

**ECOLOGICAL VALUES IN *TAFSIR 'ILMI* OF INDONESIAN  
MINISTRY OF RELIGIOUS AFFAIRS (ANALYTICAL STUDY  
“*TUMBUHAN DALAM PERSPEKTIF AL-QURAN DAN SAINS*”)**

**THESIS**

Submitted in partial fulfillment of the requirement for the degree of *Sarjana  
Agama* (S.Ag) Qur'an and *Tafsir* Studies Program



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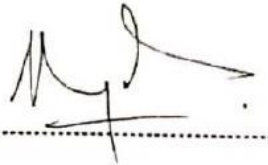
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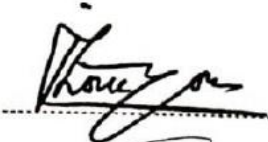
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## ABSTRACT

**Nabilla Qurrota A'yunin**, *Ecological Values in Tafsir Ilmi of Indonesian Ministry of Religious Affairs (Analytical Study "Tumbuhan Dalam Perspektif Al-Qur'an dan Sains")*.

Studies related to scientific phenomena in the Al-Quran that focus on the ecological area are still very minimal. In this case, human awareness to maintain environmental balance is still lacking. The Ministry of Religion's scientific interpretation team highlighted this situation in their initiative to publish a series of *tafsir ilmi* entitled *tumbuhan dalam perspektif Al-Quran dan sains*. Inside of it, it is explained that humans are responsible for everything on earth, as *khalīfah fī al-arḍ* (representative of Allah, the creator of the universe) who carries out the mandatory to prosper the universe and themselves. The discussion of human relations with the living things around them makes this book inclined to have an ecocentric perspective, which makes this book interesting to study more deeply.

The problems examined in this study are 1) how is the interpretation of ecological verses in a book *tumbuhan dalam perspektif Al-Quran dan sains*? 2) how are the ecological values in a book *tumbuhan dalam perspektif Al-Quran dan sains*? The purpose of this research is to find verses and ecological values according to the book *tumbuhan dalam perspektif Al-Quran dan sains*.

To answer these questions, this library search collects various reference sources or referrals through literature review, whether in the form of books, journals, articles, and other scientific works. The research model is qualitative, namely research that reveals data in the form of verbal narratives.

The result of this study is the discovery of verses of the Al-Quran that discuss ecology in a book *tumbuhan dalam perspektif Al-Quran dan sains*, which are found in the interpretation of Surah Ibrāhīm verses 24-26, Surah Al-An'ām verse 99, Surah At -Takwīr verses 17-18, and Surat Yunus verse 24. The contents of the interpretation can be detailed with the interactions between biotic components, biogeochemical cycle processes, and food chains. Apart from that, ecological values are also found in it, namely in the interpretation of Surah Ar-Rahmān verses 7-9 which teaches humans to always be fair in utilizing natural resources. Al-An'ām verse 41 teaches humans to always be generous to all God's creatures which are manifested by farming and reforestation. Yāsīn verse 35 and Al-Mulk verses 3-4 teach humans to have an attitude of altruism as a guide in dealing with biotechnology developments.

**Keywords:** Ecology, Values, Book *Tumbuhan dalam Perspektif Al-Quran dan sains*

## ABSTRAK

**Nabilla Qurrota A'yunin**, *Nilai-nilai Ekologi Dalam Tafsir Ilmi Kementerian Agama RI (Studi Analitis Buku "Tumbuhan Dalam Perspektif Al-Quran dan Sains"*.

Kajian terkait fenomena sains dalam Al-Quran yang fokus pada wilayah ekologi masih sangat minim. Dalam hal ini, kesadaran manusia untuk menjaga keseimbangan lingkungan juga masih sangat kurang. Tim tafsir Ilmi Kementerian Agama menyorot keadaan itu dalam ikhtiar penerbitan seri tafsir ilminya berjudul tumbuhan dalam perspektif Al-Quran dan sains. Didalamnya dijelaskan bahwa manusia merupakan penanggung jawab atas semua yang ada di bumi, sebagai *khalfah fi al-ard* (wakil Allah sang pencipta alam semesta) yang mengemban amanah untuk memakmurkan jagat raya dan dirinya sendiri. Pembahasan mengenai relasi manusia dengan makhluk hidup disekitarnya membuat buku ini condong memiliki perspektif ekosentris, yang mana membuat buku ini menarik untuk dikaji lebih dalam.

Masalah yang diteliti pada penelitian ini adalah 1) bagaimana penafsiran ayat-ayat ekologi dalam buku tumbuhan dalam perspektif Al-Quran dan sains? 2) bagaimana nilai-nilai ekologi dalam buku tumbuhan dalam perspektif Al-Quran dan sains? Adapun tujuan penelitian ini adalah menemukan ayat-ayat dan nilai-nilai ekologi menurut buku tumbuhan dalam perspektif Al-Quran dan sains.

Untuk menjawab pertanyaan-pertanyaan tersebut, maka penelitian yang bersifat kepustakaan (*library search*) ini mengumpulkan berbagai sumber referensi atau rujukan melalui kajian kepustakaan, baik berupa buku, jurnal, artikel, dan karya ilmiah lain. Adapun model penelitiannya adalah kualitatif, yaitu penelitian yang mengungkap data dalam bentuk narasi verbal.

Hasil dari penelitian ini adalah ditemukannya ayat-ayat Al-Quran yang membahas mengenai ekologi dalam buku tumbuhan dalam perspektif Al-Quran dan sains, yang mana terdapat dalam penafsiran surat Ibrahim ayat 24-26, surat Al-An'am ayat 99, surat At-Takwir ayat 17-18, dan surat Yunus ayat 24. Isi penafsiran tersebut bisa dirincikan dengan terjadinya interaksi antar komponen biotik, proses daur biogeokimia, dan rantai makanan. Selain itu, juga ditemukan nilai-nilai ekologi yang terkandung didalamnya, yakni pada penafsiran surat Ar-Rahman ayat 7-9 yang mengajarkan manusia untuk selalu bersikap adil dalam memanfaatkan sumber daya alam. Al-An'am ayat 41 yang mengajarkan manusia untuk selalu bersikap dermawan kepada semua makhluk Allah yang dimanifestasikan dengan bercocok tanam dan melakukan reboisasi. Yasin ayat 35 dan Al-Mulk ayat 3-4 yang mengajarkan manusia untuk memiliki sikap altruisme sebagai pegangan dalam menghadapi perkembangan bioteknologi.

**Kata Kunci:** Ekologi, Nilai-nilai, Buku Tumbuhan dalam Perspektif Al-Quran dan sains

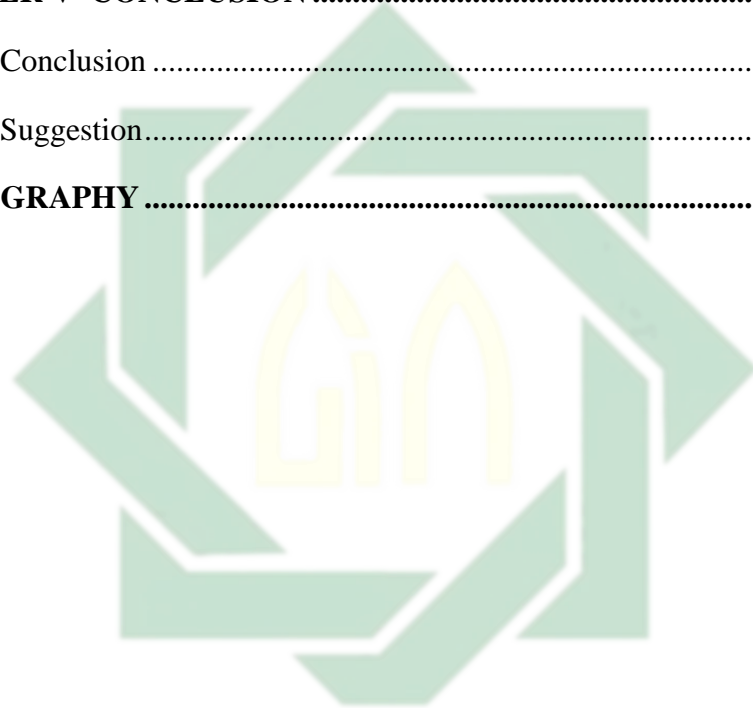
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# CHAPTER I

## INTRODUCTION

### A. Background of Study

Ecology in simple meaning can be understood as a reciprocal relationship between humans with their natural surroundings. Ecological problems that threaten human existence have recently become increasingly visible. Call it several ecological problems that are often found in our country, such as pollution, flood, landslide, global warming, and many more. Meanwhile, Indonesia is one of 17 countries known as “*Megadiversity Countries*”.<sup>1</sup> This is because Indonesia has a rich biodiversity which includes land, sea, and air.<sup>2</sup> But not as beautiful as the expectation, behind that, the damage and natural disaster keep happening, according to the official website of National Disaster Management Authority, at least 2.718 disaster that occurred in Indonesia from 1 January to 9 October 2022, with the flood as the most frequent type of disaster.<sup>3</sup> As a result, the rich biodiversity also being eroded and continues to shrink that lead to the ecological crisis. This crisis cannot be said as a something that just happened. Apart from being Indonesian geographically located in the pacific ring of fire which make

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<sup>1</sup>Indonesia is in a strategic location, that's between two continents (Asia and Australia) and two oceans (Indian and Pacific), which has a major role in Indonesia's rich biodiversity. Read more at KLHK RI, *Strategi Nasional dan Arahana Rencana Aksi Pengelolaan Jenis Asing Invasif di Indonesia*, (Jakarta: 2015), 1-5

<sup>2</sup>Filia Rani Artanti, *Konservasi Flora dan Fauna di Indonesia*, (Malang, Universitas Negeri Malang, 2019), 3

<sup>3</sup>Badan Nasional Penanggulangan Bencana, *Geo Portal Data Bencana Indonesia*, (9 Oktober 2022), diakses melalui <https://gis.bnpb.go.id/>

Indonesia frequent disaster,<sup>4</sup> the human factor also has a role in it, because human and nature is one of the interconnected units.<sup>5</sup> If analyzed, humans cannot be able to fulfill their life necessities without depending on nature, and nature needs human to be responsible for taking care of it from being damaged and still sustainable.

Humans are the most perfect creation of Allah swt, and should have an action and minds that reflect the “perfection” of the natural surroundings. Perfection can be reflected in how to interact with their environment and hold back the lust not to fulfill personal desires but also to think about the impact in the future. But in reality, the ecological crisis still continues, in other words, this is one of the forms of spiritual crisis, in which humans have denied God’s message to always maintain ecological harmony. Whereas Indonesia is the largest Muslim country in the world, with a total population 231,055 million people.<sup>6</sup> That two facts become an interesting thing to be researched. In one side Indonesia has the largest Muslim population in the world, while in the other side the ecological damage always continues, whereas the act of “destroying” nature does not thought by Islam and becomes two contradictory things.

Be the arbiter of the problems above, the Indonesian government has made countermeasures, all of them are in the form of regulation, in the form of

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<sup>4</sup>Tectonically, Indonesia is the meeting point of the world’s three tectonic plates, (Eurasia, Indo-Australia, and Pacific), while volcanically, Indonesia is on the path of the pacific ring of fire. Read more at Hasrul Hadi, dkk, *Penguatan Kesiapansiagaan Stakeholder Dalam Pengurangan Risiko Bencana Gempabumi*, Jurnal Geodika, Vol. 3, No. 1, (Juni 2019), 30

<sup>5</sup>Amirullah, *Krisis Ekologi (Problematika Sains Modern*, Jurnal Lentera), Vol. 18, No. 1, (Juni 2015), 5.

<sup>6</sup>The Royal Islamic Strategic Studies Center, *The Moslem 500 (The World’s 500 Most Influential Muslims*, 2022) (Jordan: Jordan National Library, 2021), 256.

action, and internalization of the important values of maintaining ecological harmony. Regarding the last one, this can be seen from the discourse that is developed by the Indonesian Ministry of Religious Affairs on their scientific interpretation. One of the books from the Indonesian Ministry of Religious Affairs on a scientific interpretation series that contained ecological values is in a book with the titled “*Tumbuhan Dalam Prespektif al-Qur’an dan Sains.*”

Interestingly, the book entitled “*tumbuhan dalam perspektif Al-Quran dan sains*” does not only discuss plants, more than that this commentary book also discusses their relationship with animals and humans. This connection is called ecology, in which humans have great control over the balance in it. Unfortunately, not everyone understands this. So there is a need for a deeper explanation regarding the internalization of life values in social relations with the surrounding environment. For example, one of the ecological values that are fine in the scientific interpretation of the Indonesian Ministry of Religious Affairs is the human command to take the advantage from the result of the plants that Allah given to the universe based on surah Yāsīn [36]: 35.<sup>7</sup>

لِيَأْكُلُوا مِنْ ثَمَرِهِ ۖ وَمَا عَمِلَتْهُ أَيْدِيهِمْ ۖ أَفَلَا يَشْكُرُونَ ۝ ٣٥

“That they may eat of His fruits. That was made by their (human) hands. Will they not then give thanks?”

This verse encourages humans to always take the advantage of the plants that have been provided in abundance by Allah in this universe. The meaning of ‘take the advantages’ in this case is to take according to need, and not greed. In addition, if the natural product is in the form of an organic element, so humans are

<sup>7</sup>Kementrian Agama RI, *Tafsir Ilmi: Tumbuhan dalam Prespektif al-Qur’an dan Sains* (Jakarta: Kementrian Agama, 2010), 220.

also allowed to modify the natural product, both in the form of changes in chemical structure or changes in genetic structure. With notes, these changes are based on the aims of providing goodness and giving benefits to mankind.

From the explanation of the interpretation of Yāsīn verse 35, it can be seen that the Scientific Tafsir of the Indonesian Ministry of Religious Affairs series of book *tumbuhan dalam perspektif Al-Quran dan sains* is a book that has an ecocentric perspective. Overall, this book discusses a lot about several types of plants in the Al-Quran, the chemical processes that occur in them, and the benefits that can be felt by humans and animals. The breadth of the discussion in this book makes it interesting to study more deeply about ecological values such as those conceptualized by the *tafsir ilmi* of the Indonesian Ministry of Religious Affairs in a series of *tumbuhan dalam perspektif Al-Quran dan sains*.

## **B. Problem Identification and Limitation**

Based on the background of the study that exposure above, then there are several problems that can be identified, namely:

1. Ecology in Al-Quran.
2. The correlation between science and the Al-Quran related to ecology.
3. The ways to maintain ecological balance in the Al-Quran.
4. The application of ecological values in day life contained in the Al-Quran.
5. Ecological values according to the book "*Tumbuhan Dalam Perspektif Al-Quran dan Sains*".
6. Interpretation of ecological verses.

7. Interpretation of ecological verses according to the book “*Tumbuhan Dalam Perspektif Al-Quran dan Sains*”.

Actually, there are many verses of the Al-Quran that discuss ecology, but due to time and space limitations, this research is just limited to some verses, namely: Ibrāhīm [14]:24-26, Al-An'ām [6]:99, At-Takwīr [81]:17-18, Yūnus [10]:24, Ar-Raḥmān [55]:7-9, Al-An'ām [6]:141, Yāsīn [36]:35, and Al-Mulk [67]: 3-4.

### **C. Problem Formulation**

Based on the problem identification and limitation above, this research requires several problem formulations so that research is more focused. The problem formulations are:

1. How is the interpretation of ecological verses in a book *tumbuhan dalam perspektif Al-Quran dan sains*?
2. How are the ecological values in a book *tumbuhan dalam perspektif Al-Quran dan sains*?

### **D. Research Purposes**

Regarding the explanation of the problem formulation above, then the purpose of this research is:

1. Find the interpretation of ecological verses contained in a book *tumbuhan dalam perspektif Al-Quran dan sains*.
2. Find the ecological values in a book *tumbuhan dalam perspektif Al-Quran dan sains*.

## **E. Research Benefits**

Hopefully, the outcome of this research can provide benefits for the readers, at least from two scientific aspects, namely:

### **1. Theoretical Benefits**

This research is expected to be able to explore the messages of the Al-Quran about ecological balance and values that can be studied more deeply by readers. Using the scientific interpretation of Indonesian Ministry of Religious Affairs, "*Tumbuhan Dalam Prespektif Al-Quran dan Sains*" as the main reference, hopefully this research can be able to provide a solution for the problems of the ecological crisis that hit the world, especially in Indonesia.

### **2. Practical Benefits**

Practically, this research is expected to coloring the interpretation study and inspire the readers, especially students of Al-Quran science and interpretation to always continue to do research on relevant issues. Considering the problem of natural destruction and ecological crisis will always continue without awareness from everyone, this research is also expected to be one of the media influences for the public to immediately realize the importance of protecting the universe.

## **F. Theoretical Framework**

In research, the theoretical framework is a fundamental thing that must be available in it, because this part can help to identify and find a solution for the researched problems. This research is use the scientific interpretation approach,



which in this era, scientific interpretation is one of the contemporary interpretation products.<sup>8</sup> Scientific interpretation has its own pros and cons, some support this kind of interpretation because interpretation like this can answer the science and technology problems that are currently developing. While in the other side, the contra group stated that this kind of interpretation considered that there is an element of coercion in combining certain verses with the development of modern science.

