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From Sustainable Development to Sustainable Community

Toward a Moral Paradigm for Environmental Sustainability

Abundio R. Babor Jr., MSC

Loyola School of Theology

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Toward a Moral Paradigm for
Environmental Sustainability

ABUNDIO R. BABOR JR., MSC

MONOGRAPHS



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PREFACE

This publication is taken from the dissertation entitled "From Sustainable Development to Sustainable Community: Toward a Moral Paradigm for Environmental Sustainability" which was successfully defended at the Academia Alfonsiana, Rome on 21 April, 2015. This publication is offered as a contribution for the discussion and development of Catholic moral theology.

I grew up in a village in central Philippines where floods were a common occurrence and evacuation to higher grounds was part of life especially during the monsoon period. Often, I saw big trucks hauling timber from the mountains down to the center of the town. I thought those were normal realities of life. I understood later that the flooding was related to the business of logging in our place. The mountains were already denuded; there were no more trees to contain the huge volume of water from incessant rains.

Some of our neighbors said our town had to develop and move toward economic progress. Others, however, didn't agree. The model of progress and development should not bring misery to the people, they argued. Until now, these non-governmental organizations are still fighting against all forms of environmental destruction in our place. To them I acknowledge their influence on my interest in environmental issues.

In pursuing this undertaking, I am very thankful to God for giving me the strength to persevere despite problems with my health. God's love and grace sustained me in doing this arduous but important endeavor. I also thank Our Lady of the Sacred Heart for her maternal inspiration while I was doing this work.

I want to thank Fr. Mark McDonald, MSC, the Superior General of the Missionaries of the Sacred Heart, and Fr. Gene Pejo, MSC, the Provincial Superior of the Philippine Province, for giving me the opportunity to continue my doctoral program in moral theology at the Academia Alfonsiana, Rome.

I am also deeply grateful to my moderators, Prof. Martin McKeever, C.Ss.R (first moderator) and Prof. Jules Mimeault, C.Ss.R (second moderator), for their wisdom, patience and guidance. They helped me clarify things that I wanted to bring out in this dissertation and to express those ideas in clearer and intelligible presentation.

My profound thanks go to my confreres at the Casa Generalizia in Via Asmara, Rome, and my confreres in the Philippine province for their unwavering support and encouragement. I express my gratitude especially to Fr. Mark McDonald, MSC, for doing the proofreading of the whole text.

Finally, I thank my immediate family, my friends and acquaintances who in one way or another have been supportive of this undertaking.

DEFINITION OF TERMS

At the outset, it is good to keep in mind the meaning of the following terms as they are used in this dissertation:

1. Ecology. The term *ecology* is derived from the Greek *oikos* which means "house" or "place" to live. Ernst Haeckel (1834-1919) was the first to use the term. Drawing from the literal meaning and inspired by the holistic interpretation of it, the term *ecology* came to be used now with greater profoundness and broadness. Eugene Odum, in his *Fundamentals of Ecology*, describes ecology as the study of organisms 'at home' in their interrelatedness. He further notes that the term *ecology* is applied today not only to the environment but also to social and cultural attitudes.

2. Environment. It is the sum of all external conditions affecting the life, development and survival of every organism. It refers to the life context in which everything is located.

3. Creation. Creation is used in a religious sense to describe a unified view of the environment. The Christian vision of the environment reveals richness, diversity and order which spring from God, the Creator.

4. Responsibility. It expresses the moral obligations that arise from commitments we have made or roles we have assumed.

5. Ecosystem. It is a community of species that interact with one another and with their physical surroundings.

GENERAL INTRODUCTION

1. Background of the Study

"What should we do?" "How do we live sustainably?" Those were the startling questions the speaker asked during the forum I attended in Manila in August 2007. The speaker was not asking those questions rhetorically; rather, they were addressed to an audience that needed to be informed and educated about the country's program of sustainable development vis-à-vis the worsening environmental problems the Filipinos have to face each year. The speaker provided alarming evidence, glaring evidence at that, of the damage we human beings have done and continue to do to the environment. No one among the audience apparently needed more convincing that the matter was very serious. Specifically, the environmental problems mentioned were climate change, global warming, stronger typhoons,[1] severe flash floods, deforestation, pollution, the shrinking supply of drinking water, and other pressing environmental problems.

The Philippine government organized the forum to educate the people about sustainable development as the global approach in solving the problems of the environment. It was presented as the answer to the questions "What should we do?" and "How do we live sustainably?"

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[1] The Philippines experienced for the first time a category 5 super typhoon named "Yolanda" on November 8, 2013, which devastated the provinces in the central part of the country. It was a typhoon never seen in its magnitude before. See http://www. gmanetwork.com/news/tag/typhoonyolanda (14.10.2014).

Policy makers, e.g., politicians, statesmen, world leaders, talk about sustainable development as if it were the panacea to our environmental ills. In the Philippines, the Philippine Council for Sustainable Development was established on September 26, 1996 by then President Fidel V. Ramos.[2] The Presidential Council was given as its mandate, among others,

> the protection and advancement of the right of the people to a balanced and healthful ecology in accordance with the rhythm and harmony of nature and the adoption of a national conservation strategy for sustainable development which was presented by the country during the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro.[3]

The Earth Summit, held in 1992 in Rio de Janeiro, Brazil, marked a momentous event in the history of environmental consciousness among world leaders. It earmarked sustainable development as the overarching philosophy of a concerted effort to take care of the global environment. The world leaders adopted the principle of sustainable development taken from the *Brundtland Report, Our Common Future*, a United Nations (UN) Commission on Environment and Development report which expressed the need to have intensive collaboration among nation states to address the global environmental crisis. It served as a blueprint for the future and an agreed upon agenda to tackle environmental issues. The summit reflected a global consensus, at the highest levels of government, with an explicit recognition of the indispensable roles of various sectors in society to implement sustainable development.

Broadly, sustainable development encompasses three (3) general policy areas, namely: economic growth, social equality and environmental protection. Firstly, on economic growth, it emphasizes the necessity to create methods to sustain development based on

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[2] http://www.psdn.org.ph/agenda21/eo370.html (7.09.2013).

[3] *Ibid.*

sustained economic growth. Secondly, as regards social equality, it seeks to alleviate poverty and aims to address the inequitable distribution of wealth in society and the ever-growing gap between classes of people. Thirdly, on environmental protection, it promotes the process of reconciling development with the regenerative capacity of the environment.

While sustainable development is a laudable paradigm to address the environmental crisis, it is the contention of this dissertation that it is not the paradigm for environmental sustainability. It is not a holistic framework. It ignores the moral and spiritual life of the human community which are fundamental and more important grounds for environmental sustainability. Thus, the central point of this dissertation is the claim that the moral and spiritual aspects are indispensable elements that should be part of any paradigm for environmental sustainability.

In this regard, to provide a more or less complete picture of the background of this study, it is important for the reader to note that what will be argued in this dissertation is the necessity to have the paradigm of sustainable community, instead of sustainable development, as the appropriate model for environmental sustainability. This paper would argue that the paradigm of sustainable community is more holistic and that it would encompass the moral and spiritual aspects. The community being referred to here is the human community to which God has given the moral responsibility for the continued sustainability of his creation, the environment.

Two questions then have to be raised: "How would the human community become sustainable?" and "How would the environment become sustainable if the human community were sustainable?" To answer the first question, this paper asserts that the human community would become sustainable if its members would live virtuously. When human beings live with faith, hope, charity and act prudently, justly, steadfastly and moderately with one another, the human community would become sustainable. In like manner, the environment would become sustainable because human beings would relate with it

virtuously as well. All human beings and the environment would be in harmony because living virtuously would avoid doing harm to God's created beings.

To argue further, another question needs to be addressed: "How would a virtuous life happen?" A virtuous life needs to be cultivated; St. Thomas Aquinas pointed this out in his *Summa Theologica*.[4] Indeed, a virtuous life doesn't happen all at once. In fact, it is a long process to become more prudent, more just, more steadfast and more sensible. The long process of growth in the moral virtues would not fail, however, because it would be sustained by the theological virtues of faith, hope and charity. The theological virtues are God's gifts to help us become who we should really be.

This dissertation argues that the pertinent question we need to address, as Christians, in our relationship with one another and with the environment is: "Who does Jesus call us to be?" The answer lies precisely in the truth that it is about being who we are, being made in the image and likeness of God[5] (Gen 1:27), our human character—our habits of mind and our habitual behaviors—that matters most significantly in our understanding of our identity as human beings living in community and with other species of the environment. The moral virtues and the theological virtues would build up the persons we should become. We are called to take care of one another and to be good stewards of God's creation.

With these arguments as the background of the rationale of this dissertation, we now proceed to the other subsections of the general introduction.

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[4] See St. Thomas AQUINAS, *The Summa Theologica*, First Part of the Second Part, Question 58, Article 1, at http://www.ccel.org/ccel/aquinas/summa/SS/SS047.html#SSQ47OUTP1 (26.12.2015).

[5] All Bible quotations in this dissertation are taken from *The Holy Bible: Revised Standard Version Catholic Edition*, London: Catholic Truth Society, 1966.

2. Statement of the Problem

The damage we have done to the environment is morally wrong and contrary to the teachings of the faith. We have failed the Creator who asks us to be good stewards of his creation. The Sacred Scripture tells us that God created the heavens and the earth (Gen 1:1); that God loves his world and is pleased with it (Gen 1:4, 10, 12, 18, 21, 25 and 31); and that he created man and woman in his image and gave them the responsibility to take care of his creation (Gen 1:27-28). God, who created our world, loves life and wishes to share this life with every creature. In the Gospel of John, we see the meaning of this when Jesus said: "I have come that they may have life and have it to the full" (Jn 10:10).

Fullness of life refers to the sustained nurturance of the moral, spiritual, economic, social, and environmental aspects. In this regard, this dissertation argues that the present environmental crisis which is a serious global problem needs a moral and theological paradigm more than the economic, social and environmental paradigm of sustainable development. The needed paradigm for environmental sustainability has to be grounded in fundamental moral truths.

John Paul II, in his message during the celebration of the World Day of Peace on January 1, 1990, said that the environmental crisis is fundamentally a moral issue.[6] He emphasized that

> world peace is threatened not only by the arms race, regional conflicts and continued injustices among peoples and nations, but also by a lack of due respect for nature, by the plundering of natural resources and by a progressive decline in the quality of life … and we cannot continue to use the goods of the earth as we have in the past.[7]

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[6] JOHN PAUL II, "The Ecological Crisis: A Common Responsibility," 1990 World Day of Peace Message, at http://conservation.catholic.org/ecologicalcrisis.html (18.04.2012).

[7] *Ibid*.

Pope Benedict XVI echoed the same call in his January 2010 New Year message. He linked the cultivation of peace with the protection of creation. His message, considered as a reference point to his later pronouncements on the environment especially in his encyclical *Caritas in Veritate,* underscored:

> Our duties towards the environment are linked to our duties towards the human person, considered in himself and in relation to others. It would be wrong to uphold one set of duties while trampling on the other. Herein lies a grave contradiction in our mentality and practice today: one which demeans the person, disrupts the environment, and damages society.[8]

The Vatican's call to respect the environment as God's creation was sustained and heightened further by Pope Francis when he issued his first encyclical *Lumen Fidei*, saying:

> Faith, on the other hand, by revealing the love of God the Creator, enables us to respect nature all the more, and to discern in it a grammar written by the hand of God and a dwelling place entrusted to our protection and care.[9]

In his Apostolic Exhortation, *Evangelii Gaudium*, Pope Francis stressed:

> There are other weak and defenseless beings who are frequently at the mercy of economic interests or indiscriminate exploitation. I am speaking of creation as a whole. We human beings are not only the beneficiaries but also the stewards of other creatures.[10]

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[8] BENEDICT XVI, *Deus Caritas Est,* 2005, 51, at http://www.vatican.va/holy_father/benedict_xvi/encyclicals/documents/hf_ben-xvi_enc_20051225_deus-caritas-est_en.html (11.04.2012).

[9] FRANCIS, *Lumen Fidei,* 2013, 55, at http://w2.vatican.va/content/francesco/en/encyclicals/documents//papa-francesco_20130629_enciclica-lumen-fidei.html (11.04.2012).

[10] FRANCIS, *Evangelii Gaudium,* 2013, 215, at https://w2.vatican.va/content/francesco/en/apost_exhorta-tions/documents/papa-francesco_esortazione-ap_20131124_evangelii-gaudium.html (09.12.2013).

What is expressed by the Vatican statements as articulated by the three popes is the need for an ecological conversion. Like all efforts at conversion, the ecological one calls for repentance, discipline and self-sacrifice. Ecological conversion happens when we allow God's gifts of faith, hope and charity to take root and shape our life so that we would become more virtuous: prudent in our actions, just in our relationship with one another, steadfast in our role as good stewards and moderate in our lifestyle as persons living in community and with all other creatures in the environment.

In arguing for a virtuous life that could sustain the human community and the environment, this dissertation would focus on the following questions for investigation:

1. What are the environmental problems that are characterized as very critical and in need of urgent attention?

   1.1. What is the impact of climate change and the related problems of global warming, rising levels of sea water, melting of the ice caps, the prospect of environmental refugees and severe flooding?

   1.2. How is pollution affecting the problems of drinking water, air quality, the land and the condition of the basic necessities of life?

   1.3. How does biotechnology affect the ecosystem and how are the problems of drought, resource depletion, deforestation and other environmental problems being addressed?

2. Is sustainable development the appropriate paradigm to address the environmental crisis?

   2.1. What is sustainable development?

   2.2. What is the meaning and history of the term 'development'?

   2.3. How does sustainable development become a paradigm for environmental sustainability?

3. Is sustainable community the needed paradigm to address the environmental crisis?

3.1. What is sustainable community?

3.2. What are the characteristics of a sustainable community? Would the moral and theological virtues be indispensable in a sustainable community?

3.3. How will sustainable community sustain the environment? Would living a virtuous life sustain the environment?

3. Methodology

To answer the aforementioned questions, I follow three methodological steps corresponding to the three major parts of this dissertation. In the first step, I use an analytical narrative of the environmental issues that would show the extent of the environmental crisis. Relying on the current data available, I make a descriptive presentation of the environmental issues with the aim of determining the nature and scope of each particular problem. In analyzing the interrelationship and distinctiveness of each environmental problem, this methodological approach would hopefully give us a broader and deeper understanding of the nature of the environmental issues.

In the second step, I employ a historico-analytical approach in making a presentation and critique—a critical assessment and evaluation of the paradigm of sustainable development as the answer to the question of environmental sustainability. By using Catholic Social Teaching[11] and other pertinent church documents, the critique

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[11] Catholic Social Teaching refers to a series of documents by Roman Catholic popes and bishops that address "social" issues such as economic justice, human rights, war and peace, and related themes. A compilation of most of the major social teachings of Church documents can be found in David O'BRIEN and Thomas SHANNON, eds., *Catholic Social Thought: The Documentary Heritage*, New York: Orbis, 1992. For overviews of Catholic Social Teaching, see Donal DORR, *Option for the Poor: A Hundred Years of Vatican Social Teaching,* New York: Orbis, 1992; Marvin MICH, *Catholic*

aims to recognize the importance of the paradigm but at the same time to refute the suitability of the paradigm of sustainable development for environmental sustainability.

In the third step, I utilize the speculative method in which this research presents an alternative paradigm that could possibly achieve and nurture environmental sustainability: sustainable community. With the cultivation and practice of the moral virtues and guided by the theological virtues, the human community could effectively carry out its moral responsibility to care for the environment and ensure its sustainability. Since we are conditioned by history, culture, social position and our respective community context, "we have to think globally but act locally"[12] in addressing the environmental crisis. In this sense, this dissertation proposes that a sustainable community is possible and its principles applicable by taking the "Basic Ecclesial Community" in the Philippines as a model.

This study endeavors to investigate concerns or questions on the environment from the moral-theological perspective. Since this is an interdisciplinary research in moral theology, the arguments are framed within the moral, biblical, theological, spiritual, social and anthropological context.

4. Significance of the Study

This research primarily hopes to provide a moral discourse that could be relevant to the ongoing debate on what to do with the

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Social Teachings and Movements, Connecticut: Twenty-Third Publications, 1998; Kenneth HIMES, ed., *Modern Catholic Social Teaching: Commentaries and Interpretations*, Washington, DC: Georgetown University Press, 2005; and see especially PONTIFICAL COUNCIL FOR JUSTICE AND PEACE, *Compendium of the Social Doctrine of the Church*, Washington, DC: USCCB Publishing, 2005.

[12] The origin of the phrase in an environmental context is not clear. Possible originators include the French theologian Jacques Ellul, David Brower (founder of Friends of the Earth) and others. See http://en.wikipedia.org/wiki/Think globally, act locally#Origins of the phrase (21.09.2014).

environmental crisis. The paradigm of sustainable development is not as comprehensive as it should be. While it takes the three pillars of economic growth, social equality and environmental protection in one strand, it leaves out the more important dimension of the moral life of the community which is the fundamental aspect we need to address on the question of environmental sustainability.[13] I strongly believe that there is a necessity to argue, in the ongoing debate, on the need to highlight the moral dimensions of the environmental crisis and that a moral paradigm is needed, namely sustainable community, to turn the environmental crisis around. Our response to the threats posed by the existing environmental problems would likely be far more effective if it were motivated, not merely by economic, social and environmental survival, but most importantly by our desire to live as moral beings tasked to act as responsible stewards of God's creation.

Secondly, the communities of the Catholic Church in the Philippines, starting on the local level of the parishes with their respective Basic Ecclesial Community programs, could make use of this research in educating the local community members of their moral responsibility to care for the human community and the environment. The cultivation and practice of moral virtues vis-à-vis care for the environment could be integrated into the pastoral strategies for the education of members at the grassroots level, in the neighborhood and the villages. As one doing research in moral theology on this particular issue, I argue that more than ever, Christians are called to demonstrate their commitment to care for one another and the environment by living virtuously. It is particularly the challenge of the Church to form the moral conscience of the people for the care of the human community and environment since everyone and everything are God's creatures.

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[13] The Ecumenical Patriarch Bartholomew pointed out other aspects: "We believe that the roots of the environmental crisis are not primarily economic or political, nor technological, but profoundly and essentially religious, spiritual and moral. This is because it is a crisis about and within the human heart." See https://www.patriarchate.org/-/building-bridges-interfaith-dialogue-ecological-awareness-and-culture-of-solidarity (14.10.2014).

Thirdly, this research could be used to dialogue with the numerous environmental groups[14] so that a more comprehensive understanding

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[14] Leonardo Boff made an interesting survey of the environmental groups and the different approaches taken as responses to the ecological crisis. He cites at least five: (1) *Ecopolitics*—it seeks to develop strategies of sustained development assuring balanced ecosystems, including the labor system, and at the same time, to maintain a sense of solidarity with future generations. It says that the future generations have a right to a society of fairness, justice, and participation, and to a healthy environment. (2) *Human Ecology and Social Ecology*—which proposes that human beings and society should establish a relationship with the environment. It argues that human beings are the result of a long biological process. Without the elements of nature of which they are part and parcel, without the viruses, bacteria, microorganisms, the genetic codes, and the basic chemical elements, they would not exist. Societies always organize their relationships with the environment to assure the production and reproduction of life. Proponents of this approach define the relationship between countryside and city; they decide how an urban development is to be built so as to include quality of life, how a hospital, a school, or a factory is to be set up ecologically, how traffic is to be routed, how social violence is to be avoided, how the relationships between public and private, labor and leisure, material and cultural production are to be organized. It argues that society establishes a certain kind of social communication and decides what kind of science and technology it desires. (3) *Mental Ecology*—proposes that the state of the world is connected to our own state of mind. If the world is ill, that is a sign that our psyche is also ill. Aggressions against nature and the will to dominate exist because visions, archetypes, and emotions that lead to exclusion and violence are at work within the human psyche. It further holds that there is an internal ecology just as surely as there is an external ecology, and that they mutually condition each other. (4) *Ecological Ethics*—argues that the ethic of the dominant society today is utilitarian and anthropocentric. It considers all beings to be at the service of human beings, who may use them as they please in accordance with their desires and preferences. It believes that human beings are the crown of the evolutionary process and the center of the universe. Being ethical would demand developing a sense of the limits of human desires insofar as they easily lead to striving for individual advancement at the cost of class exploitation, subjugation of peoples, and gender oppression. The human being is also, and indeed primarily, a being of communication and responsibility. Thus, being ethical would also demand encouraging generational solidarity in the sense of respecting the future of those not yet born. Being ethical would demand acknowledging that other beings have relative autonomy; they also

of the environmental crisis could be reached, especially on the causes, projected impacts, and possible ways to cope with the crisis. The church could learn from dialogue with the existing environmental groups particularly those that are affiliated with the scientific community, so that it may be able to discern her mission in caring for the environment using available scientific data and facts. In this opportunity for dialogue, the different environmental groups could likewise be enriched in their understanding particularly on the moral dimension of the environmental crisis since all concerned sectors have to find a holistic approach to care for the environment.

5. Scope and Limitation of the Study

This dissertation is undertaken to help the Christian community discern the underlying causes and to understand better the nature of the environmental problem from the moral and theological point of view. It is my intention as a researcher not to burden the reader with encyclopedic data, extensive interpretation and lengthy argumentation for easier understanding of the issue. It aims to be straightforward without being simplistic. In this regard, the reader may feel in need to have more information on the problems of the environment, the scope of sustainable development and the notion of sustainable community. These topics are wide-ranging and the materials and the data are extensive except on sustainable community in which the available literature is seminal. The reader is therefore encouraged to read more from other sources, if possible.

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have a right to continue to exist and to coexist with us and with other beings since they have existed for millions of years before us and without us. In a word, they have a right to the present and the future. (5) *Radical or Deep Ecology*—it seeks to reach down to the roots of the environmental problem. This approach seeks to discern the fundamental question, for the current crisis is a crisis of the dominant civilization. In other words, what is in crisis is our dominant paradigm, our basic model of relationships and the prevailing sense of what life is all about. To read more of this, see Leonardo BOFF, *Cry of the Earth, Cry of the Poor*, translated by Phillip Berryman, Maryknoll, New York: Orbis Books, 1997, pp. 5-8.

In Chapter One, on the topic of the state of the environment, the data on the environmental problems are enormous. Due to the massive scale of the various environmental problems and the practical impossibility to cover everything, this research would focus on the issues that are considered urgent and critical in our time. Although the environmental problems are interconnected and interrelated, this research employs two main criteria to focus on particular environmental issues among other issues: *urgency* and *significance*. Urgency demands immediate action due to the gravity of the nature of the problem. One cannot delay a response to the problem when delay could make matters worse. Significance requires conscientious selection of the environmental problems that have the most impact on the global community and the magnitude of their effects worldwide. In this regard, Chapter One covers the urgent and significant environmental issues and others are mentioned in passing.

In the second chapter where the paradigm of sustainable development is presented and analyzed, we are again faced with the enormity of the material. Although the idea of sustainable development is a recent one in environmental discourse, it has already accumulated huge volumes of literature due to its intellectual, political, and socio-economic importance and appeal. Moreover, the concept of 'development' in sustainable development has even more texts to peruse on due to its controversial and hotly debated nature in human history. Chapter Two attempts to discuss these topics as thoroughly as possible but it concentrates only on the core contents of sustainable development and the idea of development since it is impossible and an impractical task to cover everything under such broad topics.

In the last chapter where the notion of sustainable community is presented as the paradigm for environmental sustainability, it is good to keep in mind that given the contemporary setting of the debate on how to sustain the environment from the point of view of moral theology, the materials available are generally scant. Some materials are considered introductory ideas on this area. To find possible answers

to the complex and multifaceted problems of the environment is arduous. However, this should not deter us from trying.

This research tries to find the moral connection between sustaining the human community and sustaining the environment through Christian virtue ethics. A virtuous life is most certainly the moral stance the Christian community should take in view of the environmental problem. But Christian virtue ethics is just one of the many possible moral approaches that could be used in moral discourse on the environment. Other moral approaches like duty ethics seem adequate as well to address the environmental problem. In this regard, the reader might also be interested in exploring other moral approaches. However, as far as this dissertation is concerned, Christian virtue ethics is more appealing because this kind of ethics goes beyond the lists of moral imperatives of "thou shalts" and "thou shalt nots." Instead of thinking only about what the human community should *do* on the environmental problem, Christian virtue ethics asks first about who we *are* and asks what *kind* of people we want to be. These are fundamental questions we need to ask before we could proceed to explore the possibilities of finding an appropriate solution to the environmental crisis. At this point, it would be sufficient to argue that Christian virtue ethics could serve more our purpose than other possible moral approaches for a moral discourse on the environment.

6. Structure of the Dissertation

This research consists mainly of three Chapters that compose the main body of the paper. The general introduction in the beginning explains the rationale of the research. The general conclusion and recommendations at the end give the closing arguments of the paper and would cite significant areas for further research that are related to the concerns of this dissertation. At the end of the dissertation as well, two appendices are added. First is the map of the Philippines; the second is the suggested set of modules for the ongoing education of the Basic Ecclesial Community. The appendices are thought to be necessary parts of the dissertation because these explain the location of the Basic Ecclesial Community and how the modules for ongoing

formation of the members could be designed for communal and environmental sustainability.

In the main body of this dissertation, I situate the reader first with the state of the environment in Chapter One. This chapter provides the context of the environmental crisis. To begin with, the earth as a planet is a wondrous one. No other may be like it. From all that we know, no other planet may support self-conscious forms of life. Human beings, unlike other animals, have the ability to modify and make use of the resources of this wondrous planet for survival and well-being. Human beings can observe the planet from space, communicate rapidly around the world, prevent and remedy many diseases, manufacture many items that could make life more comfortable and enjoyable, and construct complex human settlements.

The human activities, however, which were done in the name of economic growth and development, have made a negative impact on the planet. The unsustainable human activities which included abuse of the planet's natural resources as if these were unlimited, overdependence on the non-renewable sources of energy like fossil fuels, massive cutting of forests for commercial use, wanton mining of the earth's mineral resources and many others have led to numerous environmental problems. We now face the threat of climate change and global warming, melting of ice caps, rise of sea water levels, pollution of land, water and air, deforestation, drought and resource depletion. These environmental problems which are discussed and analyzed in this chapter will make us realize that such a damaged state of the environment cannot be passed on to future generations without any concerted global effort to correct what went wrong.

When the global human community scrambled to do something about the severe environmental crisis, the concept of sustainable development emerged during the 1992 United Nations Conference on Environment and Development's Earth Summit as the most favored paradigm for environmental sustainability. In Chapter Two, this paradigm is presented, discussed and critically assessed so that the reader will have a good grasp of its concept, historical background,

and the key principles on which it is anchored. The combination of sustainability and development to form the phrase "sustainable development" demands that we also have to investigate and examine closely the meaning of development, its historical discourse, and how it is being explained given its different theories. The presentation of the different theories of development and the thoughts of prominent economic theorists are important because the notion of development in sustainable development does not come from a vacuum but from a long history of development discourse.

The narrative presentation and analysis are followed by the section on the critique of sustainable development. The critique tackles the problematic concept of sustainable development, its inconsistencies and its incompatibility with environmental sustainability using Catholic Social Teaching. In this part, I argue that despite sustainable development's impressive framework of providing a solution to the environmental crisis, ultimately it could not free itself from the grasp of the environmentally destructive economic system which fundamentally aims at economic growth as its primary objective. I strongly argue in this section that sustainable development does not recognize the essentially moral nature of the environmental problem.

In Chapter Three, I propose to the reader the paradigm of sustainable community as the appropriate paradigm to sustain the environment. What is being presented in this part is the central argument that to solve the environmental crisis we need to live a good moral life based on the virtues so that there would be communal and environmental sustainability. The insatiable desire to use the resources of the environment for profit, economic growth and development which is perpetuated by sustainable development should be overcome. The environmentally destructive attitude has to be challenged by a virtuous way of life. Living prudently, justly, courageously and moderately with faith, hope and charity will make the human community and the environment sustainable. An unsustainable human community where there is excessive consumerism, greed, and unequal distribution of natural resources should be reconstituted and transformed into a sustainable community by means of virtuous

living. When the human community becomes virtuous, human beings would only use what is considered vital and necessary for human flourishing.

It should be noted that what is being stressed on the discussion of the virtues for communal and environmental sustainability is the argument that to live virtuously is not something spontaneous nor something that God would automatically infuse in every human being as if it were the case of *Deus ex machina*.[15] This dissertation emphasizes that God requires the moral cooperation of every human being. In other words, the moral virtues of prudence, justice, fortitude and temperance need to be cultivated with faith, hope and charity in the context of the community.

After the discussion on the necessity of virtues for communal and environmental sustainability, the reader is helped to understand the applicability of the concept and principles of sustainable community. The purpose of this part is to illustrate that a sustainable community is not just a theory floating in the air or an abstract thought. The cultivation and practice of the virtues should occur in the daily human experience in one's own context. It is for this reason that this dissertation would take the Basic Ecclesial Community in the Philippines as an example where the local community members are formed and informed of their moral responsibility to care for one another and the environment. In the long run, when small communities, like the Basic Ecclesial Community, would become models of change and would make a difference in the global community, they will become the "salt of the earth … and light to the world" (Mt 5:13-14) for communal and environmental sustainability.

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[15] The expression is of Greek origin in which the god or gods would make an unexpected intervention to solve a seemingly impossible problem. See http://en.wikipedia.org/wiki/Deus_ex_machina (23.02.2015).

