiofor's *The Boy who Harnessed the Wind* and Joya's *The Last Fishing Boat*.

Theoretical Framework:

This study is anchored by Ecocriticism theory.

Ecocritism

Ecocriticism forms the theoretical basis of the study. 'Ecocriticism' is a term derived from Greek *oikos* and *kritis*. *Oikos* means "household," a nexus of humans, nature and the spirit. *Kritis* means judge, "the arbiter of taste who wants the house kept in good order in all regard (Howarth, 1988, p. 163). Ecocriticism is an interdisciplinary field of study that examines the relationship between literature, culture, and the environment. It is concerned with the ways in which literary texts represent and engage with the natural world, and how they contribute to environmental awareness and action. According to Abrams (2009):

> Ecocriticism is a term coined in the late 1970s by combining "criticism" with a shortened form of "ecology"—the science that investigates the interrelations

> of all forms of plant and animal life with each other and with their physical habitats. "Ecocriticism" designates the critical writings which explore the relations between literature and the biological and physical environment, conducted with an acute awareness of the devastation being wrought on that environment by human activities (p. 88).

According to Irr (2016), historically, the roots of Ecocriticism can be traced back to the Romantic Movement in literature, which emphasised the importance of nature and the natural world (p. 3). This movement, which began in the late 18th century, included writers such as William Wordsworth and John Keats who celebrated nature in their poetry. Glotfelty (1996) in "Introduction: Literary Studies in an Age of Environmental Crisis" which appears in *The Ecocriticism Reader: Landmarks in Literary Ecology,* comes up with a definition which broadly captures what Ecocriticism is all about. Glotfelty simply defines Ecocriticism as "the study of the relationship between literature and the physical environment" (p. xviii).

One of the key concerns of Ecocriticism is the representation of nature in literature. As Buell (1995) notes in his seminal work *The Environmental Imagination*, "Ecocriticism, like environmentalism generally, is marked by a strong impulse to connect what has been artificially disconnected" (p. 5). This impulse arises from the recognition that human beings are not separate from the natural world, but are deeply interconnected with it. By exploring the ways in which literature reflects and shapes our understanding of the environment, Ecocritics seek to create a more nuanced and sustainable relationship with nature.

Another important theme in Ecocriticism is the critique of anthropocentrism. Anthropocentrism is the belief that human beings are the most important beings in the universe, and that the natural world exists solely to serve human needs. As Le Guin (1989) argues in her essay "The Carrier Bag Theory of Fiction," this perspective has been deeply embedded in Western culture for thousands of years, and has led to the destruction of countless ecosystems and species (p. 23). Ecocritics challenge anthropocentrism by examining the ways in which literature can foster a more holistic and ecologically responsible worldview.

Finally, Ecocriticism is concerned with the role of literature in environmental activism. As Glotfelty (1996) writes in the introduction to *The Ecocriticism Reader*, "Ecocriticism is not just the study of nature in literature; rather, it is any study of the relationship between humans and the natural world that necessarily presupposes a critical perspective" (p. xviii). In other words, Ecocritics do not simply seek to analyse literary texts, but to use them as tools for social and environmental change. Such texts could be of a serious or even humorous nature; they could deal with social or purely cultural issues (See Chilala, 2017; 2003).

Other scholars refer to Ecocriticism by alternative names such as environmental criticism**,** nature writing and green studies. Whichever term one settles for, the key issue common in these terms is the interaction between human beings and the environment.

As Mthatiwa (2011) puts it, "whatever the nature or media of the text might be (film, novel, image) Ecocriticism is simply interested in, among other things, analysing the manner in which the human relation to nature is represented" (p. 16). Since Ecocriticism deals with any media, this study analyses film scripts, especially works which feature Malawi in terms of theme, casting as well as setting. This study, therefore, focuses only on two selected films set in Malawi; Chiwetel Ojiofor's *The Boy who Harnessed the Wind* (2019) and Shemu Joya's *The Last Fishing Boat* (2010). It has to be made clear that this study focuses on the 'text' which is the film script. I decided

to focus on the film script as this study is literary in nature which is centred on literary texts as opposed to films which usually fall under film studies. However, by studying the film script, this study differs from those studies under film studies as they focus on the motion pictures, visuals, sound, among other things. This article is concerned with how film script reveals human behaviour as driver of environmental degradation and climate change.

Particularly, this study uses Ecocriticism in the analysis of the film scripts to analyse how ecological themes, environmental representation, and human-nature relationships are depicted. On representation of nature, this study uses Ecocriticism to interrogate the depiction of landscapes on how the natural environments are portrayed. The role that settings (forests, lakes, cities, among others) play in the film script is analysed. On human-nature relationship, Ecocriticism is applied to evaluate how characters in the film script relate to their environment. Of significance, is interrogating the role of humans as exploiters of nature. Therefore, Ecocriticism theory is relevant to this project.

Human behaviour as driver of environmental degradation and climate change in Ojiofor's *The Boy who Harnessed the Wind*

In Ojiofor's *The Boy who Harnessed the Wind*, several environmental features are influenced by human behaviour. For example, land, trees, rains, and wind. Land as a key part of the environment is being used for agricultural activities, a junkyard and is also used as a dwelling place. Trees are being used for their economic and geographical value. Lastly, wind is being used as energy which is producing electricity used for powering pumps that generate water for irrigation.

Use of land for agricultural practices

In *The Boy who Harnessed the Wind* land is used for its economic value as the major preoccupation of the people is agriculture. Agriculture relies on land as it is where all farming activities take place. In using land for Agriculture, the people engage in food production, which is fundamental and crucial in human civilisation, culture, and survival. Agriculture is the primary means of producing food as farmers grow crops and raise livestock to meet their food needs. Agriculture influences the nutritional quality of food as diverse and balanced agricultural practices can provide a wide range of nutrients necessary for human health. In addition, food is deeply intertwined with culture. Different cultures have unique cuisines, traditions, and rituals related to food. Agriculture shapes these cultural expressions by providing the raw ingredients for meals. The following passage depicts a situation of Trywell engaged in an agricultural activity:

> Trywell, Mkubwi and Shabaniare rushing in the rain. They each carry a fertiliser bag and apply it to the ground before using a hoe to mix the earth together (Ojiofor, 2019, p. 12).

In applying fertiliser to the field, Trywell engages in a crucial agricultural activity. Fertiliser is a substance or mixture of substances that is applied to soil or plants to provide essential nutrients that are necessary for plant growth and development. Fertilisers are used in agriculture, gardening, and horticulture to improve soil fertility and enhance plant growth.

While fertilisers play a crucial role in enhancing crop productivity and addressing nutrient deficiencies in soil, their excessive or improper use can lead to various negative effects on the land and the environment. For instance, use of fertiliser on farm land may lead to soil degradation.

Overuse of fertilisers can contribute to soil degradation, leading to a decline in soil fertility over time. According to Savci (2012),

> Soil structure in agricultural productivity are very important and it is regarded as an indicator. Unconsciously, the fertilising, soil, just as in the deterioration of the structure is caused by industrial emissions. Especially NaNo3, NH4NO3, KCI, K2SO4, NH4Cl demolish the structure, such as fertilisers, soil, soil structure, deterioration is difficult to obtain high-quality and efficient product. Particularly high level of sodium and potassium containing fertilisers, make a negative impact on soil, pH, soil structure deterioration and the increasing feature of acid irrigation or other agricultural operations or from the benefits derived from it is not possible or very scarce. Continuous use of acid-forming nitrogen fertilisers causes a decrease in soil pH, liming, if not carried to prevent the declining efficiency of field crops. Basic use of fertilisers in the soil leads to an increase in pH. Increases in soil and plants, seedlings pH circuit of a sudden drop in the yield and quality drops, but causes harmfulness. In addition, expanding the size of soil pollution by accumulation in the soil (Pp. 78-79).

In this case, excessive application of certain nutrients found in fertiliser can alter the soil structure and disrupt the balance of microorganisms thereby affecting the overall health of the soil.