According to Abdul Mustaqim, at least there are several things that must be considered for scientific interpretation not to seem forced. *First*, be moderate people. This means, in the modern era like now, certainly needs an interpretation that is able to keep up with the times and be a solution for contemporary problems. Certainly, the condition does not directly claim that all the discoveries of the knowledge theory are contained in the Al-Quran, therefore it must be identified earlier before interpreting it.

*Second*, believe that the Al-Quran does not contradict the facts and scientific objective truths. Therefore, the scientific interpreter should always hold the definite scientific truth and not hold the scientific theory that is still predictive and assumptive.

*Third*, stay away from the coercion impression in interpreting the verses of the Al-Quran. It means, that the interpretation of scientific verses should be reviewed from the linguistic and historical points of view. In this way, it can keep

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<sup>8</sup> Muhammad Faisal, *Sains Dalam Al-Quran (Memahami Konstruksi Pendekatan Tafsir Bil-Ilmi Dalam Menafsirkan Al-Quran)*, Basha'ir Jurnal Studi Al-Quran dan Tafsir, Vol. 1 No. 1 (Juni 2021), 21

away from the deviations of interpretation and find out the possible meaning (*Al-Ma'na Al-Muhatmil*).

*Fourth*, don't have a negative prejudice or negative accusations against scientific interpreters just because we don't know about it and we don't fully explore it. In the Al-Quran there is a sign about science theory, and that is an appeal for scientists to always study it further and deeper.

*Fifth*, the product of scientific interpretation should not be recognized as the only meaning that Allah's hope then ignores the other potential meaning inside it. Must remember that the verses of the Al-Quran are *yahtamilu wūjuh al-ma'na* which means that the verses of the Al-Quran have many potentials of interpretation inside.<sup>9</sup>

## G. Previous Research

1. Muhammad Naimuddin, "Penafsiran Ayat-ayat yang Menyangkut Lingkungan Hidup dalam Kitab *al-Ibrīz li Ma'rifati Tafsir al-Qur'an al-Aziz bi Lughah al-Jawī*", Thesis on Ushuluddin and Islamic Thought Faculty, Al-Quran Science and Interpretation Study Program, Sunan Kalijaga State Islamic University Yogyakarta, 2020. This research discusses about the analysis of verses regarding the environment and also describes solution for natural damage that occurs based on point of view of KH. Bisyrri Mustofa on a book *al-Ibriz li Ma'rifati Tafsir al-Qur'an al-Aziz bi Lughah al-Jawī*.

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<sup>9</sup> Abdul Mustaqim, *Epistemologi Tafsir Kontemporer*, (Yogyakarta: LKiS Yogyakarta, 2010), 160

2. Alif Jabal Qurdi, “Tafsir Ekologi: Telaah Atas Penafsiran Yusuf Al-Qaradawi Dalam Kitab Ri’ayah Al-Bi’ah fi Syari’ah Al-Islam”, Thesis on Ushuluddin and Islamic Thought Faculty, Al-Quran Science and Interpretation Study Program, Sunan Kalijaga State Islamic University Yogyakarta, 2019. This study focuses on methodology construction of Yusuf Al-Qaradawi’s ecology interpretation and viewed from the hermeneutics study.
3. Radifatul Hasanah, “Ayat-ayat Ekologis Dalam Al-Quran Dan Relevansinya Dengan Aksi Penolakan Umat Islam Terhadap Eksploitasi Tambang Di Kecamatan Silo Kabupaten Jember”, Thesis on Ushuluddin, Adab, and Humaniora Faculty, Al-Quran Science and Interpretation Study Program, State Islamic Institute Jember, 2020. This research focuses on the mine exploitation problem which is considered to disturb the ecological balance. This is made to explore the ecological verses in the Al-Quran, therefore can be a reinforcement of rejecting action for mine exploitation in Silo, Jember district.
4. Ahmad Dwi Bayu Saputro, “Nilai-nilai Pendidikan Ekologi dalam al-Qur’an (Analisis *Tafsir Maudhu’i* Karya Tim Kementerian Agama RI)”, Thesis on Master Postgraduate Maulana Malik Ibrahim State Islamic University Malang, Madrasah Ibtidaiyah Teacher Education Study Program, 2017. This research focuses on discussing the analysis of ecological education values with thematic interpretation from the Indonesian Ministry of Religious Affairs as the primary source. Besides that, this research also explained the implementation from that ecological education values and solutions for

ecological crisis management according to the primary source that used in this research.

5. Mamluatun Nafisah, “Al-Qur’an dan Konservasi Lingkungan (Suatu Pendekatan *Maqāsid al-Syariah*)”, Thesis on Master Postgraduate Universitas Syarif Hidayatullah State Islamic University Jakarta, Concentration of Interpretation Program Study, 2017. This research focuses on two object study, the first is to analyze the interpretation of the verses of the Al-Quran regarding environmental issues using the *maqāshid syariah* approach, the second is analyze the ecological discourse as a primary principle in Islamic law because environmental care is the subject of faith and as a guarantee for the survival of living in this world.

Based on the explanation of previous research, so this research almost has a similar thing with the five research that have been mentioned before, because all of them use the environment as their main object. The most similar is the thesis from Ahmad Dwi Bayu Saputro, but that thesis focuses on ecological education values that contained in the thematic interpretation of Indonesian Ministry Of Religious Affairs on a book series “*Pelestarian Lingkungan Hidup*”, while this research focuses on ecological values that contained in the scientific interpretation of Indonesian Ministry Of Religious Affairs on a book series “*Tumbuhan dalam Perspektif Al-Quran dan Sains*”.

## H. Research Methodology

Research methodology is a study that shows the completion of research in a scientific way by using several steps to solve a researched problem. This methodology is not only to answer the problem formulation, but also has a role on determining the steps in research.<sup>10</sup> Based on that explanation, then this research divides the research methodology into three aspects, namely research methodology, research approach, and research theory. The description of the three aspects is:

### 1. Research Methodology

The methodology used in this research is functional descriptive analysis methodology. Descriptive-functional research is research that aims to describe a universal situation that is broken down into more specifics.<sup>11</sup> This research is included as qualitative research, which this kind of research focuses on developing explanations of existing social phenomena.<sup>12</sup> Zuchri Abdussamad describes that qualitative research is a kind of research approach that uses natural patterns in the scope of social science to examine a problem with a holistic perspective.<sup>13</sup>

Extracting data using dogmatic sources by conducting a literature review using library research as a type of research. It is called library research

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<sup>10</sup> Mimasha Patel, dkk, *Exploring Research Methodology: Review Article*, International Journal of Research & Review, Vol. 6, No. 3 (Maret 2019), 48

<sup>11</sup> Septiawan Santana K., *Menulis Ilmiah Metodologi Penelitian Kualitatif Edisi Kedua* (Jakarta: Yayasan Pustaka Obor Indonesia, 2010), 73.

<sup>12</sup> Beverley Hancock, dkk, *An Introduction to Qualitative Research*, (The NIHR RDS EM/YH, 2009), 7

<sup>13</sup> Zuchri Abdussamad, *Metode Penelitian Kualitatif*, (Syakir Media Press, 2021), Hal. 32

because the data or materials that used in this research is come from the scope of the library, such as a book, journals, magazines, and others.<sup>14</sup> In this research, the meaning of the source of the library research is a way of tracing the explanation of the phenomenon and finding the meaning of the verses to be studied. After that, a research approach by using interpretation literature and also other disciplines that are in a line with this research.

The social phenomenon in this research is the occurrence of disasters that often occur, and because of that humans are under a threat of ecological crisis. To find the answer to that anxiety, this research will explore the ecological values that contained in the Al-Quran based on the scientific interpretation of Indonesian Ministry of Religious Affairs. Of course, this main source is also supported by the other literature that has similar or the same discussion.

## 2. Research Approach

The approach used in this research is a scientific interpretation approach. Al-Quran Interpretation is an explanation of Allah's words in accordance with the abilities of each individual and there are several conditions that must be done for those who will interpret the Al-Quran. This explanation was born from an interpreter who was serious and repeatedly in finding the meaning of the Al-Quran text according to the tendencies and abilities of each interpreter.<sup>15</sup> While science (*'ilmī*) is one of the Arabic vocabularies which has meaning of knowledge. Science in this case covers all

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<sup>14</sup> Nursapia Harahap, *Penelitian Kepustakaan*, Jurnal Iqra' Vol. 8 No. 1 (Mei 2014), 68

<sup>15</sup> M. Quraish Shihab, *Kaidah Tafsir*, (Tangerang: Lentera Hati, 2021), 9

fields of science, starting from biology, physic, economic, politic, etc. It can be concluded that the scientific interpretation is the interpretation of the verses of the Al-Quran using a scientific approach.<sup>16</sup>

### 3. Research Theory

The theory used in this research is a thematic method. This method focuses its view on a particular theme, then looks for that theme in the Al-Quran by collecting the verses that talk about that. After that analyzed and understood verse by verse, then also enriched the description of the explanations by using relevant hadiths, and after that concluded thoroughly.<sup>17</sup> So this research, will collecting the ecological verses contained in the Al-Quran and explain them based on the scientific interpretation of Indonesian Ministry of Religious Affairs perspective. The steps for this research are:

#### 1. Data Sources

In the first step, this research determines the primary and secondary data sources that will be used. This research uses the scientific interpretation of Indonesian Ministry of Religious Affairs, book series “*Tumbuhan Dalam Prespektif Al-Quran dan Sains*” as a primary data source. Then the secondary data sources as support the main source, this research uses references in the form of a book (referential, encyclopedia, dictionary), journals (national and international), final scientific work

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<sup>16</sup> Asep Sulhadi, *Tafsir Ilmi: Sejarah dan Konsepsinya*, Jurnal Samawat, Vol. 6 No. 1 (Tahun 2022), 2

<sup>17</sup> M. Quraish Shihab, *Kaidah Tafsir*,...,328

(thesis and dissertation), and official website (domestic government and international organizations).

## 2. Data Collection Method

In the second step, this research used the documentation method as the way to collect data for the research. The procedure of this documentation method is to look for data or documents in the form of books, journals, videos, and others that are related to the research conducted. The document is a very important thing and useful for extracting information in qualitative research.<sup>18</sup>

## 3. Data Analysis Technique

After the first and second steps are done, then automatically the required data has been collected, therefore the next step is to analyze the results of the data set that has been searched. The analytical technique used in this research is descriptive analysis. This technique is used with the aim of enriching the theory used in this research as well as to explain something that the scope is still general to be more specific.<sup>19</sup>

### I. Discussion Systematic

The systematic discussion in research of Ecological Values in *Tafsir Ilmi* of Indonesian Ministry of Religious Affairs (Analytical Study “*Tumbuhan Dalam Perspektif Al-Qur’an dan Sains*”) is as follows:

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<sup>18</sup> Muri Yusuf, *Metode Penelitian (Kuantitatif, Kualitatif, & Penelitian Gabungan)*, (Jakarta: Kencana, 2014), 391

<sup>19</sup> Ibid, ..., 52



The first chapter describes the introduction as a research concept, which consists of background, problem identification and definition, problem formulation, research objectives, research benefits, theoretical framework, literature review, research methodology, and discussion systematics.

The second chapter describes the *tafsir 'ilmī* and ecology. Explanation of the *tafsir ilmi* starts from the definition, history, advantages and disadvantages, and also the pros and cons. While the discussion of ecology contains an explanation of ecology from two perspectives, namely science and Islam, also there is a discussion of ecological values.

The third chapter describes the book. divided into two discussions, namely from the technical aspect and methodological aspects of the book. The technical aspect discusses the writing background, the biography of the redactor team, and the systematics of writing. While the methodology of the book discusses the *tafsir* method, the systematic presentation of *tafsir*, the nuances of *tafsir*, and the *tafsir* approaches.

The fourth chapter is an analysis of the interpretation of ecological verses and ecological values in a book *tumbuhan dalam perspektif Al-Quran dan sains*.

The fifth chapter is the closing which contains the conclusions of all discussions and answers to problems.

## CHAPTER II

### TAFSIR 'ILMI AND ECOLOGY

#### A. *Tafsir 'Ilmi*

Al-Quran is the only one of the last holy book revealed by Allah to Prophet Muhammad. Its presence is used to guide people on the right path and its existence is valid until the end of time. Al-Quran has an unrivaled language style and holds a very high depth of meaning. Besides that, Al-Quran also contains miraculous properties that can prove that it is the revelation of God's truth. One of those miracles is the scientific truth that was only revealed by humans with technology in the 20<sup>th</sup> century, even though it has been explained by the Al-Quran since 1400 years ago.<sup>1</sup>

An example of the scientific truth that has just been revealed by humans is that in the 20<sup>th</sup> century, a new theory was discovered regarding the formation of the universe, which in fact has been explained in the Al-Quran surah Al-Anbiya' verse 30.<sup>2</sup> It should be underlined that miracle expressions in the Al-Quran like this are not necessarily conveyed explicitly to mankind, but the process of interpretation must be equipped with qualified knowledge. The product of the *tafsir* is also various, it can tend to some pattern, like *fiqhī*, *tarbawī*, *falsafī*,

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<sup>1</sup> Harun Yahya, *Al-Quran dan Sains: Memahami Metodologi Bimbingan Al-Quran Bagi Sains* (Bandung: Dzika, 2004), 81

<sup>2</sup> Muzaffar Iqbal, *Contemporary Issues In Islam and Science Volume 2*, (New York: Routledge, 2016), xiv

*akhlaqī, sufi, 'ilmī, dan I'tiqadī.*<sup>3</sup> Likewise, the book of Tumbuhan Dalam perspektif Al-Quran dan Sains by Kementerian Agama RI which is the object of this research has a scientific tendency which makes it classified as the *tafsir ilmi*, therefore in this research it is necessary to explain the pattern of *tafsir ilmi* as follows:

### 1. Definition of *Tafsir 'Ilmi*

Tafsir ilmi is the al-Quran interpretation that focuses on explaining verses related to science in the Al-Quran. According to Abd Majid Abd Salam al-Mahrasi, tafsir ilmi is a product of tafsir whose *mufasssir* focuses on various scientific problems and tries to solve them by using the Al-Quran. In other opinions, tafsir ilmi described by husain adz-Dzahabi in his book *tafsir wa al-Mufasssirūn* as a tafsir that the interpretation style is using the scientific theoretical approaches and philosophical thoughts contained in the al-Qur'an.<sup>4</sup>

Furthermore, according to Abdul Mustaqim, tafsir ilmi is an Al-Quran interpretation style that is using scientific theoretical approaches. This tafsir aims to explore the scientific theories and philosophical thoughts from the Al-Quran, justify and compromise the theory of science with the Al-Quran, and also deduce the scientific theory from the Al-Quran.<sup>5</sup>

<sup>3</sup> Abdul Syukur, *Mengenal Corak Tafsir Al-Quran*, Jurnal El-Fuqonia, Vol. 01 No. 01 (Agustus 2015), 86

<sup>4</sup> Badri Khaeruman, *Sejarah Perkembangan Tafsir Al-Quran*, (Bandung: Pustaka Setia, 2004), 109

<sup>5</sup> Abdul Mustaqim, *dinamika Sejarah Tafsir Al-Quran, Studi Aliran-aliran Tafsir dari Periode Klasik, Pertengahan, Hingga Modern-Kontemporer* (Yogyakarta: Adab Press, 2014), 137

Based on some of the definitions forward by ulama, it can be concluded that tafsir ilmi can be defined as the interpretation that focuses on *kauniyah* verses in al-Qur'an which is contained a scientific value with scientific theoretical approach and modern scientific discoveries, that have the aim to show the miracle of al-Qur'an.

## 2. The History of *Tafsir 'Ilmi*

Since Rasulullah die, there is no one can be mubayyin (explainer) of the Al-Quran, so the interpretation efforts began to be continued by *sahabah* and *tabi'in*. That interpretation effort continues to develop until now in accordance with the needs of the people for an explanation of the contents of the verses in the Al-Quran. This happened because even though his revelation was over, but Al-Quran is always open to understanding and interpreting. In line with the speed of the dynamics of society, then the portion of the role of the mind in the interpretation of the Al-Quran develops and increases, so that various methods and patterns of the interpretation appear. One of the various forms of interpretation is scientific interpretation or *tafsir 'ilmy*.