CHAPTER ONE

THE STATE OF THE ENVIRONMENT

As one called to till and look after the garden of the world (cf. Gen 2:15), man has a specific responsibility towards the environment in which he lives, towards the creation which God has put at the service of his personal dignity, of his life, not only for the present but also for future generations.
— Pope JOHN PAUL II, *Evangelium Vitae*, 42

1.1. Introduction

We live in a time of environmental crisis.[1] What brings us into this state of the environment is the fact that what we do, our human activities, affect gravely the land, water, air and different types and forms of biological life that make up our planet's whole ecosystem. Numerous varieties of animal and plant species are heading towards extinction because forests, grasslands,

[1] The "earth suffers from a significant environmental crisis as a new Christian millennium unfolds. The crisis is multidimensional; it is a crisis of context, consciousness, and conscience. The earth's *context* of life is being subjected to human interventions and exploitations that often surpass in extent and impact especially the consequences of major natural catastrophes.… In this context, most human members of the biotic community (the community of all life), through ignorance or indifference or arrogance, are not very *conscious* of the effects of their way of life on the broader environment and its ecosystems.… Human *conscience* has not been sufficiently stimulated to respond to human consciousness of pressing problems.… People fail to consider the ramifications of human technology on the earth, and to accept human responsibility to remedy past human harms.… " See John HART, *What Are They Saying About Environmental Theology?,* New York/Mahwah, NJ: Paulist Press, 2004, p. 1.

wetlands and aquatic ecosystems are mindlessly degraded or destroyed daily in the name of economic development.

In this Chapter, the environmental problems are being presented and analyzed. The first to be discussed is the problem of climate change which is considered the most serious of the other environmental problems because it disrupts the vital functions of the ecosystem that nurtures practically every organism that thrives on this planet. Data indicating the threat of climate change has become more compelling and warns us of the dangerous times ahead. Based on available data, it is argued that temperatures rising by a few degrees would cause sea levels to increase significantly thus endangering low lying areas and countries around the world. The discussion on climate change includes assessment of the problem of climate change, and other environmental issues connected to it.

The next topic is about the problem of environmental pollution focusing especially on water, air and land pollution. Air, land and water are indispensable resources for the survival of all species on the planet. Pollutants and toxic materials emitted into the air and washed out into waterways contaminate the food chain, and put the survival of myriad types of living organisms and entities at risk. The pollution of air, land and water resources will have serious and wide-ranging effects on the environment and human health.

The discussion on the issues of drought and biotechnology particularly on the problem of genetically modified organisms follows. The technology of genetic alteration by recombination which is used to create new and diverse organisms may pose a lot of problems to biological diversity. At the present time, the diversity of biological life is declining. Variety of natural resources is fast depleted. Different species of animals and plants are in danger of extinction due to drought, resource depletion and deforestation.

The issue on population is the last topic to be discussed. Only two and a half years ago, the world crossed an historic threshold: The global population breached the 7-billion mark. Many environmentalists believe that rapid population growth is a cause for alarm since global

population growth means there will be more and more mouths to feed and thus cause more problems in the use of natural resources and degrade the environment more with the consequent environmental problems of pollution, waste, use of more energy, and others.

With the present environmental problems, we need to ask: "What has happened to the earth that God has created?" In the account of the Genesis story of creation, all of the things that God created were good (Gen 1:1-31). God is full of goodness, and in God's desire to share His goodness, God embarked on the process of creation.[2] Everything that God made was good. Up to God's creation of the human being, all the other creatures and resources God made were intended for the good of all. Nature and all other resources are God's masterpieces of creation, and are therefore gifts.[3]

The Scriptural account of creation fundamentally stresses the need for moral conversion and responsibility. Human beings failed to fulfill their role in ensuring the integrity and wholeness of creation and the well-being of all creatures.[4] The moral failure of human beings to do such a fundamental task resulted in the state of the environment we have at the present time.

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[2] "La creazione visibile `essa stessa un dono divino, il 'dono originario', che fissa uno 'spazio' di comunione personale." Cf. Paul Michael HAFFNER, *Verso una teologia dell'ambiente: L'eredita ecologica di Papa Giovanni Paolo II*, Rome: Edizioni Art, 2007, p. 113.

[3] Norman Wirzba argues that the theology of creation is very essential because it provides a vision of "God's intention … it provides us the ultimate context for implementing the art of homecoming. While ecology can show us the indissoluble ties that unite us with the earth, the teaching of creation fleshes out for us the nature and character of responsible human life within the world." Cf. Norman WIRZBA, *The Paradise of God: Renewing Religion in an Ecological Age*, United Kingdom: Oxford University Press, 2003, pp. 34-38.

[4] Cf. Piotr TCHAADAIEV, "Une piété cosmique: La création," *Annales,* Juillet-Aout 2011, p. 26.

1.2. Climate Change

On August 29, 2005, Hurricane *Katrina*[5] hugely devastated Louisiana, Mississippi and Alabama in the United States of America. There were more than 1,300 people confirmed dead due to massive flooding and there was an estimated loss of property amounting to more than 30 billion dollars. *Katrina* was largely recognized as the worst weather disaster in the history of the United States. In the year before *Katrina's* onslaught, Europe was experiencing an intense heat wave. The heat wave caused at least 20,000 deaths of people in Europe due to heat strokes and dehydration. In 2002, low pressure systems caused torrential rain and flooding in Northern Europe specifically in the countries of Germany, Austria and the Czech Republic. These severe weather systems caused the evacuation of hundreds of thousands of people, with at least one hundred (100) deaths, and with an estimated damage of fifteen (15) billion euros.[6]

In the year 2013 in the Philippines, a series of catastrophic events hit the country. It was capped by what was identified as the strongest super-typhoon that ever hit the earth. It was locally called typhoon *Yolanda* and it killed more than six thousand (6,000) people, and made hundreds of thousands homeless. It triggered worldwide movements for assistance and relief. The devastation was so great that rebuilding the affected communities was seen to take quite some time. Before typhoon *Yolanda*, tropical typhoon *Ondoy* caused massive floods in the metropolis of Manila and surrounding suburbs in September of 2009. The magnitude of those floods was never before experienced by the residents in the affected areas. Monsoon rains had also severely

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[5] Hurricane Katrina was featured in the 2005 famous documentary film *An Inconvenient Truth* about the issues of global warming and climate change. It was based on the book of the same title by the former US Vice President Albert A. Gore, Jr. Hurricane Katrina was presented as the direct consequence of global warming. See http://www.takepart.com/an-inconvenient-truth/film (15.09.2013).

[6] Edward A. PAGE, *Climate Change, Justice and Future Generations*, MA, USA: Edward Elgar Publishing Limited, 2006, pp. 48-59.

affected the same metropolis in August of 2012. It is the same story in some areas in the Southern Philippines (Mindanao) which were also severely affected by floods causing the death of many people. These areas in Mindanao had never before experienced the extent of such flooding.

The incidents cited above are all linked to the problem of climate change. These could be portents of what lies ahead.

1.2.1. Assessment of the Problem of Climate Change

The Fifth Assessment Report of the Intergovernmental Panel on Climate Change[7] (IPCC), issued on November 2, 2014, consistently attributed, since its First Assessment Report in 1990, the phenomenon of climate change to the man-made emission of greenhouse gases. The report, time and again, sounded the alarm and predicted that climate change will have drastic consequences on the environment such as extraordinary rains and floods, devastating heat waves and droughts, more powerful storms and the melting of ice caps, among others.

According to the Intergovernmental Panel on Climate Change's report, the current data about climate change centers on the following:

> observational evidence from all continents and most oceans show that many natural systems are being affected by regional climate change, particularly temperature rise; a global assessment of data since 1970 has shown that it is likely that anthropogenic (human-induced) warming has a discernible influence on many physical and biological

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[7] The Intergovernmental Panel on Climate Change (IPCC) was established in November, 1988 by the United Nations Environment Programme (UNEP) and World Meteorological Organization (WMO). Its task is to assess in a comprehensive, objective, open and transparent manner the scientific, technical, and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation. The IPCC, along with former US Vice President Al Gore, won the 2007 Nobel Peace Prize. See https://www.ipcc.ch/organization/organization.shtml (24.10.2013).

> systems. Impacts due to climate change will vary regionally but aggregated and discounted to the present, they are very likely to impose net annual costs which will increase over time as global temperatures increase.[8]

The comprehensive report by the United Nations panel of experts on climate change drew calls for concerted global action and a more rapid and determined response. United Nations chief Ban Ki-moon emphasized that the global response needs to move much more rapidly because of the worsening effects of climate change.[9] This was the same point that Pope Francis emphasized in his official message to the 20th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change in Lima, Peru on December 1-12, 2014. He said that an urgent action is needed because the time to find global solutions regarding the effects of climate change is running out.[10]

Furthermore, the chairman of the Intergovernmental Panel on Climate Change, Rajendra Pachauri, warned that international coordination alone through the auspices of the United Nations would not be enough to tackle the problem of climate change. He emphasized that what is needed is strong and clear leadership among world leaders. If world leaders are not resolved to "take some steps, nothing is going to happen."[11]

As a matter of fact, the responsibility to address the environmental problem of climate change requires a multilevel coordinated response. It requires the exercise of responsibility of the individual, local,

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[8] *Report of the International Panel on Climate Change*, 2007, 25, http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm (05.09.2013).

[9] *Ibid.*

[10] See http://en.radiovaticana.va/news/2014/12/11/pope_climate_change_an_ethical_and_moral_responsibility/1114382 (18.12.2014).

[11] *Report of the International Panel on Climate Change*, 25.

national and global levels. To use the famous quote once again, "we have to think globally but act locally."

1.2.2. Climate Change Data Controversy

While climate change has been acknowledged by a big number of scientists globally, there have been groups of skeptics which doubted the claims of those who were propagating the concepts of climate change. An incident referred to as "Climategate" is an example where electronic mails (emails) were leaked regarding England's University of East Anglia's Climatic Research Unit, fueling skepticism of the case about global warming. The Climatic Research Unit was said to have been influential in the creation of the Intergovernmental Panel on Climate Change's reports, and there were emails from scientists within the unit claiming that the data used by the group had been exaggerated. The Climatic Research Unit has since then been cleared of these doubts.

There were some allegations in "Climategate" that stated claims of irregularities as to the effects of climate change especially with regard to temperature increases.[12] Several revelations were cited which many skeptics had long suspected. Some of the highlights of the claims were as follows:

- There was a clique of politicized scientists, financially backed by politicians, who were distorting and tampering with scientific data to make the findings profitable and congenial to governments;
- The Climatic Research Unit had allegedly profited from the research activities;
- The bureaucratic processes required by the Intergovernmental Panel on Climate Change were tampered with, to deliberately exclude adverse scientific

[12] Christopher MONCKTON, *Caught Green-Handed!,* Science and Public Policy Institutes, 2009, p. 45.

results, to be able to politically influence the panel's conclusions, rather than just deal with scientific facts;

- Some results were excluded so that the Intergovernmental Panel on Climate Change report would conform to what they wanted in the United Nations' panel to report;
- The authors tampered with data to conceal their inconsistencies and errors;
- They made inconsistent public statements which were contrary to what was allegedly happening that the temperature had not risen drastically;
- The scientists supposedly asked their friends rather than independent scientists to review their studies;
- They had journal editors friendly to them who rejected papers whose findings were inconsistent [with] or contrary to theirs;
- They made a campaign to remove the editor of a journal, when the concerned editor did not wish to take part in corrupting science for political purposes;
- There was a disinformation campaign specially against their scientific opponents;
- They supposedly committed the criminal offense of conspiracy to conceal and to destroy computer codes and data that had been legitimately requested by an external researcher who found their findings incompetent.[13]

The claims in "Climategate" as well as of the other skeptics have since then been negated by more recent studies, some of which were even undertaken by scientists who belonged to skeptical groups.

Some of the skeptics, in the course of studies, eventually became convinced of the reality of climate change and its effects. Professor Richard Muller, of the Berkeley Earth Project which validates claims

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[13] *Ibid.*

by climate researchers, is an example. He was a former climate change skeptic but turned into a climate change advocate since their latest study confirmed that there is indeed anthropogenic global warming.[14]

Results of the research done by Professor Richard Muller and his group have shown that the average earth temperature has increased by 1.5 Centigrade (C) or 2.7 Fahrenheit (F) over the last 250 years. Professor Muller stated:

> Three years ago, I identified problems in previous climate studies that, in my mind, threw doubt on the very existence of global warming.… Last year, following an intensive research effort involving a dozen scientists, I concluded that global warming is real and that the prior estimates of the rate of warming were correct. I'm now going a step further: Humans are almost entirely the cause![15]

The research findings pinpointed clearly that human activity was found to be the most straightforward explanation for climate change.

1.2.3. Anthropogenic Cause of Climate Change

The cause of climate change is generally attributed to natural or anthropogenic factors. Going back into time, the earth's climate has been changeable[16] depending on the impact of the natural composition of the global climate elements and earth's orbital variables, or solar emission, and other natural internal processes of

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[14] Cf. "Skeptic Says Climate Change is Down to Humans," *BBC Online,* August 1, 2012, http://www.bbc.com (28.02.2013).

[15] *Ibid.*

[16] "Climate change is … not unprecedented on the planet. We know that the Sahara was green 8,000 years ago and that North America was covered by great ice sheets 21,000 years ago and that both of these millennial-scale climate changes were caused by regular and predictable changes in the Earth's orbital parameters." Cf. Natalie GOLDSTEIN, *Global Warming,* New York: Infobase Publishing, 2009, pp. 5-6.

the earth's climate system. Thus, earth's climate was said to have been changing for thousands of years.

Most of the time, climate change has been used interchangeably with global warming, and the greenhouse effect.[17] Climate change however is used to refer to any change or changes in modern climate systems depending on natural variability or anthropogenic causes while global warming refers to an upsurge over a period of time of the average temperature of the earth's atmosphere and oceans.

When the documentation on the earth's climate began in 1880, the warmest year ever experienced was 2013 according to the National Oceanic and Atmospheric Administration.[18] The warmest years

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[17] The greenhouse effect was discovered by Joseph Fourier in 1824, and was first investigated quantitatively by Svante Arrhenius in 1896. Radiation from the Sun, when measured at the top of the Earth's atmosphere, can be seen to cover a wide spectrum. This spectrum is consistent with the blackbody radiation associated with the temperature of the Sun's surface. The spectrum observed from the Earth's surface is consistent with this once the absorption of atmospheric species has been accounted for. See Hirofumi UZAWA (1999), "Global Warming as a Cooperative Game," *Environmental Economics and Policy Studies* 2, pp. 1–37.

[18] "The year 2013 ties with 2003 as the fourth warmest year globally since records began in 1880. The annual global combined land and ocean surface temperature was 0.62°C (1.12°F) above the 20th century average of 13.9°C (57.0°F). This marks the 37th consecutive year (since 1976) that the yearly global temperature was above average. Currently, the warmest year on record is 2010, which was 0.66°C (1.19°F) above average. Including 2013, 9 of the 10 warmest years in the 134-year period of record have occurred in the 21st century. Only one year during the 20th century—1998—was warmer than 2013. Separately, the 2013 global average land surface temperature was 0.99°C (1.78°F) above the 20th century average of 8.5°C (47.3°F), the fourth highest annual value on record. The 2013 global average ocean temperature was 0.48°C (0.86°F) above the 20th century average of 16.1°C (60.9°F) and tied with 2006 as the eighth highest annual temperature on record and the highest since 2010, the last time El Niño conditions were present in the central and eastern equatorial Pacific Ocean. ENSO-neutral conditions were present in this region during all of 2013. Precipitation measured at land-based stations

on record so far have been 2014, 2010, 2005, 1998, 2013, 2003, 2002, 2006, 2009, 2007, with 2004 and 2012 in a tie.[19] Climate scientists say the record speaks of the indication of climate change wherein the temperature increase is not only caused by natural factors but by anthropogenic ones. The scientists refer to the proliferation of greenhouse gases in the atmosphere principally by carbon dioxide (CO2)[20] and other greenhouse gases such as methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6).[21]

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around the globe was near average on balance for 2013, at just 0.31 mm above the long-term average. However, as is typical, precipitation varied greatly from region to region. This is the second consecutive year with near-average global precipitation at land-based stations." See http://www.ncdc.noaa.gov/sotc/global/2013/13 (11.11.2014).

[19] *Ibid.*

[20] Carbon dioxide is regarded as the primary driver of global warming. It is abundant in the Earth's atmosphere, released by humans and other animals, and used up by plants in the processes of respiration and photosynthesis. It is a product of the combustion of carbon-related compounds such as fossil fuels and organic matter; it can be produced synthetically by acidification and decomposition of metallic carbonates, among other methods of chemical reaction. However, CO2 is produced industrially through different processes of combustion of carbonaceous fuels, decomposition of calcium carbonates, fermentation, and from gas wells. It can also result from the oxygenation of the product of the incomplete combustion of automobile and generator fuels. See C. D. KEELING (1983), "The Global Carbon Cycle: What We Know from Atmospheric, Biospheric, and Oceanic Observations," *Proceedings of Carbon Dioxide Research, Science and Consensus*, United States Department of Energy, Washington, DC, II, pp. 3–62.

[21] Cf. T. J. CONWAY, P. TANS, L. S. WATERMAN, K. W. THONING, K. A. MASARIE and R. H. GAMMON (1988), "Atmospheric Carbon Dioxide Measurements in the Remote Global Troposphere, 1981–1984," *Tellus* 40B(2), pp. 81-115.

When the Industrial Revolution[22] began around the turn of the 19th century, the level of carbon dioxide in the atmosphere had risen by thirty-five (35) percent and the concentration of methane in the atmosphere had increased by 1,060 parts per billion (151 percent). The anthropogenic sources of carbon dioxide and methane in the atmosphere include the burning of fossil fuels for industrial purposes and transportation systems, livestock raising, and agricultural production.

The Intergovernmental Panel on Climate Change's report asserted that human beings are changing the earth's natural climate system. From the scientific data that has been gathered so far, evidence indicates that human-induced climate change could have devastating effects on the environment.

1.2.4. Projected Results of Climate Change

The most noted effect of climate change is the warming of the surface of the earth and the atmosphere. There are other consequences observed, studied or foreseen along this line: 1) If the greenhouse effect is responsible for the warming, then the stratosphere should cool, but should warm if solar variations cause the warming; 2) Higher latitudes will warm more than lower latitudes, as evidenced by past warmer climates and derived computer models; 3) Since warmer air can hold more moisture, the atmospheric water vapor content is expected to

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[22] Industrialization initially started in Britain in view of the emerging capitalist social relations and it spread fast to North America and Western Europe. The Industrial Revolution's effects supposedly focused on a general increase in the living standard of people, improved overall nutrition and health, increased life spans, and intensification of global trading, but it also caused increased gaps between the rich and poor within and across nations. The level of industrialization is a measure for a country's stage of development. Increased industrialization implies a higher quality of life and progress for a country's residents. However, the system of industrialization provides efficient exploitation of vast amounts of natural resources and the use of fossil fuels to produce goods seen as necessary for improved overall social well-being. See John Kenneth GALBRAITH, *The New Industrial State*, Oxford: Princeton University Press, 1985, pp. 22-34.

increase, and because of increased evaporation, some land areas will be dryer, and more intense and longer droughts are expected; 4) Rainfall will be more intense and more often; 5) Migration patterns of birds and other animals will be affected; 6) Permafrost will decrease extensively; 7) Mountain glaciers in high and mid latitudes are expected to retreat; 8) Ice caps in Greenland and Antarctica are expected to melt; 9) Sea ice will retreat in both hemispheres; 10) Snowfall is expected to decrease at very high latitudes, among others.[23]

The effects of climate change are indeed worrisome. In a nutshell, climate change will force a significant rearrangement of spatial and temporal patterns in virtually all of the world's ecosystems. The groupings of species at any given latitude and longitude today will not persist but will probably be replaced by different assemblages which are still unknown. Today's typical oak-hickory forest, for example, will be replaced by a different ecosystem. Because natural selection acts on each and every species, different species assemblages then will result.

Furthermore, climate change will have large scale human concerns which would include changes in the distribution of agricultural areas and sea level changes as they will affect coastal areas. Many coastal cities will be facing rising levels of sea water. The National Oceanographic and Atmospheric Association of the United States had a forecast regarding increasingly severe weather for the remainder of the present century and placed the blame squarely on greenhouse gas emissions.[24]

Climate change is seen to be rapid. It could cause an evolutionary bottleneck for many different species which could face high extinction risk. Many populations of different species will diminish, and extinction rates will rise. Specialized species such as polar bears are at greatest risk. Overall, global biodiversity is expected to decline in the twenty-first century. The balance of nature is certainly threatened

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[23] Robert G. WATTS, *Global Warming and the Future of the Earth,* UK: Morgan and Claypool, 2007, p. 15.

[24] See John KRICHER, *Tropical Ecology*, New Jersey: Princeton University Press, 2011, pp. 140-155.

given the reality of present climate change and its collective effects on global ecosystems that will become increasingly evident during the present century.[25]

The effects of climate change on the future generations will be tremendous. Authors such as Mohamed Salih expressed dread:

> What we do today about climate change has consequences that will last a century or more. The part of that change that is due to greenhouse gas emissions is not reversible in the foreseeable future. The heat trapping gases we send into the atmosphere in 2008 will stay there until 2108 and beyond. We are therefore making choices today that will affect our own lives, but even more so the lives of our children and grandchildren. This makes climate change different and more difficult than other policy challenges.… And our children and their children's grandchildren have the right to hold us to a high standard of accountability when their future—and maybe their survival—is hanging in the balance.[26]

The present generation, therefore, may not yet fully feel the effects of climate change, even if some effects are already manifested. It will be the future generations who are seen to bear the projected worse consequences of climate change.[27] Specifically, the next subsections

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[25] *Ibid.*

[26] Kate RAWORTH, "Adapting to Climate Change: What's Needed in Poor Countries, and Who Should Pay," *Oxfam Briefing Paper* 104, Washington, DC: Oxfam International, 2007, p. 141.

[27] On October 10, 2008, Archbishop Celestino Migliore, the Apostolic Nuncio and Permanent Observer of the Holy See to the United Nations, in his address to the United Nations on sustainable development, stressed: "The current negotiations on the United Nations Framework Convention on Climate Change are a good example of how responsibility to protect … a fact that we ought to take into account as we consider the protection of the global climate for present and future generations." See http://www.

discuss the projected results of climate change which should be of utmost concern to the global community.

1.2.4.1. Melting of Ice Caps

Since climate change involves changes in precipitation patterns, melting of the ice caps or ice sheets could be one of the projected results. Melting of the ice caps or ice sheets due to climate change is considered devastating on a wide scale. For instance, a would-be complete meltdown and collapse of the Greenland ice sheet is estimated to raise sea level by as much as 7 meters (23 feet).[28] If it would happen, it would submerge a lot of island countries located especially within the Pacific area. It would result in the inundation of most of the world's coastal cities as well as low-lying areas thus displacing many millions of people.

The loss of the West Antarctic ice sheet is seen to have similar consequences and effects.[29] Although the Intergovernmental Panel on Climate Change in its 2014 report declared that it may still take beyond this century for the ice-melts to occur, it is observed that the Greenland ice cap is melting much faster than expected.[30] The loss of the ice sheets, be it Greenland or West Antarctic, could slow down or may even shut off the thermohaline circulation in the North Atlantic. This could make the North Atlantic area a lot colder as a result of the turning off of the Gulf Stream.

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vatican.va/roman_curia/secretariat_state/2008/documents/rc_seg-st_20081028_sustainable-evelopment_en.html (22.10.2013).

[28] http://ocean.nationalgeographic.com/ocean/critical-issues-sea-level-rise/ (09.09.2013).

[29] Cf. Frank ACKERMAN, *Can We Afford the Future? The Economics of a Warming World,* New York, USA and London, UK: Zed Books Ltd, 2009, pp. 211-215.

[30] http://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_summary-for-policymakers.pdf (10.11.2014).

1.2.4.2. Rise of Sea Water Level

As mentioned above, sea level rise would be devastating to human communities around the world. Studies have shown, however, that sea level has actually been rising at a rate of around 10 to 12 cm per century for several millennia already. It was further noted that the rate of increase had accelerated during the last hundreds of years, and had further accelerated during recent decades.[31]

There are two major causes of rising sea levels. First, when oceans heat up the water consequently expands, and thus sea levels rise. Second, warming causes the glaciers to melt and the waters run into the sea, thus causing sea level to rise. The problem nonetheless is that both of these situations are simultaneously occurring. The melting glaciers are from the mid-latitude and high-latitude continental glaciers according to the 2014 Intergovernmental Panel on Climate Change's report.[32]

Comparing the expected melting of the Greenland and Antarctic ice caps, what is more critical is the fact that the Antarctic ice cap could suddenly collapse. This is because the western part of the Antarctic ice sheets rests on the ocean bottom, not on any land continent.

Based on available data, Robert G. Watts, a climatologist, warned:

> The combined melting of the major ice caps, the warming of the ocean and the melting of the mountain glaciers will definitely cause global sea water level to rise. The volume of ice that makes up the Antarctic ice sheet stands at 3.4 kms. If it were to melt, the ocean would rise by nearly 5m, about 17 ft. Currently, the Greenland ice sheet is thought to contribute about 28% of past sea level, and Antarctica is thought to contribute about 12%. If Greenland would melt entirely, sea level would rise by about 7m (23ft). If the rest of Antarctica should melt, sea level would rise about 77m

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[31] *Ibid.*

[32] Cf. Robert G. WATTS, *Global Warming and the Future of the Earth,* UK: Morgan and Claypool, 2007, pp. 78-79.

> (253ft). Many scientists believe that the Intergovernmental Panel on Climate Change has seriously underestimated the danger of sea level rise.[33]

Glaring evidences were strongly pointed out by Watts as to what problems could possibly happen when some areas would be affected by the melting ice caps and rising sea levels. The problem of environmental refugees would be one of these.

1.2.4.3. The Prospect of Environmental Refugees

At the present time, there are some cases of environmental relocation. In the world's largest mangrove forest in the Bay of Bengal, the Sundarbans, a territory shared by both India and Bangladesh, around 6,000 people had to be relocated because their land had been submerged by water. The tiny country of Malta is another example. The country with its 400,000 inhabitants may have some of its parts submerged as it is an area that is highly vulnerable to rising sea level. Malta has a reservoir of fresh water but it could be threatened when sea water rises.[34] The island country may have saline contamination of water supplies and consequent ruining of crops. It would make the island uninhabitable in the end.

Difficulties in managing the issue of environmental refugees actually go beyond relocation. Inhabitants of the Marshall Islands, an island country situated near the equator in the Pacific Ocean, are primarily concerned about their culture, their history, their identity, if they must leave. Indeed, what happens if the 61,000 Marshallese must abandon their low-lying atolls? Would they still be a nation with a United Nations' seat, with control of their old fisheries and their undersea minerals? Where would they live, and how would they make a living? Who, precisely, would they and their children become?[35]

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[33] *Ibid.*, p. 82.

[34] *Ibid.*

[35] Cf. Derek BELL (2004), "Environmental Refugees: What Rights? Which Duties?," *Res Publica* 10/2.

These are fundamental and crucial questions that further complicate how to handle the problems of environmental refugees. The people of the Marshall Islands—and of Kiribati, Tuvalu and other atoll nations beyond—can only wonder for how many more years they will be able to cope.

In the last ten years, the possibility of environmental refugees has already been foreseen. The United Nations Environment Programme reported in 1989 that

> as many as 50 million people could become environmental refugees if the world does not support sustainable development.[36]

Handling the projected problem of environmental refugees involves asking existential issues that are not adequately addressed in the international legal frameworks.[37] It is a difficult issue that the world community has to face more and more as the effects of climate change become more intense.

In this regard, the United Nations Environment Programme urged nations to develop policies to address what support structures and frameworks they are going to put in place to deal with this problem and to acknowledge the prospect of environmental refugees in their countries. Implementing specific projects in countries most affected is another pathway nations could take to support each other on this issue. For policymakers and governments, while the issue of how to deal with refugees is politically contentious, the plight of

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[36] See Lori HUNTER (2005), "Migration and Environmental Hazards," *Population and Environment* 26/4.

[37] In fact, the 1951 global treaty on refugees, mandating that nations shelter those fleeing because of persecution, does not cover the looming situation of those displaced by climate change. Some advocate negotiating a new international pact obliging similar treatment for environmental refugees. See Diane BATES (2002), "Environmental Refugees? Classifying Human Migrations Caused by Environmental Change," *Population and Environment* 23/5.

environmental refugees merits special attention because they need international support in facing the problem.[38]

1.2.4.4. Severe Flooding

Climate change is expected to increase the risk of flooding for people around the world, both by raising global sea levels and increasing severe inland flooding like what happened during Hurricane *Katrina* in 2005 in the United States and typhoons *Yolanda* and *Ondoy* in the Philippines in 2013 and 2009 respectively. Flooding has always been one of the most devastating types of disasters. It occurs when there is a large amount of precipitation and it would cause the catch basin to go beyond its base flow.

With climate change, intensity of precipitation will be more observed in many regions, causing more serious flooding. Floods along maritime coastlines can result from storm surges. A storm surge is a phenomenon tied to low-pressure systems like typhoons that occur in the Philippines every year. Meteorologists explain that the force of the winds inside a typhoon pushes the water up in front of it. This piling effect combines with normal tides, sometimes raising the water level more. The force of the wind turns this high water into a destructive force once this makes a landfall.

Inland flooding will be most impacted by climate change. Climatologists predict that rainfall patterns are expected to change over the next century, with climate models predicting more heavy-rain events, separated by prolonged periods of dry weather. Much of this will be due to the heating of the atmosphere. It is because warmer air holds more water, raising the potential for a quick release of a large volume of water.

Flash flood is at present one of the most commonly experienced forms of flooding around the world. It is normally caused by heavy rainfall over a short period of time where the ground is not able to rapidly absorb the large volume of water from the rainfall. It is severe in

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[38] *Ibid.*

urban areas where blockage of the drainage systems due to commercial wastes is a common problem. When buildings and cemented surfaces such as roadways and parking lots gather tremendous amounts of rainfall and the drainage system does not function well, flash flooding can cause a lot of damage to properties.