Use of fertiliser on farm land may also lead to water pollution. Runoff materials from farming fields treated with fertilisers can carry excess nutrients, such as nitrogen and phosphorus, into nearby water bodies. Jote (2023) observes,

> Most nitrogenous fertilisers aren't absorbed products, and they interfere with both underground and surface water. Groundwater nitrate problem should be considered in a global context. 22% of cultivated areas in Europe for the internationally recommended drinking water nitrate concentration in groundwater concentration (≥ 11.3 mg/L) above. In European Countries, NO3- N concentration value is 23 mg/L and in the USA, it is 45 mg/L. NO3- and NH4+ concentration, Nottingham, United Kingdom exceeds the stated limits. The city of Nottingham is underlain by the unconfined Sherwood aquifer, which is vulnerable to contamination from various sources arising from urban and industrial activities of the region. According to that study, samples of aquifer recharge, both artificial and natural, and of shallow and deep groundwater were collected to determine the sources and level of contamination from nitrogen species. Deep groundwater contains low concentrations of ammonium (less than 0.3 N mg /L) throughout, however much higher nitrate concentrations (< 1.0 mg /L N to 28.0 mg/L N). Most remaining groundwater samples have a nitrogen fertiliser source, possibly derived from an influent river draining a rural catchment [32, 33]. Similarly, high concentrations of NO3- and NH4+ have also been reported in the USA. One of the most important parameters of the pollution of water is nitrate which is the basic component of fertiliser. Both the nitrate concentration of

> groundwater and surface water is increased by agricultural activities. Nitrate is the most common form of dissolved nitrogen present in groundwater or other water bodies (p. 5).

This water pollution has the potential of causing serious medical and environmental issues negatively impacting human, animal and plant life.

Use of fertiliser on farm land may also lead to loss of biodiversity. The disruption of soil and water ecosystems due to excessive fertiliser use can have adverse effects on biodiversity. As Sud (2020) argues,

> Nutrient pollution from improper and excessive fertiliser use also has several negative consequences for ecosystems. These include both direct toxicity to organisms (high concentrations of N can be toxic to organisms that absorb elements directly from the environment such as algae, lichens or bryophytes) and indirect impacts through factors such as nutrient enrichment, oxygen depletion in aquatic ecosystems, soil or water acidification or intensifying the impact of other stressors such as pathogens, invasive species and climate change (Erisman, *et al.* 2013). The main consequence of phosphorus (P) pollution is eutrophication of fresh waters. N pollution leads to a variety of impacts including coastal and marine eutrophication, groundwater pollution, changes in species composition, increased atmospheric concentrations of N2O (both an important greenhouse gas and stratospheric ozone depleting substance), increase in NOx resulting in atmospheric smog and ozone, and acidification of soil and freshwater (pp. 10-11).

Changes in nutrient levels can favour certain plant species over others, leading to shifts in vegetation patterns and potentially impacting the animals that depend on specific habitats.

Use of fertiliser on farm land may also lead to greenhouse gas emissions. Certain fertilisers, particularly nitrogen-based ones, can contribute to the release of greenhouse gases such as nitrous oxide, which is a potent contributor to global warming. As Hasler (2017) puts it,

> Fertilisers also show negative externalities, especially the emission of greenhouse gases during the production process ….(Jenssen and Kongshaug, 2003; Wood and Cowie, 2004). Overall 12% of the greenhouse gas emissions worldwide are related to agriculture (Smith *et al.*, 2007) with 38% stemming from the use of organic and mineral fertilisers alone (Wegner and Theuvsen, 2010). Additionally, nutrient leaching to ground and surface waters are resulting in eutrophication of aquatic ecosystems with increased growth of algae and finally decreasing the levels of oxygen (FAO, 2012). Also the decline of nonrenewable resources (e.g. phosphorus or potassium; (EFMA, 2000f) is connected to the use of mineral fertilisers (Pp. 87-88).

In summary, in *The Boy who Harnessed the Wind*, land is being used for various purposes, including agriculture. Use of land for agriculture has economic values as well as contributing to food production. One of the crucial agricultural activity is application of fertiliser. However, despite fertiliser playing a crucial role in enhancing crop productivity and addressing nutrient deficiencies in soil, their excessive or improper use can lead to various negative effects on the land

and the environment. Some of the possible negative effects of the use of fertiliser on farm land have been outlined.

Use of land as a dwelling place

In *The Boy who Harnessed the Wind* land is also being used for dwelling purposes. There is land for dwelling used for space to sleep and eat, space for a school, space for a shop, and other communal activities.

An example of the use of land for dwelling as space to sleep in *The Boy who Harnessed the Wind* is portrayed when the narrator William's room is described William's room as:

> A messy room, full of what would appear to be junk - broken radios, various bits of electronic equipment etc... Evidence of a restless, perhaps chaotic mind. William sits on a bed-mat in the corner. In front of him lies a large radio-cassette player with its front casing removed and a smaller radio. He fiddles with rudimentary wiring - attaching them. He tunes the radio to static and starts tuning the radio- cassette player to the same dial. The smaller radio cuts out. Static now coming from the cassette player alone. He frowns (Ojiofor, 2019, p. 2).

Apart from portrayal of William's room, another case of land used for dwelling in *The Boy who Harnessed the Wind* is the description of Jeremiah's compound as the narrator states:

> Trywell approaches Jeremiah's house. The surrounding fields are noticeably less well kept than his own. Two young children play outside - their clothes are ill-fitting and their faces dirty. One of them is Jeremiah's daughter - Alile.
> TRYWELL: (low voice) Alile? Where's your father?
> Alile points to a shack at the back of the compound. It was previously used to store grain, but not anymore. Trywell approaches slowly. He passes Jeremiah's wife Mika, holding the baby. He waves. She smiles back, weakly. Trywell knocks on the door of the shack, then immediately runs around the small building (Ojiofor, 2019, p. 9).

In contrast to Jeremiah's compound which is portrayed negatively due to its unkemptness and untidiness, Trywell's compound is represented positively as a neatly kept homestead. The narrator describes it as:

> a small, neatly kept homestead. It is several months later. The home is surrounded by newly ploughed fields (Ojiofor, 2019, p. 2).

In addition, in Trywell's compound, there is a main house and a "storehouse - a small, squat, standalone construction at the back of the property" (Ojiofor, 2019, p. 5). The quality and condition of Trywell's house and the material possessions found in it reveal that he is a man of low economic status:

> Light from the opening door and creases in the wooden panelling reveal various farming tools and a few sacks of grain lying on the ground. Propped up in the corner is a bicycle. Trywell wraps the radio's strap around the bike's handle bar. The weather report plays as Trywell carries farming equipment

> outside….. William climbs onto the corrugated iron roofing, he checks the bolts and plastic sheeting for holes or damage (Ojiofor, 2019, p. 5).

It can be noted that the farming tools in the room are evidence that Trywell is a small scale farmer who solely relies on rain-fed agriculture for survival. There is no evidence of heavily mechanised farming tools. Presence of both corrugated iron and plastic sheeting on the roofing system of the house signifies that the roof is of poor quality. Hence, William has to check for holes or damage as rains are about to begin falling.

Another example of land used for dwelling purposes in Ojiofor's *The Boy who Harnessed the Wind* is a farm store. In the following passage, the narrator paints a situation in a store at a rural setting, Wimbe trading centre:

> Trywell and Joe Godsten (40) - the store owner - heave out two heavy bags of fertiliser. They drop them down roughly. Out of breath Joe sits on them and lights a cigarette (Ojiofor, 2019, p. 8).

The store portrayed above is called *Farmers World* shop. *Farmers World* offers Malawian farmers (big and small) a large range of products through a network of over one hundred shops across Malawi. The focus of these shops is trading in fertiliser and other agricultural inputs. In addition, they also offer a complete range of goods including hardware supplies and bicycles. Apart from providing space for the farm store as evidenced in the paragraph above, land in *The Boy who Harnessed the Wind* is also dwelling space used for a school. In the following passage, the narrator paints a situation at Kachokolo Secondary School,

> Several squat buildings surround the school yard. Seventy or so boys and girls lined up in a military-like formation. William and Gilbert amongst them. The headmaster Mister Ofesi (52) speaks from a small podium. This and all conversations in school that involves faculty are in English. Half a dozen teachers stand near the podium (Ojiofor, 2019, p. 10).

School buildings are facilities specifically designed and constructed to house educational institutions, where students gather to receive instruction and engage in various academic, extracurricular, and social activities. Land used for school buildings is crucial as the blocks are a critical component of the educational system and play a significant role in students' learning experiences. The ideas which William uses to construct a windmill were drawn from a book stored in the school's library.