This type appears from the assumption that the Al-Quran is the holy book which contains various kinds of scientific information, both related to religious issues and scientific cues.<sup>6</sup> This scientific interpretation began to emerge during the dynasty of Abbasiyah, especially during the reign of Harun Ar-Rasyid (785-809 M) and Al-Makmun (813-833 M), which at that time

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<sup>6</sup>Ali Akbar, *Kontribusi Teori Ilmiah Terhadap Penafsiran*, Jurnal Ushuluddin Vol. 23 No. 1 (Juni 2015), 35

there was a very development of science.<sup>7</sup> The policies that implemented during this reign were very supportive in widening the area of interpretation of the Al-Quran. Tafsir which used to rely only on the hadith of prophet Muhammad, *sahabat*, and *tabi'in* (based on history/*naql*) began to shift to the realm of *ijtihad (aqli)*.<sup>8</sup>

The idea of scientific interpretation was pursued by Imam Al-Ghazali and other *ulama* who agreed with him. In this case, Al-Ghazali is the most persistent figure in supporting scientific interpretation, especially his work *Jawahir Al-Quran*.<sup>9</sup> This phenomenon is recorded in the book *Mafātīhu al-Ghaib* by Fahru Al-Razi, which in discussing the history of the emergence of scientific interpretation, he is a figure who deserves to be put forward. Al-Ghazali in his commentary book *Jawahir Al-Quran* has indeed begun to interpret the Al-Quran with multidisciplinary knowledge such as medicine, astrology, etc. Unfortunately, his thoughts have not succeeded in realizing the method of scientific interpretation, it was not until a century later that the work of Fahru Al-Razi in *Mafātīh Al-Ghaib* emerged which succeeded in

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<sup>7</sup>Al-Makmun is the son of Harun Al-Rasyid, during his reign it was proven that he experienced significant scientific developments because at that time there was a large-scale translation of books into Arabic. In addition, during the reign of Al-Makmun also succeeded in making *Bait Al-Hikmah* which is used as a translation center and library which contains many books in the fields of medicine, mathematics, optics, geography, physics, astronomy, philosophy, and history. Learn more at Din Muhammad Zakariya, *Sejarah Peradaban Islam (Prakenabian Hingga Islam di Indonesia)* (Malang: CV Intrans Publishing, 2018), 24

<sup>8</sup> Hadi, *Metodologi Tafsir Dari Masa Klasik Sampai Masa Kontemporer* (Salatuga: Griya Medika, 2020), 15

<sup>9</sup> J.J.G. Jansen, *Diskursus Tafsir Al-Quran Modern Terj. M. Nur Kholis*, (Yogyakarta: PT. Tiara Wacana Yogya, 1997), 61

realizing the method of scientific interpretation which was once the thought of Al-Ghazali's.<sup>10</sup>

After the Fahir Al-Razi's time, this tendency of scientific interpretation gave birth to commentary books which were more or less influenced by his thoughts. Some of them are: *Ghara'ib Al-Quran wa Ragha'ib Al-Furqon* by An-Nasyaburi (728 H), *Anwar At-Tanzil Wa Asrar At-Ta'wil* by Al-Baidhawi (791 H), and *Ruh Al-Ma'ani Fa Tafsir Al-Quran Al-Adzim Wa Sab'al-Matsani* by Al-Alusi (1217 H). After the Al-Alusi period, at the beginning of the 4th century Hijriyah, the method of scientific interpretation is increasingly progressing rapidly. Some of the works from this period are: *Kasyf Al-Asrar An-Nuraniyah Al-Qur'aniyah* by Muhammad bin Ahmad Al-Iskandarani (1306 H), *Thaba'I Al-Istibdad wa Mashari al-Isti'bad* by Al-Kawakibi (1320 H), *Tafsir Juz 'Amma* by Muhammad Abduh (1325 H), and *Jawahir Al-Quran* by Thantawi Jauhari (1358 H). From the several works of commentary that have been mentioned earlier, the scientific interpretation of the Al-Quran that is clearly visible is the book of interpretations by Al-Iskandarani and Ath-Thantawi where they have made efforts to understand the verses of the Al-Quran through empirical science (*tajribi*) and scientific discoveries.<sup>11</sup>

### 3. The Advantages and Disadvantages of *Tafsir 'Ilmi*

Just like everything that exists in this earth, nothing is perfect, it always has advantages and disadvantages. Likewise with *tafsir ilmi*, which if

<sup>10</sup> Rubini, *Tafsir 'Ilmi*, Jurnal Komunikasi dan Pendidikan Islam, Vol. 5 No. 2 (Desember 2016), 95

<sup>11</sup> Rubini, *Tafsir 'Ilmi*,...97

analyzed the existence also has positive and negative sides. The positive aspects of advantages contained in the *tafsir ilmi* are:

- a. The interpretation results are expected to show that the Al-Quran and science are not contradictory.
- b. Support the advancement of science for the benefit of humanity.
- c. Several verses in the Al-Quran describe various natural phenomena whose expressions cannot be known explicitly, but implicitly, and this condition requires an expert to reveal it. So the efforts to reveal the meanings of the Al-Quran which explain the phenomenon of this universe can also be a way to reveal the evidence of Allah's infinite power.
- d. Interpreting the verses of the Al-Quran using the *tafsir ilmi* pattern serve as a *hujjah* against disbelievers and as an effort to strengthen *uluhiyah* Allah.<sup>12</sup>

In other side, this interpretation pattern of course also has a disadvantages. There are at least three disadvantages of *tafsir ilmi*, first, *tafsir ilmi* pattern is more impressive with imposing the Al-Quran with natural phenomena so that it can raise doubts about the truth.<sup>13</sup> Second, besides that, because scientific discoveries can't be guaranteed, both of them have conflicting characteristics, scientific discoveries are relative and transitory, while the Al-Quran has absolute and eternal properties.<sup>14</sup> Some people say that this interpretation makes the Al-Quran seem inconsistent in interpreting

<sup>12</sup> Mutma'innah dan Junaidi, *Plus Minus Tafsir Ilmi*, Ijert: Indonesian Journal Of Education Research and Technology, Vol. 2 No. 1 (Januari 2022), 8

<sup>13</sup> Ibid.,9

<sup>14</sup> Ma'mun Mu'min, *Metodologi Ilmu Tafsir* (Yogyakarta: Idea Press Yogyakarta, 2016), 288

the verses of the Al-Quran. Third, this kind of interpretation opens wide opportunities for *mufassir* to express his ideas and thoughts, and because of that, it can lead to the birth of interpretations that are subjective and in accordance with his desires.<sup>15</sup>

#### 4. Pros and Cons of *Tafsir 'Ilmi*

Despite all the advantages and benefits, it turns out that the existence of the pattern of *tafsir ilmi* is not necessarily accepted by all *ulama*. Some classical *ulama* to the modern age that supports the presence of this pattern of interpretation is Al-Ghazali, Ar-Razi, Al-Mursi, As-Suyuti, Muhammad Abduh, Tantawi Jauhari, etc. On the other hand, there are also some classical *ulama* to the modern age who do not agree with its existence, they are Asy-Syatibi, Mahmud Syaltut, Amin Al-Khuli, etc.<sup>16</sup> Both of them have their own reason that they have expressed. At least those who are in favor with the pattern of *tafsir ilmi* express their opinion as follows:

1. Human tipology will change every time and it is time for the interpretation of the Al-Quran is according to what is it closest with modern humanities. If at the time of Rasulullah, science was not an important matter, so it is only natural if the scientific miracles in the Al-Quran had not been discovered and scientific interpretation was not an important matter. In contrast with the situation of modern humans whose lives are always concerned with science and technology, nowadays the pattern of

<sup>15</sup> Nashruddin Baidan, *Metodologi Penafsiran Al-Qur'an* (Yogyakarta: Pustaka Pelajar, 2012), 57

<sup>16</sup> Kementerian Agama RI, *Tafsir Ilmi: Tumbuhan dalam Prespektif al-Qur'an dan Sains*, ..., xxiv



scientific interpretation is needed to direct modern humans in the true teachings.

2. Currently, research tools and laboratories are developing rapidly, making it easier for researchers to produce theories that are closer to the truth. So that this also has implications for the ease of disclosing scientific theories in the verses of the Al-Quran and minimizing the existence of new scientific theories.<sup>17</sup>

Then the group that rejects the scientific interpretation or *tafsir ilmi* presents the following argument:

1. Sometimes the verses that are interpreted using the pattern of scientific interpretation have a meaning that is not in accordance with the meaning at the time of revelation.
2. In its interpretation there is a tendency to force verses to match with the developments of modern science.
3. The side of science and technology shows that not all science and technology teachings and theories are taken from the text of the Al-Quran.<sup>18</sup>

Human's life is always related to many things which in the end requires to choose one of the many choices that exist. The choice us also sometimes influenced by the background of each individual so the results will have a

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<sup>17</sup> Ulya Fikriyati, *Tafsir Ilmi Nusantara: Antara Kepentingan Ideologis dan Kebutuhan Pragmatis (Menimbang Tafsir Karya Ahmad Baiquni)*, Jurnal Al-Burhan Vol. XIII No. 1, (Oktober 2013), 58

<sup>18</sup> Abdul Mustaqim, *Kontroversi Tentang Corak Tafsir Ilmi*, Jurnal Studi Ilmu-ilmu Al-Qur'an dan Hadis, Vol. 7 No. 1 (Januari 2006), 33

variety. Just like a *mufassir* who has many choices in interpreting the verses of the Al-Quran, depending on which analysis lens is used. As long as the results of the interpretation is not deviate from Islamic teachings and take the right steps, then this research argues that the pattern of scientific interpretation or *tafsir ilmi* doesn't need to be blamed or destroyed, it just need an extra caution in interpreting it.

## **B. Ecology**

### **1. Ecology In Science Perspective**

Consciously or not, humans are social beings who need other humans to support their lives, but more than that, it turns out that humans do not only need other humans but also need other components around them. For example, to meet their food needs, humans need animals and plants as food sources. Likewise, animals and plants also need humans to preserve their lives. It shows that humans, animals, plants, and other supports component have a reciprocal relationship. This interaction is studied in a branch of biology science, called 'ecology'.

#### **a. Definition of Ecology**

Ecology comes from two words in Yunani language, that is *oikos* and *logos*. *Oikos* means home, and *logos* means knowledge/science.<sup>19</sup> Since hundreds of years ago, ecology has progressed along with the history of human development. Various ancient texts since the time of

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<sup>19</sup> Djohar Maknun, *Ekologi: Populasi, Komunitas, Ekosistem Mewujudkan Kampus Hijau, Asri, Islami, dan Ilmiah* (Cirebon: Nurjati Press, 2017), 1

Hippocrates, Aristotle, and other philosophers, have included discussions on ecological problems even though at that time they had not been given such a name.<sup>20</sup> Ernest Haeckel (1834 – 1914) is a biologist known as a person that coining the term of ecology more than 150 years ago.<sup>21</sup> According to him, ecology is a reciprocal relationship in the environment with various organisms around it, including organic and inorganic components. Implicitly also states that ecology is a scientific discipline that develops through natural history, so that humans can easily trace the early history of ecology by tracing the early history of humans on planet earth.<sup>22</sup>

Another definition also forwarded by Charles Krebs which stated that ecology is a study of interactions that determine the expansion and abundance of organisms. In this case, the meaning of ‘expansion’ is where an organism is found and the meaning of ‘abundance’ is how many organisms live in a place. An example of that definition from Krebs is the interactions between predators and prey, which are different species. In addition, also the interaction between organisms and environmental factors (including temperature and rainfall)<sup>23</sup>

Furthermore, Manuel Molles defines ecologu as a study that discusses the relationship between organisms and their environment.

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<sup>20</sup>Ramli Utina dan Dewi Wahyuni, *Ekologi dan Lingkungan Hidup*, (Gorontalo), 10

<sup>21</sup> Elizabeth Watts, dkk, *Ecology and Evolution: Haeckel's Darwinian Paradigm*, Trends In Ecology & Evolution Journal, Vol. 34 No. 8 (August 2019), 681

<sup>22</sup> Antonio Bodini and Stefan Klotz, *The Science Of Ecology For A Sustainable World*, Ecology Journal, Vol. 1

<sup>23</sup> Charles Krebs, *The Ecological World View* (Collingwood: CSIRO Publishing, 2008), 2

According to him, human survival depends on how well we observe the diversity that exists in the environment and predict the feedback that will be obtained from that diversity. For example, a hunter must know where the places that animals are usually found and farmers must know weather predictions and soil conditions because these two things are affecting the growing up of the plants that they plant.<sup>24</sup>

While Eugene Odum explain ecology more complexly. That ecology is the study of the interrelationships of the components on earth, including plants, animals, microorganisms, and humans that live together as components that are interdependent. This means that ecology is not only related to organisms, but also to the flow of energy and material cycles that exist on land, sea, air, and fresh water. So that in this way ecology can be seen as “the science of the structure and function of nature” in which human is also be part of it.<sup>25</sup>

The environment that have living components or have life are referred as a biotic components, such as humans, animals, and plants. Meanwhile, lifeless components are referred as abiotic components, such as temperature, light intensity, wind, rainfall, and so on. From Odum’s statement, ecology doesn’t study only about components that interact in an environment, but also the energy distribution processes that occur within it, such as food chain processes and biogeochemical cycle.

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<sup>24</sup> Manuel C. Molles, *Ecology Concepts & Applications Seventh Edition* (New York: McGraw-Hill Education, 2016), 1

<sup>25</sup> Eugene P. Odum, *Ecology: The Link Between The Natural and The Social Sciences Second Edition* (1975), 1

From the various meanings described above, it can simply put that ecology is a branch of biology that studies about the interactions between organisms supported by the abiotic components that surround them. This studies involves humans as a component in it, so that ecology ia a science that bridges natural sciences with social sciences.<sup>26</sup>

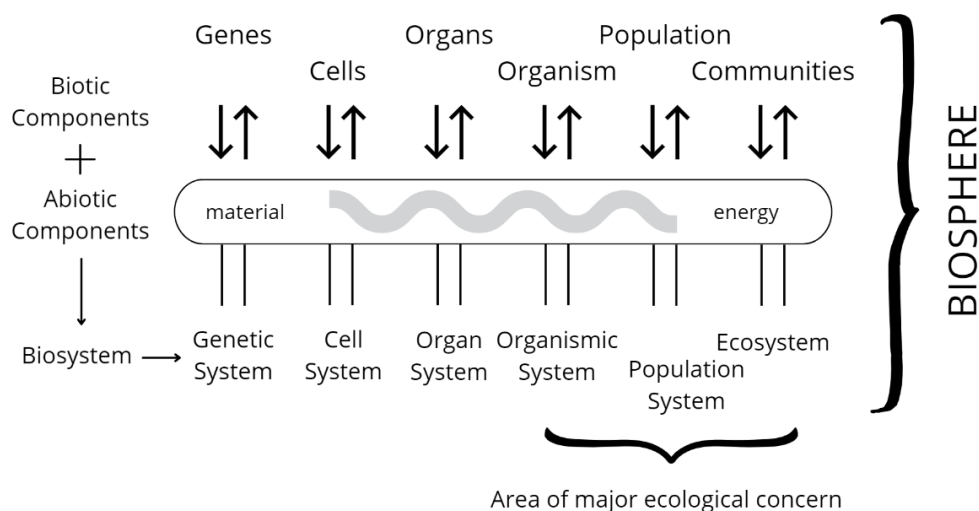
#### **b. Ecological Scope**

In academic scope, ecology is one of biology science branch which is discuss about relationship between organism and environment, more broadly, also between humans and the environment. Although often the term of 'ecology' is equated with 'environment', even though there are differences between both of them. In the discussion of ecology, humans are part of the environment, doesn't separate from the environment. So that humans have a contribution to maintain their relation with nature. In a real sense, ecology connects various kinds of science, starting from physics, biology, and social sciences.<sup>27</sup> Discussion about the scope of ecology is something that must be understood as a provision to explore further ecological science. So this research focuses on using Eugene Pleasants Odum's theory to describe the scope of ecology. In his book "*Ecology: The Link Between The Natural and The Social Sciences*", Odum stated that the scope of ecology is briefly described in the charts as follows:

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<sup>26</sup> Universitas Negeri Yogyakarta, *Handout Ekologi*, diakses melalui staff.uny.ac.id, 2

<sup>27</sup> Eugene P. Odum, *Ecology: ..., vi*



The discussion of ecology can't be separated from the discussion of ecosystems with their various constituent components, namely biotic and abiotic. So it is necessary to explain in advance the definition of biotic and abiotic components. Biotic is a component that has life (such as humans, animals, plants, and microorganisms)<sup>28</sup>, while abiotic is a component that doesn't live in an environment (such as water, soil, temperature, sunlight, air, and air pressure).<sup>29</sup>

Also a brief discussion about the levels of organization of living things described in the chart above. The cell is the smallest structural and functional part of a living organism.<sup>30</sup> A bunch of cells will form organs and work together to doing certain tasks (eg the heart organ in human).<sup>31</sup> A bunch of organs becomes an individual organism. A group of organisms

<sup>28</sup> Tim GTK Diknas, *Modul Belajar Mandiri Calon Guru: Pegawai Pemerintah dengan Perjanjian Kerja Bidang Studi Biologi* (Jakarta: 2021), 165

<sup>29</sup> Ibid...,167

<sup>30</sup> Kementerian Pendidikan dan Kebudayaan, *Organisasi Kehidupan: Ilmu Pengetahuan Alam (IPA) Paket B Setara SMP/MTs Modul 4* (2017), 4

<sup>31</sup> Kementerian Pendidikan dan Kebudayaan, *Organisasi Kehidupan...*, 27

will form a population (eg plant population). From a population, it will meet with other populations, so it is called the community level (eg human population interacts with animal populations and plant populations).