The projected severe flooding caused by climate change will lead to more devastation and loss of human lives. A rapid rise of water such as flash flooding can cause immediate death from drowning or injury. The results also include greater risk of disease from contamination of drinking water tainted by pollutants. It is noted that cholera and other diarrheal diseases are common in the days and weeks after floods. Floodwaters that recede slowly can also become breeding grounds for diseases like malaria or can cause leptospirosis. Important institutions such as hospitals, schools and other vital infrastructures are often affected in major flood occurrences causing the affected communities to be at even greater risk.

1.2.5. Mitigating Climate Change Effects

Climate change is a serious threat because climate is the primary factor in determining the kind of terrestrial ecosystem that occurs in any given area according to John Kricher, a climate scientist. Climate results from patterns of atmospheric and oceanic circulation and heat distribution. For terrestrial ecosystems, the kind of ecosystem that will predominate depends on the average annual precipitation and the average annual temperature.[39] Kricher was quoted as saying:

> If the mean annual precipitation is somewhere between 300 and 400 centimeters (118–157 in.) and the mean annual temperature ranges from 20° to 30°C (68°–86°F), lush, evergreen tropical rainforest will prevail. But if the mean annual precipitation is only about 100 cm, even if the mean annual temperature remains between 20° and 30°C, the ecosystem will be savanna, park-like grassland with scattered trees, such as acacias. Deserts are uniquely

[39] John KRICHER, *Tropical Ecology…*, pp. 20-54.

> arid, receiving less than 50 centimeters (less than 10 in.) precipitation annually, often far less. Some deserts, usually dominated by succulent plants such as cacti, are as warm as or warmer than rainforests. Other deserts, typically dominated by shrubs such as sagebrush, periodically experience snowfalls in winter. Ecologists cleverly call these two desert types "hot deserts" and "cold deserts." Then there is Arctic tundra, the realm of the lemming, caribou, and musk ox, which is dry and cold, so cold that permafrost (soil at or below the freezing point of water [0°C or 32°F] for two or more years) endures throughout the year. Tundra typically receives about 50 cm (20 in.) of precipitation per year and has a mean annual temperature of only –10°C (14°F). Mean annual temperature and mean annual precipitation organize terrestrial life into huge ecosystems called biomes. Examples include deciduous forest, evergreen tropical forest (moist forest and rainforest), boreal forest, tundra, hot and cold desert, savanna, and grassland. Biomes demonstrate the temperature and precipitation.[40]

The effort to mitigate climate change is primarily focused on how to reduce the release of carbon dioxide into the atmosphere. Climatologist Karl Georg Hoyer argued, however, that the debate on mitigation should move away from sole reductionism of the release of carbon dioxide but should include the need to reduce all greenhouse gas emissions and natural resources consumption.[41] In that regard, it would cover all aspects of climate policy on mitigation.

Greenhouse gas emissions are divided into two groups: those caused by consumption and those caused by production.[42] Emissions

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[40] *Ibid.*

[41] See Karl Georg HOYER, *Interdisciplinarity and Climate Change,* eds. Roy Bhaskar, Cheryl Frank, Karl Georg Høyer, Petter Næss and Jenneth Parker, UK: Taylor and Francis, Inc., 2010, pp. 112-118.

[42] See Carlo AALL and John HILLE, "Consumption—A Missing Dimension in Climate Policy," in *Interdisciplinarity and Climate Change:*

in developed countries are increasingly related to consumption. Production of goods and services is concentrated in the developing countries due to cheap labor. There is thus the need to develop a more comprehensive climate policy that would cover consumption and production for the mitigation of greenhouse gas emissions.[43]

1.3. Global Warming Risks

The use of the term "global warming" as mentioned earlier refers to the upturn of the planet's average surface temperature. The cause of it mostly points to the release of greenhouse gases into the atmosphere by human-fuelled activities.

Global warming as a concept began in what scientists referred to as the "greenhouse effect" which refers to the basic physical mechanism behind projected changes in the climate system. The greenhouse effect happens when

> some atmospheric gases (called greenhouse gases) have asymmetric interactions with radiation of different frequencies just like glass in a conventional greenhouse; they allow short-wave incoming solar radiation back to the surface.[44]

The greenhouse gases warm the earth's surface by emitting trapped energy and thus cause a blanketing effect, making the temperature at the surface higher than what it should be. In other words, when greenhouse gases absorb radiation, the stratosphere becomes warm and then it re-emits infrared radiation back to the earth's surface.

Transforming Knowledge and Practice for Our Global Future, eds. Roy Bhaskar, Cheryl Frank, Karl Georg Høyer, Petter Næss and Jenneth Parker, New York: Routledge, 2010, pp. 85-99.

[43] *Ibid,* p. 112.

[44] See Stephen M. GARDINER, *A Perfect Moral Storm: The Ethical Tragedy of Climate Change,* Environmental Ethics and Science Policy Series, New York: Oxford University Press, 2011, pp. 23-24.

Global warming is the immediate result of the greenhouse effect. The extent of the effects of global warming is seen in the many physical and biological processes on a global scale. As pointed out in the preceding discussion, an increase in the global average surface air temperature will bring about alarming changes in rainfall patterns and other climatic conditions, resulting in serious ecological disequilibrium. As indicated earlier, the immediate impact of global warming is the increase of sea level because of the massive melting of mountain glaciers, snow, and the polar sea ice. For sure, a 20–60 cm sea level rise would have a devastating impact on human communities living in the low-lying areas of the world. It is estimated that more than half a billion people would be directly affected by such an increase in the sea level. The strength and frequency of hurricanes and typhoons would also intensify, as to what happened in the Philippines in the last five years, and the distribution of rainfall would become more unstable.

Furthermore, a significant contributor to the problems of global warming is ozone depletion. Earth's atmosphere[45] is divided into different layers, two of which are the stratosphere and troposphere. Ozone is present in both layers. Stratospheric ozone absorbs the sun's rays and protects life from harmful wavelengths. It protects life by absorbing dangerous solar ultraviolet radiation.

When the energy on the earth's surface heats the ground, it is further amplified by the transpiration of plants. This results in a rate of humidity of more than 50% on the average in the troposphere which contains 99% of atmospheric water vapor. The humidity causes water vapor condensation which slows down the cooling of the air. Beyond

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[45] The earth's atmosphere is a mixture of gases and particles that surround the planet. If we see it from space, the atmosphere of the earth would appear like a thin covering of dark blue light enveloping the earth. It is made up of layers that surround the planet like rings. The four different layers of the atmosphere have been identified. These are the troposphere, stratosphere, mesosphere, and thermosphere. See J. H. SEINFELD and S. N. PANDIS, *Atmospheric Chemistry and Physics: From Air Pollution to Climate Change*, Second Edition, New Jersey: Hoboken Press, 2006, pp. 124-162.

the troposphere is the stratosphere, characterized by the progressive disappearance of water. The solar energy directly coming into the atmosphere is no longer used by condensation but largely used to warm up or dissociate molecules, especially ozone. This is able to filter ultraviolet rays, and this is seen to be the factor in the ability of life to develop and grow on earth. When the ozone layer is depleted, then there are destructive effects on the planet which directly affect human life and other life forms.[46]

1.4. The Problem with the Use of Fossil Fuels

One of the most significant events in the history of humanity was the discovery of fossil fuels. Fossil fuels store the chemical energy created over hundreds of millions of years as accumulated layers of the remnants of plants and animals were subjected to heat and pressure. These organic residues became fossil fuels, namely coal, oil, and natural gas. These fossil fuels are considered nonrenewable resources because the earth's system does not regenerate them anymore.[47]

The chemical element carbon accumulates partly in decomposed plant tissues. In geologic time, it was stored as sedimentary rock within the crust of the earth. The carbon compounds were converted by thermodynamic pressure to long-chain, energy-rich molecules that form the basic sources of fossil fuels. The immense amount of energy contained within the trillions upon trillions of fossil fuel molecules became the source of energy starting in the industrial period. The fossil fuels are essential in today's global economy; they provide eighty-five (85) percent of the world's energy. They are used in the production of electricity for industrial and domestic needs, in the mass production of material goods, in running transportation

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[46] Cf. Jean LILENSTEN and Jean BONAREL, *Space, Weather, Environment and Societies,* Netherlands: Springer Inc., 2006, p. 231.

[47] See Harold H. SCHOBERT, *Chemistry of Fossil Fuels and Biofuels*, New York: Cambridge University Press, 2013, pp. 72-89.

systems, and other mechanical and electronic services.[48] The fossil fuels provide the vital backbone for economic growth and development. However, when these are burned, carbon unites with oxygen in the atmosphere to produce carbon dioxide, the main culprit responsible for anthropogenic global warming.

The next subsections discuss each of these fossil fuels to help us understand their respective impact on the environment.

1.4.1. Coal

Coal was discovered in the late eighteenth century. It is fossilized plant material, deposited 300 million years ago when the earth's temperature was warmer and wetter. Coal was compacted into carbon-rich fuel when it was preserved and altered by geological forces over ages of time.

The use of coal is significant. The coal-burning steam engine stimulated the industrial revolution, leading to the nineteenth century's vast commercial productivity. It is considered an inexpensive source for producing electricity and heat. Burning coal for energy, however, releases many pollutants into the air, water, and land. These pollutants include mercury, sulfur oxides, nitrogen oxides, methane, and carbon oxides. The dispersal of such chemicals into the environment has many damaging effects. More specifically, coal combustion contributes to the climate-changing effect of increased atmospheric carbon. It is responsible for about twenty-five (25) percent of atmospheric pollution.[49]

1.4.2. Oil

Oil is a fossil fuel coming from phytoplankton and microorganisms that lived in temperate and shallow seas millions of years ago. When phytoplankton and microorganisms died, they sank to the bottom and were buried as sediments. Over long periods of time, heat from

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[48] *Ibid.*

[49] *Ibid.*

the earth and the pressure of overlying layers of sedimentary rocks transformed them into deposits containing oil substances.

The invention of affordable automobiles in the twentieth century created a huge market for oil, which became the world's dominant energy source. But the use of oil as a consumable unit, in terms of extraction, refining, and then commercial use, was already known in the late 19th century. Oil is regarded as a safer, cleaner, and smoother form of energy than that produced by coal. It is projected however that oil reserves will be exhausted at some point in the near future.

Oil as a fossil fuel when extracted is called crude oil. Crude oil which is a hydrocarbon is also known as petroleum. It is a natural substance that requires millions of years to form. Crude oil is actually organic. Its maturation process is an environmentally-friendly process because the organic matter decays without releasing gases into the atmosphere. When crude oil is extracted and then refined into gasoline and other forms, it becomes an efficient source of energy.

Oil is the primary source of the global energy supply. Around thirty-three (33) percent of the energy used comes from oil. Gasoline, diesel, and jet fuel are refined oil products and, together, these fuels power the majority of transportation in the world. The burning of oil for energy, however, creates an instantaneous oxidation process that releases heat and greenhouse gases. The greenhouse gases released into the atmosphere are carbon dioxide, nitrous oxide, and methane. Oil use is the largest emitter of carbon dioxide; coal is second, and the third is natural gas.

1.4.3. Natural Gas

The use of natural gas in generating energy is rapidly increasing because it was recently found out to be cheaper and cleaner than oil and coal. Natural gas is a fossil fuel existing as a natural deposit in many parts of the planet. It is composed of hydrocarbons, which are molecules of hydrogen and carbon of up to five different combustible gases, and traces of other gases such as nitrogen, hydrogen sulfide, carbon dioxide, and helium. In many regions, it is trapped as large

deposits in rocks deep beneath the earth's surface. It is also found in deposits of crude oil and coal, and in ice crystals in regions that have permafrost.

The combustion of natural gas for energy releases carbon dioxide and nitrous oxide into the atmosphere. While the greenhouse gases released by natural gas are in lesser amounts than from coal and oil, the concern is for the enormous volumes of natural gas being produced and, therefore, the enormous amount of carbon dioxide emitted that would aggravate global warming.[50]

1.5. Concentration of Atmospheric Carbon Dioxide

As discussed above, using fossil fuels to sustain the industrial and technological revolution made a deep impact to human society and at the same time led to a higher concentration of carbon dioxide in the atmosphere. John Kricher pointed out:

> By the beginning of the twentieth century it was clear that fossil fuels had changed the world. There would be no going back. With the discovery of fossil fuels, an immense energy subsidy was made available to humans, an energy subsidy that would become the catalyst to change the world more in two hundred years than it had changed since humans invented writing and agriculture, some 10,000 years earlier.[51]

The concentration of atmospheric carbon dioxide emanating from industrialization and other sources in the early 20th century was about 270 ppm (parts per million). Within 150 years, a mere fraction in geologic time, it would rise further to 380 ppm, the present value, and predictions suggest that it will continue to increase, eventually exceeding 400 ppm.[52]

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[50] *Ibid.*

[51] See John KRICHER, *Tropical Ecology…,* p. 102.

[52] *Ibid.,* pp. 140-155.

Although the oceans can absorb carbon dioxide, the oceanic absorption is not able to cope with the huge industrial output of the atmospheric carbon dioxide. What makes it worse is the fact that the use of fossil fuels is complicated by increased global deforestation due to expanding demands for timber for different industries and other needs of the population. Deforestation results in the removal of trees that supposedly take in and store more carbon. In other words, the combination of fossil fuel use and deforestation exacerbates global warming.

In the age of industrialization up to now, fossil fuel combustion happens mostly in the operation of power plants, refineries and motor vehicles. In the United States alone, at least one-third of the carbon dioxide emissions comes from power plants and other industries, based on the United States' Department of Energy's data of 2004. In the United Kingdom, the volume of carbon dioxide emissions increased by more than thirty (30) percent. It has been predicted that carbon dioxide emissions will continue to increase exponentially as the industrialized world tries to meet the vital energy needs to keep economic growth and development going.[53]

The emission of carbon dioxide has historically been vented into the atmosphere. Thus there is a need to store the emitted carbon dioxide geologically. There is a need to remove from the atmosphere the carbon dioxide that is being produced by fossil fuel use for a good period of time for the climate to sufficiently stabilize. The consensus of scientists is that carbon dioxide ought to be prevented from reaching the atmosphere for at least thousands of years.[54]

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[53] See W. D. GUNTER, S. BACHU and S. BENSON, "The Role of Hydrogeological and Geochemical Trapping in Sedimentary Basins for Secure Storage of Carbon Dioxide," in *Geological Storage of Carbon Dioxide,* eds. S. J. Baines and R. H. Worden, London: Geological Society Special Publications, 2004, pp. 91-92.

[54] *Ibid.*

The problem, however, is that people are mostly found not to really care much about the environment and the effects of climate change. The majority of the American public, for instance, was found to be hesitant in exerting extra efforts to reduce greenhouse gases by using alternative sources of energy, like using solar panels in their homes, riding bicycles to and from work, etc. Most Americans do not feel threatened by the effects of the environmental problems as they believe that the threats are more real for people in other countries.[55] Most do not believe that climate change poses a serious threat in the near future, and hence they do not think that they, or family members or friends, face a real risk in the short term. The majority of Americans do not think that climate change is a threat in their lifetime. In a poll in 2006, Americans ranked the environment as only the twelfth among the list of the important problems of their nation—below immigration, health care and gas prices, among others.[56] Way back in 2003, they showed less concern about climate change than the citizens of Germany, Switzerland, Japan, Ireland, Great Britain, Mexico, Brazil, Portugal, Canada, Denmark, Norway, Chile and Poland.[57] As of 2007 in fact, the United States government was uncooperative in enforcing particular international climate protocols, such as the Kyoto Protocol, that targeted the reduction of the emission of greenhouse gases.[58]

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[55] See Cass SUNSTEIN, *Worst-Case Scenarios,* Cambridge, MA, USA: Harvard University Press, 2009, pp. 34-35.

[56] *Ibid.*

[57] *Ibid.*

[58] The United States was noncommittal to the Kyoto Protocol. The said protocol was considered an historical international achievement because it was the first international agreement to set targets to reduce greenhouse gas emissions. The Protocol sketched out the basic features of its mechanisms and compliance system but unfortunately did not spell out the specific rules of how individual countries would implement it. The United States severed from the Protocol in 2001 and did not ratify it. See http://www.eoearth.org/view/article/154065/ (15.09.2013).

The United States public is not entirely to blame. Back in the middle of the 1950s, not many scientists in fact were concerned that humanity was adding carbon dioxide gas to the atmosphere with the burning of fossil fuels. The skepticism was based on the argument that the added greenhouse gas would not linger in the air, and that most of the carbon dioxide on the surface of the planet was to be dissolved in the huge mass of water in the oceans. It was argued that no matter how much more carbon dioxide might be poured into the atmosphere, nearly all of it would wind up safely buried in the ocean depths.[59]

A number of climate scientists came out to dispute the generally accepted assumption. Willard Libby, a climatologist of the University of Chicago, and his collaborators used a new technique, the process called *radioactive carbon-14*. They developed the technique on how to enrich carbon isotopes because the isotopes were also very useful for medical research.[60] But it was Hans Suess, a chemist, who incorporated the carbon-14 detection technique into carbon dioxide research. He devised a system on how to measure carbon isotopes in the annual rings of old trees. Suess nonetheless detected a contamination of the wood by carbon. It was assumed by Suess that the said carbon came from the burning of fossil fuels. It was thought that *carbon-14* is continually sustained in the atmosphere as cosmic rays strike nitrogen atoms and convert them to isotopes.[61]

As far back as 1951, Willard Libby had speculated that the study of carbon might shed some light on the problem of circulation in the deep basins of the oceans. Ocean uptake could be split into two factors—the chemistry of carbon dioxide absorption in surface water, and the mixing of this water into the whole volume of the oceans. The chemical reactions, at least, seemed to be well known. Observations

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[59] Cf. Alex BOWEN, Nicola RANGER and Bob WARD, *Mitigating Climate Change Through Reductions in Greenhouse Gas Emissions*, Policy Brief, UK: Grantham Institute on Climate Change, 2009, pp. 4-24.

[60] *Ibid.*

[61] *Ibid.*

in the 1930s had established the key data, such as how the partial pressure of carbon dioxide in sea water varied as a function of acidity. It was not known clearly how the phenomenon occurred. The theory put forward in the early 1950s was that it would take centuries for the oceans to store carbon.[62]

A few *carbon-14* measurements suggested that the water at the bottom of the oceans might be around two thousand years old, and others thought that it could even be older. In 1955, oceanographer Roger Revelle[63] argued that nobody really was sure whether it takes a hundred years or ten thousand.[64] Revelle argued that sea water is a highly complex entity. Its acidity is determined not only by the ingredients most obvious to chemists, like carbonate ions derived from carbon dioxide, but also by the obscure element called *boron*. The concentrations of various types of ions are set through intricate chains of processes which many scientists only understood in a limited way in the 1950s.[65]

There were different studies that addressed mainly the steady-state rates of exchange between atmosphere and ocean. But the crucial question for global warming was a transient effect, the net flux of new carbon dioxide into the water. Revelle knew that sea water is hypersensitive to change. To match an increased level of carbon

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[62] *Ibid.*

[63] Roger Revelle, a revered professor of geology and an early predictor of global warming, was cited by the former US Vice President Al Gore in his book *The Inconvenient Truth*. Revelle, who was the chair of the National Academy of Sciences Energy and Climate Panel in the US in 1977, concluded that about 40 percent of the anthropogenic carbon dioxide has remained in the atmosphere. In his role as spokesperson against the dangers of global warming, Revelle influenced public opinion on the carbon dioxide issue due to his widely read articles published in *Scientific American*. See Spencer WEART, *The Discovery of Global Warming*, Massachusetts: Harvard University Press, 2004, pp. 122-129.

[64] *Ibid.*

[65] *Ibid.*

dioxide in the atmosphere, the number of carbon dioxide molecules in the water would rise only as one factor in a cascading readjustment of the proportions of many types of molecules. In technical terms, sea water is a "buffered" solution, resisting the change in acidity that an increase of carbonates would involve. When some carbon dioxide molecules were absorbed, their presence would alter the balance through a chain of reactions, and in the end some carbon dioxide molecules would be expelled back into the atmosphere.[66]

Revelle's study was extensive and it yielded numerous significant results in understanding the complex interaction between the atmospheric carbon dioxide coming from fossil fuel use and the oceans. Revelle argued that while it was true that most of the carbon dioxide molecules added to the atmosphere would wind up in the oceans in a number of years, most of these molecules, however, would promptly be evaporated out.[67] In his calculation, Revelle assumed that industries and agricultural and transport systems would emit more greenhouse gases in the future because of overdependence on fossil fuels. Industrialization would be shooting up carbon dioxide into the atmosphere continually as economies of the world strive to sustain their economic growth and development.

1.6. Environmental Pollution

Environmental pollution is understood as the contamination of water, air and land in such a way that it causes real or potential harm to human well-being or other organisms in the ecosystem.[68] The next subsections discuss the types of pollution that are considered serious environmental concerns.

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[66] BOWEN et al., *Mitigating Climate Change Through Reductions in Greenhouse Gas Emissions*, p. 10.

[67] *Ibid.*

[68] See R. M. HARRISON, *Understanding our Environment: An Introduction to Environmental Chemistry and Pollution*, Cambridge: The Royal Society of Chemistry, 1999, pp. 17-24.

1.6.1. Water Pollution

Water pollution is considered the most pervasive form of pollution affecting all possible types of bodies of water such as subterranean aquifers, rivers, lakes, and oceans. As technology improves, scientists are able to detect more pollutants even at smaller concentrations in the earth's freshwater bodies. There could be small traces of contaminants such as sunscreen, pesticides and petroleum. Thus the earth's groundwater, lakes, rivers, streams, etc., are termed chemical cocktails.[69]

In the developed world, regulation has restricted industry and agricultural operations from pouring pollutants into lakes, streams, and rivers. Technology has also offered a solution in the form of expensive filtration and treatment plants that make our drinking water safe to consume. Some cities are even promoting "green infrastructure" such as green roofs and rain gardens, as a way to naturally filter out pollutants. Unfortunately, this is not so widespread in some parts of the developing world, where infrastructure is less in terms of political, economic, and technical aspects in dealing with a myriad of pollution threats to freshwater and all of the species that rely on and abound in it.

It is an established fact that in developing countries, 70 percent of industrial wastes are dumped untreated into waters, polluting the usable water supply, and an estimated 99 million pounds (45 million kilograms) of fertilizers and chemicals, on the average, were estimated to have been used each year.

The sea on the other hand is threatened not only by contaminants coming from land and other sources but by atmospheric factors. The phytoplankton, which is the basis of the ocean's food chain, is dying due to the warming of the ocean. Around a third of the carbon dioxide emitted by burning fossil fuels is absorbed by the ocean; thus the chemistry of the ocean is changing. The Intergovernmental

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[69] http://environment.nationalgeographic.com/environment/freshwater/pollution (11.04.2013).

Oceanographic Commission has reported that 20 to 25 million tons of carbon dioxide are added to the oceans each day, and this consequently increases the rate of carbon dioxide in the atmosphere. Too much acidity happens when carbon dioxide dissolves into the ocean and leads to the disruption of the marine environment. It is harder then for corals and sea organisms to form their shells because too much acidity in the water reduces the availability of calcium carbonate. This acidity leads as well to the disruption of the marine environment affecting the growth and reproduction rates of fish and planktons. The marine food web is thereby disrupted.[70]

Oil spillage is also considered the most prevalent cause of pollution of sea water, along with the dumping of chemical and human waste in coastal waters, as well as the dumping in deep seas by ships carrying human effluent or silt. Whereas ocean systems used to cope, the effects of billions of tons of toxic contaminants over entire decades have begun to affect oceans and seas. These contaminants are big quantities of petroleum, plastic by-products and heavy metals.[71]

Estuaries and rivers are contaminated as well by pollution materials such as industrial effluent, sewage and agricultural products, fertilizers, slurry run-off, silage and pesticides. Oil refineries and chemical plants close to bodies of water are very notorious polluters. Rivers are used by chemical companies as dispersal mechanisms for toxic waste. Different subspecies of fish which thrive in these rivers are usually found unsafe for human consumption.[72]

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[70] Another grave consequence of climate change and global warming for the marine environment is that two-thirds of the coral reefs are now severely damaged, and one-fifth of the corals cannot be expected to recover anymore from the damage. Corals will continue to bleach as the temperature rises. See Vaclav SMIL, *The Earth's Biosphere: Evolution, Dynamics and Change,* Boston: Massachusetts Institute of Technology, 2000, pp. 90-100.

[71] See Michael NORTHCOTT, *The Environment and Christian Ethics,* Cambridge, UK: Cambridge University Press, 1996, pp. 11-14.

[72] *Ibid.*

The North Sea between Britain and Europe is one of the most heavily polluted seas in the world. Hundreds of tons of poisonous materials such as chromium, cadmium and mercury were dumped in the area between 1975 and 1982.[73] All forms of shellfish absorb these waste materials, and thus they become harmful to human consumption.[74] In the Philippines, in some areas on the shore of western Luzon, shellfish sometimes had become inconsumable because of red tide. There were recorded deaths from among those who have unknowingly consumed contaminated shellfish. People have become victims of the harmful effects of pollution.

Furthermore, the water crisis due to water pollution is worsening even as there is an increasing global campaign to raise people's awareness that freshwater resources are limited and have to be protected both in terms of quantity and quality. The problem of drinking water touches, in fact, all organisms in the ecosystem.

In the *World Water Vision Report,* it was pointed out strongly that

> there is a water crisis today. But the crisis is not about having too little water to satisfy our needs. It is a crisis of managing water so badly that billions of people—and the environment—suffer badly.[75]

Almost everywhere, water is wasted, and as long as people are not facing water scarcity, they believe access to water is a given and natural thing. However, water consumption naturally increases with continuing urbanization and corresponding changes in lifestyle.

Water should be recognized as a great priority. One of the main objectives of the World Water Council is to increase awareness of the water issue. Decision-makers at all levels must be involved. One of the

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[73] *Ibid.*

[74] Michael NORTHCOTT, *The Environment and Christian Ethics,* pp. 11-14.

[75] World Water Council, 7th *World Water Vision Report.*

Millenium Development Goals is to halve, by 2015, the proportion of people without sustainable access to safe drinking water and sanitation. Several measures, according to the World Water Council, must be undertaken to attain that goal: 1) guarantee the right to water; 2) decentralise the responsibility for water; 3) develop know-how at the local level; 4) increase and improve financing; and 5) evaluate and monitor water resources.[76]

Although food security has been significantly increased in the past thirty years, water withdrawals for irrigation represent 66% of the total withdrawals and up to 90% in arid regions, with the other 34% being used by domestic households (10%), industry (20%), or evaporated from reservoirs (4%).[77]

As the per capita use surges due to changes in lifestyle and as population expands as well, the proportion of water for human use is increasing. This, coupled with spatial and temporal variations in water availability, means that the water used for producing food for human consumption, industrial processes, and all the other uses is becoming scarce. But it is all the more critical that increased water use by humans does not only reduce the amount of water available for industrial and agricultural development; it has a profound effect on aquatic ecosystems and their dependent species. Environmental balances are disturbed and cannot maintain their regulating role anymore.

As the water resource is becoming scarce, tensions may intensify. Water pollution and the water crisis are definitely problem-causing factors for diminishing drinking water supply. In the long run, this will make the environmental crisis even worse.

1.6.2. Air Pollution

Traditionally, the cause of air pollution has been environmental disasters such as forest fires and volcanic eruptions. As the world

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[76] *Ibid.*

[77] See Igor A. SHIKLOMANOV, *Industrial Hydrological Programme*, St. Petersburg: State Hydrological Institute, 1999.

has become largely industrialized over the recent decades, pollution has been attributed to increased production of toxic materials due to industrialization, and thus has been a direct result of industrial output. Historically, the initial reaction in containing air pollution and in air quality regulation within an area was to build tall smoke stacks. Whereas these tall smoke stacks were successful in reducing the pollutants in the immediate area, they were however also found to be causing the deposition of air pollution far from the source of emission. This deposition is referred to as acid deposition or more commonly known as acid rain.[78]

Acid deposition is primarily composed of sulfur dioxide, nitrous oxides, volatile organic compounds and ozone. Acid depositions emanate from the previously mentioned chemical emissions from industrial plants and exhaust from automobiles. The chemicals react with water vapor and sunlight in the upper atmosphere and form acidic compounds. These acidic substances fall to the earth in the form of rain, snow, sleet, fog, dew and even in gaseous form. Acid deposition was found to have other environmental effects such as declining forest productivity, acidification of lakes and rivers, the declining supply of fish stocks, and the negative effects on the reproductive activities of fish and amphibians.[79]

It may be true that concerted efforts have been exerted by different countries to have steady and life-saving improvements to air quality, but still, many fossil fuel power plants, boilers, and cement plants continue to treat the skies like sewers. From soot to toxic heavy metals, dirty coal and fossil fuel smoke stacks emit vast quantities of dangerous pollutants that are well known to cause disease and death. The total cost of these health impacts is more than $100 billion per year. Until stronger standards to reduce toxic emissions from coal and fossil fuel burning industries are implemented, harmful toxic

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[78] Cf. Zachary A. SMITH and Katrina Darlene TAYLOR, *Transborder Air Pollution,* Arizona, USA: Northern Arizona University, 2007, pp. 42-48.

[79] *Ibid.*

chemicals will continue to be released into the air, threatening the health of different organisms and species.

It is important to ask indeed why there is an immediate need to find measures to curb industrial pollution. The risks are high. Rising temperatures could make air pollution worse. This puts many at risk for lung problems and it is particularly dangerous for people with respiratory diseases like asthma. As the climate changes, air pollution gets even worse. The smog coming from motor vehicles, factories, and other industrial sources reacts with sunlight and heat. Increasing temperatures speed up this process and would result in more smog. Added to the mix are ragweed and other allergens in the air which are expected to worsen as rising carbon dioxide levels cause plants to produce more pollen. Also, as dry areas get dryer, wildfire risks go up and smoke from burning landscapes intensifies poor air quality.

If left unchecked, carbon pollution coming from motor vehicles, power plants and other industrial sources will continue to drive climate change, increase ozone smog, and send more health-harming particles and toxic substances into the air.