Although land in *The Boy who Harnessed the Wind* is used as a space to sleep and eat, space for a supermarket, space for a school, and other communal activities, the construction of buildings can contribute to land degradation. According to Dai *et al.* (2022),

> With the rapid development of the economy, however, soil disturbance by construction activities, including occupation and erosion of large areas, has posed a threat to ecological and food security. Soil erosion rates in areas disturbed by construction activity are 2 to 40,000 times greater than pre-construction conditions, and soil erosion is an important component of nonpoint source pollution that degrades surface water quality (1).

Construction of buildings may lead to soil erosion as construction activities typically involve excavation and grading, which can expose soil to wind and water erosion. The removal of vegetation and the disruption of the natural topography can result in increased soil erosion. Writing on the situation in China, Zhang *et al.* (2015) state that,

> Rapid economic growth in China over the last 30 years has resulted in massive construction activities. These constructions have altered landforms, vegetation, and waterways, thus leading to surface runoff, soil erosion, sedimentation, and land degradation. From 1991 to 2003, the annual rate of land degradation caused by nonagricultural construction occupation in China exceeded 3800 km2, total area of land degradation of approximately 50 thousand km2, representing approximately 25% of the total amount of land resource degradation. The area impacted by soil erosion from construction activity increased by 61.6 thousand km2, the amount of waste slag was 100.3 billion tons, and the amount of increased soil erosion was 10.1 billion tons between 2006 and 2010 in China (p. 229).

Soil compaction may be affected as during the construction process heavy machinery and equipment are often used which can compact the soil. Tang *et al.* (2023) observe that, "construction activities use impermeable materials to cover the soil; these adversely affect the physical, chemical and biological properties of the soil. The use of heavy machinery or the storage of construction materials over-compact the soil and reduce the drainage capacity of the soil itself" (p. 2). The over-compaction may also affect porosity as "during the earthwork phase in construction, soil removal also changes the soil porosity" (Tang *et al.*, 2023, p. 2). This can lead to reduced soil fertility and decreased water infiltration.

In summary, in *The Boy who Harnessed the Wind* land is used for dwelling purposes as space to sleep and eat, space for a shop, space for a school, and other communal activities. However, the construction of buildings can contribute to land degradation through various means.

Use of land as a junkyard

In *The Boy who Harnessed the Wind* land is also used as a junkyard. There is a depiction of a lot of raw material used in industries and some for domestic use dumped on land which is an over exploitation of land as a natural resource. The narrator paints a situation of land being used as a junkyard:

> Gilbert is lying down on a dilapidated car seat, he's bench pressing a tractor fan - the junkyard evidently doubles as his gym!
> GILBERT (CONT'D): Anything new?
> William is turning over a disused fuel pump.
> WILLIAM: It's a pump.
> He examines it.
> GILBERT: Can you fix it?
> Gilbert is beginning to struggle with the weight of the fan. William moves off to examine what else is around.
> WILLIAM: Maybe...

> He picks up some copper wiring and wipes mud off a car battery - half buried in the dirt. It looks dead. Useless.
> Gilbert is now locked in a brace position - unable to lower the fan without it coming down heavily on him.
> GILBERT: William help! HELP!!!
> William races over (Ojiofor, 2019, p. 9).

Even though William benefits from the junkyard by finding materials which he uses in his windmill project, the danger the junkyard poses as a factor to the environmental degradation and climate change cannot be overlooked. It is becoming a common phenomenon to use land as a junkyard as Guha (2000) observes: "Nature has become a source of cheap raw material as well as a sink for dumping the unwanted residues of economic growth" (p. 4). This tendency has implications as it contributes to environmental degradation and climate change.

One implication of junkyards is that it can contribute to environmental degradation and climate change as they cause land pollution. Improper disposal and management of end-of-life vehicles, appliances, and other scrap materials in junkyards can lead to land pollution. Writing on the wastes found in junkyards, Hossain *et al.* (2018) state,

> Conversely, if these wastes cannot be controlled in proper manner, then they can bring detrimental effects on surrounding environment including soil, surface and ground water. The soil becomes contaminated by the toxicity of the constituents of wastes, as a result the natural composition of soil is disturbed, which may spoil the top soil and pollutes the sub soil. Leachate from decomposed solid waste conveys heavy metals such as Fe, Cu, Cd, Ni, Pb, Zn etc. and toxic chemicals (Haque *et al.*, 2013). If the water source is mixed with the leachate it becomes polluted and will be threaten to water and aquatic life. Usually the adjacent areas of the dumping site are used as cropping field by the local people and in this way hazardous substances may be accumulated by the plant from the decomposed waste and leachate from the dumping site. After dumping the waste under soil, the hazardous volatile organic compound may cause detrimental effects on the health of the people living around the disposal site of the solid wastes (p. 235).

Hazardous substances, and non-biodegradable materials found in junkyards may contaminate the soil. This can lead to climate change as the release of hazardous materials and chemicals into the soil can have long-term effects on ecosystems and contribute to the degradation of soil quality.

Another way junkyards, also known as salvage yards or scrap yards, can contribute to environmental degradation and climate change as they lead to water pollution. If not managed properly, junkyards can become sources of water pollution. According to Islam *et al.* (2012),

> The waste dump sites virtually become a breeding ground for all kinds of diseases (Sahu, 2007). Solid waste leachate is the greatest threat to groundwater which possesses various chemical and biological contaminants (Bidhendi *et al.*, 2010). Due to lack of properly equipped plants and sanitary dumping sites operated within the required standards, the industrial wastes are released in an ad hoc manner to the environment (Satter and Islam, 2005). Presently 10% of waste water generated is being treated; the rest is discharged

> as it into the water bodies (Satter and Islam, 2005). When the waste stream contains a complex mixture of toxic substances predominantly natural and synthetic organic substances, metals, and trace elements, as well as pathogens from domestic and industrial sectors enter into streams, rivers and other water bodies, they get dissolved or suspended or deposited on the bed resulted in the pollution of water quality (Islam and Tanaka, 2004). Heavy metals such as Cu, Fe, Pb, Mn, Zn), Cd, Co, etc. which are present in water as trace amount, but have significant effect on water environment and thus on human existence (Anonymous, 2004). Contamination of these heavy metals deteriorates the water quality (p. 213).

Hazardous substances from scrap materials may leach into the ground, contaminating groundwater and nearby water bodies. This can lead to climate change as water pollution can harm aquatic ecosystems and contribute to the release of pollutants into the atmosphere, potentially impacting air quality.

In summary, in *The Boy who Harnessed the Wind* land is being used as junkyards, also known as salvage yards or scrap yards. Even though William benefits from the junkyard by finding materials which he uses in his windmill project, the dangers of the junkyard as a factor to environment degradation and climate change have been highlighted.

Use rain for agriculture

In *The Boy who Harnessed the Wind* rain is another environmental feature. There is heavy reliance on rains for agriculture. Since rain is essential for the growth of crops and plants, it is positively portrayed as it can symbolise growth, fertility, and abundance. No wonder when students are in the classroom when it is raining, their teacher perceives rain as a good sign:

> A number of students, including William and Gilbert, rush into the classroom - soaking wet. They hurry to the window to continue watching the downpour.
> Mike Kachigunda enters.
> MIKE: Everyone find a seat.
> They do.
> MIKE: Your first day of schooling and the rains have come. A good sign (Ojiofor, 2019, p. 12).

Due to the role rain plays in agriculture as it nourishes crops and ensures their growth, adequate rainfall is essential for a successful harvest. Trywell hopes for a good harvest and a good financial revenue:

> WILLIAM: (cautiously) Papa. Should I take my fees with me to school tomorrow morning?
> TRYWELL: When the rains stop and we're sure of the harvest - we can pay the fees.
> WILLIAM: But sir... (Ojiofor, 2019, p. 20).

Trywell promises William that he will be able to pay school fees after harvest. Trywell is used to how after adequate rainfall farmers get a good harvest and sell the surplus, making good amounts of money in the process.

Despite its significant importance in various aspects of life, the environment, and the economy, excessive rainfall in *The Boy who Harnessed the Wind* is portrayed as leading to flooding and at the end causing drought:

> Rain comes lashing down onto the Kamkwamba fields. Trywell desperately tries to dam up a section of land but the rain and mud sweep over him. It's useless.
> Later. The rain has stopped. Trywell is deep in the mud. He looks shocked by how bad things are.
> AGNES: How bad is it?
> Trywell shakes his head.
> AGNES (CONT'D): What about the phosphorous?
> TRYWELL: It's gone (Ojiofor, 2019, p. 20).