The explanation of the chart above shows that to know the scope of ecology one must first understand the levels of organization of living things. By looking at the chart above, it is easy to imagine how biological units interact with the physical environment (energy and material) sequentially to combine to produce a series of living systems (biosystems). The using word 'system' here refers to a group of items that interact regularly or depend on each other to form a unified whole. This ecological scope focusses from the level of individual organism to the very last level of organization of living things.<sup>32</sup>

Starting from individual organism level, which can be humans, animals or plants. All of them can't live or reproduce without intermediaries or the help from other components, such as plants can't carry out photosynthesis without help from water, soil, sunlight (in the form of material). This interaction continues up to the population level, where humans need animals and plants to eat, also animals and plants need humans to care for and maintain their existence. The interactions that occur between these populations expand to become a community, which inside of that community, there will find the process of the food chain (in the form of energy) that occur in it. All of them, both organisms, the

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<sup>32</sup> Eugene P. Odum, *Ecology: ..., 4*

processes that occur in it, and the material or energy involved in its is the scope of ecology.

## 2. Ecological Values

Etymologically, value is a word that comes from the English language itself. In everyday life value is something that is valuable, qualified, shows quality, and it is useful for humans. Meanwhile, in philosophy, value is used as a term to denote an abstract noun that has the meaning of worth equal to goodness.<sup>33</sup> In this discussion, value is a moral-based quality.

In Islam, attitude or *akhlak* is a main thing that is always considered. Allah created humans perfectly compared to other creatures, humans were given reason and thoughts that are used to interact with other humans and also the environment around them. A person with a good morals always carries out their obligations and gives rights that must be given to those who are entitled. Always understand what is the obligation and right for themselves, his God, fellow human beings, other living things, and the environment around them.<sup>34</sup>

So in this case, it is true that ecological values are something that needs to be considered as an effort to be responsible to God as the creator of the universe, the preservation of the surrounding environment, the survival of other living things and themselves. Al-Quran and Hadith have provided quite clear guidelines that natural resources and the environment are the carrying

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<sup>33</sup> Moh. Najib, *Pendidikan Nilai (Kajian Teori dan Praktik di Sekolah)* (Bandung: CV Pustaka Setia, 2014), 14

<sup>34</sup> Akilah Mahmud, *Ciri dan Keistimewaan Akhlak Dalam Islam*, Jurnal Sulesana, Vol. 13 No. 1 (2019), 30



capacity for human life. Because spiritual facts shows that God has provided environmental carrying capacity facilities for human life. So in this case, the preservation of the environment conservation is a mandatory.<sup>35</sup>

### 3. Ecology In Islamic Perspective

Islam as a religion that is always open to the times, will continue to be wide open for further study using various perspectives, including the perspective of science. Ecology as a part of science which talking all about interaction in this nature. If in science, the definition of ecology, in a nutshell, is the mutual relationship between creatures in this world, then according to Islam, ecology has more meaning than that. It is not only a matter of reciprocity but rather an emphasis on human responsibility as the controller in this world towards other creatures around it.

#### a. The Role of Islam In Maintaining Ecological Balance

Islam as a perfect and comprehensive religion must have its own background and reasons for advocating or forbidding something. Also inserts a purpose in creation which is to glorify and praise to Allah.<sup>36</sup> Likewise Allah as the creator of this universe, of course has a reason in creating the universe and its contents. This case is explained in surah Al-Jasiyah [45]: 13

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<sup>35</sup> Agus Jatmiko, *Pendidikan Berwawasan Ekologi: Realisasi Nilai-nilai Ekologis dalam Kurikulum Pendidikan Agama Islam*, Al-Tadzkiyyah: Jurnal Pendidikan Islam, Vol 7 (Mei 2016), 50

<sup>36</sup> Ghazi bin Muhammad, dkk, *The Holy Qur'an and The Environment*, (Jordan: The Royal AaL Al-Bayt Institute for Islamic Thought, 2010), 11

وَسَخَّرَ لَكُمْ مَّا فِي السَّمٰوٰتِ وَمَا فِي الْاَرْضِ جَمِيعًا مِّنْهُ لِيَّا فِيْ ذٰلِكَ لَاٰيٰتٍ لِّقَوْمٍ  
يَّتَفَكَّرُوْنَ ۙ ۱۳

“And He has subjected for you all that is in the heavens and all that is on earth; all is from Him. Indeed, there are signs in this for people who reflect.”

In the verse above, it is explicitly stated that Allah created the sky and the earth as a form of Allah’s mercy to humans. Humans can take so many advantages of what Allah has provided for the prosperity and welfare of his life. But it doesn’t just stop in there, this is also a form of lesson for Muslims to always be grateful for what Allah has bestowed on humans. This form of gratitude can be implemented, one of them by taking advantage of nature without any destructive action, or in other words, humans are encouraged to always maintain a balance in the environment.<sup>37</sup> This can be felt by humans who want to think and care with the surroundings environment.

#### **b. The Interpretation of Ecological Verses in Al-Quran**

It is believed that the Qur'an has describes nature as Allah's creation in its essence is a form of theophany that covers and reveals at the same time the greatness of Allah.<sup>38</sup> As a part of nature, in the study of Al-Quran interpretation, issues concerning ecology have not been discussed clearly by ulama. Even though there are many verses in the Al-Quran that implicitly contain ecological meanings inside. The discussion of ecology in the Al-Quran is usually not far from discussing about the favors that

<sup>37</sup> Sabarudin, dkk, *Islam dan Lingkungan Hidup*, (Sleman: Aswaja Pressindo, 2017), 59

<sup>38</sup> Ahmad Cholil Zuhdi, *Krisis Lingkungan Hidup Dalam Perspektif Al-Qur'an*, Mutawattir: Jurnal Keilmuan Tafsir Hadis, Vol. 2 No. 2, Desember 2012, 142

God has bestowed on the world, humans as the khalifah fil ardh, and also the damage to the earth which is caused by humans. Some verses that discuss about the ecological theme are in surah Al-Rum verse 41, surah Shad verse 27, surah Al-A'raf verse 56-57, and surah Al-An'am verse 141.

First, the discussion of ecology in the Al-Quran usually doesn't escape from discussion about human activities that can cause damage in the earth. This is mentioned in surah Al-Rum [30]:41

ظَهَرَ الْفَسَادُ فِي الْبَرِّ وَالْبَحْرِ بِمَا كَسَبَتْ أَيْدِي النَّاسِ لِيُذِيقَهُمْ بَعْضَ الَّذِي عَمِلُوا لَعَلَّهُمْ  
يَرْجِعُونَ ٤١

“Corruption has appeared on land and sea because of what people's hands have earned, so that He may cause them to taste the consequence of some of their deeds, so that they may return.”

According to Al-Misbah's book, the purpose of land and sea where the damage occurs is the sea could be polluted so that the fish die and the seaproducts decrease. While in the land, the temperature is getting hotter, so there is a long dry season.<sup>39</sup> The actions of destroying the environment by humans on the earth are due to their life orientation is only the luxuries of the world. If only that didn't happen, so this world would be full of virtue, glory, security, and peace. Then this kind of humans will be destroyed by Allah with bringing disaster that will destroy his property and soul, with this way, Allah wants his servants to return back to the right way.<sup>40</sup> The meaning of 'return back to the right way' in this case is to

<sup>39</sup> Quraish Shihab, *Tafsir Al-Misbah Jilid 11* (Jakarta: Lentera Hati, 2002), 77

<sup>40</sup> Hasbi Ash-Shiddieqy, *Tafsir Al-Quran Majid An-Nuur Jilid 4* (Semarang: PT. Pustaka Rizki Putra), 3184

return to maintaining the balance of the earth by not destroying them. The same thing also explained in the surah Al-A'raf [7]:56-58

وَلَا تُفْسِدُوا فِي الْأَرْضِ بَعْدَ إِصْلَاحِهَا وَادْعُوهُ خَوْفًا وَطَمَعًا إِنَّ رَحْمَتَ اللَّهِ قَرِيبٌ مِّنَ الْمُحْسِنِينَ ٥٦ وَهُوَ الَّذِي يُرْسِلُ الرِّيحَ بُشْرًا بَيْنَ يَدَيْ رَحْمَتِهِ ۗ حَتَّىٰ إِذَا أَقَلَّتْ سَحَابًا ثِقَالًا سُقِنَهُ لَيْلِدٍ مَّيِّتٍ فَأَنْزَلْنَا بِهِ الْمَاءَ فَأَخْرَجْنَا بِهِ ۖ مِنْ كُلِّ الثَّمَرَاتِ ۗ كَذَلِكَ نُخْرِجُ الْمَوْتَىٰ لَعَلَّكُمْ تَذَكَّرُونَ ٥٧ وَالْبَلَدُ الطَّيِّبُ يَخْرِجُ نَبَاتَهُ ۗ وَابْدُنِ رَبِّهِ ۗ وَالَّذِي خُبَّتْ لَا يَخْرِجُ إِلَّا نَكِدًا ۗ كَذَلِكَ نُصَرِّفُ الْآيَاتِ لِقَوْمٍ يَشْكُرُونَ ٥٨

“Do not spread corruption on earth after it has been set alright, but call upon Him with fear and hope. Indeed, the mercy of Allah is close to those who do good. (56). It is He Who sends the winds as glad tidings ahead of His mercy, until when they bear heavy clouds, We drive them to a lifeless land then We send down rain from it, producing thereby every kind of fruit. This is how We raise the dead, so that you may take heed (57). The good land produces its vegetation by the Will of its Lord, but the bad land only produces poor and scanty vegetation. This is how We diversify the signs for people who give thanks.(58).”

This verse contains prohibition to do damage in the earth. The earth with all of its contents was created to be processed and utilized as well as possible by humans. It's just that there are some people who do damage isn't only damage the environment.<sup>41</sup> According to tafsir Al-Quran al-majid An-Nuur, destroying the earth has a various meaning, namely: destroying humans physically by means of murder and persecution, destroying property by stealing and seizing that which doesn't belong to him, destroying religion with kufr and committing immorality. One of the forms of Allah's grace is to send winds so that it rains, so that the rain becomes a source of life and sustenance for all creatures that live on the earth. So the lesson from these three verses is that humans are commanded to always be grateful and unite Allah with tauhid

<sup>41</sup> Ariyadi, *Al-Qur'an Views Relating to Environmental Conservation*, Jurnal Daun Vol. 5 No. 1 (Juni 2018), 6

uluhiyyah.<sup>42</sup> While growing plants on barren lands that are exposed to rain are also equated with when Allah resurrects humans after death.<sup>43</sup>

Then humans are reminded by Allah that everything on this earth was created in vain but with the aim that humans can take benefit from it.

This is explained in surah Shad [38]:27

وَمَا خَلَقْنَا السَّمَاءَ وَالْأَرْضَ وَمَا بَيْنَهُمَا بَاطِلًا ۚ ذَٰلِكَ ظَنُّ الَّذِينَ كَفَرُوا فَوَيْلٌ لِلَّذِينَ  
كَفَرُوا مِنَ النَّارِ ۗ ٢٧

“We have not created the heavens and earth and all that is between them in vain. That is the assumption of those who disbelieve. So, woe to disbelievers from the fire.”

This verse explains by Quraish Shihab that Allah will not create something without the benefit and purpose in it, like making sky and earth a place full of benefits. If the creation of this world was aimless, then what Allah does regarding the life and death of the creatures is a game.<sup>44</sup> But it is not like that, the creation is a way to prove the perfect power and greatness of Allah. So that with this, Allah wants his servant to take wisdom in it and be responsible for what Allah has placed on earth as a place for human habitation. Furthermore, Hasbi Ash-Shiddieqy explains that humans who can't be responsible for what is entrusted to them will become kufur people and will go to hell.<sup>45</sup>

Then implicitly Allah explains that with his greatness, created various kinds of plants from vines to those that do not vines with the aim that humans can use them. This is explained in surah Al-An'am [6]:141

<sup>42</sup> Hasbi Ash-Shiddieqy, *Tafsir Al-Quran Majid An-Nuur Jilid 4*, ... 1414

<sup>43</sup> Quraish Shihab, *Tafsir Al-Misbah Jilid 5*, ... 127

<sup>44</sup> Quraish Shihab, *Tafsir Al-Misbah Jilid 12*, ... 136

<sup>45</sup> Hasbi Ash-Shiddieqy, *Tafsir Al-Quran Majid An-Nuur Jilid 4*, ... 3508

وَهُوَ الَّذِي أَنْشَأَ جَنَّاتٍ مَّعْرُوشَاتٍ وَغَيْرِ مَّعْرُوشَاتٍ وَالنَّخْلَ وَالزَّرْعَ مُخْتَلِفًا أَكْلُهُ ۗ وَالزَّيْتُونَ  
 وَالرُّمَانَ مُتَشَابِهًا وَغَيْرَ مُتَشَابِهٍ كُلُوا مِنْ ثَمَرِهِ إِذَا أَثْمَرَ وَآتُوا حَقَّهُ ۗ يَوْمَ حَصَادِهِ ۗ وَلَا  
 تُسْرِفُوا إِنَّهُ لَا يُحِبُّ الْمُسْرِفِينَ ۝ ۱۴۱

“It is He Who brings into being gardens – trellised and untrellised – and palm trees and crops of different flavors, and olives and pomegranates – similar (in shape) yet different (in taste). Eat of their fruit when they bear fruit and give out its due to on the day of harvest. But do not be wasteful, for He does not like those who are wasteful.”

About this verse, in tafsir Al-Quran Majid An-Nuur explaining that Allah created a park which contains plants and fruits of various shapes and tastes. Humans are commanded to always be grateful for the blessings that has given by Allah in the form of these plants and fruits. This blessing is channeled by issuing zakat with the existing limit levels.<sup>46</sup> According to Quraish Shihab in his tafsir al-misbah, the issuance of this zakat reaps many opinions among ulama about whether all types of crops and fruits are obligatory to pay zakat or only a few.<sup>47</sup> The most important is the utilization is not excessive and does not damage the essence of the usefulness of these plants and fruits.

UIN SUNAN AMPEL  
 S U R A B A Y A

<sup>46</sup> Hasbi Ash-Shiddieqy, *Tafsir Al-Quran Majid An-Nuur Jilid 4, ...* 1323

<sup>47</sup> Quraish Shihab, *Tafsir Al-Misbah Jilid 4, ...* 317

**CHAPTER III**

**THE BOOK OF *TUMBUHAN DALAM PERSPEKTIF AL-QURAN DAN SAINS (TAFSIR ILMU OF INDONESIAN***

**MINISTRY OF RELIGIOUS AFFAIRS)**

**A. Technical Aspects**

**1. Writing Background**

Indonesia is a country with a majority of its people as Muslims, of course, the people really need Islamic religious guidelines in their life. These guidelines are certainly sourced from the Al-Quran and hadith. However, Muslims who need these guidelines, sometimes face difficulties in accessing languages where most of the interpretations of the Al-Quran are in Arabic. In response to this, the Indonesian Ministry of Religious Affairs supports the improvement of the quality of religious understanding and practice of the Islamic community in Indonesia, one way is to provide products of Al-Quran interpretation in Indonesia.<sup>1</sup>

Its traces, so far the Indonesian Ministry of Religious Affairs has made an effort in translating the Al-Quran and its interpretation into the Indonesian language. Starting from the translation of the Al-Quran in the Indonesian language by the Indonesian Department of Religious Affairs

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<sup>1</sup>Kementerian Agama RI, *Tafsir Ilmi: Tumbuhan dalam Prespektif al-Qur'an dan Sains* (Jakarta: Kementerian Agama, 2011), xi

which was first circulated on 17<sup>th</sup> August 1965, with output in the form of 3 volumes and each volume containing ten volumes. Then in 1971, printed the Al-Quran and its translation into one complete volume.<sup>2</sup> These two works still include only the translation, not touching on the work of interpretation, because the effort to translate the Al-Quran into Indonesian languages has taken a lot of time, effort, and thought.

Until 1975, then for the first time produced work in the form of Al-Quran interpretation in one volume which contains the interpretation of the first three *juz* in the Al-Quran. This interpretation effort continued with subsequent volumes until it was completed 30 *juz* in 1980 with a simple format. Even though the product is complete in 30 *juz*, the Indonesian Ministry of Religious Affairs continues to make improvements to the results of the commentary, this refinement process was completed in 2007.<sup>3</sup>

Doesn't satisfy just that, the Indonesian Ministry of Religious Affairs continues to carry out further updates and improvements, which based on suggestions from *ulama* and several experts from multidisciplinary, require an in-depth study of the *kauniyah* verses or verse studies from the

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<sup>2</sup> Sahlan Muhammad Faqih dan Siti Pajriah, *Tafsir Resmi Versi Pemerintah di Indonesia*, Jurnal Iman dan Spiritualitas Vol. 1 No. 2 (2021), 116

<sup>3</sup> Since the *ulama* meeting on 28 – 30 April 2003, the Indonesian Ministry of Religious Affairs received two suggestions as a response to their commentary work. First, it is necessary to make improvements to the work of “Al-Quran dan Tafsirnya Kementerian Agama RI”. Second, to formulate guidelines for perfecting the interpretations as a reference for the work of the interpretation team in these improvements and also a schedule for completion (with a target of completion in 2007). In 2007 the interpretation team had completed all improvement studies, but publication was carried out in stages. In 2004 *juz* 1-6 began to be published, in 2005 *juz* 7-12, in 2006 *juz* 13-18, in 2007 *juz* 19-24, in 2008 *juz* 25-30. Learn more at Sahlan Muhammad Faqih dan Siti Pajriah, *Tafsir Resmi Versi Pemerintah di Indonesia*, Jurnal Iman dan Spiritualitas Vol. 1 No. 2 (2021), 117



perspective of science and technology.<sup>4</sup> Responding to this requirement, the Indonesian Ministry of Religious Affairs immediately formed a team to work with Lembaga Ilmu Pengetahuan Indonesia (LIPI).