1.6.3. Land Pollution

The various kinds of land surface affect differently the dynamics between the earth and the atmosphere. What are considered land cover and land-use patterns are also affected by the distribution and density where human settlements are located. Land pollution is the result of degradation of the land surface caused by varieties of land misuse such as use of pesticides and insecticides in some agricultural practices, mineral exploitation, industrial waste dumping, and indiscriminate disposal of urban wastes. The pollution of the land is usually the result of commercial and industrial uses or from the spillage of treated chemicals and dumping of waste.[80] These things leave behind levels of trace metals, hydrocarbons and other compounds on the land, which may cause harm to the human community and the environment.

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[80] See Eric J. ROOSE et al., eds., *Soil Erosion and Carbon Dynamics*, Boca Raton, FL: CRC Press, 2006.

The effects of land pollution are unlike those of air and water, which directly affect human health. The effects of land pollution affect the human community less directly. It is because the waste material in the soil may seep into surface water or groundwater where it can be taken and thus could harm human health and other living organisms. The pollution of the land could diminish the quality of groundwater and impoverish the soil to the extent that the soil could no longer support plant and animal life. Land pollution leads to a domino effect;[81] the plants absorb the pollutants thereby introducing the pollutant to the food chain.

Industrial wastes are one of the causes of serious land pollution. These wastes contain traces of quantities of used chemicals. They include detergents, solvents, cyanide, trace metals, mineral and organic acids, nitrogenous substances, fats, salts, bleaching agents, dyes, pigments, phenolic compounds, tanning agents, sulfide, ammonia and others. Many of these substances are toxic.

The pollution of the land by trace metals occurs largely from industries, trade wastes, agricultural wastes, and automobile use. Mining is a major area where metal pollution occurs. Apart from trace metals, the wastes contain organic materials, chemical treatments, pesticides, solid objects, and other materials peculiar to the mining operations. Trace metals in soil can enter the food chain because as already pointed out, plants and vegetation absorb them and plants are subsequently consumed by animals and humans, with serious consequences.[82] Land disposal sites of these metals serve as breeding grounds for disease-carrying organisms.

Some serious concerns on land pollution are the radioactive wastes. These kinds of wastes are dangerous. The harmful effects of radioactive wastes on living organisms are produced by radiation, rather than by chemical mechanisms. Radioactive wastes remain

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[81] *Ibid.*

[82] See D. J. HILLEL, *Out of the Earth,* New York: Free Press, 1991.

dangerous for many years.[83] Generally, radioactive wastes are products of nuclear energy use. An example is the processing of uranium ore and its method to turn it into nuclear fuel, which is used for electric power production. Nuclear wastes coming from power plants are very dangerous; these include used-fuel from nuclear reactors, as well as the radioactive liquids and solids produced from any reprocessing of the spent fuel.[84] These could cause a lot of serious health problems that could lead to death.

Something has to be done to stop if not minimize land pollution. The best way is to avoid producing wastes in the first place. Recycling and reuse of materials are ways to avoid waste generation. In the local community, people have to be educated about the recycling programs for newspapers, glass, and metal containers. There are still many things that can be done at the local level to avoid polluting the land. But the most serious are those that cause widespread damage of the land due to industrialization for economic profit and development.

1.7. Drought

The phenomenon of drought happens when the expected rainfall does not occur in a particular area for a long period of time. When drought happens in a place where the agricultural area does not have irrigation, farmers lose a lot of crops; this may range from mild to severe. Crop losses happen because the plants would die without water. The weather, which is understood as the atmospheric condition in that particular area, can develop into a static state. Meteorologists who study climatic conditions have found out that there are times when weather patterns occur more than what was expected.[85]

Climate scientists explain that if water vapor is not in the atmosphere, rising temperatures cause warm air to elevate and, in the

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[83] *Ibid.*

[84] *Ibid.*

[85] Michael COLLIER and R. H. WEBB, *Floods, Droughts and Climate Change,* Tucson, Arizona*:* University of Arizona Press, 2002.

case of warm moist air, to condense in the cooler upper atmosphere and to shed its moisture as rain or other forms of precipitation. If rising air or water vapor is not present in combination, then drought results. Meteorological droughts are due to changes in climatic conditions over vast regions.[86] Conditions that can cause drought include shifts in the jet stream in the presence of an El Niño, which the Philippines experiences from time to time; it signals changes in the temperature of vast areas of ocean water that contribute moisture for rainfall or other changes.

The causes of drought are complex. Deforestation is thought to be one of the causes. But a certain cause of drought is failure of winter rains and snows. The absence of winter moisture can affect plants, animals, and human communities. In many areas, water supplies are dependent upon winter moisture that is stored for use by farmers, and if the drought is prolonged, it creates immense problems for human communities.

The impact of global warming on drought is a great concern for climate scientists because global warming may cause the disappearance of some glaciers.[87] Non-occurrence of glaciers could greatly affect the huge rivers of China, India, and Southeast Asia. The Himalayan glaciers are the sources for the largest rivers in Asia. The Indus River in India is the source of sustenance for millions of inhabitants. If the Himalayan glaciers were to disappear because of global warming, then the Yellow, Yangtze, Mekong, and Salween rivers would be reduced to only a trickle of their former flow volumes. Severe drought could occur and the effects could be deadly for hundreds of millions of people.

It is noted that periods of drought also cause mass movements of people. People move to other locations to find provisions for their basic necessities. Severe droughts caused by global warming will

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[86] *Ibid.*

[87] Joaquin ANDREU, Giuseppe ROSSI and A. V. MAYORGA, eds., *Drought Management and Planning for Water Resources*, Florida: CRC Press, 2005.

certainly cause movements of peoples and will also contribute to socio-political instability in many parts of the world. The instability may cause wars and the deaths of many people because people will fight for survival.[88] Conflicts in the Horn of Africa and in the Darfur region of Sudan in the late 20th century, for example, are directly related to prolonged drought conditions that worsened the conflicts between tribes. Competition for scarce resources could lead to more and more conflicts. Drought is a serious environmental concern.

1.8. Biotechnology: The Problem about Genetically Modified Organisms

The development and application of biotechnology has grown in leaps and bounds in the recent years. Because all living organisms depend on molecular activity for survival and reproduction, research on molecular biotechnology and the utility of genetically altered cells has acquired a more dominant role vis-à-vis food production. The economic feasibility of genetically modified crops, microbes, and animals, often referred to as genetically modified organisms, has become a moral issue in view of the environmental crisis.

An intense global debate is focused on the ethical issues and the potential benefits and risks of genetic engineering technology as a way to address the growing food shortage. Although there is a general agreement that attention must be focused on educating the global community on the potential and technical challenges of genetic engineering especially on genetically modified organisms, it is equally important to recognize the complexities that arise from a heightened awareness of the moral issues and the environmental impacts of biotechnology.[89]

The first thing to be said about the research in biotechnology which has accelerated in recent times is the fact that it has basically

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[88] *Ibid.*

[89] Sarad PAREKH and Anne GREGG, *The GMO Handbook,* ed. Sarad Parekh, New Jersey, USA: Humana Press, Inc., 2004, pp. 3-28.

some purpose for economic profit and commercialization. In other words, the dominant capitalist economic system provides the wider background of why research in biotechnology had gained accelerating momentum, although it is argued by some scientists that research in biotechnology is necessary for the advancement of science.[90]

Technological advancements have made it possible for research especially in plant biology to become highly sophisticated. As early as the 1980s, attention was focused on recombinant deoxyribonucleic acid research, in which specific genes were manipulated to create new entities of living microbes. The manipulated entities were later called genetically modified organisms. The interest primarily came from scientists who felt that there were potential opportunities for this technology and its commercial value.

To understand better the science of biotechnology, we have to take a look at its historical background. The history of genetically modified organisms has actually evolved from way back. Since the dawn of civilization, agricultural biotechnology practices have guaranteed food supply, steady sources of income and maintenance of the quality of life. Domestication of plants and animals can be traced back as far as 10,000 years ago. The history of all cradles of civilization has contained detailed descriptions of primitive methods to improve plant and animal productivity. The effort to multiply food production coming from plants and animals was facilitated by the science of microbiology. The earliest known application of microbiology was the food fermentation industry, which employed selective microbes for culturing and deriving fermented foods. The techniques are well documented for successful beer and wine production and bread-making in various archaeological relics of the ancient civilizations. Cheese, yogurt, vinegar, soy sauce, and curd are other examples of the application of selective microbes used in old biotechnology and commercial applications.[91]

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[90] *Ibid.*

[91] *Ibid.*

Improvement in agricultural techniques for the domestication of plants and animals happened gradually, including step-by-step selection of better performing and more adaptive genotypes along with intuitive breeding. Gregor Mendel's discovery of genetics in the 1860s led to the beginning of applied science and controlled breeding methods. Breeding was an efficient tool to make better hybrids and genotypes of crops and diversified animal stocks. This set the pace for the "green revolution."[92]

Toward the mid-20th century, the discovery of the structure and function of deoxyribonucleic acid was indeed very significant. Scientists thereafter exploited the capability of changing organisms by altering deoxyribonucleic acid. This altering was done initially by mutagenesis. Using a specific chemical agent, scientists could modify the deoxyribonucleic acid sequence, and by this process of mutation, they could induce inheritable change in the structure of genetic material. The organism that inherited the new or modified deoxyribonucleic acid sequence was called a *mutant strain.*[93] The technique of genetic alteration by recombination, so-called crossing over, was then used to create diverse organisms carrying two mutations from two cells, each carrying single but completely different deoxyribonucleic acid sequences.

The major impact of the power of genetic modification happened in the mid-1970s with the discovery of restriction and ligation enzymes. These enzymes break isolated deoxyribonucleic acid molecules into fragments that could be reassembled in any sequence. This method provided a quantum leap in molecular techniques and made possible the ability of any isolated deoxyribonucleic acid molecule to be spliced together in large blocks of genes, either from the same or a different organism.[94]

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[92] *Ibid,* pp. 30-34.

[93] *Ibid*.

[94] *Ibid*.

The breakthrough in producing recombinant deoxyribonucleic acid molecules gave birth to genetic engineering or "cloning"[95] which led to the new science of engineering genes and creating genetically modified organisms and new transgenic living cells. The process enabled molecular biotechnologists to intervene in the hereditary process of plants, animals, and microbes.

Given the new techniques being discovered, biotechnology indeed helps increase significantly food production to meet the needs of the growing population. But there are moral issues involved. First, the transgenic plants in genetically modified organisms are laden with high chemical pesticides. Rachel Carson in her book *Silent Spring* clearly pointed out that agricultural pesticides are destroying the ecosystems rapidly. Should this not be taken as a matter of serious moral concern? The production of genetically modified organisms backed up by the capitalist economic system is leading us towards environmental disaster.[96] Second, in genetic engineering, are not human beings "playing God," in a sense, by interfering with nature? Once we begin to consciously design and manipulate organisms, we will have entered a completely new relationship with the environment in which things are not accepted as they are but are treated as objects

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[95] The successful cloning of Dolly, an adult sheep, announced in Scotland on February 22, 1997 was perhaps one of the most dramatic scientific procedures in recent times. Strictly speaking, cloning is the production of one or more individual plants or animals that are genetically identical to another plant or animal. In the case of the sheep Dolly, a cell was taken from mammary tissue of a mature 6-year-old sheep while its deoxyribonucleic acid was in a dormant state. It was fused with a sheep ovum which had its nucleus removed. The fertilized cell was then stimulated with an electric pulse. Out of 277 attempts at cell fusion, only 29 began to divide. These were all implanted in ewes. Thirteen (13) became pregnant but only one lamb, Dolly, was born. See James Q. WILSON, "The Paradox of Cloning," in *Weekly Standard*, May 26, 1997.

[96] In the United States, the petrochemical industry is a $60 billion business. What drives the production of genetically modified organisms is economic profit. Cf. J. ELLUL, *The Technological Society,* New York: A. A. Knopf and Random House, 1964, pp. 35-47.

shaped according to human beings' whims, and worse, according to market forces for economic profit.

1.9. Resource Depletion

The degradation of the environment is especially monitored in resource depletion. At the present, natural resources are dwindling fast. Fish stocks are declining in most of the world's oceans, forests are being cleared at a very fast rate world-wide, fertile lands are disappearing due to human-caused erosion and urbanization, and safe clean water for public use is becoming scarce due to waste and pollution.[97]

When talking about natural resources, it is important to distinguish those that are renewable and those that are not. For example, water is considered a renewable resource, because once used, it can be returned to the environment's circulatory system that returns it to use via evaporation and precipitation. However, with the increase in population and demand for water, together with climate change, water resources may become insufficient.

Resource depletion of the oceans is another example. The history of cod fishing in the Atlantic Ocean tells us about the abundance of resources available in past centuries and the way in which those resources have been enormously diminished within the last century. For hundreds and in some cases thousands of years, the capability of the human race to harvest resources was exceeded by the ability of nature to replenish itself. The development of industrialized harvesting techniques succeeded not only in depleting the stocks of the fish but also seriously damaged the environment. Overfishing has probably already destroyed the ocean ecosystem beyond repair, and the same is true of the logging of hardwood trees in the former rainforests of, for example, the Philippines and Indonesia. Human society must prepare to live in a world in which many of the resources it had previously used are no longer available.

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[97] See Thomas HEYD, *Encountering Nature: Toward an Environmental Culture,* UK: MPG Books, Ltd, 2007, pp. 90-91.

Another point in resource depletion is the food crisis. The relationship between the crisis of agricultural production and issues of global warming was pointed out strongly by Maria Inês Lacey.[98] Lacey stressed that the mechanisms explaining the contemporary food crisis are rooted in a capital-intensive, industrial and corporate form of agricultural production, systematically integrated into the global market and its institutions, heavily dependent on petro-chemical inputs and techno-scientific innovations, and implemented by way of soil-depleting planting monocultures.[99] In this regard, Lacey argued, an agro-ecosystem which is rich in biodiversity and that yields a portfolio of products is needed to arrest the continued degradation of the soil. This kind of a system eliminates much of the need for chemical fertilizers, herbicides and pesticides and results in the production of food under conditions in which sustainability and social health are strengthened and rated more highly than profit and economic growth.[100]

Biodiversity should be considered at the level of the whole ecosystem to put a break on or at least to minimize resource depletion. We take for example the high diversity of the ecosystem of the coral reef which is threatened in many areas due to overfishing, pollution from increased sedimentation and loss of mangrove forests.[101] There are different species at the brink of extinction, if not extinct already. The total number of recently extinct vertebrates is estimated to be four hundred twenty-four (424) within a period of about five hundred (500) years. Most of these extinctions have occurred from the late

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[98] Maria Inês LACEY, "Food Crises and Global Warming: Critical Realism and the Need to Re-institutionalize Science," in *Interdisciplinarity and Climate Change,* eds. Cheryl Frank et al.*,* UK: Taylor and Francis, Inc, 2010, pp. 45-48.

[99] *Ibid.*

[100] *Ibid.*

[101] John KRICHER, *The Balance of Nature: Ecology's Enduring Myth*, Princeton: Princeton University Press, 2009, pp. 140-155.

eighteenth century up to the present. Indeed, the extinction rate is increasing rapidly. The number of threatened, critical, or endangered species had risen at a rate never expected. What is alarming is the fact that extinctions of insects and other invertebrates as well as most plant groups are poorly documented; thus, there can be little doubt that they have occurred and continue to occur.[102]

The main factor in biodiversity decline in view of resource depletion is the loss or severe fragmentation of habitat. Tropical rainforest has declined globally by over 50% in a number of decades. Given that numerous rainforest species are endemic and they occupy limited areas, calculations suggest that as many as four thousand (4,000) may become extinct annually. Deforestation is high throughout all equatorial areas, and not just in the rainforest. In some parts of South America there has been a rapid loss of other ecosystem types, principally dry savanna and dry shrubby desert. These ecosystems, once rich in endemic species, have been largely converted to soybean fields.[103]

The alarming loss of biodiversity was well-documented by Edward O. Wilson, the world's leading expert on biodiversity. He looked at the distribution of nine hundred forty (940) mammal species, one thousand nine hundred twenty-one (1,921) bird species, four hundred six (406) snake species, and six hundred eighteen (618) amphibian species, many of which are unique to particular areas, some of which, due to habitat loss, are threatened species.[104]

Wilson estimated that about twenty-seven thousand (27,000) species are doomed to extinction each year. That amounts to seventy-four (74) species per day and three (3) species per hour. If Wilson's estimate is true, such a rate would qualify as a major

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[102] *Ibid.*

[103] *Ibid.*

[104] See Edward O. WILSON, *The Creation: An Appeal to Save Life on Earth*, New York: W. W. Norton and Company, 2006, pp. 37-80.

extinction event. Wilson's logic for such a claim rests on numerous case studies that demonstrated the cumulative negative impacts of anthropogenic activities.[105]

Resource depletion and rapid loss of biodiversity characterize the state of environment we have at the present. Given that resources are, by definition, finite and scarce in nature, there must be some mechanisms to arrest such a slippery slope towards environmental disaster. Such mechanisms remain to be figured out by the global community.

1.10. Deforestation

The ecological role of forests is very important in the ecosystem. Forests capture, retain, and release water for the world's great rivers and lakes. They reduce soil erosion, maintain water quality, transpire great quantities of water vapor into the atmosphere, contribute to atmospheric humidity and cloud cover, mitigate certain types of air and water pollution, absorb carbon dioxide, release oxygen, and maintain rich assemblages of plant and animal life. In short, forests play vital roles in all the biogeochemical cycles, especially the hydrologic and the carbon and oxygen cycles, and in creating and preserving biodiversity.[106]

Forests are generally classified on the basis of climate and the kinds of trees they have. A common general classification refers to the four climatic types: boreal, temperate, subtropical, and tropical. The most famous tropical forests are tropical rain forests or monsoon forests. These constitute only about fifty-eight (58) percent of all tropical forests, whereas dry forests constitute forty-two (42) percent of tropical forests, but they have the greatest biodiversity. A tropical rain forest may have hundreds of species of trees and thousands of species of animals per square kilometer, many times the numbers

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[105] *Ibid.*

[106] Cf. W. H. CORSON, *The Global Ecology Handbook,* Boston: Beacon Press, 1990, pp. 42-64.

in temperate forests. In other words, tropical rain forests contain several million species of plants and animals, perhaps one-half of all existing species.[107]

Estimated forest destruction is very alarming. Tropical rain forests, for example, are being cut at the rate of thirteen million and eight hundred sixty thousand (13,860,000) hectares per year. The ecological consequences of this loss are severe. Consequences arising from rapid deforestation include loss of biodiversity, erosion and general land degradation, increases in certain diseases[108] such as malaria, yellow fever, and trypanosomiasis, siltation of rivers and coastal areas, loss of

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[107] *Ibid.*

[108] One recent alarming development is the linking of the Ebola virus outbreak to deforestation. As the deadliest-ever Ebola outbreak continues its spread in West Africa, evidence suggests that human impact on the environment may have played a role in the latest epidemic. Researchers say logging and global warming may have precipitated the crisis by bringing animals infected with the disease in closer contact with humans. As of December 10, 2014, there have been seventeen thousand nine hundred forty-two (17,942) reported cases of the disease, with six thousand three hundred eighty-eight (6,388) reported deaths according to the World Health Organization. The West African outbreak was first reported in February 2014 in several remote towns in Guinea as well as in Guinea's capital, Conakry. It has spread throughout the country and into Sierra Leone, Liberia and Nigeria. Although the cause is not definitely known, researchers say this outbreak most likely started with humans being infected with Ebola after eating bats. Fruit bats are commonly eaten in stews in West Africa. Some bat populations have reservoirs of Ebola that, when transmitted to their own species, do no harm. But the disease presents its deadly symptoms known as Ebola hemorrhagic fever when it is passed to humans. Robert Garry, a professor of microbiology and immunology at Tulane University who has worked extensively in West Africa, said that as people go further and further into the rainforest-type areas because of logging, they seem to come more in contact with the reservoirs of the virus. The changes to the environment can increase concentrations of wild animal populations in the remaining forest, bringing previously untouched reservoirs of Ebola into closer proximity with humans. For more of these, see http://www.who.int/csr/disease/ebola/situation-reports/en/ (05.12.2014).

coral reefs, depletion of inshore fisheries, and the risk of losing safe potable water. But the most serious consequence is definitely climate change and possible global changes if virtually all the world's tropical forests are decimated. Trees absorb greenhouse gases and carbon emissions. They produce oxygen and perpetuate the water cycle by releasing water vapor into the atmosphere. Without trees, the cycle will be interrupted.

There are a number of causes of deforestation, all of them related to the economic aspect. In developing countries, forests are cut to provide agricultural land, both for pasture and agriculture. Another reason is the insatiable appetite of industrial nations such as the United States, Japan, and Western Europe for lumber, pulpwood, and various forest products. Tropical hardwoods such as teak, rosewood, and mahogany have been used extravagantly by the wealthy nations. Temperate woods such as redwood, spruce, and fir have also been used extensively as construction materials in housing and furniture. Pulpwood is harvested in huge quantities to meet the worldwide demand for newspapers, magazines, and packaging.

The other cause of deforestation is the need for fuelwood especially in rural areas of the developing countries. Wood remains a primary energy source in many countries in Asia, Africa and Latin America. In Nepal, India and much of Africa, villagers search the countryside for shrubs, sticks, and even living trees to cook their daily meals. Fuelwood collection is particularly destructive in dry lands or high altitudes because of slow natural regeneration rates.

The destruction of forests leads to a tragic series of environmental problems. Solutions must be found to counter the loss of forests. The solutions which should not be for socio-economic reasons alone but moral ones should require greater efforts in conservation, recycling of forest products, and reforestation.

1.11. Population

When Paul Ehrlich published his book *The Population Bomb* in 1968, he argued that over-population is the fundamental cause of the

environmental crisis.[109] Most ecologists consider human population growth to be one of the greatest problems in environmental sustainability and a major driving force of environmental degradation. They see excessive consumption of the growing population as a consequence which would result in worsening pollution and environmental deterioration.

On a global basis, the human population has grown rapidly over the past two thousand years. The world's population, which was less than five hundred (500) million people for most of human history, now stands at seven (7) billion according to the United Nations Population Division. In June 2012, the United Nations updated its world population projections[110] using statistical computer models and it projected that global population would hit 8.1 billion by 2025, and grow further to 9.6 billion in 2050 in which most of the growth will come from developing countries.[111]

At the beginning of the 20th century, the world's population was only 1.7 billion. Human population is increasing at the annual rate of 1.5 percent, which means a net increase of almost eighty-seven (87) million people per year, or about 1.7 million per week. In comparison, the world's population early in the agricultural revolution (ca. 8,000 B.C.) was probably no more than ten (10) million. Human beings took more than three (3) million years to reach a population of one (1) billion people, sometime in the eighteenth century. The second billion came in only one hundred thirty (130) years, the third billion in thirty (30) years, the fourth billion in fifteen (15) years, the fifth billion in twelve (12) years, and the sixth billion was achieved in about eleven (11) years in the year 2000.

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[109] See Paul EHRLICH, *The Population Bomb*, New York: Buccaneer Books, 1968, pp. 5-22.

[110] See http://esa.un.org/wpp/ (20.11.2013).

[111] *Ibid.*

The issue of population and resources consumption had been a hotly debated issue. The Malthusian theory was at the core of the debate. Thomas Malthus' theory of population states that

> the power of population is indefinitely greater than the power in the earth to produce substance for man. Population, when unchecked, increases in a geometrical ratio. Subsistence increases only in an arithmetical ratio.… This implies a strong and constantly operating check on population from subsistence.[112]

The Malthusian theory predicted human misery and catastrophe when resources would no longer be enough to feed the disproportionate human population. Malthus, in other words, advocated the reduction of human population, or if not, to control its growth because there will come a time when the resources of the world will not be enough to sustain the ever-increasing population. He argued that human population would grow much more rapidly than the production of food. He went on to the extent of saying that people, in the long run, could starve.[113] Malthus asserted that whereas population was expected to grow geometrically, food production would only increase arithmetically.

The Malthusian theory however remains to be validated. At the present time, the massive starvation which Malthus predicted has not happened except that there are identifiable countries particularly in the African continent where food problems are of utmost concern.

Malthus nonetheless gained numerous adherents. Paul Ehrlick, when he wrote his book *The Population Bomb*, also warned of mass starvation as early as the 1970s and 1980s. Although Ehrlick missed his projections, he continued to reiterate that the scenario will most likely still happen in the future. Ehrlick however differed from Malthus. He was more precise in saying that the key issue in the population debate

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[112] Cf. Thomas MALTHUS, *An Essay on the Principle of Population,* Boston: IndyPublish, 1798, p. 71.

[113] *Ibid.*

is not the earth's population per se but the way the population will consume the earth's resources and affect the environment. Indeed, population concerns are important because these are directly related to environmental issues. It is argued that the volume of people plus the way they live affect every other aspect of the environment, especially the resources needed for the survival and subsistence of people like land, oceans, fisheries, forests, grasslands, wildlife, groundwater, rivers and lakes, atmosphere, air quality, climate and weather.

It is true that on top of the consumption of food resources, there has been a dramatic increase in human activity brought about by the increase in population, such as the pollution of rivers, lakes and oceans, the increasing use of water resources, the expansion of croplands, increased use of fertilizers and irrigation, the loss of natural forests, and the large increases in numbers of motor vehicles. The increase in population has led to the rapid rise in the use of coal, oil and natural gas, plus an increase of volumes of methane, carbon dioxide and greenhouse gases in the atmosphere resulting from the burning of fossil fuels and the change of land use from agricultural to industrial systems.

In clarifying the issue of population vis-à-vis the environment conversely, we need to understand that population is not just about numbers of people. Population trends also take into consideration three dimensions: fertility, mortality and migration. Fertility pertains to how many children women can bear in their lifetime, mortality looks at the lifespan, and migration denotes where people live and move. Each of these dimensions has factors that could influence the impact of population across the world.

High projections for world population continue as a result of constant high fertility rates in sub-Saharan Africa. The median number of children per woman in the region remains at 4.6, well above both the global mean of 2.5 and the replacement level of 2.1.[114]

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[114] Cf. http://www.prb.org/Publications/Datasheets/2012/world-population-data-sheet/fact-sheet-us-population.aspx (25.09.2014).

Mortality—or birth rates versus death rates—and migration also affect the structure of population. Living longer can cause a region's population to increase even if birth rates remain constant. In many developing countries, where there are more young people than old, there exists a struggle to provide sufficient land, food, water, housing, education, and employment for the young population.

Migration as another factor that affects population is driven by a number of reasons. It can be classified as social, economic, political and environmental in nature. Economic migration means moving to find work or follow a particular career path. Social migration means moving somewhere for a better quality of life or to be with family and friends. Political migration means moving to escape political persecution or war, and environmental causes of migration include natural disasters such as flooding, typhoons, earthquakes, volcanic eruptions, and others.[115]

Considering all the factors involved in discussing how population affects the environment, it is important to state that as the economic status of life improves, consumption of natural resources increases per person. In other words, as people become materially well-off, they consume more natural resources and energy, specifically carbon-based fuels such as coal, oil, and natural gas. This could be seen in consumption patterns of developed countries that include higher protein foods such as meat and dairy, more consumer goods, bigger houses, more vehicles, and more air travel. Thus, to bring out a moral argument on this point, it is not the earth's population per se that causes much environmental degradation but the way the affluent societies consume the earth's resources and affect the environment. The monopoly over the use of natural resources and over-consumption of a few developed affluent societies are one of the root causes of the global environmental crisis.

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[115] See http://www.bbc.co.uk/schools/gcsebitesize/geography/migration/migration_trends_rev2.shtml (15.07.2014).

For Catholic Social Teaching, it is a question of social justice and equitable distribution of goods. The problem is precisely about equal sharing of the earth's resources. As the *Compendium of the Social Doctrine of the Church* states:

> The goods of the earth were created by God to be used wisely by all. They must be shared equitably, in accordance with justice and charity. This is essentially a question of preventing the injustice of hoarding resources … greediness, be it individual or collective, is contrary to the order of creation. Modern ecological problems are of a planetary dimension and can be effectively resolved only through international cooperation capable of guaranteeing greater coordination in the use of the earth's resources.[116]

The environmental crisis, especially the abuse of natural resources, does not depend ultimately on the question of population growth. The Compendium argues that population growth is "fully compatible with integral and shared development."[117] But development can only be integral if it ensures the good of all.

1.12. Conclusion

It had been argued in this section that the environmental problems we have at the present are mostly anthropogenic and human-induced precisely because of humanity's propensity for economic growth and development. Certainly, human beings bear the huge burden of guilt for ignoring the ecological fact that the earth's material and energy resources are naturally finite and fragile. In the case of climate change, for instance, overdependence on the use of non-renewable sources like coal, oil and natural gas for sustained industrialization resulted in a high concentration of atmospheric carbon dioxide which is regarded

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[116] See *Compendium of the Social Doctrine of the Church,* 2005, 482, at http://www.vatican.va/roman_curia/pontifical_councils/justpeace/documents/rc_pc_justpeace_doc_20060526_compendio-dott-soc_en.html (11.05.2013).

[117] *Ibid.*

as the main culprit of global warming. Thus, we have become highly vulnerable to various forms of natural disasters and calamities.

From the moral point of view, the foregoing analysis strengthens the theological argument that the occuring environmental calamities are contrary to the will of God. It is argued that humankind's obsession with economic growth and development has produced many of today's tragic events. The natural world has been severely damaged by human decisions that objectified and assaulted creation and went against God's will.

Taking into consideration humanity's irresponsible way of stewardship, Pope John Paul II said that the environmental problems we have today are effects of human sin,

> which has inevitable repercussions on the rest of the created order.[118]

Our environmental sins as irresponsible stewards of God's creation—the environment—have caused the environmental crisis we are facing at the present time. In this light, what is demanded is a shift of our understanding that begins with acknowledgement that everything owes its existence to God. Obssession with economic growth and material prosperity should not define our relationship with the environment. Indeed, the environmental damages can still be halted if only we take seriously our common responsibility for the environment.