In the passage above, excessive rains have inundated farm land, making the land unworkable and removed phosphorus fertiliser from the soil. This act leads to poor harvest which also leads to shortage of food both for humans and animals. It is not surprising that the people in *The Boy who Harnessed the Wind* are hit with a famine. In this case, rain exists as a destructive force, one which bears the power to destroy the very same lives it is supposed to sustain.

The people in *The Boy who Harnessed the Wind* suffer due to their heavy reliance on rain-fed agriculture. According to Hara (2011), "rain-fed agriculture is the most important sector in the local economy, with about 66% of the population being employed in the sector as family farm owners and unpaid family farm workers. Under Malawi's land tenure system, smallholder farmers normally hold land under customary tenure, while commercial estates hold land under leasehold tenure" (p. 257).

Relying on rain-fed agriculture comes with several challenges and risks, which can have significant consequences for farmers, communities, and food security. For instance, there is climate variability and unpredictability associated with dependence on rainfall for agricultural activities. Writing on El Nino, a climate pattern that describes the unusual warming of surface waters in the eastern Pacific Ocean, Owusu *et al.* (2019) state, "in Ghana and other developing countries, vulnerability to El Nino event is exacerbated by the predominance of rain-fed agricultural systems and the absence of reliable climatic information" (p. 610). Inconsistent or irregular rainfall can lead to droughts or floods, both of which can have detrimental effects on crops.

Crop failure and reduced yields is a challenge associated with heavy dependence on rainfall for agricultural activities. Insufficient or untimely rainfall can result in crop failure or reduced yields. Pangapanga-Phiri *et al.* (2023) observe,

> The Malawi 2023-2024 agricultural season is under threat as evidenced by the downscaled in-country weather forecasts. The Department of Climate Change and Meteorological Services (DCCMS) projects the presence of moderate to strong El Nino conditions, which will cause an early or delayed onset of rainfall in some parts, whereby the first rainfall will come some two weeks earlier or after the end of October 2023. The El Nino will reduce or increase the rain duration, where in some areas, it will result in a prolonged dry spell, lasting at least 10 days in January and strong chances of dry spell of at most 10-15 days in February. During the prolonged dry spell, excessive heat and

> water stress may result in 2023- 2024 seasonal crop failures and food shortages. At the start of the rainy season for 2023/2024, some areas have already witnessed excessive heat like most districts in the southern and northern Malawi (see Figure 1). Some districts like Lilongwe already received rains, midway of October 2024, more than the expected *chizimyalupsa*, which is a likely effect of El Nino. According to Department of Disaster Management Affairs (DoDMA), with the residual effects of Tropical Cyclone Freddy, Idai, Ana, and the previous drought of 2015, the number of households becoming food insecure will increase while several households will be trapped in poverty cycle (p. 3).

Insufficient or untimely rainfall leading to crop failure or reduced yields does not only affect the livelihoods of farmers but also contributes to nation's food shortages and economic challenges.

Another challenge associated with dependence on rainfall for agricultural activities is water scarcity. In regions where rain-fed agriculture is prevalent, water scarcity is a common concern. As Bekele *et al.*
(2019) observe,

> Water is becoming an economically scare resource even in areas of the world that have relatively plentiful water. Agriculture production under an erratic climatic conditions and limited water resources cannot be profitable investment unless on-farm water management practices were designed to meet the present and future growing demands of water for sustainable food production [5]. Shortage of soil moisture in the dry rain-fed areas often occurs during the most sensitive growth stages (flowering and grain filling) of the crops. As a result, rain-fed crop growth is poor and yield is consequently low (p. 1).

Dependence on rainfall alone may not provide sufficient water for crops, leading to crop failure and decreased yields.

Economic instability is another challenge associated with depending on rainfall for agricultural activities. The dependency on rain-fed agriculture can contribute to economic instability for farmers and communities. Crop failures can lead to financial losses, debt, and increased poverty. As Jaramillo *et al.*
(2020) put it,

> In Central America, the socioeconomic risk related to drought and more specifically to rainfed agriculture has historically caused problems of poverty, food insecurity, and unemployment, as well as rural migration. Rainfed crop production depends solely on rainfall and farmers cultivate their crops at the beginning of the rainy season with the aim of ensuring establishment by using only the water that the soil is able to retain. However, rainfed agriculture has two major limitations that make it a highly risky system for both food security and employment, as well as for competitive food production. The first is that, when sowing during the 6 rainy months, the lower supply of solar energy prevailing in these months limits photosynthesis and therefore the productive

> potential of crops to almost half of the genetic potential of varieties and hybrids. The second limitation is related to the seasonality of production and supply to the market. Because farmers obtain their crops at the same time, this causes an oversupply historically followed by a fall in prices, which drastically affects their income (p. 2).

In regions where agriculture is a primary livelihood, the impacts of rain-fed agriculture failures extend beyond economic consequences. Social unrest, migration, and conflicts can arise due to food shortages and resource competition.

In summary, in *The Boy who Harnessed the Wind*, rain is presented ambivalently. Rain is depicted as a symbol of growth, fertility, and abundance while on the other hand, excessive rain is portrayed as a symbol of destruction and chaos. The people in *The Boy who Harnessed the Wind* suffer due to their heavy reliance on rain-fed agriculture. Other challenges and risks which come due to relying on rain-fed agriculture have been outlined.

Use of trees

In *The Boy who Harnessed the Wind* trees are another environmental feature which are being used by man. Trees are essential components of the natural world and play a crucial role in various aspects of our lives and the environment. For instance, trees are portrayed as a source of money when sold for wood and timber. Trees can also be a source of medicine, furniture, paper, and various other products for centuries that is why despite resistance from other stakeholders, Jeremiah sold the trees to the representatives of the tobacco estate:

> Chief Wimbe sits in one of the chairs. He is in full traditional dress. On the settee sits Charles Daud (50), he's the Chief's right hand man, advisor and cousin. Squeezed next to him is Justin Mtiwa (30), a mediator from the tobacco estate. He holds a ledger in his sweaty palms. An accountant from the estate Reginald Nwachi (25) takes up another seat.
> JEREMIAH (CONT'D): Company man. I'll sign.
> JUSTIN: At two-hundred?
> JEREMIAH: I'll sign.
> CHIEF WIMBE: Jeremiah!
> Jeremiah begins to move through the crowd. Trywell intercepts him.
> TRYWELL: (in Chewa) Jeremiah, listen to the Chief (Ojiofor, 2019, p. 16).

Trywell tries to convey to the reader environmental consciousness by joining the chief in advising against selling trees to the estate. Unlike Trywell, Jeremiah is incapable of appreciating the significance of trees and still maintains his stand and others join:

> JEREMIAH: (in English) I can decide my own, the Chief can decide his own. This is madness Trywell - we need the money.
> The tobacco men are clearly relieved.
> REGINALD: Who else will sign with Jeremiah? We can only guarantee this excellent price for today.
> Jeremiah has disturbed the confidence in the room. He signs the ledger.
> REGINALD (CONT'D): Think of your families... will pride... feed them?

> Silence. Slowly a hand raises in the crowd.
> FARMER 1: I'll sign.
> More voices of assent. Trywell turns and sees William. William leaves (Ojiofor, 2019, p. 16).

It is not surprising that one late afternoon when William is on top of a hill he notices workers from the tobacco estate that bought the trees wantonly cutting them down:

> Looking down from the top of the ridge he can see in the distance several trucks and workers from the tobacco estate. They are dressed in overalls and are hacking away at the trees. A large tree falls (Ojiofor, 2019, p. 17).

The representatives from the tobacco estate do not value trees as the likes of Chief Wimbe and Trywell, and this is apparent from their action of cutting down the trees.