Based on what was written by head of *Kementerian Agama RI*, head of *Litbang dan Diklat Kementerian Agama RI*, head of *Lajnah Pentashihan Mushaf Al-Quran Kementerian Agama RI*, and head of *Lembaga Ilmu Pengetahuan Indonesia (LIPI)* in his greeting on the tafsir ilmi of the series “*Tumbuhan dalam Perspektif Al-Quran dan Sains*”, at least there are several reasons behind the formation of this scientific interpretation. *First*, as a response to the development of science and technology. *Second*, to introduce the greatness of Allah to modern humans. *Third*, as a manifestation of modern human awareness of the importance of *iqra'* or digging deeper into all things that exist on earth through the Al-Quran and science. *Fourth*, as a way to show the wider community that the Al-Quran and science have harmonious scientific integration, both of them can synergize in facing the development of modern science and technology.

Through the formation of this *tafsir ilmi*, it is hoped that the reader will be able to observe and pay attention to the vast expanse of the universe, which by doing and being aware, it can make the reader believe in the power and the greatness of Allah in creating and maintaining the harmony of the universe. It also implicitly wants to be able to build Islamic civilization which

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<sup>4</sup> The results of the study of these *kauniyah* verses serve as an additional explanation of the pre-existing interpretations, which are arranged according to the order of the *mushaf (Al-Quran dan Tafsirnya - Kementerian Agama RI)*, baca selengkapnya di Kementerian Agama RI, *Tafsir Ilmi: Tumbuhan dalam Prespektif...*, xiii

was initiated through the encounter between science and *tafsir*.<sup>5</sup> Due to this background, the Indonesian Ministry of Religious Affairs is actively conducting studies on *kauniyah* verses, so up to now there have been 36 works of thematic model interpretation with 15 of them using the scientific interpretation style and the rest being thematic model interpretation with social discussion.<sup>6</sup>

*Tumbuhan dalam perspektif Al-Quran dan sains* itself is one of the products of thematic model interpretation using the scientific interpretation style owned by the Indonesian Ministry of Religious Affairs. This book was published in 2011 together with two other series, namely; *air dalam perspektif Al-Quran dan Sains* and *kiamat dalam perspektif Al-Quran dan Sains*.

## 2. Editorial Work

The redactor team of *Tafsir Ilmi* of the Indonesian Ministry of Religious Affairs, especially in the series “*Tumbuhan Dalam Perpektif Al-Quran dan Sains*” consists of several experts with different scientific backgrounds. The first team is called the *syar’I* team, which is a group of people who is an expert in the field of the language of the Al-Quran, such as *asbabun nuzul*, *munasabatul-ayat*, history of interpretation, and other Islamic studies. The second team is called *kauniy* team, which is a group within-person who is an expert in the scientific field, such as physics, chemistry,

<sup>5</sup> Faizin, *Integrasi Agama dan Sains dalam Tafsir Ilmi Kementerian Agama RI*, Jurnal Ushuluddin Vol. 25 No. 1 (Januari-Juni 2017), 25

<sup>6</sup> Sahlan Muhammad Faqih dan Siti Pajriah, *Tafsir Resmi...*, 119

biology, astronomy, etc. These two teams synergize in the form of *ijtihad jama'I* (collective *ijtihad*) to explain the *kauniyah* verses in the Al-Quran.<sup>7</sup> In the book "*Tumbuhan Dalam Perspektif Al-Quran dan Sains*" as well as other series compiled in the same year, there were several people who joined the redactor team, both *syar'I* and *kauniy* groups, namely:

a. Prof. Dr. H. Abdul Djamil, MA

He is the head of *Badan Litbang dan Diklat Kementerian Agama RI* who was appointed in 2010. Two years after taking on the trust as head of *Badan Litbang dan Diklat Kementerian Agama RI*, he was trusted as a director general of *Bimbingan Masyarakat Islam*, and in 2014 he was trusted as a director general of *Penyelenggaraan Haji dan Umrah*.<sup>8</sup>

b. Drs. H. Muhammad Shohib, MA

Is a head of *Lajnah Pentashihan Mushaf Al-Quran* in 2007-2014. One of his papers is in a journal entitled "*Sikap Terhadap Uang dan Perilaku Berhutang*" in the scientific journal of *Psikologi Terapan* published by the psychology faculty, Muhammadiyah University, Malang in 2015.<sup>9</sup>

c. Prof. Dr. H. Hery Harjono

A researcher who does a lot of research in geodynamics related to the earth's crust associated with earthquakes. He served as President of HAGI (*Himpunan Ahli Geofisika Indonesia*) in 1992-1994. Involved in research

<sup>7</sup> Kementerian Agama RI, *Tafsir Ilmi: Tumbuhan dalam Prespektif...*, xiv

<sup>8</sup> Kementerian Agama RI, *Abdul Djamil: Orientasi Sudah, Tinggal Kerja Keras*, (6 Juni 2014), diakses melalui <https://kemenag.go.id/>

<sup>9</sup> Muhammad Shohib, *Sikap Terhadap Uang dan Perilaku Berhutang*, *Jurnal Ilmiah Psikologi Terapan* Vol. 03 No. 02 (Januari 2015), 1

project *Multi-Diciplinary Hazard Reduction from Earthquakes and Volcanos in Indonesia* as Principal Investigator in which this project is an Indonesian-Japanese collaboration supported by the Japan International Cooperation Agency (JICA), Japan Science and Technology Agency (JST), LIPI, and Ministry of Research and Technology which was held from 2009-2012.<sup>10</sup>

d. Dr. H. Muchlis M. Hanafi, MA

Born in Jakarta on 18 August, 1971. He is a doctorate in the field of interpretation and *Al-Quran* studies, alumni of Al-Azhar University, Cairo, Egypt. Currently serves as the main secretary of the *Badan Amil Zakat Nasional (BAZNAS) RI*. In his history, he was also entrusted being the head of *Lajnah Pentashihan Mushaf Al-Quran* in 2017-2022, and head of the Al-Quran studies division of *Lajnah Pentashihan Mushaf Al-Quran* in 2010-2015.<sup>11</sup>

e. Dr. H. Muhammad Hisyam

He is a LIPI historian who specializes in Islamic history. Completed his doctoral program at Leiden *University* in 2000 which discussed the role of princes in Java during the colonial era. The dissertation was then published into a book in 2001 by INIS, Jakarta-Leiden with the title "*Caught Between Three Fires, The Javanese Pangulu Under The Dutch Colonial Administration 1882-1942*". During his lifetime he left many good

<sup>10</sup> Lembaga Ilmu Pengetahuan Indonesia, *Prof. Dr. Hery Harjono Terima HAGI Award 2011*, (28 September 2011), diakses melalui <http://lipi.go.id/>

<sup>11</sup> Badan Amil Zakat Nasional, *Riwayat Hidup Dr. H. Muchlis Muhammad Hanafi, Lc., MA.*, diakses melalui <https://baznas.go.id/>

impressions on the people around him, until he finally died from infected by Covid-19 viruses on July 18, 2021.<sup>12</sup>

f. Prof. Dr. Arie Budiman

Members of the *Kauniy* team while working on the scientific interpretation of the Indonesian Ministry of Religious Affairs. One of his works is "*A Study of Several Ecological Gatra of Indonesian Bakay Molluscs*" which was published in 1991 and was his dissertation in order to obtain a doctoral degree at the University of Indonesia. In addition, there is also his work "*Some Aspects on The Ecology of Mangrove Whelk Telescopium Tslescopium (Linne, 1758) (Mollusea, Gastropods: Potamididae*" published by the journal *Treubia* in 1988, "*Diversity and Abundance of Mangrove Molluscs: The Water Hole Effect*" which published in 1997.<sup>13</sup>

g. Prof. Dr. Syamsul Farid Ruskanda, M.Sc.

In working on the scientific interpretation of the Indonesian Ministry of Religious Affairs, he became a member of the *Kauniy* team, or one of the expert teams from *LIPi (Lembaga Ilmu Pengetahuan Indonesia)*. Some of his works are books entitled "*Rukya Dengan Teknologi: Upaya Pandangan Tentang Penentuan Awal Ramadhan dan Syawal*" which was published in 1994, "*100 Masalah Hisab dan Rukyat: Telaah Syariah, Sains, dan Teknologi*" which was published in 1996. Then in 1996 1998 wrote a book entitled "*Pencapaian Ilmu Lembaga: Lembaga Ilmu*

<sup>12</sup> Riwanto Tirtosudarmo, *Muhammad Hisyam, Sejarahwan Islam yang Rendah Hati*, (21 Juli 2021), diakses melalui <https://pmb.brin.go.id/>

<sup>13</sup> Arie Budiman, *Keanekaragaman dan Kelimpahan Jenis Moluska Bakau: Efek Lubang Air*, (Bogor: Masyarakat Zoologi Indonesia, 1997), 1

*Pengetahuan Indonesia (LIPI) Selama Pelita VI (1993-1997)*". Until he died in 2011.<sup>14</sup>

h. Prof. Dr. H. Hamdani Anwar, MA

He is one of the professors of Al-Quran and Interpretation at UIN Syarif Hidayatullah, Jakarta. *Completed* his education up to strata three at the Jakarta State Islamic Institute (which is now known as the UIN Syarif Hidayatullah).<sup>15</sup> There are also many videos of his da'wah circulating on Youtube with a calm and structured delivery that makes it easier for the audience to understand what is conveyed.<sup>16</sup>

i. Prof. Dr. H. E. Syibli Syarjaya, LML, M.M

Born in Pnadeglang on 5 July, 1950. He is an expert in Al-Quran and Interpretation who has a lot of experience and scientific works. He obtained his LML degree from the Sharia Al-Azhar faculty of Cairo University in 1980, while his master's degree in management was obtained from STIE IPWI Jakarta in 2000, and his doctorate was obtained from UIN Bandung. Currently serving as Rector of Mathla'ul Anwar University, and was previously a Rector of IAIN Sultan Maulana Hasanuddin Banten from 2010-2014. He also become deputy chairman of the advisory board of the *BWI (Badan Wakaf Indonesia)* in 2017-2020.<sup>17</sup>

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<sup>14</sup> Sugiono, *Upaya Membantu Keamanan dan Kenyamanan Berkendara dengan Optik*, (30 Desember 2015), diakses melalui <http://lipi.go.id/>

<sup>15</sup> Direktori Staff UIN Syarif Hidayatullah Jakarta, *Profil Staff*, diakses melalui <https://staff.uinjkt.ac.id/>

<sup>16</sup> MJB TV, *Ketulusan Nabi Nuh A.S Dalam Berdakwah / Prof. Dr. Hamdani Anwar, M.A (Video)* (3 Desember 2022), <https://www.youtube.com/watch?v=eeUqGmdNDfU>

<sup>17</sup> Badan Wakaf Indonesia, *Susunan Pengurus BWI Indonesia 2017-2020*, diakses melalui <https://www.bwi.go.id/>

j. Prof. Dr. Thomas Djamaluddin, M.Sc.

Born in Purwokerto, 18<sup>th</sup> January 1962. Completed undergraduate education at Institut Teknologi Bandung with an astronomy major, then continued his education with the same major until postgraduate in Kyoto University using a Monbusho scholarship. Served as the head of LAPAN (*Lembaga Penerbangan dan Antariksa Nasional*) from 2014-2021. Currently as a principal investigator (professor of research) in BRIN (*Badan Riset Inovasi Nasional*) and as a lecturer in a doctoral program in the major of *Ilmu Falak* UIN Walisongo Semarang.<sup>18</sup>

k. Prof. Dr. H. Darwis Hude, M.Si.

A professor who was born in Bone, on 27<sup>th</sup> March 1956 is an alumnus from *pesantren* As'adiyah Sengkang, Wajo, South Sulawesi. Currently serving as a director of *the* postgraduate Institute PTIQ Jakarta.<sup>19</sup> In addition, it is also listed as a national council of judges of MTQ in the field of *Musabaqoh Fahmil Quran, Musabaqah Syarhil Quran, and Musabaqah Makalah Ilmiah Al-Quran*.<sup>20</sup> One of his works is a scientific article entitled "*Melacak Peran Strategis Keluarga Batih Dalam Pembentukan Karakter Bangsa*" in a journal of Al-Burhan (*Jurnal Kajian Ilmu dan Pengembangan Budaya Al-Quran*).<sup>21</sup>

l. Dr. H. Moedji Raharto

<sup>18</sup> T. Djamaluddin, diakses melalui <https://tdjamaluddin.wordpress.com/>

<sup>19</sup> Institut PTIQ Jakarta, *Struktur Organisasi*, diakses melalui <https://ptiq.ac.id/>

<sup>20</sup> Pondok Pesantren As'adiyah Pusat Sengkang, *Profil Prof. Dr. H. Darwis Hude, M.Si.*, (8 Desember 2018), diakses melalui <https://asadiyahpusat.org/>

<sup>21</sup> Darwis Hude, *Melacak Peran Strategis Keluarga Batih Dalam Pembentukan Karakter Bangsa*, Al-Burhan: Jurnal Kajian Ilmu dan Pengembangan Budaya Al-Quran, Vol. 1 No. 2 (November 2015)

A researcher born in Ponggok, Blitar, East Java on 8<sup>th</sup> November 1954 completed his doctoral program at the University of Tokyo, Japan, in 1997. The dissertation used to achieve this doctoral degree is “Study of Galactic Structure Based on M Type Stars”. Apart from being a teaching staff at the department of astronomy at the *Institut Teknologi Bandung* (ITB) he is also active as a *member* of the International Astronomical Union, International Islamic Calendar Programmer, and also a member of *Musyawaharah Kerja Departemen Agama*.<sup>22</sup>

m. Dr. H. Sumanto Imam Hasani

A researcher in *Lembaga Ilmu Pengetahuan Indonesia* (LIPI). He once led an exploration team for medicinal plants in the forest area of Lawu’s mount in 2006.<sup>23</sup> In addition to being a team from writing *tafsir ilmi* of Indonesian Ministry of Religious Affairs series of *tumbuhan perspektif Al-Quran dan sains*, Sumanto also contribute in writing *tafsir ilmi* in some series, such as *samudera dalam perspektif Al-Quran dan sains* and *penciptaan jagat raya dalam perspektif Al-Quran dan sains*.

n. Dr. Hoemam Rozie Sahil

Is one the staff of *PNS Lembaga Ilmu Pengetahuan Indonesia* (LIPI) in the work unit of the physics research center from 1 march 1979 to 24 December 2015.<sup>24</sup> One of his publications in a scientific paper entitled

<sup>22</sup> Rameli Agam, *Dr. H. Moedji Raharto: Nikmatnya Mendetekdi Informasi Langit*, diakses melalui <http://lipi.go.id/>

<sup>23</sup> Syamsul Hidayat, dkk, *Eksplorasi Flora: 25 Tahun Menjelajah Rimba Nusantara* (Jakarta: LIPI Press, 2017), 223

<sup>24</sup> Pusat Penelitian Fisika LIPI, *Staf*, Diakses melalui <http://sivitas.lipi.go.id/>



*“Pemasyarakatn Pompa Hidraulik Ram (Hidram), Kasus Difusi Teknologi Tepat Guna di Pedesaan Indonesia”*.<sup>25</sup>

o. Prof. Dr. M. Rahman Djuwansah

A researcher at the geotechnology research center in *Lembaga Ilmu Pengetahuan Indonesia* (LIPI). He received his doctoral degree at Strasbourg University majoring in geology in 1990.<sup>26</sup> One of his works entitled *“Penelitian Spasial – Temporal Kualitas Air Waduk Saguling Untuk Mitigasi Kelangkaan Sumber Air Baku Metropolitan Bandung”*.<sup>27</sup>

p. Ir. Dudi Hidayat, M.Sc.

Is a researcher in *Pusat Analisa Perkembangan Iptek* (PAPPIPTEK) – LIPI born in Sumedang, 1967. Received his formal education in Delft University, Belanda in 1994, the University of Sussex Brighton in 1999, and the faculty of public administration, at the University of Indonesia in 2020. Starting his career in the *Lembaga Ilmu Pengetahuan Indonesia* (LIPI) in 1995. His long service has made him experienced in holding positions in it, namely, in 2001-2007 he became head of *Bidang Penelitian Kebijakan IPTEK*, 2008-2010 as e head of PAPPIPTEK, and in 2019 until now as head of *Pusat Penelitian Kebijakan dan Manajemen IPTEK dan*

<sup>25</sup> Lembaga Ilmu Pengetahuan Indonesia, *Pemasyarakatan Pompa Hidraulik (Hidram), Kasus Difusi Teknologi Tepat Guna di Pedesaan Indonesia*, (3 Maret 2014), diakses melalui <http://lipi.go.id/>

<sup>26</sup> Badan Riset dan Inovasi Nasional, diakses melalui <https://siin.brin.go.id/>

<sup>27</sup> Pusat Penelitian Geoteknologi – LIPI, *Prosiding Geotek Expo Pusat Penelitian Geoteknologi LIPI – 2016 “Geoteknologi Untuk Solusi Perkotaan”*, (Bandung: LIPI, 2017), 11

*Inovasi (P2KMI). Currently concurrently as a Plt. Deputi Bidang Jasa Ilmiah – LIPI.*<sup>28</sup>

q. Abdul Aziz Sidqi, M.Ag.