In this context, to stop the environmental deterioration, or at least to minimize it, requires the concerted effort of the global community. In 1987, the World Commission on Environment and Development issued a report entitled *Our Common Future,* also known as the Brundtland Report, which proposed the concept of *sustainable development* as the most possible approach to handle the environmental crisis. The next Chapter will explore this topic.

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[118] JOHN PAUL II, "The Ecological Crisis…," p. 14.

CHAPTER TWO

SUSTAINABLE DEVELOPMENT AS A PARADIGM FOR ENVIRONMENTAL SUSTAINABILITY

> *God is the guarantor of man's true development, inasmuch as, having created him in his image, he also establishes the transcendent dignity of men and women and feeds their innate yearning to "be more."* — Pope BENEDICT XVI, *Caritas in Veritate,* 29

2.1. Introduction

The awareness of the worsening state of the environment and the adverse impacts of environmental problems on the global community and the planet jolted world leaders to find a workable solution to the environmental crisis. Sustainable development was proposed as the workable solution. As a concept, it first emerged in the second half of the 1980s.[1] It promises a comprehensive answer to the question on how the resources of the planet can be conserved for continued economic development. It sought and continues to seek to integrate the possibility of sustained economic and social development with the necessity of conserving the environment.

The idea of sustainable development attempts to address the complex relationship between development and the environment. It

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[1] On the economic changes of the 1980s, see Georges CORM, *Le nouveau désordre économique mondial. Aux racines des échecs du développement*, Paris: La Découverte, 1983, pp. 42-95.

is drawn from two notions: "development," which implies continual growth or sustained progression, and "sustainable," which implies the ability to maintain and to nurture the conditions on which life depends.[2] It is propounded that sustainable development addresses the total quality of life by meeting current human necessities while protecting the ability of future generations to meet their own. Such necessities include basic requisites such as resources, recycling waste, and maintaining a rich biodiversity, genetic diversity, and functional diversity on a sustainable basis.

Sustainable development, however, has a conceptual problem from the moral point of view. The environmental crisis is a moral crisis;[3] it is not only a socio-economic environmental one. In reality, what makes the concept of sustainable development devious is the fact that it was conceived with the economic agenda as its framework. Sustainable development sees the "possibility for a new era of economic growth" with emphasis on "policies that sustain and expand the environmental resource base."[4] It is this problem—obsession with economic growth—that makes the concept of sustainable development inadequate to address the issue of environmental sustainability.

In this Chapter, sustainable development as the paradigm for environmental sustainability is subjected to serious scrutiny. The Chapter begins with the definition of sustainable development, its historical background, its scope, the twenty-two (22) principles that provide the policies for its implementation, and how it is being explained in another document called *Agenda 21*. It is followed by the analysis of the notion of "sustainability," its etymology and origin. The analysis of the term "development" comes after.

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[2] See Ulrich GROBER, *Sustainability: A Cultural History*, United Kingdom: Green Books, 2010, p. 72.

[3] JOHN PAUL II, "The Ecological Crisis…," p. 14.

[4] WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, *Our Common Future*, with an introduction by Gro Harlem Brundtland, London: Fontana Books, 1988, p. 1.

The concept of sustainable development cannot be understood in a historical vacuum. Sustainable development as a paradigm continues the widely held but problematic notion of development as a theory and practice. Development as a concept has many antecedents, and over time has taken on board many accretions and influences particularly within the framework of neoliberalism.[5] In this regard, it is necessary that this paper has to devote more space and effort in examining

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[5] Neoliberalism is a complicated idea. Basically, it is considered as a paradigm for economic theory and policy-making where power and wealth are, to an ever increasing degree, concentrated within transnational corporations and the market as a result of the practical implementation of an economic and political ideology. It is a revival of the economic theories of Adam Smith who wrote his famous book *An Inquiry into the Nature and Causes of the Wealth of Nations* in 1776, in which Smith argued that rational self-interest and competition can lead to economic prosperity. Smith developed "laissez-faire" economics in which there is only minimum governmental interference in the economic affairs of individuals and society. Up to our present time, it had become broadly the economic model around the world, characterized by open markets and relatively barrier-free domestic and international trades. The definition of neoliberalism, however, is best given by David Harvey in his book *A Brief History of Neoliberalism.* He says: "Neoliberalism is in the first instance a theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets and free trade. The role of the state is to create and preserve an institutional framework appropriate to such practices. The state has to guarantee, for example, the quality and integrity of money. It must also set up those military, defense, police and legal structures and functions required to secure private property rights and to guarantee, by force if need be, the proper functioning of markets. Furthermore, if markets do not exist, then they must be created, by state action, if necessary. But beyond these tasks the state should not venture. State interventions in markets (once created) must be kept to a bare minimum because, according to the theory, the state cannot possibly possess enough information to second-guess market signals (prices) and because powerful interest groups will inevitably distort and bias state interventions (particularly in democracies) for their own benefit." Cf. David HARVEY, *A Brief History of Neoliberalism*, Oxford: Oxford University Press, 2005, p. 2; Erich ARNDT (1954), "Neuliberalismus und Wirklichkeit—Neue Wege und alte Dogmen," *Gewerkschaftlicher Monatshefte* 5, pp. 137-142;

the term "development" (its theories) than the term "sustainable" in sustainable development. The notion of "sustainability" is not problematic compared to the concept of "development" given the historical context of both terms.

Toward the end of the Chapter, the critique of sustainable development is presented focusing on its conceptual discrepancies and inconsistencies. Using Catholic Social Teaching as reference, the critique contends that sustainable development is insufficient and that it lacks the holistic approach to address the environmental crisis. This research argues that sustainable development as a paradigm for environmental sustainability is flawed and is effectively rendered incoherent and unproductive for the realization of its avowed goal.

2.2. The Concept of Sustainable Development

One of the complexities and problems in defining sustainable development is the proliferation of definitions. The various definitions, however, gravitate on some common elements and these would make some definitions acceptable to many.[6] For the sake of providing an adequate overview, we may focus on the following definitions:

> **Brundtland (1987):** Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.[7]
>
> **National Strategies for Sustainable Development (2000):** Sustainable development is economic and social

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Jeremy WALDRON (1987), "Theoretical Foundations of Liberalism," *The Philosophical Quarterly* 37, pp. 127-150.

[6] The various definitions of sustainable development are interesting. Different definitions have their own particular emphasis depending on each institution's focus and agenda. See Mark MAWHENNY, *Sustainable Development: Understanding the Green Debates,* Oxford: Black Science Ltd., 2002, p. 2.

[7] Cf. *Our Common Future…,* p. 41.

development that meets the needs of the current generation without undermining the ability of future generations to meet their own needs.[8]

World Wildlife Fund (1991): Sustainable development means improving the quality of life while living within the carrying capacity of supporting systems.[9]

International Council for Local Environmental Initiatives (1994): Sustainable development delivers basic environmental, social and economic services to all residents of a community without threatening the viability of the natural and social systems upon which the delivery of these services depends.[10]

Wackernagel and Rees (1996): Sustainable development is the need for humanity to live equitably within the means of nature.[11]

Pearce et al. (1990): Sustainable development means that conditions necessary for equal access to the resource base be met for each generation.[12]

World Bank (1989): Sustainable development will be non-declining per capita utility because of its self-evident appeal as a criterion for intergenerational equity.[13]

The need to pass on to the succeeding generations the wealth of the earth and the need to limit development to only that which is necessary are the key elements of the definitions cited, i.e., avoid

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[8] Mark MAWHENNY, *Sustainable Development…*, p. 3.

[9] *Ibid.*

[10] *Ibid.*

[11] *Ibid.*

[12] *Ibid.*

[13] *Ibid.*

passing problems into the future and avoid wasting resources. Up at this point at least, it is a highly principled message that places emphasis on conservation to ensure that future generations can enjoy the same breadth of choices as the current generation. It is a simple message but its interpretation can become confusing and challenging. It spans a range of interpretations from being an exhortation to individuals and societies that human beings should become accountable for living within their means to being an imperative call to the global community to live within the sustainable resources of the planet. Consequently, the wide range of interpretations covers as well a huge breadth and broad scale of potential must-do activities. There are further difficulties as well that have to do with having to define the limits and constraints on exploiting the resources available since a message of conservation always means preserving the status quo.

Among the definitions cited, the Brundtland definition finds wider acceptance among major global organizations. It had become the mainstream definition of sustainable development. However, organizations such as the World Bank, the European Union and the Organization for Economic Cooperation and Development tend to flesh out the statement with a series of caveats and defining objectives. The Organization for Economic Cooperation and Development approach, for example, sets out from the thrust of the second definition (National Strategies for Sustainable Development 2000) cited above. It specifically states economic and social development as key factors, but there is no mention of the environment. By contrast, the World Bank's definition looks for a balance of environmental, social and economic needs or priorities as underpinning the definition, thereby suggesting a different set of priorities: (1) social progress that recognizes the needs of everyone; (2) effective protection of the environment; (3) prudent use of natural resources; (4) maintenance of high and stable levels of economic growth; and (5) maintenance of stable levels of employment.

At this point, it thus appears that the definitions are descriptive in nature rather than principled statements. The difficulty with the definitions is that words like "high," "prudent," "effective" or even

"recognizes" remain rather vague and unclear, i.e., unclear about what they refer to. Again, these are crucial problems in establishing appropriate scales and particular limitations that remain important factors in explaining the concept of sustainable development.

2.2.1. Sustainable Development: A Short Chronology

To understand how the concept of sustainable development came about, we have to go back to the year 1962 when Rachel Carson's book *Silent Spring* was published. The book's release was considered by many as the starting point of the global community's heightened awareness of the extent of the environmental crisis and the turning point in our understanding of the interconnections between the environment, the economy and social well-being. Research in the fields of epidemiology, ecology and toxicology confirmed that agricultural pesticides were destroying the ecosystems rapidly. As a result, damage to different organisms and human health was widespread.

In 1968, a conference spearheaded by the Intergovernmental Conference for Rational Use and Conservation of the Biosphere was organized. The concept of sustainable development came out during the deliberations. In the same year, Paul Ehrlich's *Population Bomb* was published in which Ehrlich argued and established the interplay of the environment, resource exploitation and human population. In the following year, an environmental group called Friends of the Earth was organized. The group's focus was directed to the issue of how environmental degradation could be prevented, the nurturance of biodiversity and education of citizens on how to participate in decision-making processes concerning the environment. In 1971, another environmental group called Greenpeace was launched, starting an aggressive agenda to protect the environment and spearheading non-violent protests and interventions.

In 1972, a United Nations Conference on the Human Environment was held in Stockholm, Sweden. The concept of sustainable development became a prominent item in the deliberations again. What was also significant in this year was the publication of *Limits to Growth* by the Club of Rome which predicted dire consequences of

the environmental problem if economic growth is not slowed down. The document was put under intense criticism because it advocated abandonment of economic development.

In 1980, the United Nations Environment Program, the International Union for Conservation of Nature, and the World Wide Fund for Nature published a report entitled *World Conservation Strategies: Living Resource Conservation for Sustainable Development*; the usage of the phrase sustainable development had since then gained much wider acceptance.

In 1983, the Norwegian Prime Minister Gro Harlem Brundtland was asked by the United Nations Secretary General Javier Felipe Ricardo Pérez de Cuéllar to head a United Nations Commission to take up and further consider the ideas developed in Stockholm. The commission was then named the Brundtland Commission. In 1987, the Brundtland Commission came up with the report entitled *Our Common Future: World Commission on Environment and Development* wherein it describes and defines the main core principle of sustainable development:

> Humanity has the ability to make development sustainable—to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs.[14]

The publication of *Our Common Future* and the work of the World Commission on Environment and Development were the groundwork for the convening of the 1992 Earth Summit in Rio de Janeiro, Brazil, the consequent adoption of *Agenda 21* (prescriptions for implementing sustainable development), the *Rio Declaration* (commitment to put into practice the principles of sustainable development) and the establishment of the United Nations Commission on Sustainable Development.

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[14] Cf. *Our Common Future…,* p. 41.

Three (3) years after, the World Summit for Social Development was held in Copenhagen, Denmark. It was the first time that the international community expressed a clear commitment to eradicate absolute poverty. On the other hand, the implementation of the Kyoto Protocol[15] was also set as a priority agenda. In the years that followed, the event that was significant for sustainable development was the 2002 World Summit on Sustainable Development that was held in Johannesburg, South Africa, to mark the decade of sustainable development since the 1992 Earth Summit in Rio de Janeiro, Brazil. The Summit strongly expressed its frustration for the lack of government progress in implementing sustainable development and in turn promoted "partnerships" as a non-negotiated approach to sustainability.[16]

2.2.2. Sustainable Development: Setting the Vision amidst Controversies

The Brundtland Report, also known as *Our Common Future*, is basically anchored on a premise that development and environmental issues could not be separated knowing that it is futile to try to tackle environmental problems without considering the broader issues of economic poverty and social disparity. Development is being defined here as referring to the processes of economic and social change in the Third World.[17] The document recognizes that development could undermine environmental resources and in the same way environmental degradation could impede economic development. *Our Common Future*'s definition of sustainable development as cited above is based on two notions. The first is the concept of basic needs

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[15] The Kyoto Protocol is an international agreement that commits developed countries to binding targets to reduce greenhouse gas emissions. The Protocol was adopted in Kyoto, Japan, on December 11, 1997.

[16] Cf. A. G. VINA, M. HOFF and A. M. DEROSE (2003), "The Outcomes of Johannesburg: Assessing the World Summit on Sustainable Development," *SAIS Review: A Journal of International Affairs* 23(1), pp. 53–70.

[17] Cf. *Our Common Future…,* p. 54.

and the corollary of the primacy of economic development. The second involves the idea of environmental limits. These limits are not, however, those set by the environment itself, but those set by the economic setup. This gives an intrinsic fundamental problem: it ties down the idea of environmental sustainability to the socio-economic context of development. It means that sustainable development is defined by the achievement of socio-economic objectives and not by the measurement of the sustainability of the environment. Plainly, the center of the problem was what kind of environmental policies are required to achieve certain socio-economic goals rather than what kind of socio-economic policies are necessary to achieve environmental sustainability.

The problem with interweaving environmental sustainability with development actually sparked heated debates in the 1992 Earth Summit in Rio de Janeiro, Brazil, and in the drafting of *Agenda 21* which contained the detailed version of the *Rio Declaration* on the principles of sustainable development. Each participant country tried, as expected, to protect its own national interest. There was serious differences over key problems. For most of the developed[18] countries, climate change was on top of their agenda because it has become a serious social problem due to the worsening natural calamities, such as, for example, serious flooding of the urban areas and devastation of crops. These countries argued that restrictions on gas emissions should be prescribed. On the part of the developing countries, there was fear that their attempts to industrialize would be stifled by restrictive international agreements particularly on atmospheric gas emissions. They also feared that their freedom to use natural resources within their boundaries could be constrained by the agreement imposed by developed countries that had themselves become wealthy precisely by exploiting the developing countries' natural resources, for instance, by

[18] The terms "developed" and "developing" are used to refer to the economic status of a country mainly on the basis of economic performance, per capita income, industrialization, literacy rate, living standards, etc. A developed country has a highly developed economy and advanced technological infrastructure relative to other less developed nations.

clearing the vast majority of their forest cover and later by allowing industries to develop and operate without regard for environmental protection and neglecting consequent problems such as pollution of different kinds.

With concerted efforts of the proponents and organizers despite the heated debates, the 1992 Earth Summit served to install sustainable development as an integral part of the international environmental agenda. But in certain respects, it moved the concept of sustainable development closer to the developed countries' science-oriented environmental protection over the developing countries' concerns about economic development. The issue of consumption, for example, prevented the developing countries from advancing their quality of life agenda through economic development. An example of this debate occurred over the issue of consumption. This item of the agenda came to the Earth Summit entirely in brackets and negotiators eventually removed it from the official document.[19] In this instance, the developed countries succeeded in suppressing the agenda of the developing countries.[20] During the deliberations of the Earth Summit, the delegations of the developing countries were able to propose new programs for developmental aid but they could not force the developed countries to follow through on these commitments.[21] In one particular instance, the United States and the United Kingdom immediately objected to proposals to expand the United Nations Environment Programme's role into developmental affairs. Technology transfer particularly yielded two arenas of conflict—

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[19] See Maurie J. COHEN and J. MURPHY, "Sustainable Consumption: Environmental Policy and the Social Sciences," in *Exploring Sustainable Consumption: Environmental Policy and the Social Sciences*, eds. M. J. Cohen and J. Murphy, New York: Elsevier, 2001, pp. 225-240.

[20] Cf. Gilbert RIST, Majid RAHNEMA and Gustavo ESTEVA, *Le Nord perdu. Repères pour l'après-développement*, Lausanne: Editions d'En Bas, 1992, p. 44.

[21] Maurie J. COHEN and J. MURPHY, "Sustainable Consumption…."

intellectual property rights and concessional versus commercial terms for technology transfer.

However, in the end the Earth Summit finally settled the controversies and was able to set the argument in motion that the global community needs the new vision of sustainable development: a development that is no longer quantitative but qualitative. In other words, what the world needs is a balanced development striving for all human values, economic and social, in harmony with the environment. Indeed, the Earth Summit succeeded in offering the vision of sustainable development: a sustainable society as the attainable model for a harmonious and materially prosperous world.[22]

2.2.3. Principles for Environmental Protection and Sustainable Development

The World Commission on Environment and Development's *Our Common Future* came up with 22 principles—also known as legal principles—as a policy for environmental protection and sustainable development. The 22 principles are the following:

> I. GENERAL PRINCIPLES, RIGHTS, AND RESPONSIBILITIES
>
> **Fundamental Human Right**
>
> 1. All human beings have the fundamental right to an environment adequate for their health and well-being.
>
> **Inter-Generational Equity**
>
> 2. States shall conserve and use the environment and natural resources for the benefit of present and future generations.
>
> **Conservation and Sustainable Use**
>
> 3. States shall maintain ecosystems and ecological processes essential for the functioning of the biosphere, shall preserve biological diversity, and shall observe the

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[22] For a detailed account, see Peter M. HAAS, Marc A. LEVY and Edward A. PARSON, "Appraising the Earth Summit: How Should We Judge UNCED's Success?", *Environment* 34(8), October 1992, pp. 5-15.

principle of optimum sustainable yield in the use of living natural resources and ecosystems.

Environmental Standards and Monitoring

4. States shall establish adequate environmental protection standards and monitor changes and publish relevant data on environmental quality and resource use.

Prior Environmental Assessments

5. States shall make or require prior environmental assessments of proposed activities which may significantly affect the environment or use of a natural resource.

Prior Notification, Access, and Due Process

6. States shall inform in a timely manner all persons likely to be significantly affected by a planned activity and to grant them equal access and due process in administrative and judicial proceedings.

Sustainable Development and Assistance

7. States shall ensure that conservation is treated as an integral part of the planning and implementation of development activities and provide assistance to other States, especially to developing countries, in support of environmental protection and sustainable development.

General Obligation to Cooperate

8. States shall cooperate in good faith with other States in implementing the preceding rights and obligations.

II. PRINCIPLES, RIGHTS, AND OBLIGATIONS CONCERNING TRANSBOUNDARY NATURAL RESOURCES AND ENVIRONMENTAL INTERFERENCES

Reasonable and Equitable Use

9. States shall use transboundary natural resources in a reasonable and equitable manner.

Prevention and Abatement

10. States shall prevent or abate any transboundary environmental interference which could cause

or causes significant harm (but subject to certain exceptions provided for in Art. 11 and Art. 12 below).

Strict Liability

11. States shall take all reasonable precautionary measures to limit the risk when carrying out or permitting certain dangerous but beneficial activities and shall ensure that compensation is provided should substantial transboundary harm occur even when the activities were not known to be harmful at the time they were undertaken.

Prior Agreements When Prevention Costs Greatly Exceed Harm

12. States shall enter into negotiations with the affected State on the equitable conditions under which the activity could be carried out when planning to carry out or permit activities causing transboundary harm which is substantial but far less than the cost of prevention. (If no agreement can be reached, see Art. 22.)

Non-Discrimination

13. States shall apply as a minimum at least the same standards for environmental conduct and impacts regarding transboundary natural resources and environmental interferences as are applied domestically (i.e., do not do to others what you would not do to your own citizens).

General Obligation to Cooperate on Transboundary Environmental Problems

14. States shall cooperate in good faith with other States to achieve optimal use of transboundary natural resources and effective prevention or abatement of transboundary environmental interferences.

Exchange of Information

15. States of origin shall provide timely and relevant information to the other concerned States regarding transboundary natural resources or environmental interferences.

Prior Assessment and Notification

16. States shall provide prior and timely notification and relevant information to the other concerned States and shall make or require an environmental assessment of planned activities which may have significant transboundary effects.

Prior Consultations

17. States of origin shall consult at an early stage and in good faith with other concerned States regarding existing or potential transboundary interferences with their use of a natural resource or the environment.

Cooperative Arrangements for Environmental Assessment and Protection

18. States shall cooperate with the concerned States in monitoring, scientific research and standard setting regarding transboundary natural resources and environmental interferences.

Emergency Situations

19. States shall develop contingency plans regarding emergency situations likely to cause transboundary environmental interferences and shall promptly warn, provide relevant information to and co-operate with concerned States when emergencies occur.

Equal Access and Treatment

20. States shall grant equal access, due process and equal treatment in administrative and judicial proceedings to all persons who are or may be affected by transboundary interferences with their use of a natural resource or the environment.

III. STATE RESPONSIBILITY

21. States shall cease activities which breach an international obligation regarding the environment and provide compensation for the harm caused.

IV. PEACEFUL SETTLEMENT OF DISPUTES

> 22. States shall settle environmental disputes by peaceful means. If mutual agreement on a solution or on other dispute settlement arrangements is not reached within 18 months, the dispute shall be submitted to conciliation and, if unresolved thereafter, to arbitration or judicial settlement at the request of any of the concerned States.[23]

The principles begin with reference to human beings' fundamental right to an environment fit for health and welfare. Human rights are indeed linked to sustainable development because the right to life cannot be realized if there are no basic rights to access safe water, air, and land. This principle on rights is expected to provide protection to the most vulnerable people of society, especially the poor, women and minorities.

Discussions on sustainability have always included the considerations of the quality of life. Indeed, sustainability should give primordial importance to the right of people to have their basic necessities met at the same time that the preservation of nature cycles is maintained in attaining this quality of life. We find the same emphasis in the *Stockholm Declaration*:

> Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations.[24]

The emphasis is clear that both the natural and the man-made environment are essential to the enjoyment of basic human rights—even the right to life itself. Protection of human life at the same

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[23] *Our Common Future…*, pp. 348-351.

[24] UNITED NATIONS ENVIRONMENT PROGRAMME, *Stockholm Declaration on the Human Environment*, Nairobi: UNEP, 1972, Principle One (see also Preamble).

time with nature is an integral component of the right to a healthy environment. This finds continuity in the other principle underlining conservation of resources especially not only for the present generation but for future generations as well. It means that all governments are obliged to ensure that the welfare of future generations is addressed inasmuch as the needs of the present generation are met.

Since the rights of future generations to a healthy environment are intertwined with the present, protection of the earth's ecosystem is given much emphasis. This finds reference to all governments' commitment to the pursuance of programs of sustainable development by protecting and restoring the health and integrity of the planet to which all life belongs. The mention of the earth's ecosystem is juxtaposed with the allusion of the environmental problems facing humanity that involve a complex of interrelated issues especially climate change, pollution, deterioration and depletion of natural resources, biotechnology and others. Thus, the principles under the General Principles, Rights, and Responsibilities refer to the obligations of the States to protect, preserve, and, insofar as possible, restore the health and integrity of ecosystems, ensuring the functioning of essential ecological processes and life support systems, and at the same time to disseminate information on activities or measures that are likely to have environmental impact and involve other States in relevant decision-making processes.

To achieve this goal, the need for global partnership is stressed as a fundamental requirement to achieve sustainable development. Thus, the spirit of the principles underlines that all States have the sovereign right to utilize their resources to meet their sustainable development needs and the responsibility to develop and implement a national plan for the protection and preservation of the environment within the levels of their national jurisdiction, and to ensure that activities within their jurisdiction or control do not cause potential or actual harm to the environment of other States or areas beyond the limits of their national jurisdiction.

Notwithstanding the stress for States to take appropriate measures to prevent transboundary environmental harm, the principles oblige all States to conduct and encourage scientific research. The States are also urged to establish scientific monitoring programs for the collection of environmental information on all aspects of the environment and on human environmental impacts. Ensuring the dissemination of scientific data and information is also demanded as well as promoting scientific cooperation in the fields of environmental conservation and sustainable development.

As a framework for sustainable development, the principles contain prescriptions that seemingly try to accommodate the differences of perspectives. Nonetheless, the principles were accepted as policy guidelines for the implementation of sustainable development.

2.2.4. Sustainable Development in *Agenda 21*

The concept of sustainable development as contained in this document was more emphasized as it attempted to provide the basis for many kinds of action in pursuit of sustainability but it makes none of them mandatory. The scope covers vast issues ranging from water quality and biodiversity to the role of women, children and organized labor in implementing sustainable development.

A series of key themes were identified. The first is the revitalization of growth with sustainability. Sustainable development could not be separated from the fundamental importance of economic growth, for either rich or poor countries. The second theme is sustainable living, under which comes poverty, health and population growth. The third theme addresses the problems of urbanization (water supplies, wastes, pollution and health). The fourth theme is efficient resource use under which the main topic includes combating deforestation and desertification to conservation of biological diversity. Just as growth is the foundation stone of mainstream sustainable development, efficient resource use is the mechanism for achieving it. The fifth theme concerns global and regional resources (atmosphere and oceans). The sixth spells out the management of chemicals and wastes. The seventh and final theme is people's participation and responsibility.

What is immediately noticeable in the document is the strong emphasis it gives to the importance of economic growth and development. Everything on sustainable development is predicated on economic growth, both globally and nationally. The key themes clearly stress that economic growth will direct the necessity of policy towards more efficient use of the environment and hence towards a more sustainable world economy. Further, although it calls for participation of women, children, young people, indigenous people, trade unionists, businessmen, industry proprietors, farmers, local authorities and scientists to play a role in promoting sustainable development, it does not provide a political analysis of power since the question precisely is who holds relevant levels of decision-making processes in implementing sustainable development.

2.3. The Notion of Sustainability

Sustainability is a concept about continuance and maintenance of the status quo. Literally, the term "sustainability" means the ability to keep going, to keep up, to maintain, and to cause to continue in a certain state.[25] In environmental ethics, it is defined as the ability to maintain and nurture the conditions on which life depends and the capacity to endure and exist in all possible conditions.[26] It pertains to the maintenance of the interplay of biological systems over a long period of time.

Attaching the term "sustainable" to "development" means long-term maintenance of well-being that has economic, social and ecological dimensions. Sustainability requires the reconciliation of economic, social, and environmental demands—also referred to as the "three pillars" of sustainable development. In other words, the economy and society are supposed to be constrained by environmental limits.

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[25] J. SIMPSON and E. WEINER, eds., *The Oxford English Dictionary*, Second Edition, Oxford: Oxford University Press, 1989.

[26] Robert M. SOLOW, "An Almost Practical Step Towards Sustainability," Invited Lecture on the Occasion of the Fortieth Anniversary of Resources for the Future, Washington, DC: Resources and Conservation Center, 1992.

From the perspective of sustainable development, sustainability interfaces with economics through the social and environmental consequences of economic activity. It involves the integration of the environmental and the social aspects in pursuing economic growth and development. Moving towards sustainability is primarily a social challenge because it entails international and national law, urban planning and transport, change of social and individual lifestyles and ethical consumerism. Ways of living more sustainably can take many forms, from reorganizing living conditions such as establishing sustainable communities and eco-villages and by promoting environment friendly economic sectors such as green building architecture, sustainable agriculture, green technologies[27] and renewable energy.

2.3.1. Etymology of Sustainability

The word sustainability is derived from the Latin word *sustinere* meaning *to hold*, from the Latin root word *tenere*.[28] In the 1980s, sustainability has mostly been used in the context of human sustainability on earth. This has resulted in the most widely quoted definition of sustainability as a part of the concept of sustainable development.

A universally accepted definition of sustainability remains elusive, however, because the term is used in a broad range of meanings in public and scientific discussions. In its broad meaning, the word *sustainability* is not only referring to human sustainability on the planet but to many situations and contexts over many scales of space and time including ecosystems, species, or biological evolution.

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[27] See Paulo BLASI (1989), "Lo sviluppo della fisica e conseguenze tecnologiche ed etico sociali," *Problemi di Bioetica* 3, pp. 19-32.

[28] A. HOLLAND, "Sustainability," in *The Shorter Routledge Encyclopedia of Philosophy*, ed. E. Craig, London/New York: Routledge, 2005, p. 1008.

2.3.2. A Short Historical Background of the Concept of Sustainability

The popular use of the term "sustainability" started during the 1983 establishment of the United Nations' *The World Commission on Environment and Development* (WCED), headed by Gro Harlem Brundtland, former prime minister of Norway. The United Nations' General Assembly asked the commission to

> propose long-term environmental strategies for achieving sustainable development by the year 2000 and beyond; to recommend ways to protect the environment which could lead to greater cooperation among developing countries and between countries at different stages of economic and social development and lead to the achievement of common and mutually supportive objectives that take account of the interrelationships between people, resources, environment, and development; to consider ways and means by which the international community can deal more effectively with environmental concerns; and to help define shared perceptions of long-term environmental issues and the appropriate efforts necessary to deal successfully with the problems of protecting and enhancing the environment, a needed long-term agenda for action during the coming decades, and aspirational goals for the world community.[29]

With the given mandate, the commission attempted to find positive links between environmental concerns and economic issues such as development and economic growth that could at the same time address the serious issue of global poverty—which essentially was the core content of the principle of sustainability. As a result, numerous international and national environmental agencies started to use the term "sustainability" to encourage the global and local communities to care for the environment, to strive for development,

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[29] *Our Common Future…*, pp. 348-351.

to improve their quality of life without "compromising the needs of future generations."[30]

However, the modern concept of "sustainability" is deeply rooted in many previous cultures. It is said that in early human history, the use of fire and the innate desire for survival may have altered the natural composition of plant and animal organisms. Thousands of years ago, our ancestors already had mechanisms on how to sustain agriculture that depended largely on their ability to use the resources of the environment. Further on, in the late 1800s, the emphasis on the human inseparability with nature—as basis for sustainability—became more compelling due to the impact of the writings of Henry David Thoreau,[31] George Perkins Marsh,[32] and John Muir[33] who became

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[30] *Ibid*., p. 43.