The wanton cutting down of trees, without proper consideration for sustainable practices or environmental consequences, as depicted by the representatives from the tobacco estate, has significant detrimental effects on the environment, contributing to both environmental degradation and climate change. For instance, the primary consequence of cutting down trees without proper management is deforestation. Deforestation leads to loss of biodiversity. Forests are home to a diverse range of plant and animal species. Wanton tree cutting results in the loss of habitat for countless species, leading to a decline in biodiversity. As Bodo *et al.* (2021) put it,

> Deforestation leads to habitat loss while preservation and conservation of the natural forest increase biological diversity. Through the biological diversity of the natural forest the basis for life on earth and it is a sure means of securing the abundance of the earth for people of the future. In essence, by conserving the forest, we do not just guarantee the survival of several other habitats but also the survival of the human environment. In the long run, we can have food security, improved agriculture, recreational pursuits and other derive benefits through different the varieties of life that the forest houses by conserving the different characteristic elements and the biological diversity of the forest [23]. Biological diversity is the assurance we need for healthy living presently and in the future as the entire scope of the uncommonly rich and assorted biological legacy of the tropical areas is presently in danger. The reasons why the issue of deforestation and habitat loss should be seen as global concern and given urgent attention are so many; some of which are the exploding human population, the continuous scientific advancement of new uses for biological diversity and currently the extinction or the gradual disappearance of some rare plants and animals (Pp. 1-2).

Loss of biodiversity contributes to environmental degradation and climate change. Biodiversity loss can disrupt ecosystem functions, impacting the carbon cycle and the ability of ecosystems to sequester carbon. This challenge is sometimes exacerbated by cultural practices, especially because culture is very central to the lifestyle and image of any people (Chilala, 2020).

Increased greenhouse gas emissions is another consequence of cutting down trees without proper management. Wanton tree cutting contributes directly to increased levels of greenhouse gas emissions. The removal of trees eliminates a natural mechanism for sequestering carbon,

leading to higher concentrations of carbon dioxide in the atmosphere. According to Bengston and Dockry (2014),

> Forests and deforestation play important roles in the carbon cycle and climate change. Some scientists estimate that forests sequester around 40% of human-made carbon emissions annually, but forests also release carbon when deforested. Globally, about 17% of carbon-dioxide emissions result from tropical deforestation and forest degradation—more than transportation-related greenhouse gas emissions (p. 35).

Increased greenhouse gas emissions contribute to environmental degradation and climate change. Elevated levels of greenhouse gases trap heat in the atmosphere, contributing to global warming and climate change.

Cutting down trees without proper management has the potential of causing loss of ecosystem services. Various ecosystem services, including air and water purification, pollination, and climate regulation, are provided by forests. As Duguma *et al.* (2019) argue,

> Forests provide multiple ecosystem services spanning from local livelihoods and socioeconomic development related goods and services such as food, wood, and water to the global ecological and economic services, such as ecosystem functioning, biological diversity, carbon dynamics, and climate. However, deforestation and forest degradation (D&D) are causing a significant reduction in the provisioning of valuable ecosystem goods and services from forests in developing countries [1] in the tropics currently poses the greatest threat to the forest ecosystem and the goods and services they provide (p. 1).

The wanton cutting down of trees reduces the capacity of ecosystems to provide these essential services.

Diminished ecosystem services can exacerbate the impacts of climate change and reduce the resilience of natural systems.

It is not surprising that after severe famine hit the village, one of Jeremiah's daughter dies of hunger related sickness. Jeremiah realised that he was at fault for selling the trees to the officials of the estate who wantonly cut down them. Cutting down of the trees contributed to the famine which led to the death of his child. During the funeral ceremony, as Trywell was comforting him, Jeremiah showed remorse:

> Agnes and Trywell arrive at Jeremiah's house. A scene of mourning. Many villagers sit outside surrounding Jeremiah's dead infant daughter. She has been placed on the ground wrapped in a shroud. Jeremiah sees Trywell and walks to him. They talk above the wailing.
> JEREMIAH: We knew she was going. She was sick and without food...
> He buries his face in Trywell's neck - sobbing.
> JEREMIAH (CONT'D): It's my fault. All of it. You were right.
> Trywell holds him as he cries (Ojiofor, 2019, p. 55).

The selling of trees which were eventually wantonly cut down contributed to the famine.

In summary, in *The Boy who Harnessed the Wind*, despite trees being vital to the well-being of our planet due to their profound impact on the environment, culture, and human society, it is their economic value which is being emphasised. Trees are depicted as being sold and wantonly cut down. Consequences of cutting down trees without proper management have been highlighted.

Human behaviour as driver of environmental degradation and climate change in Joya's *The Last Fishing Boat*

Use of land for sports and recreation

In *The Last Fishing Boat* people are depicted using land as they are engaging in different games and dances as part of sports and recreation. Land remains central and key to providing a platform for carrying out various sports and recreation activities. Recreational land is land that is used for pleasure or recreational purposes instead of for functional or business activities. Recreational activities are those that are pursued for pleasure or hobby and include play, sports, camping, touring, boating, hiking, hunting, and many others. Many recreational activities require facilities to be built or undeveloped land to be designated as recreational land and the owner of the land to grant the public access for recreational purposes. Land may be developed or undeveloped depending on the purpose of the land and the type of recreational activities the land will support.

In *The Last Fishing Boat* the first example of the depiction of the use of land as a space for sports and recreation is provided when a white tourist, Richard Dale is running on the beach. As the narrator provides the following description about Richard using land for sports and recreation:

> He is dressed in some sports shorts, and a track jacket, some headphones on his ears, the cable leading into his iPod in the pocket of his track jacket. Richard is a British novelist in his early forties. He has written six novels, all of which have been best sellers. He has come to Malawi with his fiancée. They are getting married in three months. Richard runs over ten kilometres every day, mainly in the mornings but sometimes in the late afternoons as well. He always listens to classical music on his iPod when running, secluding him from his surroundings. We hear the classical music he is listening to (Joya, 2010, p. 2).

The Last Fishing Boat provides another example of the use of land as a space for sports and recreation through the portrayal of children engaged in various games on a playing ground, as the narrator states:

> Some children are playing on a playing field near the chalets. Some are on a see-saw, others on some swings. Others are playing football and other games. Biti is walking on a footpath nearby, carrying a basket on her head. She looks at the children and slows her pace. Her attention is drawn to the children who are on the swings. She stops, puts down her basket, and watches the children. Suddenly we see only one young girl on a swing superimposed on the image of Biti. The little girl is Biti in her youth. And as Biti remembers herself on a swing, a smile of nostalgia comes to her face (Joya, 2010, p. 26).

Apart from being used as space for sporting activities, land in *The Last Fishing Boat* also provides space for cultural events and dances which are part of recreation. As part of recreation, cultural events and dances provide activities that are socially engaging, physically challenging, creative, and culturally and mentally stimulating. The narrator provides a depiction of a cultural event by stating:

> We are at an open space between some houses in the village. In front of us are some smartly dressed young dancers dancing in rows, while Baluti leads, playing on his guitar. We move between the rows and behind the dancers we see Yusufu and Biti Anefa dressed in traditional wedding clothes, walking slowly in a wedding procession. Biti has a scarf round her head and is looking down, while Yusufu is smiling, dancing to the tune of the music, obviously enjoying himself. Biti's mother and father are following behind, also dancing like most of the people. Others present are Malita, Mai Nangozo, Mbumula's mother, Saidi and most other villagers. Occasionally Biti raises her eyes to look at the dancers and the crowd of people around her. Her face looks tense…… Women and drummers begin to gather at an open place in the middle of the village. The drummers begin to beat the drums and he women sign and dance in a circle. (Joya, 2010, p. 40)…… Mustafa passes by the open space where women are dancing to the rhythmic beat of drums. He stops for a while and watches the women dancing. One of the women wriggles her waist seductively. Mustafa smiles and walks away (Joya, 2010, p. 75).

People engaged in dances and other cultural events are depicted utilising spaces provided by land.

This makes land a key factor in provision and access of recreation activities.

Even though Joya in *The Last Fishing Boat* positively portrays land being used as a space for sports and recreation, using land for sports and recreational activities may have the potential of causing land degradation. For instance, large gatherings at sports and recreational activities can lead to trampling of vegetation and compaction of soil, which can have some negative effects on the local ecosystem. During some sports and recreational activities, certain amount of waste can be generated. Improper disposal of waste can contribute to pollution and harm local ecosystems which include may also lead to land degradation. Lastly, some sports and recreational activities may involve the use of fire, which, if not controlled properly, could lead to localised damage to plant life and soil.

In summary, in *The Last Fishing Boat* positively portrays people using land as a space for sports and recreation. Land is portrayed as significant for providing a space for people to participate in sports and recreational activities. However, using land for sports and recreational activities may have the potential of causing land degradation.