The alumni of *pesantren* Al-Ihya Ulamadin Kesugihan Cilacap, Central Java. Undergraduate education at PTIQ in the field of Sharia, Masters at UIN Syarif Hidayatullah *Jakarta* in the Islamic Studies major. He is one of the functional position holders for the *pentashih Al-Quran ahli madya* under the auspices of the Ministry of Religion.<sup>29</sup> Currently serves as a coordinator of *Pengkajian Al-Qur'an LPMQ*.<sup>30</sup>

Besides consisting of the redactor team of *tumbuhan dalam perspektif Al-Quran dan sains* that mentioned above, there is also a secretariat staff consisting of three people, namely: Dra. Endang Tjempakasari, M. Lib., M. Musaddad, S.Th.I., Zarkasi, MA., Sholeh, S.Ag. All of them are working together to create this work of interpretation.

### 3. Systematic of Writing

On the first page there is a guideline for transliteration of Arabic-Latin, followed by the first part which contains several greetings. First greetings delivered by the head of Indonesian Ministry of Religious Affairs, head of *Badan Litbang dan Diklat Kementerian Agama RI*, head of *Lajnah Pentashihan Mushaf Al-Quran Kementerian Agama RI*, head of *Lembaga Ilmu*

<sup>28</sup> Lembaga Ilmu Pengetahuan Indonesia, *Profil Deputi Bidang Jasa Ilmiah*, diakses melalui <http://lipi.go.id/>

<sup>29</sup> Kementerian Agama RI, *Sah, Kemenag Kini Punya Pejabat Pentashih Mushaf Al-Qur'an*, (24 Agustus 2021), diakses melalui <https://kemenag.go.id/>

<sup>30</sup> Kementerian Agama RI, *Sah, Ada Jabatan Fungsional Pengembang Tafsir Al-Qur'an di Kemenag*, (24 Agustus 2021), diakses melalui <https://kemenag.go.id/>

*Pengetahuan Indonesia* (LIPI). After the greetings, there was a brief explanation about the Al-Quran and knowledge, *tafsir ilmi*, pros and cons of *tafsir ilmi*, and the basic principles in the preparation of *tafsir ilmi* as an introduction to continue the next discussion. After that, then enter the core discussion in this interpretation.

The second chapter is discussing plants in the Al-Quran. It contains a discussion of plants as *tamsil* and the use of plants by humans.

The third chapter is discussing processes and life in plants. It contains four sub-chapters and some of these sub-chapters have their respective explanations. The four sub-chapters and their explanations in this section are:

1. Plants as energy producers

This sub-chapter contains two explanations. First, it discusses the process of photosynthesis which contains a discussion of chlorophyll, the green substance in the Al-Quran, and also the process of photosynthesis itself in the Al-Quran. Second, discussing fossil fuels which include stone and iron.

2. Cycle of plants' life

3. The life of dead land

4. Plants Life

This sub-chapter contains an explanation of fruits, vegetables, and plants in the Al-Quran. There are 19 discussions, namely 1) pomegranates (discusses the origin of pomegranates and ancient records about them,

pomegranate trees, and the use of pomegranates). 2) Olives (discusses olive trees, fruit, and olive oil for health), 3) Tin, 4) dates, 5) grapes, 6) *sidr*, 7) *syajr miswak*, 8) *asl*, 9) ginger, 10) fennel nuts , 11) onion, 12) garlic, 13) cucumber, 14) basil, 15) pumpkin, 16) mustard. 17) products from plants (discusses *khamar*, *manna*, honey, *kafur*), 18) trees in general (discusses the forbidden tree for Adam, the tree that was burned during the inauguration of Musa as a Prophet, the *Bai'atur Ridwan* tree, the tree that grows in heaven (*Tuba*), trees that grow in hell (*Zaqqum* and *Dari'*), trees prostrate to Allah, trees as pens. 19) Grains (discussing about barley and wheat).

The fourth discusses human development and civilization. It contains two sub-chapters and has a description of each sub-chapters. The two sub-chapters and their explanations in this section are:

#### *1. Farming suggestion*

This sub-chapter contains six descriptions. 1) plant products as sustenance, 2) cultivate unused land, 3) rent land, 4) recommendations for setting aside seeds and food ingredients, 5) polytheism in agriculture, and 6) hadiths that seem to prohibit farming.

#### *2. Farming developments*

This sub-chapter contains four descriptions. 1) pre-agricultural lifestyle (discusses hunter-gatherer and grazing patterns), 2) emergence of agriculture, 3) sedentary life, 4) development of science and technology

in agriculture (discusses differences in fruit taste and agricultural science and technology).

The fifth part discusses the bioethics of plants. It contains three discussion sub-chapters, namely, first, humans as *khalifah* (discussing humans having a heart as well as humans and plants), second, bioethics towards plants, third, "reasoning" science.

## B. Book Methodology

### 1. Tafsir Method

The method of *tafsir* in Islah Gusmian's view is actually the same as the term 'source of *tafsir*' which is more commonly used. In this case, Islah Gusmian divides the *tafsir* method into two, namely the historical interpretation method (*tafsir bi al-ma'tsur*) and the thought interpretation method (*tafsir bi al-ra'y*).<sup>31</sup> So from these two groupings, the books of *tumbuhan dalam perspektif Al-Quran dan sains* belong to the method of interpreting thoughts or *tafsir bi al-ra'y*. It is classified in that group because there are more explanations based on ratios than explanations through history. For example, when interpreting the verse regarding oxygen as a result of photosynthesis in Surah Al-Waqiah [56]: 71-72.

أَفَرَأَيْتُمُ النَّارَ الَّتِي تُورُونَ<sup>ۗ</sup> ۗ ۷۱ ءَأَنْتُمْ أَنْشَأْتُمْ شَجَرَهَا أَمْ نَحْنُ الْمُنشِئُونَ ۗ ۷۲

“Have you ever thought about the fire that you kindle? Is it you who produced its trees, or is it We Who produced it?”

<sup>31</sup> Islah Gusmian, *Kajian Tafsir Indonesia (Dari Hermeneutika Hingga Ideologi)*, (Yogyakarta: LKiS, 2013), 211-217

This verse can discuss two topics at once, namely the phenomenon of fire in relation to wood, and the question of who created the wood that caused the fire. In this case, before interpreting the verse, the *tafsir ilmi* team of the Indonesian Ministry of Religious Affairs first compared the translation of the verse in Indonesian with the translation in English. There is a slight difference between the Indonesian and English translations. The difference is in the word شجرة in the sentence ءَأَنْتُمْ أَنْشَأْتُمْ شَجَرَهَا. The Indonesian translation interprets *syajarah* as 'wood', while the English translation interprets it as 'tree'.

According to the *tafsir ilmi* team of the Indonesian Ministry of Religious Affairs, by using the word tree, it seems like Allah is forcing scientists to think and pay more attention to natural phenomena and dig deeper into the evidence for Allah's existence through his scientific findings. Both of these meanings are equally true, but at the current level of modern science, *syajarah* is no longer as a tree or wood, but as oxygen released during photosynthesis.<sup>32</sup> This meaning is taken from a philosophical point of view, which seeks the overall meaning, not just focusing on the original meaning. If you look deeper, the process of photosynthesis is a way for plants to grow and develop, with the process of photosynthesis a tree can maintain its existence, and one of the products of this tree is in the form of wood that humans can use as firewood which is burned with fire. Sure enough, this explanation is further explained in surah Yasin[36]: 80 “*God is one who*

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<sup>32</sup> Kementerian Agama RI, *Tafsir Ilmi: Tumbuhan dalam Prespektif...*, 31

*produces for you fire out of the green tree, when behold! You kindle therewith*".<sup>33</sup>

## 2. Systematic Presentation of *Tafsir*

Islah Gusmian classifies the systematic presentation of interpretations into two, namely systematic presentation of coherent and systematic presentation of thematic.<sup>34</sup> The systematic presentation of interpretations used in the book *tumbuhan dalam perspektif Al-Quran dan sains* is thematic. This categorization is based on the findings in the greetings presented by the Head of *Lajnah Penatshihan Mushaf Al-Quran*, Indonesian Ministry of Religious Affairs:

*“Metode yang diterapkan dalam kajian ini hampir sama dengan yang digunakan dalam tafsir tematik, yaitu dengan menghimpun ayat-ayat yang terkait dengan sebuah persoalan dan menganalisisnya sehingga dapat ditemukan pandangan Al-Quran yang utuh menyangkut persoalan tersebut. Bedanya, tafsir tematik yang sedang dikembangkan oleh Kementerian Agama saat ini lebih fokus pada persoalan akidah, akhlak, ibadah, dan sosial, sementara tafsir ilmi fokus pada kajian saintifik terhadap ayat-ayat kauniyah.”*<sup>35</sup>

In his greetings, he explicitly stated that the results of the study of *Kauniyah* verses were arranged thematically and studied comprehensively using a scientific approach. Each chapter has a different theme of discussion, it is just that each theme is related to plants. The interpretation of verses about plants in the Al-Quran is demonstrated by compiling verses of the Al-Quran

<sup>33</sup> Kementerian Agama RI, *Tafsir Ilmi: Tumbuhan dalam Prespektif...*,32

<sup>34</sup> Islah Gusmian, *Kajian Tafsir Indonesia...*, 123-130

<sup>35</sup> Kementerian Agama RI, *Tafsir Ilmi: Tumbuhan dalam Prespektif al-Qur'an dan Sains...* xiii

about related objects and themes, then an analysis is carried out to obtain a complete view of the object being interpreted.

The thematic presentation itself is a new term from contemporary *ulama* which has the meaning of a method that collects verses of the Al-Quran that have the same intention in discussing a topic and arranges them based on chronology and the reasons for the revelation of these verses.<sup>36</sup> Furthermore, Al-Farmawi explained that this thematic model has two forms of study in it, namely:

1. A complete and comprehensive discussion of a *surah* by explaining the general and specific meanings, explaining the correlation between the various issues that contains in it, so that *surah* appears in its most complete and accurate form.
2. Collecting several verses from various *surah* that have the same problem or topic. The verses are arranged in such a way and placed on the same theme and then interpreted.

From two forms of thematic interpretation methods from Al-Farmawi's point of view that have been mentioned, it is the form of the second method is often used by many people.<sup>37</sup> In this case, it is also used the study of scientific interpretation of the Indonesian Ministry of Religious Affairs series *tumbuhan dalam perspektif Al-Quran dan sains*. The

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<sup>36</sup> Abdul Hayy Al-Farmawi, *Metode Tafsir Maudhu'I dan Cara Penerapannya Terj. Suryan A. Jamrah*, (Jakarta: PT Raja Grafindo Persada, 1994), 36

<sup>37</sup> Abdul Hayy Al-Farmawi, *Metode Tafsir Maudhu'I...*, 36



interpretation consistently presents a theme first, then the verses that correlate with that theme are explained, then presented the results of the interpretation.

### 3. Nuances of *Tafsir*

As it known, that every interpretation always has a characteristic in it as a form of intellectual expression from a *mufasssir*. Usually this is called a pattern (*corak* in Indonesia), but in this case, Islah Gusmian calls it a nuance (*nuansa* in Indonesia). Simply put, nuance of *tafsir* is a tendency of thought that gives its own color to a work of interpretation.<sup>38</sup> If paying attention, the interpretation of the Indonesian Ministry of Religious Affairs in “*Tumbuhan Perspektif Al-Quran dan Sains*” has an *ilmi* or scientific nuance. This classification is because this interpretation was formed to reveal the meaning of the *Kauniyah* verses, so the nuances used to interpret these verses are *ilmi* or scientific nuances. The contents of the interpretation are filled with scientific explanations, especially regarding plants and their supporting elements in detail. Naturally, because this interpretation is the work of the thoughts of the Indonesian Ministry of Religious Affairs and the *Lembaga Ilmu Pengetahuan Indonesia (LIPI)*. For the example is when interpreting the life cycle of plants in Surah Al-An'am [6]: 95.

إِنَّ اللَّهَ فَالِقُ الْحَبِّ وَالنَّوَى يُخْرِجُ الْحَيَّ مِنَ الْمَيِّتِ وَمُخْرِجُ الْمَيِّتِ مِنَ الْحَيِّ يَذِلُّكُمْ اللَّهُ فَالِقُ  
تُؤَفِّكُونَ ٩٥

“it is Allah who causes the grain and fruit-stoness to sprout. He brings forth the living from the dead and the dead from the living. Such is Allah! So how are you being turned away?”

<sup>38</sup> Abdul Mustaqim, *Mazahibut Tafsir: Peta Metodologi Penafsiran Al-Quran Periode Klasik Hingga Kontemporer*, (Yogyakarta: Nun Pustaka, 2003), 81

From that verse, the *tafsir ilmi* team of the Indonesia Ministry of Religious Affairs does not only interpret that living things will eventually die and will be resurrected at a later date. More than that, the verse contains the life cycle of plants (which are the source of food for animals and humans). This cycle starts from the change of hydrogen, carbon dioxide, nitrogen, and non-organic salts on earth change into organic substances which are the source of life for plants with the help of sunlight. Then plants can be eaten by animals or humans, after which animals and humans can carry out the excretory process or eventually end life (dead). The results of excretion and the bodies which are left by animals or humans can be decomposed again by bacteria and chemicals in the soil, then the results are automatically used for a new plant life cycle again. That's how God brings life out of death and brings death out of life in every moment.<sup>39</sup>

#### 4. *Tafsir* Approaches

In terms of Al-Quran interpretation, the interpretation approach is divided into two, namely textual *tafsir* approach and contextual *tafsir* approach.<sup>40</sup> Textual *tafsir* approach is an effort to understand the textual meaning of the verses of the Al-Quran, so the studies focus only on the text of the Al-Quran.<sup>41</sup> While the contextual *tafsir* approach is an approach that understands the Al-Quran in a historical and literal context, the projects it with the current situation, then bring social phenomena into the scope of the

<sup>39</sup> Kementerian Agama RI, *Tafsir Ilmi: Tumbuhan dalam Prespektif...*, 37

<sup>40</sup> Islah Gusmian, *Kajian Tafsir Indonesia...*, 274-276

<sup>41</sup> M. Sholahudin, *Pendekatan Tekstual dan Kontekstual Dalam Penafsiran Alquran*, Al-Bayan: Jurnal Studi Al-Qur'an dan Tafsir, Vol. 1 No. 2, (2016),116

goals of the Al-Quran.<sup>42</sup> In line with this understanding, the book of *tumbuhan dalam perspektif Al-Quran dan sains* itself uses the contextual approach, in which the interpretation of the verses does not only pay attention to the historical context but also current conditions. For example when interpreting surah Ar-Rahman [55]: 10.

وَالْأَرْضَ وَضَعَهَا لِلْأَنْعَامِ ۝ ١٠

“He has spread out the earth for all creatures”

In this verse, it is explicitly explained that this earth is spread out for all God's creatures, not only humans. So that Islam makes comprehensive rules, rules that seek to prevent humans from doing injustice to other creatures. That is how Islam teaches its people to treat every living thing on this earth with a good treatment. Even in a war condition, Islam does not justify the destruction of gardens, livestock, or the environment. That was what *khalifah* Abu Bakr conveyed to his soldiers when against the Persian and Roman armies. He also warned his soldiers not to kill children, old people, and women.<sup>43</sup> That is the teaching of Islam which is very gentle and compassionate towards all living things on this earth. So that what used to be exemplified by the *khalifah* Abu Bakr is very applicable in today's life in various ways, one of which is by carrying out farming activities.

<sup>42</sup> Muhammad Hasbiyallah, *Paradigma Tafsir Kontekstual: Upaya Membumikan Nilai-nilai Al-Quran*, Jurnal Studi Ilmu Al-Quran dan Al-Hadits, Vol. 12 No. 1 (2018), 32

<sup>43</sup> Kementerian Agama RI, *Tafsir Ilmi: Tumbuhan dalam Prespektif al-Qur'an dan Sains...222*

**CHAPTER IV**

**ECOLOGICAL VALUES IN A BOOK “*TUMBUHAN DALAM PERSPEKTIF AL-QURAN DAN SAINS*”**

**A. *Tafsir* of Ecology Verses**

Just like other sciences, ecology also has a scope of discussion so that the discussion doesn't spread everywhere. As stated earlier, according to Eugene Pleasants Odum, the scope of ecological sciences starts from the level of organisms that make up populations in an ecosystem. In this discussion, not only learning about an organism but also the processes that occur in it and the material or energy involved in it. If detailed, at the level of the organism there will be a relationship among biotic components, while at the population level, there will be a relationship between biotic and abiotic components which is called the biogeochemical cycle. Meanwhile, from the population level to the community level, there will be a simple or detailed food chain process in it. So that this ecological scope is used as a boundary analysis in the interpretation of ecological verses carried out by the *tafsir ilmi* team of the Indonesian Ministry of Religious Affairs in a book entitled *tumbuhan dalam perspektif Al-Quran dan sains*.