[31] The anti-anthropocentric stance of Thoreau makes him one of the great environmental thinkers of the nineteenth century. Thoreau arrived at an evolutionary and ecological perspective even before Darwin's *On the Origin of Species* (1859) was published. Thoreau was tireless in his critique of the rising American preoccupation with economics and materialism. As a result, he was not widely read. Roderick Nash points out that Thoreau's 1851 statement, "In wildness is the preservation of the world," provided the basis for modern environmentalism. See Roderick NASH, *The Rights of Nature: A History of Environmental Ethics*, Madison: University of Wisconsin Press, 1989, pp. 125-127.

[32] Marsh is another important figure in environmental thinking who had much influence in calling for a change of attitude towards nature. According to Nash, Marsh's *Man and Nature* (1864) was the first comprehensive description of the destructive impact of human civilization on the environment. See Roderick NASH, *The Rights of Nature…*, p. 132.

[33] For many years, Muir wandered through Yosemite and the High Sierra, climbing mountains, studying glaciers to study the balance of ecosystems. Through his highly acclaimed writings, Muir awakened the American public to the need for the protection of nature, and was chosen to be the first president of the Sierra Club in 1892, a position he held until his death in 1914. Muir is regarded as the founder of the American conservation movement. See Roderick NASH, *The Rights of Nature…*, p. 144.

staunch critics of anthropocentrism[34]—human-centeredness and the human being's domination and exploitation of the environment.

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[34] The concept of anthropocentrism is a complex one. It was the medieval historian Lynn White Jr. who brought the issue of anthropocentrism into the open when he presented a paper entitled "The Historical Roots of Our Ecologic Crisis" to a meeting of the American Association for the Advancement of Science held in December 1966. Carolyn Merchant said that "White struck an extremely sensitive nerve in the body of Western culture in arguing that Christianity, especially in its Western form, is the most anthropocentric (i.e., human-centered) religion the world had ever seen and that, accordingly, Christianity bears a huge burden of guilt for the environmental problems that have attended the Western view of the Christian dogma of man's transcendence of, and rightful mastery over, nature. Western Christianity, for White, developed in the direction of seeking to understand God's mind by discovering how his creation operates. Human domination of nature reached its peak in the Scientific Revolution in the 17th century. Francis Bacon and Rene Descartes were dominant figures of the period whose works influenced anthropocentric thinking. Bacon claimed that modern science would allow humans to regain a command over Nature that had been lost with Adam's Fall in the Garden. Descartes, who is considered the 'father' of modern Western philosophy, argued that the new science would make humans the masters and possessors of nature. Keeping his Christian background, Descartes' famous mind-body dualism resulted in the view that only humans had minds (or souls); all other creatures were merely bodies (machines). Animals had no sentience (mental life) and so, among other things, could feel no pain. The Scientific Revolution overturned the age-old organic view of the world as a living organism and replaced it with a mechanistic clockwork image of the world as a machine. Further on, the medieval worldview, perpetuated in the philosophical systems of Bacon and Descartes, was to combine with, and be reinforced by, Renaissance humanism, which arose prior to the Scientific Revolution. Renaissance humanism was exemplified in the fifteenth-century pronouncements of Pico de la Mirandola, and in Erasmus and Montaigne, and was to continue with the Enlightenment philosophers, and on into the twentieth century with Karl Marx, John Dewey, and the humanistic existentialism of Jean-Paul Sartre. Renaissance humanism portrayed humans as the central fact in the universe while, in addition, supporting the exalted view that humans had unlimited powers, potential, and freedom over the environment." See Carolyn MERCHANT, *The Death of Nature*, New York: Harper and Row, 1980, pp. 27-29; Max OELSCHLAEGER, *The Idea of Wilderness: From Prehistory to the Age of Ecology*, New Haven: Yale University Press, 1991, pp. 11-15.

The crucial point on the question of sustainability came in the 19th century industrial revolution of the West that particularly tapped energy in fossil fuels, which emitted greenhouse gases especially carbon dioxide into the atmosphere, and the use of pesticides and other forms of toxins to control pests in agriculture. The environmental movements which became more militant and influential after the 1962 publication of Rachel Carson's book *Silent Spring* pointed out that there were environmental costs associated with the many material benefits of economic development and that Carson's depiction of the devastating impact of toxins and pollutants on the environment caused the general public and international agencies to reevaluate the limits of ecosystems.

The ecological awareness of sustainability raised by Carson and other environmentalists in the 1960s culminated in 1970 with the first Earth Day, which attracted over 20 million people to enthusiastic and peaceful rallies mainly throughout the United States. By the early 1980s, the concept of sustainability had begun to gain wider public attention chiefly as a result of the publication of Robert Allen's *How to Save the World* (1980) and Lester Brown's *Building a Sustainable Society* (1981). Brown began with an incisive analysis of the economic predicament facing the world because of our carelessness and disregard for the fundamental ecological limitations. He outlined a comprehensive strategy for moving from what he called "un-sustainable" practices to a global relationship with nature that reconfigures not only the human relationship with the planet and its biological diversity but also the structure of values for integrating ecological and economic issues.[35]

In 1984, Worldwatch Institute published its first State of the World annual report. This report provided a global perspective on the relation between the world's resource base and the dynamics of economic development. Subsequent Worldwatch annual reports helped create a global consciousness about the interconnection

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[35] See Lester BROWN, *Building a Sustainable Society,* New York: WW Norton and Co Inc., 1982, pp. 45-61.

of environmental, economic and social issues. It was an awareness soon thrust into international attention with the publication of the Brundtland report, *Our Common Future*, in 1987.

2.4. The Idea of Development

Since the concept of sustainable development did not emerge out of a historical vacuum, we need to examine the context of the idea of development. It is necessary because sustainable development as a paradigm for environmental sustainability perpetuates the widely held but problematic notion of development.

To begin with, it is a given fact that development is a complex idea. The Oxford Dictionary defines "development" as a gradual unfolding, suggesting that the word is derived from the Latin *de* and *volutus* meaning *to unveil*.[36] It has been taken to mean different things at different times, in different places, and by different people in different professions and organizations. When those who specialize in the field of psychology speak of the development of intelligence, or mathematicians of the development of an equation, the sense they give to the word *development* is clear enough. Its definition is shared by everyone working within the same sphere, so to speak. The situation is quite different, however, when it comes to the use of the word *development* in ordinary language to mean either a state or a process associated with such concepts as material well-being, progress, social equity, economic growth, personal blossoming, or even ecological equilibrium. The complexity of the definition of development is indeed a given difficulty.

2.4.1. Progress: The Root of the Idea of Development

Progress is a founding belief of the modern world which had its focus especially on development. It was an underlying concept that was received as an essential legacy of the Enlightenment. Reaching a highpoint in the 19th century, the idea of progress virtually replaced everything that was considered instrumental for the functioning of

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[36] J. SIMPSON and E. WEINER, eds., *The Oxford English Dictionary*….

society. In the name of progress, all the modern advances in science, technology, democracy, values, ethics and social organization would fuse into a single humanitarian project of producing a far better world than previously known. However, not everyone was convinced of the inevitability of progress. The historian John Bagnell Bury published in 1920 his pioneering book, *The Idea of Progress*, in which he argued that progress was not an inevitable law of nature, like the law of gravitation, but an idea made by man.[37] Nevertheless, such belief in humanity's inexorable advance in material progress persisted despite the skepticism on the idea of progress as an inevitable law of nature. In the middle of the twentieth century, *development* (with the implication of being more human-directed), however, replaced the term *progress* which was thought of in a mechanistic way. The idea of progress in the middle of the 19th century and early 20th century would thus be supplanted by the concept of development in the 20th century.

2.4.2. The Rationale of Development

The view of development had been challenged several times. As the idea of progress in the 19th century had been challenged by different points of view such as Anarchism[38] and Marxism,[39] development would be challenged by other perspectives such as Existentialism[40] in

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[37] See J. B. BURY, *The Idea of Progress: An Inquiry Into Its Origin And Growth*, London: MacMillan and Co., Limited, 1920, pp. 38-94.

[38] Anarchism is an ideology that values the notions of freedom and equality that could lead one to oppose authority and domination and with an orientation toward creating non-hierarchical, non-compulsory social relations. See more of this in David GRAEBER (2002), "The New Anarchists," *New Left Review* 13 (January-February), pp. 61-73.

[39] Marxism is an economic and social system based upon the political and economic theories of Karl Marx and Friedrich Engels. It is summed up as a theory in which class struggle is a central element in the analysis of social change. See Henry Bamford PARKES, *Marxism: An Autopsy,* Chicago, IL: University of Chicago Press, 1965.

[40] Existentialism is a philosophy that emphasizes individual existence, freedom and choice. It is the view that humans define their own

the early twentieth century and by Postmodernism[41] in the late 20th century. But such challenges did no substantial erosion of faith in development which came on to represent the spirit of modern times.

Two significant pronouncements in the 20th century exemplified the recognition of development as the spirit of the modern age, namely: the inaugural address of United States President Harry Truman in January 1949 and Pope Paul VI's pronouncement in his encyclical *Populorum Progressio* which came out in 1967.

In his inaugural address, US President Harry Truman laid down the agenda of the United States and other like-minded nations for post-war economic recovery and development.[42] He stressed:

> We must embark on a bold new program for making the benefits of our scientific advances and industrial progress available for the improvement and growth of underdeveloped areas. More than half of the people of the world are living in conditions approaching misery. Their food is inadequate. They are victims of disease. Their

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meaning in life, and try to make rational decisions rather than those that are expected and imposed by society. See Steven LUPER, ed., *Existing: An Introduction to Existential Thought*, Mountain View, California: Mayfield, 2000.

[41] Post-modernism is a critique on traditional structures and institutions, and the end of what Lyotard calls the "grand narratives" of the universal stories that explain everything. In post-modernism, there is a loss of faith in ideas, like development, and that we are gradually heading along the one direction towards universal goals such as harmony, equality and justice. Instead, there is an emphasis on different ways and plurality, on diversity and difference and on the partiality of all knowledge and information. See Jean-Francois LYOTARD, T*he Postmodern Condition: A Report on Knowledge*, Manchester: Manchester University Press, 1984.

[42] In *The Development Dictionary*, Wolfgang Sachs dates the start of the age of development to the inaugural speech by US President Harry Truman in January 1949, in which he referred to the southern hemisphere's "underdeveloped areas." See Wolfgang SACHS, *The Development Dictionary: A Guide to Knowledge as Power*, London: Zed Books Ltd., 1992, p. 2.

> economic life is primitive and stagnant. Their poverty is a handicap and a threat both to them and to more prosperous areas. For the first time in history, humanity possesses the knowledge and skill to relieve the suffering of these people. The United States is pre-eminent among nations in the development of industrial and scientific techniques. The material resources which we can afford to use for assistance of other peoples is limited. But our imponderable resources in technical knowledge are constantly growing and are inexhaustible. I believe that we should make available to peace-loving peoples the benefits of our store of technical knowledge in order to help them realize their aspirations for a better life. And, in cooperation with other nations, we should foster capital investment in areas needing development.[43]

The inaugural speech inaugurated the "development age." The term "underdeveloped" used by Truman in his speech refers to the "economically backward" countries around the world. The term "underdevelopment" was in fact a terminological innovation which provided the contrast between "development" and "underdevelopment."[44]

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[43] To read the whole text, see Harry TRUMAN, *Public Papers of the Presidents of the United States: Harry S. Truman (1949)*, Office of the Federal Register, pp. 114-115.

[44] After Truman's inaugural speech, the concept of development has, most of the time, been contrasted with underdevelopment. Thus, it is inevitable that theorizing on development would also focus on trying to seek explanation of it from inquiry of its obverse phenomenon, underdevelopment. Even as development is a bone of contention between the opposing camps of neo-Marxists and neoliberal capitalists, so is underdevelopment. Underdevelopment is mostly taken in the context of economics and it pertains to a state wherein resources are not utilized to their full potential socially and economically. As a result, development in these areas where resources are under-utilized is slower than it should be. A major characteristic of underdeveloped nations is the disparity between the rich and the poor. There is also an imbalance of trade. Underdevelopment is manifested in localities and regions that have lack of access to job opportunities and basic needs such as water, food,

However, Truman's speech signaled the adoption of neoliberalism as the backbone of development project. As such, it would characterize the epoch of the free world.

In the papal encyclical *Populorum Progressio*, however, Pope Paul VI gave an opposing analysis and an uncompromising critique on the prevailing adoption of economic liberalism as the framework of what constituted the agenda of development. Without naming it as such, the Pope nevertheless made unmistakable references to its hallmarks, particularly the promotion of unlimited free trade in the context of the newly adjusted but persisting colonial arrangements. Written in 1967, *Populorum Progressio* was the first encyclical to speak

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housing, education and health care, among others. Since the end of World War II, there has been a worldwide struggle for the improvement of living conditions in the so-called developing countries. At the beginning, people did not really concern themselves with the causes of underdevelopment. The newly independent countries (from the clutches of colonization) as well as United Nations bodies tried to promote development by applying measures like the introduction of know-how through the assignment of experts, the expansion of education, and the building of infrastructure, etc., by following the example of the industrialized countries. In the course of time, the gap gradually widened between the developed and less developed countries. During the early period of development efforts, there was little discussion on the historical causes and the real nature of underdevelopment. Theoretical considerations at this time of "cold war" explained the situation of underdevelopment and the path for development from the viewpoint of western or socialist contexts. Only in more recent times has the viewpoint of developing countries gained momentum in development theory. The answer to the question "What is development?" determines which strategies, policies, projects, what type of industry, or what organization of agriculture should be considered to be in line with development goals or detrimental to these. Different positions in development policy are based on differences in underlying development theories. There are a great number of explanations for underdevelopment and concepts of development, as presented by many theories. For more of these, see Frithjof KUHNEN (1987), "Causes of Underdevelopment and Concepts for Development: An Introduction to Development Theories," *The Journal of Institute of Development Studies* 5(3), pp. 1-14 and G. FRANK, "The Development of Underdevelopment," in *Development: Critical Concepts in the Social Sciences,* 2005, pp. 22-34.

in sufficient and clear terms on the problem of development being intertwined with economic growth. He said:

> The development of peoples has the Church's close attention, particularly the development of those who are striving to escape from hunger, misery, endemic diseases and ignorance; of those who are looking for a wider share in the benefits of civilization and more active improvement of their human qualities; of those who are aiming purposefully at their complete fulfillment. Increased possession is not the ultimate goal of nations nor of individuals. All growth is ambivalent. It is essential if people are to develop as persons.…[45]

The two influential statements, albeit differing in social analysis and orientation, agree on an underlying point of view: the fundamental project of development has to make a difference in the lives of people. Truman argued that the American people desire, and are determined to work for, a world in which all nations and all peoples are free to govern themselves as they see fit, and to achieve a decent and satisfying life. But it was the words of Pope Paul VI which captured the essence of this project in clear and simple terms. The Pope contended that it is to seek not just to *have* more but to *be* more.[46] Both Truman and Paul VI acknowledged the spirit of development as the spirit of the modern age. Both acknowledged a shared vision of humanity, but Paul VI enunciated far more distinctly the moral vision of "the development of peoples" and not merely economic development.

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[45] PAUL VI, *Populorum Progressio*, 1967, 5, at http://www.vatican.va/holy_father/paul_vi/ency-clicals/documents/hf_p-vi_enc_26031967_populorum_en.html (12.10.2013).

[46] This was echoed in BENEDICT XVI's encyclical *Caritas in Veritate,* 2009, 29, at http: //www.vatican.va/holy father/benedict_xvi/encyclicals/documents/hf_ben-xvi_enc_20051225_deus-caritas-est_en.html (16.05.2013).

2.4.3. Development as the Antithesis of Poverty

Basically, there are two senses in which the concept of development is being used in President Truman's speech. In its strongest sense, development would mean using the productive resources of society to improve the living conditions of the poorest sectors in society. In its weakest sense, development means providing the most of everything for everyone so that material well-being is achieved. In the strongest sense, though, development essentially means economic growth by using the mechanism called "trickle-down-effect"[47] which means the transfer of better material life-conditions from the rich to the poor.

Stemming from the Enlightenment on the use of the modern and scientific mind for improving life-conditions, development entails human emancipation from the vicissitudes of poverty through advancement in technology and human creativity. Thus, development requires economic, social, and cultural innovation. It means improvement in a complex of linked natural, economic, social, cultural, and political conditions. This meaning of development is at

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[47] Pope Francis strongly criticized the concept of the "trickle-down effect" in his Apostolic Exhortation *Evangelii Gaudium;* to quote, "Some people continue to defend trickle-down theories which assume that economic growth, encouraged by a free market, will inevitably succeed in bringing about greater justice and inclusiveness in the world. This opinion, which has never been confirmed by the facts, expresses a crude and naïve trust in the goodness of those wielding economic power and in the sacralized workings of the prevailing economic system. Meanwhile, the excluded are still waiting. To sustain a lifestyle which excludes others, or to sustain enthusiasm for that selfish ideal, a globalization of indifference has developed. Almost without being aware of it, we end up being incapable of feeling compassion at the outcry of the poor, weeping for other people's pain, and feeling a need to help them, as though all this were someone else's responsibility and not our own. The culture of prosperity deadens us; we are thrilled if the market offers us something new to purchase; and in the meantime all those lives stunted for lack of opportunity seem a mere spectacle; they fail to move us." Cf. FRANCIS, *Evangelii Gaudium,* 54.

the core of what has been called "developmentalism"—the belief in the viability and desirability of this kind of encompassing progress.[48]

2.4.4. Theories of Development

Development theories which mostly resonate the approach of neoliberalism vary according to the specific orientations of the various knowledge areas of inquiry, meaning that depending on the investigating discipline concerned, the leaning could thus, for instance, be predominantly economic, sociological, anthropological, historical, or even geographical. These theories are also influenced by the political positions of their proponents and adherents. In the next subsections, we are going to analyze the scope of particular theories of development. We have to keep in mind that these theories have their ideological roots and these are situated in the context of the place and time where and when their proponents and adherents constructed the theories.

2.4.4.1. Theory of Stages of Development

The economist Walt Whitman Rostow argues that economic development is a long-term process. All societies, in fact, pass through stages of development. Rostow describes the first stage as the stage of "traditional society" in which, on the one hand, the majority of the population are engaged in the production of basic necessities such as food, shelter and others while the elite wield political power over the population. This status quo in "traditional society" is reinforced by the existing military and the supporting group of civil servants. The next stage, the "transitional stage," happens when far-reaching changes in the non-industrial sectors are being created. Here, export of raw material gains impetus, a new class of traders emerges, and the idea of economic progress spreads. The "take-off stage" brings a sharp increase in the rate of investment. This stage of industrial progress is accompanied by radical changes in production techniques.

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[48] See Arturo ESCOBAR, *Encountering Development: The Making and Unmaking of the Third World,* Princeton, NJ: Princeton University Press, 1995, pp. 32-57.

Expansion takes place in a small group of leading sectors at first and, on the social side, is accompanied by the domination of the modern section of society over the traditional one. The drive to economic maturity brings a spread of growth to the other sectors and a broader application of modern technology would be followed by necessary changes in the society at large. The stage of high mass consumption can be reached after attaining a certain level of higher financial income and an efficient economic structure is generated to facilitate heightened mass consumption.[49]

The core principle of the theory of stages of development lies on its drive for mass consumption which spurs economic growth and development. But a consumerist society would regard everything as objects and commodities. It is immoral when the environment and its natural resources, and even human beings, would become means rather than ends.

2.4.4.2. Development and Modernization

The argument of modernization theory is based on the assessment of the internal factors of the developing countries such as their lack of communication and infrastructure, low rate of literacy, traditional agrarian structure, and non-equitable division of labor. The theory asserts that these factors determine their development or underdevelopment.

The goal of every underdeveloped country, the theory asserts, is to reach the economic level of the industrialized countries. The model of development is based on high income and high expenditure that could facilitate economic development. The theory contends that the degree of backwardness in underdeveloped countries should be addressed by finding suitable measures such as the modernization of the means of production, increase of capital and investment, and

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[49] See Walt ROSTOW, *The Stages of Economic Growth: A Non-Communist Manifesto*, Cambridge: Cambridge University Press, 1960, pp. 57-81.

knowledge-transfer so that the underdeveloped countries can reach the level of industrialized countries at a much faster rate.[50]

This model of development—modernization—had become the fundamental goal of every developing country. It had become an indispensable route to economic development. The goal of sustainable development is basically along this line of thinking with the aim that modernization will have less negative impact on the environment.

2.4.4.3. The Theory of Balanced Growth in Development

This theory of development was pioneered by Ragnar Nurkse, a classical development economist, who argued that the limitations of the local market could impede economic development because it could result in limited market opportunities. It is due to the fact that in such circumstances not many investments could be transacted. Nurkse cites the necessity of heightening the purchasing power of the population to attain balance in economic growth.

What could be regarded as the problem in the local market is the limited availability of capital for investment. If capital is available, investments could be made. Thus, to ensure that balanced growth could be reached, widespread investments should be done not just for the local market but in the international market as well.

As a whole, the theory of balanced growth in development refers to market expansion and an increase of production especially in the area of agriculture. It asserts that economic growth should be equally spread through the traditional and modern economic structure.[51]

The concept of sustainable development is shaped particularly by this model of development because of its emphasis on capital

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[50] Frithjof KUHNEN, "Causes of Underdevelopment…."

[51] See Ragnar NURKSE, *Classical Development Economics and Its Relevance for Today,* eds. Rainer Kattel, Jan A. Kregel and Erik S. Reinert, London, New York: Anthem Press, 2009, pp. 28-52.

investment as a necessity for developing countries to attain balanced economic growth based on the traditional and modern means.

2.4.4.4. Development Based on Dualism Theory

Adherents of dualism theory in development like the Nobel laureate Sir Arthur Lewis[52] distinguish the division between economic and social structures of the different sectors in society. The theory is often called economic dualism as expounded by Julius H. Boeke in his book *Economics and Economic Policy of Dual Societies.* Boeke differentiated two sectors of economy: 1) the traditional subsistence sector which is composed of small-scale agriculture, handicraft, and small scale trades that have a high degree of labor force but with low capital intensity; and 2) the modern sector of capital-intensive industry with capital-intensive modes of production.[53]

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[52] Nobel laureate Sir Arthur Lewis worked on a dual-track model of development. This dual-track approach considered both a small but expanding industrial sector paying modest wages and a large agricultural sector paying subsistence wages. Lewis wrote that by keeping wages constant, the industrial sector would grow, thereby surpluses would be reinvested, and excess labor would be soaked up from the agricultural sector. Slowly, living and economic standards would rise, and both the employment and food needs of the growing populations would be met. However, the Lewis Model has been highly debated. Though the model's influence was great, there were strong adverse reactions to it. Critics alleged that the model has led to dependency and fragmentation. A common criticism was that Lewis naively assumed that multinational corporations investing in developing economies would reinvest their profits and transfer their technology to these economies, but instead, these corporations ended up exploiting cheap labor in the developing economies. See Sir Arthur LEWIS, *The Theory of Economic Growth*, London: Allen & Unwin, 1955 and Hamed HOSSEINI (2012), "Arthur Lewis' Dualism, the Literature of Development Economics and the Less Developed Economies," *Review of European Studies* 4(4).

[53] See Julius H. BOEKE, *Economics and Economic Policy of Dual Societies*, New York: AltaMira Press, 1953; see also Benjamin H. HIGGINS, "The 'Dualistic Theory' of Underdeveloped Areas," in *Economic Development and Cultural Change,* London: Houghton Mifflin, 1956, pp. 99-115.

The two sectors are essentially interdependent. Development varies according to the respective patterns of each. It is argued in this theory that by expanding more the modern sector and clamping down on the traditional ones, development would happen faster.

Dualism theory as a theory of development is a bit one-sided in its focus because of the theory's emphasis on the importance of the modern sector, notwithstanding the need for the traditional sector, such as agriculture, in attaining economic development. Focusing on the modern sector could lead to increasing regional disparity, rural to urban migration, urban unemployment, and a decrease in agricultural production. However, it is still important to consider how the theory shapes the idea of sustainable development because the modern sector, especially in the area of technological innovation, has become one of the mitigating means of implementing sustainable development.

2.4.4.5. Unbalanced Growth Theory in Development

The proponent of this theory was the economist Albert Otto Hirschman[54] who argued that the problem is not the shortage of capital but lack of entrepreneurial abilities. Potential entrepreneurs are hindered in their decision-making by institutional factors, either that some group would play a great role and hinder the potential entrepreneur or entrepreneurs would aim at personal gains at the cost of others and thus be equally detrimental to development. In view of the lack of entrepreneurial abilities, there is a need for a mechanism of incentive which will automatically result in better economic conditions. According to Hirschman, manufacturing industries and import substitutions are relevant examples. These investments initiate

[54] Hirschman was a colorful figure who was not only an economist but a moralist as well. He was also known to have helped people escape the wrath of the Nazis at some point. See Jeremy ADELAM, *Worldly Philosopher: The Odyssey of Albert O. Hirschman,* New Jersey: Princeton University Press, 2013, pp. 31-42.

further investments which are made by qualified entrepreneurs. Thus, the strategy overcomes the difficulties of entrepreneurial ability.[55]

The theory's emphasis on the significance of entrepreneurship for economic growth had also influenced the thinking of sustainable development but the theory nonetheless gives no hints as to how the attitude of entrepreneurs and their institutional influence will be a factor for economic development.

2.4.4.6. Theory of Circular Causation for Development

This theory, which also shaped the concept of sustainable development, was developed by the Swedish economist Gunnar Myrdal who was a Nobel laureate in 1974. The approach in development is multi-causal where core variables and their linkages are delineated. The theory posits that a change in the form of an institution will lead to successive changes in other institutions. These changes continue in a cycle until stability is reached.

Myrdal emphasized the importance of the availability of natural resources, the given traditions of production activity, national cohesion, religions and ideologies, and economic, social and political leadership as characteristics relevant to the development process of an economy. Myrdal argued that social systems and economic processes do not develop immediately towards equilibrium but, on the contrary, factors tend to cumulate to positive or negative cycles. Under "laissez faire"[56] in the conditions of developing countries, there is a tendency towards a negative accumulation. In principle, Myrdal argues, all

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[55] See Albert HIRSCHMAN, *The Strategy of Economic Development*, New Haven: AltaMira Press, 1958, pp. 68-92.

[56] The concept of "laissez-faire" means the government should have little interference in the economic affairs of individuals and society. The root of the concept is traced to the group of economists known as the Physiocrats, who thrived in France from about 1756 to 1778. Laissez-faire became a widely accepted economic system in Great Britain under the influence of economist and philosopher Adam Smith. See http://www.britannica.com/EBchecked/topic/328028/laissez-faire (2.05.2014).

social relations have to be incorporated. At the national as well as in the international levels, the differences in the different stages of development between regions tend to increase because of the spread effects in the more developed areas and backward effects in backward areas and in traditional sectors. For instance, industrial import goods are in competition with traditional crafts. In that situation, terms of trade deteriorate because there is always the possibility of imported goods being preferred by people rather than the local products. Thus, the direction of economic processes depends on the balance of trade and the other factors causing it. Under the given conditions in developing countries, increased regional dualism (the traditional and modern sectors) often is a consequence of such processes of circular causation.[57]

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[57] Myrdal opposes the strategy of development poles because social systems and economic processes do not develop towards equilibrium but, on the contrary, factors tend to cumulate to positive or negative cycles. Under "laissez-faire" conditions in developing countries, there is a tendency towards a negative cumulation. In principle, Myrdal's theory is a negation of the monocausal explanation of problems of developing countries by economic factors alone. Rather, in a comprehensive way, all social relations have to be incorporated. At the national level—at different stages of development between regions as well as international level-trade between industrialized and developing countries—differences tend to increase because of the spread effects in the more developed areas and modern sectors and backwash effects in backward areas and traditional sectors. For instance, industrial import goods are in competition with traditional crafts; terms of trade deteriorate; capital is being transferred, etc. The direction of processes depends on the initial situation and the factors causing the change. Under the conditions in developing countries, increased regional dualism often is a consequence of such processes of circular causation. He insisted that the notion of stable equilibrium is normally a false analogy to choose when constructing a theory to explain the changes in a social system. What is wrong with the stable equilibrium assumption as applied to social reality is the very idea that a social process follows a direction—though it might move towards it in a circuitous way—towards a position which in some sense or other can be described as a state of equilibrium between forces. Behind this idea is another and still more basic assumption, namely, that a change will regularly call forth a reaction in the system in the form of changes which on the whole go in the opposite direction to the first change. The idea

2.4.4.7. Dependence Theory of Development

The theory of dependence[58] explains that the cause of underdevelopment is the dependence of poor countries on the developed countries. The backward internal economic system of the developing countries is seen as symptomatic of dependence. The rapid development of highly industrialized countries and the underdevelopment of poor countries are parts of one historical process especially seen in the context of a colonial past. Colonization provided the mechanism of developed countries' exploitation of natural resources of the colonized areas.