Use of land for dwelling

In *The Last Fishing Boat* land is being used for dwelling. The distribution of land used for dwelling purposes reflects the priorities and preoccupations of the people. There is land for dwelling used as space to sleep and eat, space for a supermarket, space for a school, and other communal activities.

There are chalets in which the tourists are lodging are depicted as being of high quality as the narrator paints a picture of the house which Richard and his girlfriend are occupying:

> Richard runs on the sand towards a row of chalets belonging to a beach hotel. There are several white people on the beach lying on the sand. Some are playing in the water (Joya, 2010, p. 4). The door to the bathroom is open. Richard's legs are in frame but we do not see the rest of his body. He leans forward into the frame and starts taking off his wet shoes. He looks around and then he stands up and walks into the bathroom, disappearing to one side. He walks back and sits down on the same chair as before. His hand come into frame with a TV remote. He presses it on and we here a TV programme. He changes the channel and we hear a church sermon where the pastor is talking about repenting sins. He quickly presses again and we here a Malawian song. It is Baluti's song (Joya, 2010, p. 54).

Richard's chalet is portrayed as having facilities which indicate that it is a self-contained house as evidenced by having an inner bathroom. The chalet is also portrayed as connected to the electricity grid due to the presence of electrical appliances such as the television. Another example of a house used as dwelling place is the portrayal of the house for Mustafa, a native Malawian, as the narrator states:

> The house is lit by a candle on a table. Ellena is seated in a cane chair watching Mustafa dressing up in front of a mirror. He is putting on a colourful shirt. He turns and faces Ellena (Joya, 2010, p. 74).

The presence of a candle in Mustafa's house reveals that the house is of poor quality and is not connected to the electricity grid. In Malawi and Africa in general, a majority of lower class people fail to access electricity in their homesteads as is the case with Mustafa.

Land is also being used as a supermarket in *The Last Fishing Boat*. In the following passage, the narrator paints a situation in a supermarket:

> The supermarket is busy. Many people are buying things. Richard and Ellena walk in. Richard picks a shopping basket and they walk along the shelves picking some groceries.
> ELLENA: I want some of that African Coffee to take home.
> We hear the voice of a man and woman arguing. The man's voice is very loud. Richard and Ellena go round a shelf and see that a group of people has formed around the till. The man talking is the Shop Manager and the woman is Biti Anefa. Biti is with her cousin, Malita. Malita is much lighter skinned and more heavily built than Biti. They both have scuffs tied round their heads and they are facing away so that Richard does not recognise Biti at first (Joya, 2010, Pp. 22-23).

Apart from providing space for a supermarket as evidenced in the paragraph above, land in *The Last Fishing Boat* is also a dwelling space used for a school. In the following passage, the narrator paints a situation in a classroom:

> In a classroom, a male teacher is standing in front writing something on the blackboard. There are many students in the classroom dressed in green uniform. Mustafa and Biti, almost fourteen years old, are seated on the same desk. Biti is concentrating on the blackboard while Mustafa is looking at her admiringly. The teacher turns and faces the class (Joya, 2010, p. 34).

Despite *The Last Fishing Boat* presenting land used for dwelling purposes such as space to sleep and eat, space for a supermarket, space for a school, and other communal activities, the construction of buildings can contribute to land degradation. According to Dai *et al.* (2022),

> With the rapid development of the economy, however, soil disturbance by construction activities, including occupation and erosion of large areas, has posed a threat to ecological and food security. Soil erosion rates in areas disturbed by construction activity are 2 to 40,000 times greater than pre-construction conditions, and soil erosion is an important component of nonpoint source pollution that degrades surface water quality (1).

Construction of buildings may lead to soil erosion as construction activities typically involve excavation and grading, which can expose soil to wind and water erosion. The removal of vegetation and the disruption of the natural topography can result in increased soil erosion. Writing on the situation in China, Zhang *et al.* (2015) state that,

> Rapid economic growth in China over the last 30 years has resulted in massive construction activities. These constructions have altered landforms, vegetation, and waterways, thus leading to surface runoff, soil erosion, sedimentation, and land degradation. From 1991 to 2003, the annual rate of land degradation caused by nonagricultural construction occupation in China exceeded 3800 km2, total area of land degradation of approximately 50 thousand km2, representing approximately 25% of the total amount of land resource degradation. The area impacted by soil erosion from construction activity increased by 61.6 thousand km2, the amount of waste slag was 100.3 billion tons, and the amount of increased soil erosion was 10.1 billion tons between 2006 and 2010 in China (p. 229).

Soil compaction may be affected as during the construction process heavy machinery and equipment are often used which can compact the soil. Tang *et al.* (2023) observe that, "construction activities use impermeable materials to cover the soil; these adversely affect the physical, chemical and biological properties of the soil. The use of heavy machinery or the storage of construction materials over-compact the soil and reduce the drainage capacity of the soil itself" (p. 2). The over-compaction may also affect porosity as "during the earthwork phase in construction, soil removal also changes the soil porosity" (Tang *et al.*, 2023, p. 2). This can lead to reduced soil fertility and decreased water infiltration.

In summary, in *The Last Fishing Boat* land is being used for dwelling purposes as space to sleep and eat, space for a supermarket, space for a school, and other communal activities. However, the construction of buildings can contribute to land degradation through various means.

Use of the lake as a space for food production

Apart from land, one vital environmental feature being used by humans in *The Last Fishing Boat* is the lake which is portrayed as a space for food production through fishing. The major occupation of the people revolves around the fishing industry. The family of Yusufu and Biti Anefa rely on the fishing industry for food as well as finances. Yusufu and his cousin, Saidi spend much of their time fishing using a boat. The following passage paints a situation depicting a fishing exercise:

> Several fishing boats have landed and there are many people buying different types of fish. Most of the people surround Yesaya, whose three boats are full of fish. We see Yusufu and Saidi bring in their boat. Some people run towards them.
> YESAYA: Where are you going? They never catch anything!
> Saidi looks at Yesaya and points a finger at him. As the boat reaches the shore, the people see that there is not much fish in it. Some of them walk back to Yesaya's boats.
> YESAYA: Didn't I tell you? Some people this year will change villages.
> Some of the people laugh. Yusufu and Saidi start selling their fish. Within a short period of time all their fish is sold out. Yesaya notices this.
> YESAYA: That's fast. Some people this year will sell their wives (Joya, 2010, Pp. 60-61).

People are depicted selling and buying fish. Fishing seems to be the centre of all activities at the lake. From the passage above, it is interesting to note that fisheries, like other sectors, is not immune to gender inequality, as it is men who dominate, and women are on the peripheral in fisheries management and development. Women are depicted cooking and eating fish but not necessarily actively involved in fishing in boats on the lake. For instance, Biti Anefa is only portrayed coming to get fish captured by her husband Yusufu. When Yusufu faces challenges to pay net and boat tax, Biti openly says that she cannot be of help as fishing is men's business:

> YUSUFU: Where does this fisheries man think I will get the money from?
> Biti goes on setting the table silently, occasionally stealing glances at him. When she finishes setting the table she takes a cup of water in one hand and a basin in the other and kneels in front of Yusufu. Yusufu puts his hands above the basin and she pours some water onto his hands. When he is done she puts the cup and the basin on the table. BITI ANEFA: *Kalibu*.
> Yusufu moves his chair closer to the table and starts eating the food. Biti stands up and goes to a corner and sits on a small stool. She looks down, avoiding looking at Yusufu as he eats. After a few mouthfuls, Yusufu pauses and looks at Biti.
> YUSUFU: Do I look like a hen which hatches money? These people are insane.
> Biti continues looking down without any reaction.
> YUSUFU (CONT'D): Why are you not answering?
> BITI ANEFA: There's nothing to say.
> YUSUFU: What do you mean there's nothing to say?
> BITI ANEFA: I thought you always says that fishing is a man's job (Joya, 2010, p. 15).

Biti feels she has nothing to say on the fishing issues troubling her husband since the husband always says fishing is a man's job. Mangubhai and Lawless (2021) in the article titled "Exploring gender inclusion in small-scale fisheries management and development in Melanesia" buttress the view that women are not considered main players in the fishing industry:

> Women make up an estimated 47% of workers (56 million women) in the smallscale fisheries sector operating along fisheries value chains worldwide…… fisheries management and development have historically focused on commercial, high value fisheries (dominated by men), and less on subsistence, low-valued fisheries (dominated by women). Until recently, there had been a disproportionate skew towards the capture side of fisheries, with less attention on post-harvest activities (e.g. processing, value adding, and sales) where women often are most active. Furthermore, gender norms shaped by cultural and social expectations of women have meant women's contribution to the sector are often unpaid, part-time, opportunistic, and viewed as an extension of household duties (p. 1).