**1. Verse About Interaction Among Biotic Components**

The basic things that studying in the ecological studies is an interaction among biotic components that occur in an ecosystem. Biotic components

itself is a component of an ecosystem consisting of living things, including animals, plants, humans, and microorganisms. The science of ecology which is also has a relation with social science, certainly never forgets the existence of plants as the main actors, while humans as connoisseurs and responsible for the sustainability of the main actors. Even because of the great services of plants for human life, Allah equates humans who have a good words with plants. This is mentioned in the surah Ibrahim [14]: 24-26.

أَلَمْ تَرَ كَيْفَ ضَرَبَ اللَّهُ مَثَلًا كَلِمَةً طَيِّبَةً كَشَجَرَةٍ طَيِّبَةٍ أَصْلُهَا ثَابِتٌ وَفَرْعُهَا فِي السَّمَاءِ ۚ ٢٤ تُؤْتِي أُكْلَهَا كُلَّ حِينٍ بِإِذْنِ رَبِّهَا وَيَضْرِبُ اللَّهُ الْأَمْثَالَ لِلنَّاسِ لَعَلَّهُمْ يَتَذَكَّرُونَ ٢٥ وَمَثَلُ كَلِمَةٍ خَبِيثَةٍ كَشَجَرَةٍ خَبِيثَةٍ اجْتُثَّتْ مِنْ فَوْقِ الْأَرْضِ مَا لَهَا مِنْ قَرَارٍ ٢٦

“Do you not see how Allah compares a good word to a good tree? Its root is firm and its branches reach the sky, yielding its fruit all the times, by the permission of its Lord. Allah makes such comparisons for people, so that they may take heed. But an evil word is like an evi tree, uprooted from the surface of the earth, having no stability.”

This verse explained that humans who have a good speech are very appropriate when equated with plants that have high beneficial values for other living things around them. The benefits of plants themselves for humans can be found starting from being a shelter for humans to being a source of food. Even the shades of green that are owned by trees or plants are also useful as objects that increase the feeling of comfort in the human hearts who look at them. So that’s why the benefits of plants for living things around them should also be in the human life who believe in Allah in the form of giving a good speech to fellow human beings. In addition, Allah expects his servants to always interact with fellow living things in harmony, provide

benefits, feel safe, and create a symbiosis of mutualism.<sup>1</sup> This verse is an intermediary for the manifestation of God's affection and justice for all of his creation and this is a code of conduct that Muslims must adhere to in their relation to other living things, whether they are plants, animals, or microorganisms.

Although this interpretation discusses more about the similarities between humans and plants seen from the interaction between the two, the interpretation of this verse also teaches humans to always do something good and beneficial to other living things. Not only humans, but it can also be associated with interactions between animals and plants or microorganisms and plants. This is because humans, microorganisms, and animals always take a lot of benefits from plants. Without eliminating the role existence of microorganisms in life, one of these biotic components is quite difficult to reveal because its presence can't be seen with the naked eye, so this analysis focuses more on the relationship between plants with humans and plants with animals. If explored further, there are actually so many benefits of plants for humans and animals from a scientific point of view. Not only as a source of food, shelter, and a refreshing object to look for, but plants could also be used as a basic ingredient in medicines.

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<sup>1</sup> Kementerian Agama RI, *Tafsir Ilmi: Tumbuhan dalam Prespektif al-Qur'an dan Sains* (Jakarta: Kementerian Agama, 2010), 11

As a small example, in Indonesia itself, there are more than 9.609 plant species that have medicinal efficacy.<sup>2</sup> It cannot be denied that many people still use herbal medicine as a powerful weapon to cure various diseases and maintain a healthy body. Apart from that, people also make plants as a means to treat their livestock. This is because many people are aware of the side effects that are obtained when using chemical drugs, so they prefer medicinal plants as a solution. This is also a way to follow the 'back to nature' trend that is popular today.<sup>3</sup>

Thus, if humans who have good speech are equated with plants that have a great influence on life in this world, then intelligent humans should also be able to maintain good relations with the plants and animals around them. In the form of eating, breeding, or any form of interaction in life, because the role of three components cannot be separated or eliminated one from three, all of them must always help and complement one another.

## 2. Verses About Biogeochemical Cycles

The biogeochemical cycle is the continuous exchange or change that occurs between living and non-living components of the biosphere.<sup>4</sup> Or simply, it is the interaction between biotic and abiotic components that occur in an ecosystem. In its description, this biogeochemical cycle is divided into

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<sup>2</sup> Muhammad Yassir dan Asnah, *Pemanfaatan Jenis Tumbuhan Obat Tradisional di Desa Batu Hamparan Kabupaten Aceh Tenggara*, Jurnal Biotik Vol.6 No.1, (April 2018),17

<sup>3</sup> Sauca Renar Kaunang, dkk, *Etnobotani (Pemanfaatan Tumbuhan Secara Tradisional) Dalam Pengobatan Hewan Ternak oleh Masyarakat Using di Kabupaten Banyuwangi*, Indonesian Journal of Biotechnology and Biodiversity Vol. 3 No. 1 (2019), 28

<sup>4</sup> *Pengertian dan Konsep Daur Biogeokimia*, diakses melalui [https://sc.syekhnurjati.ac.id/esscamp/files\\_dosen/modul/Pertemuan\\_7IPA.5040509.pdf](https://sc.syekhnurjati.ac.id/esscamp/files_dosen/modul/Pertemuan_7IPA.5040509.pdf)

five types, namely the water cycle, the oxygen and carbon cycle, the nitrogen cycle, the sulfur cycle, and the phosphorus cycle.<sup>5</sup> From the five divisions, the cycle of oxygen and carbon is a division that will be discussed, because in the book *tumbuhan dalam perspektif Al-Quran dan sains*, an interpretation has been presented regarding the process of photosynthesis which is a form of oxygen and carbon cycle. This process was initially discussed on the surah Al-An'am [6]: 99.

وَهُوَ الَّذِي أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَأَخْرَجْنَا بِهِ نَبَاتٍ كُلِّ شَيْءٍ فَأَخْرَجْنَا مِنْهُ خَضِرًا مُخْرَجًا  
 مِنْهُ حَبًّا مُتَرَاكِبًا وَمِنَ النَّخْلِ مِنْ طَلْعِهَا قِنْوَانٌ دَانِيَةٌ وَجَنَّاتٍ مِنْ أَعْنَابٍ وَالزَّيْتُونَ وَالرُّمَّانَ  
 مُشْتَبِهًا وَغَيْرَ مُتَشَابِهٍ انظُرُوا إِلَى ثَمَرِهِ إِذَا أَثْمَرَ وَيَنْعِهِ إِنَّ فِي ذَلِكَ لَآيَاتٍ لِقَوْمٍ يُؤْمِنُونَ ٩٩

“It is He Who sends down water from the sky and We produce thereby every kind of plants. We produce from it greenery from which We bring forth clustered grains. From the spathes of palm trees emerging clusters of dates hanging within reach. And gardens of grapevines, olives, and pomegranates – similar (in shape) yet different (in taste). Look at their fruit when they bear fruit and ripen. Indeed, there are signs in these for people who believe.”

This verse talks about the green substance, which the Al-Quran calls the ‘green factory’ or ‘chloroplast’ with the name *al-khadir*, which in English translates to ‘green substance’. Meanwhile, if translated into Indonesian, the information obtained is very limited. That is because the information in the translation only reaches green plants and produces many products. But in English translation is more appropriate because it says ‘green substance’ which can be associated with a ‘green factory’ which can produce seeds, fruits, and many other products from these plants.<sup>6</sup>

<sup>5</sup> Djohar Maknun, *Ekologi: Populasi, Komunitas, Ekosistem Mewujudkan Kampus Hijau, Asri, dan Ilmiah* (Cirebon: Nurjati Press, 2017), 82

<sup>6</sup> Kementerian Agama RI, *Tafsir Ilmi: Tumbuhan dalam Perspektif al-Qur'an dan Sains* (Jakarta: Kementerian Agama, 2010), 24



In this case, surah Al-An'am verse 99 becomes the forerunner of knowledge regarding the process of photosynthesis carried out by plants, which in the chloroplast is the place for photosynthesis to take place, to be precise in the mesophyll section which contains a half of million chlorophyll (green leaf substance) in every square millimeter.<sup>7</sup> Then the process of photosynthesis continues in the surah At-Takwir [81]: 17-18.

وَاللَّيْلِ إِذَا عَسْعَسَ ۖ ۱۷ وَالصُّبْحِ إِذَا تَنَفَّسَ ۖ ۱۸

“and by the night as it departs, by dawn when it breathes in.”

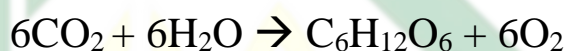
According to the interpretation in the book of *tumbuhan dalam perspektif Al-Quran dan sains* regarding the verse above, the Arabic word '*idhā tanaffas*' if translation in Indonesia was associated with *waktu subuh*, namely '*saat fajar menyingsing*'. Meanwhile, if this word is translated into English language, it means '*when it breathes in*'. This is a form of metaphor for the process in plants which is likened to the condition when a person breathes or inhales oxygen deeply. According to the book, both translations are equally correct if they are adjusted to their respective contexts. In the relation to oxygen production, the English translation is more appropriate, because it emphasizes that dawn, is the time when the oxygen production level reaches the highest level. This fact has been confirmed by the findings of modern

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<sup>7</sup> Pertamawati, *Pengaruh Fotosintesis Terhadap Pertumbuhan Tanaman Kentang (Solanum Tuberosum L.) Dalam Lingkungan Fotoautotrof Secara Invitro*, Jurnal Sains dan Teknologi Indonesia, Vol/ 12 No. 1, (April 2010), 33

science. This phenomenon is considered important, so that Allah uses it as an intermediary for oaths (*muqsam bih*).<sup>8</sup>

This can be explained scientifically, that the most productive work rate of the photosynthesis process occurs in the morning when sunlight is at the most concentrated level. The intensity of sunlight increases in the morning and it is optimal in the daylight, then decreases in the afternoon.<sup>9</sup> Until the night the plants will completely rest. So, from this, the chemical equation of the process of photosynthesis is as follows:



The meanings of the chemical equation above is in the process of photosynthesis there is a change of 6 water molecules plus 6 carbon dioxide molecules into 1 glucose molecule and 6 oxygen molecules. So this states that plants as food producers in this life also need other components in the process of making food. In this case assisted by sunlight, water, and carbon dioxide. Thus, the process of photosynthesis is classified as one of the biogeochemical cycles in the form of oxygen and carbon cycles. This is because in the process of photosynthesis, the plants requires carbon dioxide and the output of the photosynthesis proses in produces oxygen which is inhaled by humans or

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<sup>8</sup> In surah At-Takwir, most of the verses contain *muqsam bih*. *Muqsam bih* itself is an oath that is strengthened by something glorified by the swearer (Allah). In the classification of *muqsam bih* there are two kind of *qasam*, first, using the exalted name, second, using the desired creation. In this case is using the second type, because the creation shows the almighty nature of Allah when creating something. Kementerian Agama RI, *Tafsir Ilmi: Tumbuhan dalam Prespektif al-Qur'an dan Sains* (Jakarta: Kementerian Agama, 2010), 29

<sup>9</sup> Agata Virelia Putrisia, *Analisa Produktivitas Promer Sebagai Upaya Pengelolaan Kualitas Air di Waduk Jatibarang*, Semarang, Jurnal Triton Vol. 18 No. 1 (April 2022), 5

animals and after that released again into carbon dioxide which is needed again by plants, and so on.

From the explanation of the interpretation of surah Al-An'am verse 99 and At-Takwir verses 17-18, Allah has implicitly explained the process of photosynthesis in the Al-Quran. It is just that in the prophet Muhammad's time it could not be revealed because the people at that time did not know the very complex reading and writing culture as it is now. Also, there is no adequate scientific knowledge and scientific equipment. Even though disclosure of this matter is needed by scientific research centers and laboratories filled with sophisticated equipment in the field of plant physiology and the expert researchers in it.

### 3. Verse About Food Webs

Without realizing it, humans always need animals and plants to fulfill their daily food needs. If humans want to pay attention, actually the food that they eat does not immediately become food, but it must go through many previous processes, one of which is the food chain process. This process is enshrined in the Al-Quran surah Yunus [10]:24.

إِنَّمَا مَثَلُ الْحَيَاةِ الدُّنْيَا كَمَاءٍ أَنْزَلْنَاهُ مِنَ السَّمَاءِ فَاخْتَلَطَ بِهِ نَبَاتُ الْأَرْضِ مِمَّا يَأْكُلُ النَّاسُ  
وَالْأَنْعَامُ حَتَّىٰ إِذَا أَخَذَتِ الْأَرْضُ زُخْرُفَهَا وَازَّيَّنَتْ وَظَنَّ أَهْلُهَا أَنَّهُمْ قَادِرُونَ عَلَيْهَا أَتَيْنَاهَا لَيْلًا  
أَوْ نَهَارًا فَجَعَلْنَاهَا حَصِيدًا كَأَن لَّمْ تَغْرَبْ بِالْأَمْسِ كَذَلِكَ نُفَصِّلُ الْآيَاتِ لِقَوْمٍ يَتَفَكَّرُونَ ٢٤

“The likeness of the life of this world is that of the rain that We send down from the sky, and it mixes with the plants of the earth, from which both humans and livestock eat. Then when the earth is in its splendor and its fairest appearance, and its owners feel that they have full control over it, Our command comes to it, by night or by day, and We reduce it to stubble, as if it had not flourished the day before. This is how We make the signs clear for people who reflect.”

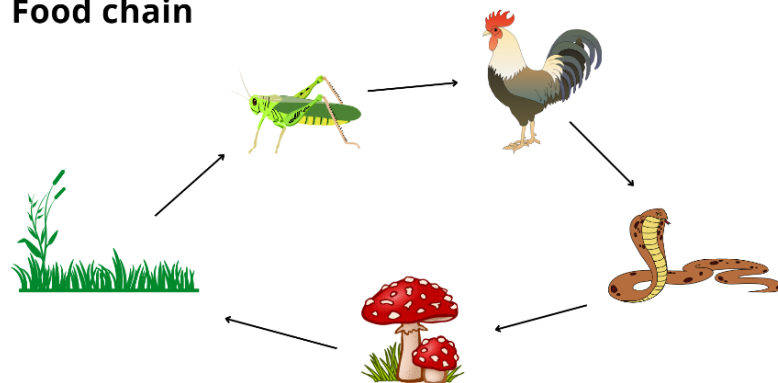
This verse explains that humans are part of the food chain. In the food chain, plants are in the main or basic position, which can mix and make their organic carbon as food with the help of carbon dioxide (CO<sub>2</sub>), rainwater, chlorophyll, and sunlight. Generally, in this process, plants are eaten by plant-eating animals (herbivores), and after that, these animals will be eaten by meat-eating animals or all-eaters animals (carnivores or omnivores). After that, these animals can be eaten by humans.<sup>10</sup> Or it could also be a very short food chain, where the plants is directly eaten by humans.

This verse is sufficient to represent the explanation that humans also need animals and plants as a staple food through the food chain process. The food chain itself is a simple cycle of eating and being eaten in an ecosystem. does not enough in there, the reality is not that simple, actuallu in an ecosystem there is not only one food chain cycle, because one producer is not always as a source of food for one type of herbivore, and also one type of herbivore does not always eat one type of producer. In the verse above, this is actually also discussed in the sentence *“then because of this, various kinds of plants grew that were (can) be eaten by humans and livestock”*. The growth of various kinds of plants on this earth is an indication that plants as producers are not always be a source of food dor just one type of animal, animals may choose one or two from many plants that Allah has created on this earth. In this case, food chains in an ecosystem can be interconnected and form a food web. So, bellow are the differences between food chain and food web.

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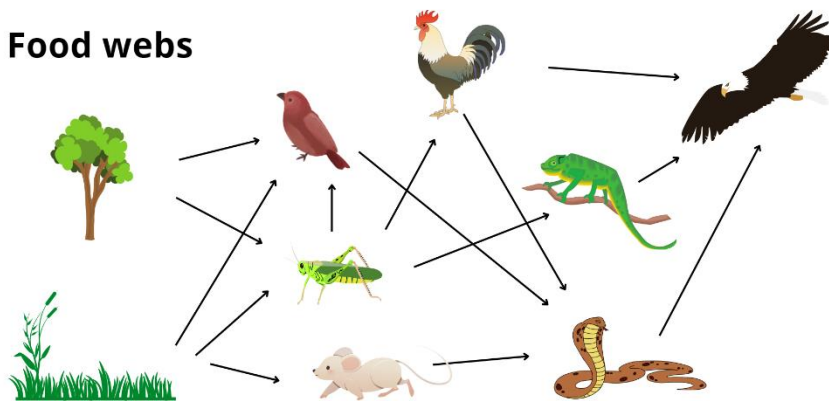
<sup>10</sup> Kementerian Agama RI, *Tafsir Ilmi: Tumbuhan dalam Prespektif al-Qur'an dan Sains* (Jakarta: Kementerian Agama, 2010), 197.