The economic and socio-political interests of the industrialized and the developing countries determine the stages of their development or underdevelopment. As to the causes of dependence, various assessments differ but economic factors are always constant. External trade supposedly defines the economic relationship between countries. But the economic relationship between them is mostly

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that Myrdal wanted to expound is that, on the contrary, in the normal case there is no such tendency towards automatic self-stabilization in the social system. The system is by itself not moving towards any sort of balance between forces, but is constantly on the move away from such a situation. In the normal case, a change does not call forth countervailing changes but instead supports changes which move the system in the same direction as the first change and much further. Because of such, circular causation as a social process tends to become cumulative and often gathers speed at an accelerating rate. See Gunnar MYRDAL, *Economic Theory and Underdeveloped Regions*, London: University Paperbacks, 1957, pp. 12-13.

[58] The theory of dependence is being contrasted to the "dependencia" theory which puts more emphasis on the external interventions of dependence rather than the internal one. It argues that external dependencies cause an internal structural deformation which perpetuates the external dependency. It starts with the analysis of the historical reality in which the political and military dependency of colonies facilitated the destruction of the indigenous lifestyle and culture, natural resources extraction, and forced integration into the global economic structure. For more of this, see M. WOHLKE, P. V. WOGAU and W. MARTENS, *Die neuere entwicklungstheoretische Bibliographic,* Edition der Iberomaerikana Reihe II, Bibliographische Reihe 2, Frankfurt: 1977.

facilitated by economic aid. As a whole, however, dependence theory concentrates on the explanations of the reality of underdevelopment but pays little attention to strategies for overcoming the situation. Implicit development here means liberation and the end of economic structural dependence.[59]

The concept of sustainable development has incorporated the goal of sustained economic growth especially for poor countries by putting emphasis on the end of economic structural dependence of the poor countries on the developed countries. In reality, this is easier said than done. Poor countries continue to seek aid and financial dole outs from developed countries especially those that have colonial ties with them.

2.4.4.8. Development Based on External Trade

The trade between countries—developed and developing countries—makes development possible. This is the contention of the theory of external trade. The developed countries offer industrial products to the developing countries and they get raw products (natural resources) from them. However, the structure of supply and demand is such that developed countries are able to reap more benefits from the exchange of goods than their counterparts. This unequal trade relationship is seen as one of the reasons for the economic backwardness of the developing countries.

It is stressed that the system of demand for raw materials is constant while the demand for industrialized goods is flexible. The technological means in the production of industrialized goods not only makes it possible for developed countries to increase their income but they gain more profit because of the flexibility of the demand of industrialized goods in the world market. This mechanism is basically

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[59] See Vincent FERRARO, "Dependency Theory: An Introduction," in *The Development Economics Reader*, ed. Giorgio Secondi, London: Routledge, 2008, pp. 58-64.

a problem of economic structural inequality between the developed and developing countries.[60]

Unfair trade has become one of the flash points of the debates especially in the era of globalization[61] wherein countries lift tariffs to facilitate greater movement of goods. Sustainable development espouses the same principle of increased trade between countries but it has encouraged more mechanisms to provide equal trading relationships.

2.4.4.9. Development and the Free Market

Development as understood from the perspective of the free market theory involves the interplay of economic, political and social factors.[62] At the present time, development is intimately tied to the globalization of the free market which is characterized in neoliberalism as a quantitative expansion of international trade and investments.[63] It represents a material and social restructuring of the organization of production, circulation and consumption on a global scale. The mobilization of surplus, investment, raw materials and resources, technology, production processes, labor processes, product mix, management styles and philosophy, and marketing and consumption patterns has become widely global.

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[60] Cf. Ràul PREBISCH (1959), "The Role of Commercial Policies in Underdeveloped Countries," *American Economic Review* 49, pp. 251-273.

[61] Globalization is a complex phenomenon; its scope and the scale of the issues involved are vast and encompassing. It is a system with integrative structures. It means that local and national governments eventually cede control of policy to the global institutions (primarily multinational corporations, but also including non-governmental, regional, or international organizations, such as the World Bank or the International Monetary Fund). Cf. Paul KENNEDY, *Preparing for the Twenty-First Century,* New York: Random House, 1993, pp. 48-52.

[62] See Daron ACEMOGLU, *Introduction to Modern Economic Growth,* New Jersey: Princeton University Press, 2009.

[63] Paul KENNEDY, *Preparing for the Twenty-First Century*, p. 48.

The rationale behind the concept of development based on the free market is basically coming from neoliberalism. The neoliberal ideology comes from the basic tenets of liberalism.[64] Neoliberalism as an ideology plays the backbone of promoting capitalism whether it is in industrial, commercial or financial sectors. One of its central ideas states that the market itself should ensure, without any restriction, the distribution of goods, services and investments.[65] This neo-

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[64] At the start of the 18th century, many societies around the world were greatly influenced by the rise of liberalism, a school of thought that promoted individual freedom and social progress. Political philosophers like Adam Smith and John Stuart Mill argued that society and the economy would flourish better when the government would limit its interventions. American economist and Nobel laureate Milton Friedman notes that there were changes in the meaning of liberalism over the passing of time; still, its basic principles are preserved and promoted. See Milton FRIEDMAN, "Liberalism," *Microsoft Encarta Reference Library* [CD-ROM], Wisconsin: Microsoft Corporation, 2003.

[65] This idea was advocated strongly by John Maynard Keynes who is perhaps the most influential theorist on the application of development on modern economics. He was a British economist whose ideas have fundamentally affected the theory and practice of modern economics. He built on and greatly refined his earlier work on the causes of business cycles, and is widely considered to be the most influential economist of the 20th century. His ideas are the basis for the school of thought known as Keynesian economics and its various offshoots. In the 1930s, Keynes spearheaded a revolution in economic thinking, overturning the older ideas of neoclassical economics that held that free markets would, in the short to medium term, automatically provide full employment as long as workers were flexible in their wage demands. He was credited with demolishing old notions such as "that wage earners were maximizers" or "that unemployment was voluntary." He advocated the use of fiscal and monetary measures to mitigate the adverse effects of economic recessions and depressions. Following the outbreak of World War II, Keynes' ideas concerning economic policy were adopted by leading Western economies. Keynes died in 1946 but during the 1950s and 1960s the success of Keynesian economics resulted in almost all capitalist governments adopting its policy recommendations. Keynes' influence waned in the 1970s, partly as a result of problems that began to afflict the Anglo-American economies from the start of the decade, and partly because of critiques from Milton Friedman and other economists who were pessimistic about the ability of governments to regulate

liberal approach essentially relies upon a four-way complementary process: liberalization, deregulation, privatization and reduction of social policies.

Liberalization is applied to the cost of products and services, which for one reason or another was set according to political or social criteria. It is also applied to the cost of public services such as education, transportation and those products subsidized by public authorities. Deregulation leads to the dismantling of public agencies that aim to set working conditions such as minimum salaries and working hours or protect collective properties such as the environment. Privatization consists of transferring to the private sector services that were previously provided by public entities. Thus, reduction of social policies and social programs is the strategy that consists of limiting access to some social programs and reduction of the amounts of welfare benefits.

One can immediately see the negative consequences of these strategies on the economies of developing countries especially on the living conditions of people and the environment. The 1997 financial crisis in Asia and Latin America for instance was directly linked to the problems of the financial and investment markets. The crisis was caused by the withdrawal of massive foreign capital, with investors searching elsewhere for better returns.[66] It was also due to the dismantling of various national control bodies over international monetary movements, achieved under the pressure of the International Monetary Fund and in tune with treaties like the North American Free Trade Agreement that have contributed to the creation of massive unstable capital flow. The financial crisis in Asia was followed by Russia in 1998, then in Brazil and Latin America

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the business cycle with fiscal policy. Cf. John Maynard KEYNES, *The General Theory of Employment, Interest, and Money,* San Diego: A Harvest Book, 1964, pp. 27-56.

[66] Daniel VILA, "Examining the Fallout from the Global Financial Crisis," *People's Weekly World,* December 6, 1997, p. 8.

in 1999.[67] In each case, the International Monetary Fund and the private financial institutions adopted the same formula: privatization of public services, cuts in social budget, increases in interest rates, and reduction in real wages. The implementation of such measures resulted in massive unemployment, increased poverty and social tension. This model of development then had caused a lot of problems in the whole spectrum of society.[68]

Although criticisms on the theory of development based on the free market abound, the theory had basically shaped the idea of sustainable development. The sustained focus on the fundamental dynamics of free business enterprises is very evident in sustainable

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[67] *Ibid.*

[68] It is worth noting that some development theorists, the so-called neo-Marxists, argue for an alternative model of development. Not everyone would agree with what one would read in Karl Marx's *Communist Manifesto* but hardly anyone could disagree with Marx's analysis and critique of capitalism in *Das Kapital*. Thus, after Marx, two veritable streams of thinking on development emerged: the socialist stream or that thrust of theorizing particularly among so-called neo-Marxists (Max Weber, Theodor Adorno, Herbert Marcuse, Richard Peet and others) that generally devoted themselves to the further critique of capitalism and elaboration and application of Marxist theory of political economy in the 20th century, and the neoliberal-capitalist stream or that orientation of theorizing (among the likes of John Maynard Keynes, Friedrich Hayek, Milton Friedman and Ayn Rand) that took upon themselves the goal of reforming/reinventing/humanizing capitalism from its crass origins and thus showing its more "human face" away from what Marx had drawn of it in *Das Kapital*. For Karl Marx, development occurred through the build-up of forces of production especially the addition of tools, machines and infrastructure to human labor power. Marx was convinced that at a certain stage of development, the material productive forces of society would come into conflict with existing relations of production and that from forms of development of the productive forces, these relations turn into their fetters. Marx then argues that it would begin the era of social revolution. The changes in the economic foundation could lead sooner or later to the transformation of the whole immense superstructure. See Ernest UNTERMANN, *Marxist Economics: A Popular Introduction to the Three Volumes of Karl Marx's "Das Kapital",* St. Petersburg, Florida: Red and Black Publishers, 1907.

development. The intricacies of the free market essentially characterize how sustainable development is being understood and implemented at the present time.

2.5. Critique of the Concept of Sustainable Development

Sustainable development is an appealing idea to practically everyone in the context of the search for environmental sustainability. However, given the history of the usage and meaning of "development" as discussed above, sustainable development is an alluring method masquerading as a desirable antidote to the environmental crisis. Sustainable development is essentially tied up with the environmentally destructive economic system which, as we have seen, stresses economic growth as its perennial goal. It has an intrinsic theoretical contradiction: sustainable development emphasizes the need to live within environmental limits but allows the retention of the optimistic idea of economic growth. The succeeding subsections expound these arguments.

2.5.1. The Focus on Economic Growth in Sustainable Development: A Problematic Focal Point

It is rather puzzling to think that the notion of "development," which did so much damage to the environment because of its propensity for economic growth and its exploitation of natural resources to sustain profit, had been attached to the concept of "sustainability," which is understood as long-term preservation of integral well-being that has environmental, social, economic, political and cultural dimensions.[69] It is argued that by putting the two terms together, what is established is the compatibility of the vision of sustained economic growth and "responsible" use of the environment for long-term ends. But economic forces, as we have seen, have stimulated mass consumption of non-renewable resources, producing and continuing to create problems for the environment. The idea of

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[69] Herman Daly commented that sustainable development as a concept is an "oxymoron." Cf. Herman DALY, *Beyond Growth: Economics of Sustainable Development*, Boston, Massachusetts: Bacon Press, 1996, p. 8.

sustainable development, to say the least, is a dubious idea to attempt to justify the continuance of a way of life which has generated the present environmental crisis.

Economic growth, considered intrinsic to the quest for sustainable development, necessarily involves environmental degradation. All materials, renewable and non-renewable, are in finite supply. To cite an example, the energy component in all manufactured goods and services, in production, processing and transport, is rendered intrinsically polluting and incapable of being recycled. The major sources of industrial energy are highly destructive to the environment. There is a limit to which the carbon dioxide produced by thermal power stations can be absorbed by trees. Once a forest has reached its threshold, it cannot any more absorb carbon dioxide. In turn, such trees should not be used for fuel because the stored carbon would be permanently locked up in them. Planting trees to make forests would, at most, just delay environmental degradation by a few years.

Even the so-called environment-friendly power technology that is hoped to sustain economic growth is in reality environmentally damaging. Even if renewable sources such as solar, wind and hydro power were to replace all thermal and nuclear power, these would still cause heavy environmental damage. Big dams displace people and submerge forests and fertile lands, large wind generators produce noise pollution, and tidal power barrages destroy sensitive coastal environments.

What economic growth and development had brought us is an environment which is in crisis: climate change, global warming due to the increase of greenhouse gases in the atmosphere especially carbon dioxide, depletion of the ozone layer, melting of the ice caps that could cause rising of sea water level which in turn could result in the prospect of environmental refugees, flooding, air, water and land pollution, water crisis and the problem of drinking water, drought, hazards of biotechnology, resource depletion and deforestation.

Economic growth that brings about a “high standard of living” implies high cost of pollution and resource consumption, a high

percentage of degradation to the environment. It is, literally, costing the environment. Every second that an electric light or appliance is left on, every centimeter that a vehicle is driven, every commercialized product and service used adds to environmental degradation. Economic growth or the maintenance of a high standard of living as exemplified in Western culture is irreconcilable with the existing environment. The rate of our consumption of the present natural resources, indeed, "compromises the ability of future generations to meet their own needs."[70]

What is clear in sustainable development is the preoccupation with economic growth and the pursuit of profit. In this case, the focus of economic growth would take human persons and the environment as mere factors of production and profit. It is, thus, fundamentally morally flawed. Reducing human persons and the environment to means to an end to accumulate profit is a serious moral issue. The search for profit should neither be the primary nor the last pursuit.

Indeed, new problems are created daily by new historical situations, new perspectives, and new organizational systems such as sustainable development. Taking into consideration Catholic Social Teaching, starting in *Rerum Novarum* up to the recent social encyclicals,[71] the Church had always emphasized the values, within the context of faith, of what it is to be human, the promotion of the dignity of the human person, equality in the social order, the issues of rights and justice, protection of the common good especially the environment, and not objectifying everything into profit for economic growth and development.

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[70] *Our Common Future…*, p. 41.

[71] See Gregory BAUM, "An Ethical Critique of Capitalism: Contributions of Modern Catholic Social Teaching," in *John Paul II and Moral Theology*, *Readings in Moral Theology,* No. 10, eds. Charles Curran and Richard A. McCormick, S.J., New York/Mahwah: 1998, pp. 245.

2.5.2. Measuring the Environment in Economic Terms

The pursuit of economic growth would value the environment primarily for its economic merit. It is doubtful that the argument that a sound and wholesome environment is essential for our survival and for the survival of all other living creatures be accepted by all economists. In Pearce's report, it is quoted:

> Economics throws light on the meaning of sustainable development because the environment and the economy necessarily interact.… In benefit estimation, money is used as a measuring rod, a way of measuring preferences.… As long as we do not forget that there will be some immeasurable gains and losses, the measurement of gains and losses in money-terms will turn out to be revealing and, we shall argue, supportive of environmental values and environmental policy.[72]

Putting a price tag on the environment is the root of the environmental crisis. The environment has lost its intrinsic value[73]

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[72] See David PEARCE, Anil MARKANDYA and Edward B. BARBIER, *Blueprint For A Green Economy*, London: Earthscan, 1989, pp. 22-29.

[73] The notion of the intrinsic value has become one of the points of debate among environmental groups. Many environmentalists give merely negative definitions of intrinsic value—i.e., by drawing a distinction between instrumental and intrinsic value, arguing that intrinsic value (value in itself independent of human valuing) is what remains after eliminating any instrumental values (instrumental value means that the environment is valuable only insofar as it is of value to humans). Others seem to argue simply that the only way to properly account for the way we value nature is to assume that natural objects have non-instrumental value, i.e., intrinsic value. The argument for intrinsic value however should start with the question "What is the ultimate goal of the things we value?" When looking at things we value, we have to be careful in distinguishing between what we value ultimately or in itself (e.g., intrinsic value) and those things we value simply because they lead to something we value (e.g., instrumental value). Thus the next question has to be: "Why do we value such and such?" If we answer along the lines that we value "A" because it leads to "B" (some further thing we value), then "A" is instrumentally valuable because it leads to "B." However, we might value "B" because it leads to "C", and so on. It can be thought that because

because its value is being measured in economic terms. In the 1991 encyclical *Centesimus Annus,* John Paul II aptly put the problem in this way:

> People think that they can make arbitrary use of the earth, subjecting it without restraint to their wills, as though the earth did not have its own requisites and a prior God-given purpose, which human beings can indeed develop but must not betray.[74]

We cannot reduce the environment to economic terms because the environment has its own good.[75] For John Paul II, the human

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of this process, we must ultimately get to something we value in itself, or intrinsically—that is, not because it leads to something else of value. In short, the chain of values must end somewhere. As it stands, however, this seems to be vague. Nevertheless, there is no doubt that there is a crucial issue involved. There are several questions that arise. For example, how is it that something comes to have value? How does something come to have intrinsic value? Can there be value (both instrumental and intrinsic) independent of the one who gives the value? What does it take to be a valuer? Arne Naess, the founder of the Deep Ecology Movement, argues that it is one's understanding that humans are the only species valuable in and of themselves. The environment has intrinsic value and has its own dynamic purpose. From the Christian theological perspective, however, it is argued that the environment has intrinsic value because it is God's creation; humans are only custodians and shepherds of God's creation. For more discussions, see Arne NAESS (1986), "The Deep Ecological Movement: Some Philosophical Aspects," *Philosophical Inquiry* 8, p. 31; George SESSIONS, *Deep Ecology for the 21st Century: Readings on the Philosophy and Practice of the New Environmentalism*, Boston & London: Shambala, 1995, p. 42; Warwick FOX, *Toward a Transpersonal Ecology: Developing New Foundations for Environmentalism*, New York: State University of New York Press, 1995, p. 91; Willard M. SWARTLEY, *The Earth is the Lord's: Essays on Stewardship*, New York: Paulist Press, 1978, pp. 22-44.

[74] JOHN PAUL II, *Centesimus Annus,* 1991, 37, at http://www.vatican.va/holy_father/john_paul_ii/encyclicals/documents/hf_jp-ii_enc_01051991_centesimus-annus_en.html (24.11.2014).

[75] Rodman argues that the concept of good in nature implies that one ought not to treat with disrespect or use as a mere means anything that has a *telos* or end of its own—anything that is autonomous in the basic sense of

person cannot use the goods of the earth as he or she wills because there is an order in the universe that must be respected.[76] God endowed his creation[77] with integrity and an equilibrium that is proper to it. In this light, human beings have the moral obligation to adopt a moral attitude toward the environment. This attitude is the attitude of respect[78] and not to use the environment for the sake of economic profit. Paul Taylor contends that it parallels the attitude of respect for persons in human ethics.[79] When we adopt the attitude of respect for persons as the proper attitude to take toward all persons as persons, we consider the fulfillment of the basic interests of each individual to have intrinsic value. We thereby make a moral commitment to live a

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having a capacity for internal self-direction and self-regulation. Plumwood also favors this approach. Moral consideration, she suggests, should be extended to anything which has an interest or good of its own, that is, to anything having a good, or end, or direction to which it tends or which it strives, and which is its own. See John RODMAN (1977), "The Liberation of Nature?," *Inquiry* 20, pp. 83-94; see also Val PLUMWOOD, *Feminism and the Mastery of Nature*, London: Routledge, 1993, pp. 20-27; Holmes ROLSTON III, *Environmental Ethics: Duties to and Values in the Natural World*, Philadelphia: Temple University Press, 1988, pp. 24-32.

[76] JOHN PAUL II, *Centesimus Annus,* 37.

[77] The notion of creation is understood to describe a holistic view of the cosmos. The Christian vision of the cosmos reveals the distinctiveness of all unique beings which spring from God, the Creator. The *Catechism of the Catholic Church* explains the initial statement of Genesis as describing three things: the eternal God gave a beginning to all that exists outside of himself; he alone is Creator; the totality of all that exists depends on the One who gives it being (*Catechism of the Catholic Church,* 290). For more discussion on this, see Paulachan P. KOCHAPPILLY, *Celebrative Ethics: Ecological Issues in the Light of the Syro-Malabar Qurbana*, Bangalore: Dharmaram Publications, 1999, pp. 371-379.

[78] See Paul TAYLOR, *Respect for Nature: A Theory of Environmental Ethics*, Princeton: Princeton University Press, 1986, pp. 308-310.

[79] *Ibid.*

certain kind of lifestyle in accordance with that relationship.[80] In this dissertation, I strongly point out that the lifestyle which is referred to would be virtuous living.

In living virtuously as a consequence of respecting the intrinsic value of the environment, we make a moral commitment to live out the virtues that will nurture the environment and our human community. The virtues (as explained in the next chapter), which are not tied to the obsession of profit and economic growth, would guide our treatment of one another and the environment. Living prudently, justly, steadfastly and moderately with faith, hope and charity should constitute our fundamental attitude. It should set the total framework of our relationship toward each other and the environment.

In the encyclical *Sollicitudo Rei Socialis*, John Paul II insists that humanity needs to respect the integrity and the cycles of nature, not according to our whims for economic development. The Pope argues for

> a holistic vision of creation, a vision of the cosmos as an orderly unity, which impinges upon humans the obligation to be aware of the interdependence of the different categories of being, whether living or inanimate animals, plants, the natural elements … and to recognize that humans cannot disrupt or break that order and interconnection wantonly.[81]

When we put a price tag on the environment, we rupture our relationship with it. We forget who we are; we forget that we have the moral responsibility to nourish the established harmony and interconnectedness.[82] We lose the awareness that as reasonable

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[80] See Max OELSCHLAEGER, *The Idea of Wilderness…*, pp. 105-106.

[81] JOHN PAUL II, *Sollicitudo Rei Socialis,* 1987, 3, at http://www.vatican.va/holy_father/john_paul_ii/encyclicals/documents/hf_jp-ii_enc_30121987_sollicitudo-rei-socialis_en.html (24.11.2014).

[82] See Paul SHEPARD, *The Tender Carnivore and the Sacred Game*, New York: Scribners, 1973, pp. 260-261.

creatures we are tasked to maintain the equilibrium that should exist between us and the other species of this planet. We should keep in mind that treating the natural resources of the environment as objects for profit would disrupt the harmony of interrelationship and interconnectedness.[83] We should not forget that we face the same basic conditions of existence with other species especially on the necessities for survival and well-being. Each existing organism is like us in having purpose of its own,[84] not because these organisms have value in economic terms.

2.5.3. Development as Integral Human Development

Integral human development should be the framework of development. This is the contention of Catholic Social Teaching. The series of Catholic Social Teaching introduces the important idea of "integral human development" which calls into question the equation of development with the maximization of economic growth.

Catholic Social Teaching suggests that development should seek to foster the total well-being of the human person. This broader or more integral understanding of development requires that attention be given to all aspects of human life. Attempting simply to maximize economic growth, Catholic Social Teaching contends, may in fact undermine other central elements of authentic human flourishing.

Integral human development, according to Catholic Social Teaching, promotes the good of every person and the whole person in the moral, cultural, economic, political, social and spiritual spectrum. This idea was introduced in the 1967 encyclical of Pope Paul VI, *Populorum Progressio*:

> Development cannot be limited to mere economic growth. In order to be authentic, it must be complete: integral, that

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[83] Alston CHASE, *Playing God in Yellowstone*, Boston: Atlantic Monthly Press, 1986, pp. 32-33.

[84] See John RODMAN, "The Liberation…," p. 96.

> is, it has to promote the good of every person and of the whole person.[85]

The anthropological locus of integral human development in Catholic Social Teaching is contrary to sustainable development's bias for economic development wherein economic growth and profit are the loci although they are within the ambit of the social and environmental continuum. For Catholic Social Teaching, the human person takes precedence over economic factors. This is why it consistently defends "every person and the whole person" from any threat of dehumanization and injustice because it is humanity's moral duty to do so.

In order to understand better Catholic Social Teaching's tradition on this particular point, I expound briefly each social encyclical's core teaching on development in the following subsections. I purposely intended to present the social encyclicals in chronological order because the idea of "integral human development" gradually evolved and was shaped by the context in which the social encyclicals were issued.

2.5.3.1. *Rerum Novarum*

While the idea of integral human development was not yet mentioned in this encyclical, Catholic Social Teaching's tradition that defends "every person and the whole person" is generally viewed as having begun with Pope Leo XIII's encyclical *Rerum Novarum* which was issued in 1891. While papal encyclicals on a variety of topics had been published in the century and a half prior to *Rerum Novarum*, Pope Leo XIII's document contained important ideas and themes that would provide the foundation for the Catholic Church's approach to modern social issues.[86] As a consequence of its groundbreaking

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[85] PAUL VI, *Populorum Progressio*, p. 14.

[86] The modern tradition of papal encyclicals was begun by Pope Benedict XIV in 1740. For an overview of the major themes of the pre-Leonine encyclicals, see Michael SCHUCK, *That They Be One: The Social Teachings of the Papal Encyclicals 1740-1989*, Washington, DC: Georgetown University Press, 1991.

content, this encyclical has received a highly exalted status within the tradition. Pope John XXIII, for example, asserted that *Rerum Novarum* "so effected for the first time an organization of principles, and, as it were, set forth singlemindedly a future course of action, that we may regard it as a summary of Catholic teaching, so far as economic and social matters are concerned."[87]

For Pope Leo XIII, personal morality and the teachings of the church were the keys to solving social problems. At the same time, however, the Pope was also aware that there may be situations in which the teachings of the church were not heeded. In these cases, he said, the state has a duty to intervene to protect the common good. Rejecting the laissez-faire arguments prominent at the time, Pope Leo XIII argued that "whenever the general interest of any particular class suffers, or is threatened with evils which can in no other way be met, the public authority must step in to meet them."[88] Above all, the Pope said, the state has an obligation to protect the rights of the poor and of workers:

> When there is question of protecting the rights of individuals, the poor and helpless have a claim to special consideration. The richer population have many ways of protecting themselves … those who are badly off have no resources of their own to fall back upon, and must chiefly rely upon the assistance of the State. And it is for this reason that wage earners who are, undoubtedly, among the weak and necessitous, should be specially cared for and protected by the commonwealth.[89]

In its defense of workers, and its affirmation of an important (but limited) role for the state in economic life, among other contributions,

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[87] JOHN XXIII, *Mater et Magistra,* 1961, 15, at http://www.vatican.va/holy_father/john_xxiii/encyclicals/documents/hf_j-xxiii_enc_15051961_mater_en.html (26.11.2014).

[88] LEO XIII, *Rerum Novarum*, 1891, 28, at http://www.vatican.va/holy_father/leo_xiii/encyclicals/do-cuments/hf_l-xiii_enc_15051891_rerum-novarum_en.html (26.11.2014).

[89] LEO XIII, *Rerum Novarum*, no. 29.

Rerum Novarum provided key themes that would be foundational for Catholic Social Teaching and would greatly impact the tradition's later explicit reflections particularly on the theme of development.

2.5.3.2. *Quadragesimo Anno*

The encyclical was published in 1931 by Pope Pius XI in commemoration of the 40th anniversary of *Rerum Novarum*. Like *Rerum Novarum, Quadragesimo Anno* mainly concerned itself with conditions in the modern industrial societies of Western Europe and North America. Much of *Quadragesimo Anno* consisted of a reaffirmation of the teachings of *Rerum Novarum*. Especially highlighted were the rights of workers, the duty of the state to protect the poor, and the serious flaws of both socialism and existing forms of capitalism.

Several new or heightened emphases were also present in Pope Pius XI's encyclical. For example, writing in response to the alarming concentration of wealth and power in the socio-economic realm, Pius XI calls for the reestablishment of a social order based on the principle of subsidiarity. The principle of subsidiarity places responsibility as close as possible to the people.[90] The people who form associations and who are most directly affected by a decision or policy should have an important role in the decision-making process. They should only be interfered with in order to support them in cases of need, and to help coordinate their activities with the activities of the rest of society with a view to the common good.

While still placing strong emphasis on social harmony, Pope Pius XI nonetheless affirmed a stronger role for workers' associations in actively defending workers' rights. He spoke of these associations as a means "of self-protection against oppression by the more powerful."[91]

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[90] It has to be noted that this principle of subsidiarity is relevant to the nature of Basic Ecclesial Community.

[91] PIUS XI, *Quadragesimo Anno*, 1931, 30, at http://www.vatican.va/holy_father/pius_xi/encycli-cals/documents/hf_p-xi_enc_19310515_quadragesimo-anno_en.html (27.11.2014).

In this encyclical, the Pope argued that socialism is fundamentally flawed because socialists failed to recognize the inherently social nature of human beings and the natural orientation of humans towards God.[92] At the same time, he argued that unrestrained capitalism has led to economic dictatorship, creating a situation in which immense power and despotic economic domination is concentrated in the hands of a few while the multitudes suffer.[93] Unregulated competition, the Pope said, permits the survival only of those who are the strongest. This often means those who fight most relentlessly are those who heed the dictates of conscience.[94] Pope Pius XI suggested the need for a frank and sincere return to the teaching of the Gospel as a solution to social ills.[95]

2.5.3.3. *Mater et Magistra*

Pope John XXIII, who issued the encyclical in 1961, reflected upon the changes that had taken place in the world since the issuance of *Quadragesimo Anno* thirty years earlier. He focused especially upon the industrialized nations, highlighting the rapid development of science and technology, the increased availability of consumer goods, and the creation of the social welfare state in these nations. However, reflecting on the rising faith in Keynesian economic ideas in the industrialized world, the Pope asserted that what was happening provided additional reasons why, to a greater extent than before, it is within the power of public authorities to reduce imbalances, to keep fluctuations in the economy within bounds, and to provide effective measures for avoiding mass unemployment.[96] Where appropriate activity of the State is lacking or defective, the Pope argued, commonwealths are apt

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[92] *Ibid.,* no. 118.

[93] *Ibid.,* nos. 109, 105.

[94] *Ibid.,* no. 107.

[95] *Ibid.,* no. 136.