Despite women being under-represented in decision-making around fisheries, fish remains a vital resource in as far as providing food which is mostly prepared by women. According to Tran, *et al.* (2022) in the article titled *The future of fish supply-demand in Malawi and its implications for nutrition security and poverty reduction,* in the recent household surveys and governmental sources, fish is the preferred animal protein source in Malawian households, making up 70% of all animal protein consumed. The following passage depicts a situation where fish is being consumed as relish:

> Ellena picks up a piece of fish with her fork and brings it to Richard's mouth. As Richard opens his mouth, she moves the fork back teasingly. Richard laughs. Ellena brings the fork to his mouth again and he bites it. As he chews, a small piece of fish juts out of his mouth. Ellena leans forward and bites it, their lips touching in a gentle kiss. Richard pulls back, looking Ellena in the eyes. They stare at each other for a while, their faces getting closer and closer until their lips touch again (Joya, 2010, p. 5).

Despite the positive portrayal of the lake as a space for food production, *The Last Fishing Boat* depicts conflict due to decrease in catch rate as fish is depleting. The fishing industry is not as lucrative as it was before. Yusufu Ali and his partner Saidi do their fishing on a small-scale, non-mechanised nature, mainly employing paddle-powered dugout canoe fishing gill and seine nets, handlines and longlines, and basket and fence traps. Due to non-mechanised fishing and depletion of fish, their daily catch is not enough as much as it used to be in the past, which warrants them mockery and ridicule from their counterparts with several boats. For instance, Yusufu is mocked by Yesaya:

> In the boat is Yusufu Ali, and his cousin and partner Saidi "Marlboro" Maele. Yusufu is a giant, muscular man in his midfifties. His huge, naked muscles move rhythmically as he slowly rows the boat. He has a hunting knife in a sheath on his belt. Saidi is shorter, thinner, and slightly younger than Yusufu. The two are rowing slowly, silently, their faces tired and expressionless. We

> see that there is very little fish in their boat, a very disappointing catch……
> Yesaya, a young man about twentyeight years old, who manages several boats left him by his late father, is selling fish at one of his boats. He runs to Yusufu's boat. He gasps in exaggerated surprise as he sees no fish in the boat and begins to laugh mockingly at Yusufu and Saidi. Yusufu and Saidi just look at him as they harness their boat from the water. Yesaya runs back to his boat still laughing loudly. Biti Anefa turns slowly and starts walking away. Yusufu notices and quickly puts three chambo fish on a straw and runs towards Biti (Joya, 2010, p. 3).

If the lake produced enough fish, Yusufu would have had enough catch and not be subjected to the mockery he receives from Yesaya.

When Yusufu fails to pay boat and net tax as demanded by the Department of Fisheries, the new Officer in Charge of the whole Mangochi District, Mr. Chigwenembe explicitly points out that overfishing is the root cause of the challenges the fishermen are facing:

> Chigwenembe comes to where they are. He takes off his glasses and looks at Yusufu.
> CHIGWENEMBE: Have you paid your taxes?
> Yusufu looks at him without answering. Saidi shakes his head.
> CHIGWENEMBE (CONT'D): Time is running out. Fast.
> YUSUFU: We can't catch enough fish.
> CHIGWENEMBE: That's not my problem. Anyway, how do you expect to catch enough fish when you have been over-fishing the lake?
> CHIGWENEMBE (CONT'D): We tell you to stop fishing during the breeding season but you don't stop. You cut all the trees to make your charcoal and now too much silt has been eroded into the lake. The fish can't breed properly and even the climate is changing. So whose fault is it? (Joya, 2010, Pp. 29-30).

From what Chigwenembe outlines, overfishing is a great environmental issue affecting the use of the lake as a space for food production through fishing. According to Du *et al.* (2021), "Overfishing refers to the removal of certain types of fish from water bodies at a rate that the species cannot replenish, resulting in a sparse population of these species in the area" (p. 1120). In simple terms, overfishing occurs when the rate of fishing exceeds the natural reproduction and growth rate of fish populations. This practice can have several negative consequences for both marine and freshwater ecosystems and can lead to a range of environmental and socio-economic problems.

One problem which may be caused due to overfishing is depletion of fish stock thereby reducing the abundance of target species. As Hara (2011) paints the situation on the depletion of fish species on Lake Malawi,

> Since the early 1990s, the estimated landed catch of *chambo* (Oreochromis spp.), 1 the most valuable species from the Southeast Arm of Lake Malawi, has declined. 1995 saw the lowest estimated catch of *chambo* ever recorded at 690 t compared to nearly 4,000 t at its height in the mid-1980s. The concern is that the demise of the Lake Malombe fishery started with the over fishing of the *chambo*. Thereafter, fishers switched to the less valuable but still abundant (at the time) Lethrinops (*kambuzi*) spp (Hara 2001). Within a period

> of 10 years, these other species had also been biologically and economically overfished. The whole fishery has never recovered to its former levels of productivity (p. 252).

Depletion of fish species can disrupt marine food webs and decrease the availability of fish for human consumption. Depletion of fish species can have economic consequences for the fishing industry, as it can lead to a decline in catches and a loss of income for fishing communities that rely on selling certain species of fish.

Altered ecosystems is another problem related to overfishing. Removing large numbers of fish from ecosystems can alter the balance of species and disrupt the natural functioning of marine and freshwater ecosystems. According to Du *et al.* (2021),

> While scientists have long been aware of the decline of Marine communities, there has been little research on how fishing or finning affects ecosystem-level processes, including climate change. The loss of predators can lead to largescale ecosystem effects, including an increase in biological carbon dioxide in the ocean. Since most commercially caught fish are predators, fishing and finning have led to a rapid decline in the number of predators in Marine ecosystems. This removal of predators is likely to increase ocean ecosystems' CO2 production, and ultimately that fishing and shark finning are contributing to climate change (p. 1121).

When the ecosystem is altered due to overfishing, it can lead to changes in the abundance of predators and prey, affecting the entire food web.

Bycatch is another problem related to overfishing. According to the United Nations Environment Programme (2004),

> The word "bycatch" refers to the portion of marine life caught that was not targeted. It may include low-value species but also vast tonnage of young or undersised fish of valuable commercial species. Almost 25% of all the fish pulled from the sea never make it to the market. An average of 27 million tonnes of unwanted fish are thrown back each year, and a large portion does not survive. Sometimes bycatch fish are kept for the market, but most often they are thrown back dead, because they may be the wrong species, the wrong size, of inferior quality, or surplus to the fishing operations quotas. The potential effects of bycatch are not just for commercial fish stocks, but the entire diversity of species in marine ecosystems and essential food chain components. Bottom trawling nets are indiscriminate and tend to pick up everything in their path with an extremely high bycatch rate. For example, up to 95% of the take in halibut trawling can be bycatch, which include a variety of endangered or overfished species (p. 2).

The bycatch caught due to overfishing can suffer injury or death and further disrupt marine ecosystems.

Broadly, overfishing greatly affects food security by reducing the availability of fish as a source of protein for human consumption. As Jones (2013) argues,

> With the globalisation of the fishing industry, overfishing has become a prominent food security issue that affects people on every continent, and requires multilateral cooperation and compliance to secure the livelihood of millions and prevent the collapse of the fishing industry. If this current trend continues, experts agree that the viscous cycle of overfishing will undoubtedly result in the collapse of ecosystems and economies on a global scale (p. 2).

Due to overfishing, millions of people worldwide suffer as they depend on fish as a primary source of nutrition.

In summary, in *The Last Fishing Boat* has been positively portrayed people using the lake as a space for food production. Despite highlighting fishing as the major occupation of the people with various benefits, overfishing is being depicted leading to decreased catch rates and the depletion of species. Several challenges such as, economic hardship, inadequate fish for food, among others, have been portrayed as the negative side of the fishing industry.