### Food chain

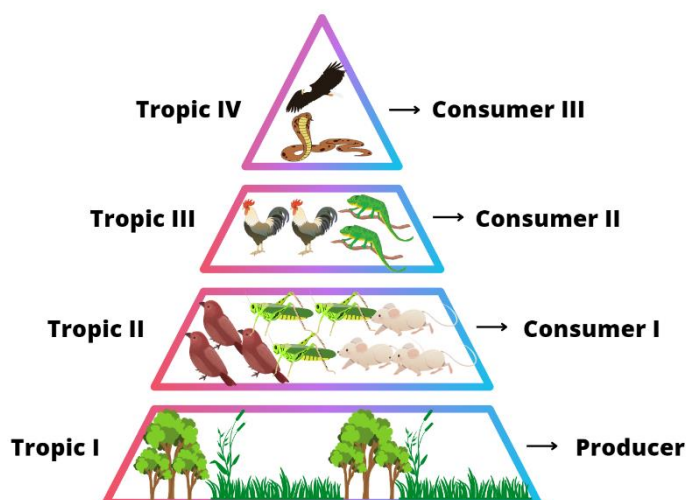


A food chain chart looks simple, while a food web chart looks more complex.

### Food webs



Discussing food webs, certainly does not escape the discussion of the food pyramid, which is the key to making balance in the ecosystem. Then an ecosystem will be balanced and its sustainability will be maintained if the number of producers is more than consumer I, the number of consumer I must be more than consumer II, and so on. So the following chart below is an example of the food pyramid from the food webs above.



From the explanation above, it can be seen that if look deeper, the surah Yusuf verse 24 is not only limited to explaining the food chain but more broadly it is also discussed food webs which in the fact have a more complex existence in the ecosystem. This verse also teaches that life is created in a balanced way, so if a human makes damage to the earth that disturbs the balance, the consequences will be felt for themselves, because humans are also part of a food chain or food web.

## B. Ecological Values In The Book of “*Tumbuhan Dalam Perspektif Al-Quran dan Sains*”

Behavior or it can called *akhlak* is a one of important thing which Islam has always paid attention in it. Then *ulama* always mentioned that people who have good morals have a higher degree than people who are knowledgeable. Good morals are something that distinguishes humans from animals, because humans that have good morals will prioritize the glory and purity of their souls so that

they can defeat their desires.<sup>11</sup> In this case, the interpretation of good morals is goodness in all aspects of life, including interactions with nature. Besides that, humans are one form of Allah's creation that has an important role in carrying out its function as a *khalifah* on earth. Allah does not only regulates life related to worship to Allah but also regulates life related to his role on earth as a *khalifah* who maintains the safety of the world and the hereafter. Thus, ecological values need to be considered, which is this value is also contained in the *tafsir ilmi* of the Indonesian Ministry of Religious Affairs in a book series *Tumbuhan dalam perspektif Al-Quran dan sains*.

### **1. Becoming Fair to The Environment as A Manifestation of Maintaining The Diversity of Natural Resources**

As a *khalifah fī al-ard*, humans certainly have a big mandate in protecting the earth where they live. It means, as a representative of Allah, humans have specific tasks and responsibilities, not only being responsible to themselves, but also to fellow Muslims, to fellow human beings, to the earth where they live, and to all of the diversity of natural resources inside of it. One of the tasks of humans is to try as much as possible in maintaining balance on this earth using the mind that has been gifted by Allah specifically for humans. So, for this reason, humans can choose to maintain a balance fairly or even be tyrannical by doing damage to it. One of the verses that discusses about this case is in surah Ar-Rahman [55]: 7-9.

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<sup>11</sup> Rasyad, *Dimensi Akhlak Dalam Filsafat Islam*, Jurnal Substantia, Vol. 17 No. 1 (2015), 89

وَالسَّمَاءَ رَفَعَهَا وَوَضَعَ الْمِيزَانَ ۗ أَلَّا تَطْغَوْا فِي الْمِيزَانِ ۚ ۘ وَأَقِيمُوا الْوَزْنَ بِالْقِسْطِ وَلَا تُخْسِرُوا  
الْمِيزَانَ ۙ ۙ

“He raised the heaven and enjoined justice. So that you may not transgress the limits of justice. Therefore, establish wights in justice, and do not give short measure.”

This verse explains that the human task is to maintain the balance of the earth. Humans are expected to be able to maintain the existence of diversity on the earth at all levels of life, in its resources, and also in its beauty. Allah wants humans to understand that there is a reason behind his creation of this universe, as well as a reason why humans must always keep this earth in balance.<sup>12</sup>

Within the scope of the Indonesian state, there are at least around 25.000 species of flowering plants (10% of the total flowering plants in the world), 515 mammals (12% of the world’s total mammals), 600 species of reptiles, 1500 species of bird, dan 270 species of amphibians.<sup>13</sup> This amount is only within the scope of the Indonesian state, not the world. The data also does not cover all biodiversity, because in fact, biodiversity does not only include the diversity of organisms but also ecosystems and genetics. Truly the power of Allah created the earth and everything in it. So that humans as a *khalifah fil ardh* must take care of it fairly, with the aim to keep up the usefulness that is also returning to themselves.

Some of the benefits of conserving biodiversity are from an ecological perspective, where biodiversity can support the balances interactions within

<sup>12</sup> Kementerian Agama RI, *Tafsir Ilmi: Tumbuhan dalam Prespektif al-Qur’an dan Sains* (Jakarta: Kementerian Agama, 2010), 217

<sup>13</sup> Thiur Dianti Siboro, *Manfaat Keanekaragaman Hayati Terhadap Lingkungan*, Jurnal Ilmiah Simantek Vol. 3 No. 1 (2019), 1



an ecosystem, such as oxygen from plant photosynthesis, animal flesh as a food source, and so on. Furthermore, from an economic point of view, animal and plants species can be renewed and utilized in a sustainable manner, so that it can be traded. Some wood like *ramin*, *marariti*, *gaharu*, and *jati* in Indonesia can be exported, so with this condition, it will generate foreign exchange for the country. Then in the medical field, approximately three billion people in the world depend on traditional medicine which uses plants as raw materials. Then the benefits in the industrial sector, for example wood of *gaharu* can be used in the cosmetic industry.<sup>14</sup>

The many benefits of preserving biodiversity seem to be the answer to God's command to always protect this earth. In this case, protecting biodiversity does not have to be done with high effort but end up not being carried out, it is enough with small efforts that can be done, such as not killing animals without any reason, selective logging, breeding, farming, and another simple thing that can be done easily by humans. Although these efforts seem trivial, that efforts are also considered as a contribution to the preservation of the biodiversity. In addition, these efforts also as a manifestation of human justice that Allah wants, because by doing these small things, it is not only beneficial to the biodiversity that is being sought, but benefits are sure to flow to humans who are trying to do the preservation of the biodiversity. So this is a justice and must be implemented.

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<sup>14</sup> Thiur Dianti Siboro, *Manfaat Keanekaragaman Hayati Terhadap Lingkungan, ...*3

## 2. Reforestation and Farming as An Implementation of Human Generosity Towards Living Things Around Them

Reforestation is a greening activity so that nature becomes green and it is usually carried out in forests that have become denuded so that they can function as they should. While farming is the activity of cultivating land by planting seeds that produce flowers or fruit to be harvested. For the last term it has been implicitly discussed in the interpretation of surah Al-An'am [6]: 141.

وَهُوَ الَّذِي أَنشَأَ جَنَّاتٍ مَّعْرُوشَاتٍ وَغَيْرَ مَعْرُوشَاتٍ وَالنَّخْلَ وَالزَّرْعَ مُخْتَلِفًا أُكُلُهُ وَالرَّيْتُونَ وَالرُّمَّانَ  
مُتَشَابِهًا وَغَيْرَ مُتَشَابِهٍ كُلُوا مِنْ ثَمَرِهِ إِذَا أَثْمَرَ وَآتُوا حَقَّهُ يَوْمَ حَصَادِهِ ۗ وَلَا تُسْرِفُوا إِنَّهُ  
لَا يُحِبُّ الْمُسْرِفِينَ ۝ ١٤١

“It is He Who brings into being gardens – trellised and untrellised – and palm trees and crops of different flavors, and olives and pomegranates – similar (in shape) yet different (in taste). Eat of their fruit when they bear fruit and give out its (*zakat*) due to on the day of harvest. But do not be wasteful, for He does not like those who are wasteful.”

This verse explains Allah's power which created various types and flavors of fruits and vegetables that are available in this world. Allah makes it as a food for humans and wants humans to obtain it by farming. So that after obtaining the results, humans are encouraged to give some of the results to others in the form of *zakat* as a gratitude to Allah for the blessings that have been received.

Quoting from the book *tumbuhan dalam perspektif Al-Quran dan sains*, according to the Al-Quran, from various aspects farming are the reasons why humans interact on earth. This process provides food for humans both physically and spiritually, because the prophet Muhammad has been

emphasized that when a person plants a tree and then bears fruit, then the tree or the bears' fruit is eaten by other people or animals, so all of this will be counted as charity for them.<sup>15</sup>

When viewed from a broader perspective, farming and reforestation actually have something in common, that is both of them have almost the same benefits. The differences only in the object that is planted, farming uses plants that produce fruit that can be harvested, while reforestation uses plants that are have a long lived. Returning to the interpretation of the surah Al-An'am verse 141, it is possible that what is meant by 'taken the results' is not limited to seeds and fruit, but it can be understandable that the result is whatever the output of these plants as long as it is useful for humans and animals. Thus, if interpreted with that way reforestation is also included in what is meant by this verse, because reforestation also provides many benefits for living things on this earth, such as:

1. Benefits of orologists. The roots of the tree or plant that meet the ground are a strong unit, so that it can prevent erosion.
2. Hydrological benefits. An area that is overgrown with trees has an adequate supply of water because trees can absorb water when it rains.
3. Climatological benefits. Trees and plants can lower the temperature in a place, so if an area has lots of plants, it can be ascertained that the area has cooler, fresher, and more comfortable air than other areas.

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<sup>15</sup> Kementerian Agama RI, *Tafsir Ilmi: Tumbuhan dalam Prespektif al-Qur'an dan Sains* (Jakarta: Kementerian Agama, 2010), 19

4. Benefits of edaphis. This is a benefit in terms of animal habitats. An environment that has a lot of trees or plants will feel more comfortable and quiet, so it can be used as a place for the animals to live in that environment.
5. Ecological benefits. A good environment is an environment that has a balance between man-made structures and natural structures so that many plants can participate in maintaining environmental balance.
6. Protective benefits. Plants can play multiple roles, being the front as a guard in protecting humans and animals from the scorching sun, strong winds, dust darts, and as sound absorbers.
7. Hygienic benefits. Hygienically, trees are oxygen factories that are a source of human needs and humans cannot even live without this oxygen.
8. Educational benefits. So many kinds of plants that are planted in the surrounding environment is a natural laboratory because it can be used as a place to learn about plants from various aspects directly.

From the several benefits of reforestation that have been detailed above and the interpretation of surah Al-An'am verse 141 regarding farming, it can be concluded that both of them have a same goal for the benefit of living together where everything is controlled by humans. By carrying out reforestation and farming, whether in large or small quantities, the actor of this act also participates in the survival of humans and animals. Indirectly also instill a generous attitude toward living things around them. Both intentionally by issuing *zakat* that has been determined for the perpetrators of

the planting activities and as a form of alms or *shodaqoh* for the perpetrators of reforestation activities because its benefits can be felt by living things without any intention.

From the explanation of the interpretation of the verse above, then compared with the interpretation in the book *al-misbah* and *an-nūr* which was previously described in chapter 2. The interpretation in the book of *tumbuhan dalam perspektif Al-Quran dan sains*, contains more ecological value, because it explains that reforestation and farming are not only beneficial to himself and others, but more than that there is a good value in it and also charity that is not realized by humans.

### 3. Altruism As An Effort to Face The Development of Biotechnology

Humans with all their development and civilization, always want renewal in their lives. Backgrounding by high curiosity so that updates are created in life. One of them is the application of GMO (*Genetically Modified Organism*) to living things where the working system is to increase their genetic abilities through genetic engineering. This is one of the important parts of the development of biotechnology. Although it is considered a new term, but the permissibility of doing GMOs has been explicitly explained in surah Yasin [36]: 35.

لِيَأْكُلُوا مِنْ ثَمَرِهِ ۖ وَمَا عَمِلَتْهُ أَيْدِيهِمْ ۗ أَفَلَا يَشْكُرُونَ ۝ ٣٥

“That they may eat of His fruit. And from what their (human) hands work. Will they not give thanks?”

This verse encourages humans to take advantage of plant products that Allah has provided in abundant quantities in this universe. The fragment of

the verse which means "...and from what their (human) hands work," can be interpreted as "from what they cultivate or modify". So, if the natural product that is utilized is in the form of an organic molecule, humans are also permitted by Allah to modify its chemical and genetic structure as long as the result of this action is can be beneficial for humans and other living things.<sup>16</sup> Nevertheless, Allah also continues to remind humans to always be careful in carrying out modification actions with the aim that mistakes do not occur in these chemical or genetic experiments. This is implicitly conveyed in surah Al-Mulk [67]: 3-4.

الَّذِي خَلَقَ سَبْعَ سَمَاوَاتٍ طِبَاقًا مَّا تَرَى فِي خَلْقِ الرَّحْمَنِ مِن تَفْوُتٍ فَارْجِعِ الْبَصَرَ هَل تَرَى مِن فُطُورٍ ۚ ثُمَّ ارْجِعِ الْبَصَرَ كَرَّتَيْنِ يَنقَلِبْ إِلَيْكَ الْبَصَرُ حَاسِئًا وَهُوَ حَسِيرٌ ۚ

"He created seven heavens one above another; you will not see any imperfection in the creation of the Most Compassionate. Look again; can you see any flaws? Then look again and again; your fight will turn back to you humbled and weary."

In that verse, Allah explains that his creation is in a balance condition and perfection. So that if the humans are going to make modifications to the living things that Allah has created, Allah encourages humans to check them repeatedly against his perfect creation, so that there are no mistakes when carrying out experiments. So that the two verses above have different contents but have the same goal, namely the ability to doing experiment in the Allah's creation as long as it does not violet the rules and has a usefulness orientation. But if it can be minimized, it is very good, because the original creation of Allah is very perfect and does not even have any defects.

<sup>16</sup> Kementerian Agama RI, *Tafsir Ilmi: Tumbuhan dalam Prespektif al-Qur'an dan Sains* (Jakarta: Kementerian Agama, 2010), 220

Until now, GMO is still being carried out with the reason that there are many benefits to be gained from this process, such as reducing environmental pollution by suppressing the use of pesticides to increase crop yields and added value of product efficiency.<sup>17</sup> In Indonesia itself, it continues to develop genetically engineered products, especially in food products, such as products derived from corn, soybeans, and potatoes. Despite the reality, these benefits are still controversial, people feel worried and anxious when consuming transgenic food because fear that it will be affect in their health and their environment.<sup>18</sup>

From this phenomenon, humans are urged to always be careful in carrying out their actions, as what has been explained by Allah in surah Yasin verse 35 and also Al-Mulk verses 3-4. So the mind that has given by Allah is useful for making good choices. Does not only thinking about the positive impact on other humans and the environment around them, humans who do the genetic engineering are required to also analyze the negative impacts and their sustainability. So it requires caution, altruism (not selfish), and widely open mindedness.

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<sup>17</sup> Nova Hariani, dkk, *Perspektif Produk Bahan Makanan Genetically Modified Organism (GMO) pada Mahasiswa*, Jurnal Biotek Medisiana Indonesia Vol. 11 No. 1 (2022), 22

<sup>18</sup> Y. Herlanti, *Analisis Argumentasi Mahasiswa Pendidikan Biologi Pada Isu Sosiosaintifik Konsumsi Genetically Modified Organism (GMO)*, Jurnal Pendidikan IPA Indonesia, Vol. 3 No. 1 (2014), 52

## CHAPTER V

### CONCLUSION

#### A. Conclusion

Based on the studies in the previous chapters, there are several conclusions. The first is in this research are found verses about ecology in the book *'tumbuhan dalam perspektif Al-Quran dan sains'* found in Surah Ibrahim verses 24-26, Surah Al-An'am verse 99, Surah At-Takwir verses 17-18, Surah Yunus verse 24. Surah Ibrahim verses 24-26 are interpreted as verses that talk about the relationship between humans and the living things around them. Whereas Surah Al-An'am verse 99 and Surah At-Takwir verses 17-18 are interpreted as verses that talk about the process of photosynthesis because they discuss the green substance of leaves and the most productive time for plants. While the surah Yunus verse 24 implicitly discusses the food chain, more broadly it can also be interpreted as a food web process.

The second is found the ecological values that contains in the book *'tumbuhan dalam perspektif Al-Quran dan sains'* are as follows:

- a. Becoming Fair to The Environment as A Manifestation of Maintaining The Diversity of Natural Resources
- b. Reforestation and Farming as An Implementation of Human Generosity Towards Living Things Around Them
- c. Altruism As An Effort to Face The Development of Biotechnology



## **B. Suggestion**

Seeing all the limitations and shortcomings that exist, the results achieved in this study are indeed so far from perfection. So that constructive and progressive corrections and criticisms both from readers and from subsequent researchers are highly expected. Reviewing studies that discuss ecology in the Al-Quran is still relatively minimal, so there is great hope for academics who are engaged in Al-Quran studies or in science to follow up and further promote studies related to ecology in the Al-Quran.



UIN SUNAN AMPEL  
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