Use of the lake as a tourist attraction

In *The Last Fishing Boat* people are also portrayed using the lake as a tourist attraction. In general, Malawi is popularly known as "the Warm Heart of Africa" due to its friendly people and rich cultural and natural heritage which makes it one of the unique and attractive destinations for tourists. The country's tourism attractiveness lies in its diversity. Malawi is endowed with a variety of natural features, which provide a great potential for development of tourism. According to M'balaka et, al. (2022), some of the features, which make Malawi attractive, include: Lake Malawi and its islands and biodiversity take up 23,000 square kilometres of the total 118,000 square kilometres of Malawi. The Lake is about 570 kilometres long and between 16 and 80 kilometres wide. It is the third largest in Africa and eleventh in the world and forms a very large inland sea with magnificent mountain surroundings harbouring over 800 species of fish. It is a fresh water lake. Its crystal clear waters and fine sandy beaches are a major attraction to tourists.

One of major characters in *The Last Fishing Boat* is Richard Dale who is in Malawi as a tourist from Britain:

> A white tourist, Richard Dale, is running on the beach. He is dressed in some sports shorts, and a track jacket, some headphones on his ears, the cable leading into his iPod in the pocket of his track jacket. Richard is a British novelist in his early forties. He has written six novels, all of which have been best sellers. He has come to Malawi with his fiancée. They are getting married in three months (Joya, 2010, p. 2).

Richard and his fiancée are visiting Malawi for touristic reasons. They seem to be engaging in Leisure Tourism.

According to Tyynelä and Rantala (2004), "An important source of income for Malawi, which is among the ten poorest countries in the world with an annual income per capita US$ 170, is the tourists attracted by Lake Malawi." To boost the tourism industry, Joya's *The Last Fishing Boat* (2010) depicts several hotels built along the lakeshore as indicated:

> Richard runs on the sand towards a row of chalets belonging to a beach hotel. There are several white people on the beach lying on the sand. Some are

> playing in the water. A handsome young Malawian man of about twenty six years old, Mustafa Ali, Yusufu's son and a tourist guide, is talking with Richard's Czech fiancée, Ellena, who is also his publicist. Ellena is in her mid-thirties, a slim, toned and attractive woman. She is animated and laughing happily (Joya, 2010, p. 4).

Apart from depicting hotels which have been built for tourism purposes at the lake, from the passage above, it can also be noted that Mustafa Ali, Yusufu's son benefits from the presence of tourists by working as a tourist guide. As a tourist guide, often simply referred to as a tour guide, Mustafa provides assistance, information, and guidance to tourists or travellers visiting the lake and its other destinations. As a tour guide, Mustafa plays a crucial role in enhancing the travel experience by offering insights, historical context, and local knowledge about the places visited. In the process of working as a tour guide, Mustafa is paid and he is able to support his family. For instance, he bought medicine and other groceries for his sick mother and siblings. The mother is said to have been sick for two months. When Mustafa brings the things, she is depicted as being very pleased.

When the tourists are at the lake, mostly they engage in sports and recreation. In *The Last Fishing Boat* the lake is portrayed being used as a platform for carrying out various sports and recreation activities. Swimming, water skiing, sailing, kayaking, parasailing and boating are some examples of the water sporting and recreation activities on Lake Malawi on offer all year round. For instance, women use the lake for swimming:

> There are over twenty women on the beach. Some naked, others half-dressed. Some are in the water bathing while others are washing their clothes on the shore. He notices Biti in the water. Suddenly she looks in his direction. He ducks under the bush. After a while he slowly raises his head again above the bush. Biti is still looking in his direction. He is not sure whether she is seeing him or not. He moves backwards until he cannot see the beach. He turns and walks away (Joya, 2010, p. 60).

Apart from swimming, *The Last Fishing Boat* also portrays boat trips as another form of water sporting and recreation activity. The boat trips involve a traditional wooden boat or modern speedboat sailing around Lake Malawi. The boat trips provide an opportunity for visiting several snorkeling spots, exploring uninhabited islands, enjoying fishing, watching the African Fish Eagle stalk its underwater prey, testing your mettle at cliff jumping, or sipping wine while watching the sun set over Lake Malawi. These boat safaris are a beloved activity that allows visitors to view a variety of wildlife from the water, including hippos and crocodiles while elephants and giraffes take a leisurely stroll and birds rest at the water's edge. The following excerpt portrays a situation during a boat trip:

> The boat is drifting in the water near a small island. On the island, Richard and Ellena are busy taking pictures of birds, the island and the mainland while Mustafa and Maliko watch. Mustafa has taken off his shirt and his bulging muscles are glittering with sweat. Ellena continuously throws glances at Mustafa's muscles. Richard shows Mustafa how to use the camera and then stands with Ellena. Mustafa takes a picture (Joya, 2010, p. 13).

Richard and Ellena go on a boat trip guided by Mustafa on Lake Malawi. From the trip, they are able to capture pictures of a lot of exciting things. This is evidence of how exciting Lake Malawi is as a tourist destination as it provides space for water sports and recreation.

Even though the lake is being used for tourism, sports and recreation, these activities can have unintended consequences on the environment. According to Hall and Page (2006), "tourism and recreation can have an adverse impact on the physical environment in numerous ways, for example the construction of facilities that are aesthetically unsympathetic to the landscape in which they are situated" (p.144). Gössling (2002) recognises five key aspects of changes in the natural environment caused by tourism: changes in land use and land cover, excessive energy consumption, reduction of biodiversity and introduction of invasive species, spread of diseases, and changes in the perception and understanding of the environment.

Tourism, sports and recreation activities also have the potential of introducing pollutants into the lake. According to Sun and Liu (2020),

> Especially for tourism that takes water resources as the development subject, the water environment is more easily affected by human tourism activities; therefore, it is more necessary to control the pollution degree of the water environment to ensure the normal development of tourism. Through the study of the impact of human tourism activities on the tourism water environment, it can provide a reference for the control of water pollution, improve the service quality of tourism, and maintain sustainable development. The water environment in the natural environment is relatively easier to be affected by human activities. Once the water environment is polluted, the first one to be affected is the aquatic organisms, and then, the land environment near the water environment watershed, which will affect the growth of surface organisms. If not prevented, the unsustainable development of tourist attractions will eventually lead to exhaustion of tourism resources and stagnation of tourism development (p. 1303).

Pollutants into the water can affect water quality and the health of aquatic organisms. According to Furgała-Selezniow *et al.* (2021), "Uncontrolled development of tourism has a negative impact on coastal ecosystems. The inflow of pollutants from land to coastal waters disturbs their ecological balance through eutrophication" (p. 2). In this case, the disturbance caused by tourism, sports and recreational activities can disrupt aquatic habitats, affecting the breeding and feeding grounds for various species of fish and other aquatic life.

Tourism, sports and recreational activities have the potential of destroying and altering the shore. According to Calaretu and Bulin (2012), "the development of tourism facilities such as accommodation, water supplies, restaurants and recreation facilities can involve sand mining, beach and sand erosion, soil erosion and extensive paving. In addition, road and airport construction can lead to land degradation and loss of wildlife habitats and deterioration of scenery" (p. 80). Shoreline erosion can also result from the destruction altering of the shore by tourism, sports and recreational activities. Shoreline erosion can be caused due to frequent boat traffic and activities close to the shore which can lead to erosion, disrupting the natural balance and stability of the shoreline.

In summary, in *The Last Fishing Boat* the lake is being used for tourism, sports and recreation activities. However, these activities can have unintended consequences on the environment. This subsection has outlined some of the possible threats that tourism, sports and recreation activities can pose to the lake.

Conclusion

Just like in *The Last Fishing Boat*, in *The Boy who Harnessed the Wind* certain human action lead to environmental degradation thereby contributing to climate change. The two texts depict how human behaviour contributes to environmental degradation and climate change. *The Boy who Harnessed the Wind* demonstrates use of wanton cutting down of trees, application of in-organic fertilisers, use of land as a junkyard, and over-reliance on rain-fed agriculture as some of the human actions leading to environmental degradation thereby contributing to climate change. *The Last Fishing Boat* depicts over fishing, fishing without government recognised nets and boats, cutting down of trees and over reliance on the fishing industry for economic sustenance as some of the human actions leading to environmental degradation thereby contributing to climate change. The portrayal of actions of Malawians using various endowments of nature emphasises that individuals benefit from nature but at the same are drivers of environmental degradation and climate change. In this case, the two film scripts contribute to sustainability narratives by showcasing characters and communities in Malawi engaging in practices that destroy the environment which if addressed may help in mitigation of environmental harm.

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