[96] JOHN XXIII, *Mater et Magistra,* no. 54.

to experience incurable disorders, and there occurs exploitation of the weak by the unscrupulous strong.[97]

The Pope strongly pointed out that the workers should always be treated with dignity. It would be unjust if the human dignity of workers is compromised even if an economic order is able to produce vast amounts of goods whose distribution conforms to the norms of justice and equity.[98] What is of ultimate importance, the Pope emphasized, is the fostering of spiritual and moral values.[99] Otherwise human ingenuity will foster destruction rather than the enhancement of human dignity. Separated from God, the Pope declared, "man becomes monstrous to himself and others."[100]

2.5.3.4. *Pacem in Terris*

The central theme of this encyclical which was issued by Pope John XXIII in 1963 was an appeal to respect the common good[101] with an array of social, economic, political, and religious rights and corresponding obligations. These rights and obligations were viewed as the basis of world peace. The Pope emphasized the fundamental importance of social and economic rights, including the right to

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[97] *Ibid.,* no. 58.

[98] *Ibid.,* no. 83.

[99] *Ibid.,* no. 210.

[100] *Ibid.,* no. 215.

[101] Pope Benedict XVI emphasized this strongly in his encyclical *Deus Caritas Est*: "To love someone is to desire that person's good and to take effective steps to secure it. Besides the good of the individual, there is a good that is linked to living in society: the common good. It is the good of 'all of us' made up of individuals, families and intermediate groups who together constitute society. To desire the common good and to strive towards it is a requirement of justice and charity. To take a stand for the common good is to be solicitous for that complex of institutions that give structure to the life of society, juridically, civilly, politically and culturally." See BENEDICT XVI, *Deus Caritas Est*, no. 7.

food, shelter, medical care, and necessary social services.[102] All of these rights, the Pope said, are grounded in the God-given dignity and social nature of the human person.[103] At the core of the social/economic rights is the right to employment with decent working conditions and a just wage.[104] When persons are unable to work, however, the Pope stressed, society and state must guarantee that the basic needs of these persons are nonetheless met.[105]

Pope John XXIII very strongly warned against the abuses of aid, which strongly went with the idea of economic development, by the highly industrialized countries to poor countries. It can never be sufficiently repeated, he asserted, that aid should be given with the greatest respect for the liberty of the countries being developed, with respect for the moral and ethnic characteristics peculiar to each, and without any intention of political domination.[106]

2.5.3.5. *Gaudium et Spes*

The Second Vatican Council issued *Gaudium et Spes* in 1965 and took up the task of "scrutinizing the signs of the times and of interpreting them in the light of the Gospel."[107] This document shared many of the major themes of the social encyclicals of Pope John XXIII. Areas of overlap, for example, include similar understandings

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[102] JOHN XXIII, *Pacem in Terris*, 1963, 11, at http://www.vatican.va/holy_father/john_xxiii/encycli-cals/documents/hf_j-xxiii_enc_11041963_pacem_en.html (27.11.2014).

[103] *Ibid.,* nos. 9, 10, 31.

[104] *Ibid.,* no. 20.

[105] *Ibid.,* no. 11.

[106] *Ibid.,* nos. 123, 125.

[107] SECOND VATICAN COUNCIL, *Gaudium et Spes*, 1965, 4, at http://www.vatican.va/archive/hist_councils/i_vatican_council/documents/vat-ii_cons_19651207_gaudium-et-spes_en.html (27.11.2014).

of the innate dignity and social nature of the human person[108] and the important role of the state in overseeing and managing modern economic life.[109] The document expressed a generally optimistic view of the potential for "progress" based on advances in science and technology and viewed development in critical terms.[110] At the same time, however, it warned against materialistic consumerism and against neglect of the spiritual and social dimensions of life.[111]

Gaudium et Spes was critical in its assessment of the international economic order. It argued that numerous reforms of the global economy are needed, the primary purpose of which should be to remove as quickly as possible the immense economic inequalities which existed between countries and between regions and groups within countries.[112] In many cases, the Council pointed out, the inequalities were worsening.[113]

The document emphasized that the goods of creation are intended by God to be shared equitably by all. The principle of "universal destination of created goods," the document stated, places limits on the right to private property. God's intention that the earth's goods be shared by all also has implications for lifestyle choices. The Council argued that all persons have the responsibility to meet the needs of the poor not only by sharing from their superfluous wealth but also by sharing in ways that will require a simplification of lifestyle.

The document was clear in its serious assessment of the global economy. It placed a heightened emphasis on equality and it began a deeper exploration of the far-reaching practical implications of the

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[108] *Ibid.,* nos. 12, 25.

[109] *Ibid.,* no. 75.

[110] *Ibid.,* nos. 85-87.

[111] *Ibid.,* nos. 63, 86.

[112] *Ibid.,* nos. 63, 66.

[113] *Ibid.,* no. 66.

principle that the goods of the earth are intended to be equitably shared by all.

2.5.3.6. *Populorum Progressio*

As mentioned earlier, Pope Paul VI's 1967 encyclical *Populorum Progressio* introduced the concept of "integral human development" as a critique to the prevailing notion of development[114] at the time. But the notion of integral development was derived in large part from the pioneering thought of French economist L. J. Lebret.[115] The Pope argued that development cannot be confined simply to the economic realm. The primary goal of development should be "complete humanism."[116] Development should lead to the process of becoming "more human." Having access to adequate material goods is a necessary part of this process but values and activities such as love, friendship, social solidarity, artistic and intellectual endeavor, prayer, and contemplation are also crucially important.[117] Given this holistic understanding of development, the document warned of the danger that development as conventionally understood and practiced could lead to the destruction of much that is of enduring value in other cultures. Pope Paul VI warned especially of the possibility of the

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[114] The economist Barbara Ward notes that development economists in the 1960s had been blinded by "the euphoria of economic growth" and uncritical optimism concerning modernization and the workings of capitalism. What resulted from that kind of "development" became more painfully clear: worsened conditions for many of the poor, social upheaval, ecological damage, etc. See Barbara WARD, "Looking Back on *Populorum Progressio*," in *Readings in Moral Theology* Number 5: *Official Catholic Social Teaching,* eds. R. McCormick and C. Curran, New York: Paulist Press, 1986, p. 130.

[115] Lebret played an important role in the drafting of *Populorum Progressio*. He is described as an "eminent specialist" on development issues. For a discussion of Lebret's work, see Denis GOULET, "L. J. Lebret: Pioneer of Development Ethics," in *A New Moral Order: Development Ethics and Liberation Theology*, New York: Orbis Books, 1974, pp. 84-96.

[116] PAUL VI, *Populorum Progressio*, no. 42.

[117] *Ibid*., nos. 19-21.

breakdown of traditional moral and spiritual values, and the collapse of traditional social relations of kinship.

In the encyclical, the Pope argued that various structural factors in the international economic system serve to perpetuate the poverty of disadvantaged people in poor countries and serve to widen the economic gap between the rich and poor nations. In presenting his analysis of these structural factors, Pope Paul VI referred especially to colonialism's creation of a system in which many poor countries' economies were made to depend upon the export of one or two agricultural crops or other natural resources. The Pope reiterated the strong emphasis placed by the Second Vatican Council on the fact that the goods of the earth are intended for all.

2.5.3.7. *Octogesima Adveniens*

Octogesima Adveniens was the second social encyclical of Pope Paul VI. It was published in 1971. In it, the Pope asserted the need for local communities to engage in social analysis and to apply the principles of Catholic Social Teaching to their own varying social conditions.[118] Pope Paul VI was especially critical of the impact of transnational corporations on global economic, political, and social life:

> We can see new economic powers emerging, the multinational enterprises … which are largely independent of the national political powers and therefore not subject to control from the point of view of the common good. By extending their activities, these private organizations can lead to a new and abusive form of economic domination on the social, cultural, and even political level. The excessive concentration of means and powers that Pope Pius XI already condemned on the fortieth anniversary of *Rerum Novarum* is taking on a new and very real image.[119]

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[118] PAUL VI, *Octogesima Adveniens*, 1971, 4, at http://www.vatican.va/holy_father/paul_vi/apost_letters/documents/hf_p-vi_apl_19710514_octogesima-adveniens_en.html (27.11.2014).

[119] *Ibid*., no. 44.

What is important to note in this encyclical is the mention of ecological issues that appeared for the first time as an important concern in Catholic Social Teaching. "Man is suddenly becoming aware," Pope Paul VI states, "that by an ill-considered exploitation of nature he risks destroying it and becoming in turn the victim of this degradation.… This is a wide-ranging social problem which concerns the entire human family."[120]

2.5.3.8. *Justice in the World*

The document pointed out strongly the inadequacy of models of development centered upon the maximization of economic growth. The document was produced by the Synod of bishops in Rome in 1971. It reaffirmed and deepened the critical, structural analysis brought into the discussion of development by the previous encyclicals. The bishops criticized the detrimental impacts of these approaches on many important dimensions of human life, including spirituality and communal cohesion. The Synod reiterated concern about the negative ecological impacts of these growth-focused models:

> Such is the demand for resources and energy by the richer nations … and such are the effects of dumping by them in the atmosphere and the sea that irreparable damage would be done to the essential elements of life on earth … if their high rates of consumption and pollution, which are constantly on the increase, were extended to the whole of mankind.[121]

The document rejected trickle-down theories of development and the bishops argued that much greater stress needs to be placed on just distribution of wealth. The bishops asserted that moral appeals without concrete efforts to modify social structures are inadequate, emphasizing "the objective obstacles which social structures place in

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[120] *Ibid*., no. 21.

[121] SYNOD OF BISHOPS, *Justice in the World,* 1971, 11, at http://www.shc.edu/theolibrary/ resources/synodjw.htm (27.11.2014).

the way of conversion of hearts."[122] The document heightened the need for a critical, structural analysis of injustice. It emphasized the component of justice in Christian faith and in the institutional life of the Church, and it put greater stress on ecological issues.

2.5.3.9. *Evangelii Nuntiandi*

The document *Evangelii Nuntiandi* emphasized work for social justice as one of the essential components of development and in the church's evangelizing task. It was issued by Pope Paul VI in 1975. Evangelization, the Pope declared,

> involves an explicit message … about the rights and duties of every human being … about international life, peace, justice, and development—a message especially energetic today about liberation.[123]

What is important to note in this encyclical is the Pope's mention of basic ecclesial communities.[124] Commenting for the first time in papal teaching on basic ecclesial communities, Pope Paul VI affirmed the value and importance of these communities. At the same time, he strongly cautioned that such communities must always have a firm spiritual basis, and must remain in communion with the church's Magisterium, and must not become sectarian.[125]

2.5.3.10. *Laborem Exercens*

In his first social encyclical which was issued in 1981, Pope John Paul II proclaimed the necessity of respecting the "subjective

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[122] *Ibid.,* no. 16.

[123] PAUL VI, *Evangelii Nuntiandi,* 1975, 29, at http://www.vatican.va/holy_father/paul_vi/post_exhortations/documents/hf_p-vi_exh_19751208_evangelii-nuntiandi_en.html (27.11.2014).

[124] The Basic Ecclesial Community is used in this dissertation as an example to demonstrate the paradigm of sustainable community. It is explained in Chapter Three.

[125] PAUL VI, *Evangelii Nuntiandi,* no. 58.

dimension" of work and the "priority of labor over capital," arguing that human dignity must not be degraded for the sake of power or profit.[126] Grounded in an assertion that work is an essential feature of human dignity and it is a sharing with God in the task of creation, the Pope takes a very positive view of work. He sees the issue of work and respect for human dignity and rights of workers as being "a key, probably the essential key, to the whole social question."[127]

In the light of his concern for the dignity and rights of workers, Pope John Paul II strongly criticized both the liberal capitalism of the West and the so-called socialist systems of the East. In a later encyclical, he would refer to the socialist systems as being in reality forms of "state capitalism" due to their unacceptable treatment of workers.[128] According to the Pope, any system in which the worker "is treated as an instrument of production … whatever the program or name under which it occurs, should rightly be called 'capitalism.'"[129]

2.5.3.11. *Sollicitudo Rei Socialis*

The critique on the pervading dominance of erroneous and morally dubious theories of development was one of the strongest points in this second social encyclical of Pope John Paul II which was issued in 1987 to commemorate the 20th anniversary of *Populorum Progressio*. In it, the Pope reflected upon what has taken place in the world with regard to the quest for development in the past twenty years. Overall, the Pope presented a rather negative portrait of the prevailing situation, asserting that the plight of the world's poor had

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[126] JOHN PAUL II, *Laborem Exercens*, 1981, 12, at http://www.vatican.va/holy_father/john_paul_ii/encyclicals/documents/hf_jp-ii_enc_14091981_laborem-exercens_en.html (27.11.2014).

[127] *Ibid.,* no. 3.

[128] This criticism was cited in JOHN PAUL II, *Centesimus Annus*, no. 35.

[129] JOHN PAUL II, *Laborem Exercens*, no. 7.

"become notably worse" during the preceding two decades.[130] He devoted much attention to exploring what had gone wrong. The hopes for development, believed by so many, had not been fulfilled and had remained an illusion.

It is important to point out that the flawed models of development have to be corrected because these development models consistently put the central emphasis on economic growth to the neglect of many of the other crucial factors including issues of distribution and concern for social, spiritual, and ecological well-being.[131] The policies of both East and West, the Pope argued, are characterized by the quest for power and profit.

2.5.3.12. *Centesimus Annus*

Development has become "superdevelopment" where indifference has become its feature. This was the stinging critique brought forward by Pope John Paul II in this 1991 encyclical. The Pope asserted that the human inadequacies of capitalism and the resulting domination of things over people are far from disappearing.[132] In particular, Pope John Paul II highlighted the reality that many people, perhaps the majority today, live in conditions characterized by marginalization and exploitation, while a wealthy minority lives in a state of equally unacceptable "superdevelopment" characterized by crass materialism, wastefulness, apathy, alienation, and lack of spiritual values.[133] A lot of people, the Pope said, "are still living in conditions of great material and moral poverty."[134]

True development, the Pope stressed, will require "sacrificing the positions of income and of power enjoyed by the more developed

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[130] JOHN PAUL II, *Sollicitudo Rei Socialis,* 16.

[131] *Ibid.,* nos. 9, 15, 28-29.

[132] JOHN PAUL II, *Centesimus Annus,* 35.

[133] *Ibid.,* nos. 19, 33, 36, 41.

[134] *Ibid.,* no. 42.

economies."[135] The encyclical strongly emphasized the necessity of a change of lifestyles, of models of production and consumption, and of the established structures of power which today govern societies.[136] Pope John Paul II was especially forceful in his critique of "capitalist neoliberalism," in this encyclical accusing it of accumulating wealth for the few at the expense of the many:

> Various places are witnessing a resurgence of a certain capitalist neoliberalism that subordinates the human person to blind market forces.… From its centers of power, such neoliberalism often places unbearable burdens on less favored countries.… In the international community, we thus see a small number of countries growing exceedingly rich at the cost of the increasing impoverishment of a great number of other countries; as a result the wealthy grow ever wealthier, while the poor grow ever poorer.[137]

The Pope also highlighted the necessity of "adequate regulation" and guidance on the part of the global community, along with a greater sharing of wealth through development aid, debt relief and other redistributive measures. Several examples that the Pope cited as being in need of regulation include measures to ensure a just wage for all workers, substantive reforms of the international trading system to guarantee fair rules of trade, legal recognition of the right to unionize, legislation to prevent the exploitation of child labor, and strong laws to protect the environment.[138]

2.5.3.13. *Compendium of the Social Doctrine of the Church*

This huge document was published in 2004 by the Pontifical Council of Justice and Peace and it encompasses the themes

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[135] *Ibid.,* no. 52.

[136] *Ibid.,* no. 58.

[137] *Ibid.,* no. 45.

[138] *Ibid.,* no. 48.

brought out by the preceding social encyclicals. To understand the unprecedented nature of this document, one must recall that over the past century the principles and themes of the previous social encyclicals have been articulated with respect to particular occasions or social circumstances. The Compendium is an attempt to integrate the themes together with the structure and scope of the entire body of social teaching in a systematic and definitive way.

The Compendium is organized into three parts. Part 1, in two chapters, reviews the background theological doctrines pertinent to Catholic Social Teaching, focusing on God's activity in the created order and the mission of the Church, before setting forth to the four foundational "principles for reflection": the dignity of the human person, the common good, subsidiarity, and solidarity. An entire chapter is devoted to human dignity, clearly the most important of these principles, while the fourth and final chapter of part 1 discuss the remaining three principles. Part 2 applies "criteria for judgment" with chapter-length treatments of seven key aspects or institutions of human society: the family, human work, the economy, civil society, the international community, the environment, and military conflict. Part 3 provides guidance for social action for church leaders and the lay faithful. A short concluding chapter restates the ideal of Catholic Social Teaching which is "to build a civilization of love."

What is most significant to note in the document is its dedication of an entire chapter to environmental issues.[139] It encourages Christians to view the environment with an affirmative attitude, to avoid a gloom-and-doom mentality, and to recognize God's presence in nature. It calls to mind the opening of the Book of Genesis, in which the human being is placed at the summit of all beings and is entrusted by God with caring for all of creation. It emphasizes that

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[139] Chapter Ten of the *Compendium* is entitled "Safeguarding the Environment." See *Compendium of the Social Doctrine of the Church*, 466.

> the relationship of man with the world is a constitutive part of his human identity. This relationship is in turn the result of another still deeper relationship with God.[140]

It further stresses that we should look to the future with hope, "sustained by the promise and the covenant that God continually renews,"[141] noting that in the Old Testament we see how Israel lived its faith in an environment that was seen as a gift from God. Proceeding to the New Testament, it points out that Jesus makes use of the natural elements in some of his miracles and reminds the disciples of his Father's providence. In Jesus' death and resurrection, "Jesus inaugurates a new world in which everything is subjected to him and he creates anew those relationships of order and harmony that sin had destroyed."[142]

The document also stressed that progress made by science and technology is for the purpose of uplifting our lives so that in that way it is in accord with God's will. It argues that the Church is not opposed to scientific progress, which is a part of a God-given human creativity. What it is stressing is the truth that "a central point of reference for every scientific and technological application is respect for men and women, which must also be accompanied by a necessary attitude of respect for other living creatures."[143] Thus, human beings' use of the earth should not be arbitrary and needs to be inspired by a spirit of cooperation with God. To forget this is to reduce the environment into "mechanistic terms," often accompanied by the false idea that its resources are unlimited, and it would lead to seeing development in a purely material dimension, in which first place is "given to doing and having rather than to being."[144]

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[140] *Ibid.,* no. 452.

[141] *Ibid.,* no. 451.

[142] *Ibid.,* no. 454.

[143] *Ibid.,* no. 459.

[144] *Ibid.,* no. 462.

The document also warned of going to the other extreme of attributing absolute value to the environment. It pointed out that an ecocentric or biocentric vision of the environment would fall into the error of putting all living beings on the same level, ignoring the qualitative difference between humans, based on the dignity of the human person, and other creatures. The Compendium emphasizes that the key to avoid such a mistake is to maintain a transcendent vision. Acting responsibly toward the environment is more likely to happen when we remember God's role in creation. Christian culture, the document explains, considers creatures as a gift from God, to be nurtured and safeguarded. Caring for the environment falls within a responsibility for ensuring the common good, in which creation is destined for all. The human community, the Compendium stresses, has the responsibility for the future generations.

On biotechnology, the Compendium comments that the possibilities offered by biotechnology are a source of hope but these also raise alarms. As a principle, the document stresses, the Christian view of creation accepts human intervention because nature is not some sort of sacred object that must be left alone. But nature is also a gift to be used responsibly and, therefore, modifying the properties of living beings must be accompanied by a careful evaluation of the benefits and risks of such actions. Moreover, biotechnology needs to be guided by the same ethical criteria that should orient our actions in the social and political spheres of action. And the duties of justice and solidarity are also to be taken into account.

Regarding the application of the principles of justice and solidarity for biotechnology, the Compendium asks for "equitable commercial exchange, without the burden of unjust stipulations."[145] It points out strongly that with the concern for making a legitimate profit, the business of biotechnology should keep in mind the common good.

Pursuing the principle of the common good and of sharing the earth's resources, the Compendium reminds that God created the

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[145] *Ibid.,* no. 475.

goods of the earth to be used by all. It says that "they must be shared equitably, in accordance with justice and charity."[146] Emphasizing that environmental problems are often connected with poverty, the Compendium explains that the poor are unable to cope with problems such as the erosion of farming land because of economic and technological limitations. And many poor people live in urban slums, afflicted by pollution. The document stresses that "in such cases, hunger and poverty make it virtually impossible to avoid an intense and excessive exploitation of the environment."[147] The answer to the problem, the Compendium insists, is not the policies of population control that do not respect the dignity of the human person. It argues that population growth is "fully compatible with an integral and shared development."[148] Development should be integral so that it could ensure the true good of all.

The Compendium also appeals for appropriate lifestyles to save the environment. It stresses that at the individual and community level, the virtues of sobriety, temperance and self-discipline should be practiced. It argues that we need to break with a mentality based on mere consumption, as well as be aware of the ecological consequences of our choices.

As Christians endowed with the moral responsibility for the environment, the Compendium urges that our action toward the environment should be characterized by gratitude and appreciation. It contends that we should always remember that the world reveals the mystery of God who created and sustains it. Rediscovering this profound meaning of nature not only helps us to discover God but is also the key to acting responsibly toward the environment.

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[146] *Ibid.,* no. 481.

[147] *Ibid.,* no. 482.

[148] *Ibid.,* no. 483.

2.5.3.14. *Caritas in Veritate*

Pope Benedict XVI presented integral development of the human person and its significance for the realization of love in truth as one of the themes in this 2009 encyclical. As a critique of the materialistic view of development, the Pope argued that development requires a transcendent vision of the person. The theological stress in this encyclical was much emphasized. The Pope argued that the idea of development needs God because without God, development is either denied, or entrusted exclusively to man, who falls into the trap of thinking he can bring about his own salvation, and ends up promoting a dehumanized form of development.[149] Clearly, the tone of the arguments is in line with Pope Paul VI's encyclical *Populorum Progressio*. The Pope referred to the "development of the whole person and of all the person," as Pope Paul VI formulated it.

The document brings back the argument to the need for a holistic approach to the interconnected problems that the present generation is facing today. To quote again:

> Our duties towards the environment are linked to our duties towards the human person, considered in himself and in relation to others. It would be wrong to uphold one set of duties while trampling on the other. Herein lies a grave contradiction in our mentality and practice today: one which demeans the person, disrupts the environment and damages society.[150]

What is underlined in the frame of these arguments is the strong critique on the dominant paradigm of development that compartmentalizes everything and treats the human person, society

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[149] BENEDICT XVI, *Deus Caritas Est*, no. 11.

[150] The *Compendium of the Social Doctrine of the Church* sharply points this out as well: *"Care for the environment represents a challenge for all of humanity. It is a matter of a common and universal duty, that of respecting a common good."* See *Compendium of the Social Doctrine of the Church*, 466; BENEDICT XVI, *Deus Caritas Est,* no. 51.

and the environment as entities subservient to economic growth and development.

2.6. Key Themes of Catholic Social Teaching as Points of Critique of the Concept of Sustainable Development

Catholic Social Teaching raised very important points that are relevant to the critique of sustainable development. Although the points being argued are not directly related to the whole concept of sustainable development (since sustainable development is a relatively recent concept), these are directed to the notion of "development" which is an inseparable part of the whole principle of sustainable development.

As highlighted in the discussion above, the following key themes prove that the concept of sustainable development is insufficient as a paradigm for environmental sustainability:

a. The only true development is integral human development. For Catholic Social Teaching, integral human development is holistic, having moral, economic, social, cultural, spiritual, and environmental components, and consists of all that enables persons to become more fully human. Sustainable development has only a three-fold focus: economic growth, social equality and environmental protection.

b. Equating development simply with economic growth is morally unacceptable. The commercialization of almost every aspect of life, of the human person, of the environment, of social structures, is not in line with the principles of Christian morality. It is morally flawed because human persons, the environment and society are to be treated as subjects, not objects, of development. Propensity for economic growth is undermining the essential moral, social, and religious values of life. While it is crucial that the basic material needs of all be met, great emphasis must be placed on "being more," not simply on "having more."

c. All nations whether rich or poor are in need of integral human development. In the richer nations, significant levels of poverty and marginalization still exist, which need to be overcome. Moreover, while many in these nations possess ample material goods, fundamental problems exist especially on moral indifference (which could be seen in the apathy towards the plight of the poor), on social degeneration (as manifested in individualism and the breakdown of family and community relations) and on religious lethargy (religious indifference and preoccupation with material goods).

d. A central principle of integral human development is that the goods of the earth are intended for all. The universal destination of goods implies that there is the need for significant lifestyle changes on the part of those who possess more than they truly need in a world in which others lack necessities. Thus, individual and collective consciences should be formed to nurture the moral value of the common good in which all communities should achieve all conditions that would make possible for all people to come to their full potential as persons and to become the persons God intends them to be (1 Cor 12:7).

e. To work for integral human development is a moral and religious responsibility because God is concerned with the integral well-being of each human person.

f. Human beings are to be subjects of development, not its objects. Sustainable development which perpetuates economic development's propensity for economic growth tends to make human beings, especially the poor and powerless, workers, instruments for profit.

g. It must be stressed that the rights of the poor (especially the right to participation) should be respected and that their basic needs are met; solidarity and subsidiarity should be the rule of every human community.

h. Without authentic, integral human development, peace in the global and local communities will not be truly attainable because the only true basis of peace is justice, not solely on sustainable development's stress for material well-being, social equity and environmental protection.

The key insights of Catholic Social Teaching constitute the central tenet of the Christian view of integral human development which is synthesized in John 10:10—Jesus came … so "that they may have life, and have it abundantly." Life in abundance with Jesus means that there is no deprivation of the moral, economic, social, cultural, spiritual, and environmental aspects of life. Jesus warned about the dangers from the attachment to wealth and the heedless acquisition of material possessions (Lk 12:15). He preached the blessings that come to the poor (Lk 6:20). He said that we will have to render an account for all that has been entrusted to us (Mt 25:14ff). In these ways, Jesus urges us to have a different way of living not based on a lifestyle of consumption, which sustainable development espouses, but upon the prudent use of the goods of this planet that "God has entrusted to us."[151]

2.7. Conclusion

The reconciliation of the goals of economic development and social stability with the earth's environmental limits over the long term is the foundational principle of sustainable development. It is indeed a laudable idea. It purportedly offers the global community a new vision of economic development, one which supposedly strikes a balance between economic goals, social needs and environmental protection. The old vision of the "affluent society" is supposed to be gone because sustainable development's new vision proposes a "sustainable society" in which there is a balanced striving for all human values, whether material or intangible, in harmony with the environment.

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[151] See A. PEREZ DE NUCCI (1995), "La urgencia de la ecologìa: ética y medio ambiente," *Cuadernos de bioética* VI(24), pp. 399-406.

The task of sustainable development, however, as clearly emphasized by the Brundtland Report in *Our Common Future*, is "to make way for a new era of economic growth."[152] Like most theories of "development," the "new era" will be marked by economic growth. In other words, the concept of sustainable development does not offer a change of paradigm in development discourse.

As argued in this section, the concept of sustainable development has sidestepped the critically important moral dimensions of environmental sustainability which would call into question the whole framework of the notion of sustainable development. The controversial point which is at the center of sustainable development is its perpetuation of the priority of economic growth which in reality makes the other areas—social and environmental aspects—supporting priorities. Of the three supposedly equal pillars of sustainable development, economic growth is the top priority.

It is needless to say that economic growth is an essential part of the framework of sustainable development. It is considered intrinsic to the quest for sustainable development. But Catholic Social Teaching provides much insight into the harmful aspects of economic growth as it has been conventionally pursued. Catholic Social Teaching's important idea of "integral human development" is a stinging critique on the equation of development with the maximization of economic growth. It argues that development should seek to foster the total well-being of the human person. It means that a more integral understanding of development requires that attention be given to the moral, religious, environmental, and social aspects of human life.

At the core of Christian life lies the two-fold commandment of love of God and neighbor (Lk 10:27). The environmental crisis challenges us to love God by loving his creation, not to abuse it, and to love our neighbor especially the future generations who will bear the brunt of the environmental disaster. Environmentalists have long linked the modern environmental crisis with a crisis of the human

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[152] Cf. *Our Common Future*….

spirit—of the heart and soul. Rightly so, Pope John Paul II called it a moral crisis. We no longer experience our co-belonging with nature in such a way that we are willing to change our lifestyles in order to build a sustainable future. What we need to do indeed is to address the roots of the problem. We have to find ways to shift our core values and paradigms so that we can have a meaningful and fulfilling relationship with the environment.

The point that has to be addressed then is what is going to bring about the change and the transformation that are needed. Sustainable development could not bring about this transformation. As argued in this paper, sustainable development falls short of its intended goal. Its provenance in perpetuating the materialistic model makes its ethical call to sustain the environment ultimately a hollow, even a meaningless, call. At the core of its concept, profit would still rule supreme at the expense of the environment.

Since sustainable development is not the appropriate paradigm for environmental sustainability due to its inadequacy, it is imperative that we have to find another one. This paper proposes that the paradigm of sustainable community is the paradigm that is needed. I argue that fundamental, significant and lasting environmental transformation will occur only when avenues are created for people to connect morally and spiritually with the environment. When human beings in the community live virtuously with a fundamental relationship with one another and with the Creator, environmental sustainability is possible. This is the topic of the next Chapter.

CHAPTER THREE

SUSTAINABLE COMMUNITY AS A PARADIGM FOR ENVIRONMENTAL SUSTAINABILITY

> *We are losing our attitude of wonder, of contemplation, of listening to creation and thus we no longer manage to interpret within it … the rhythm of the love-story between God and man.* — Pope FRANCIS, *World Environment Day*, June 5, 2013

3.1. Introduction

The environmental crisis demands that we need to explore all necessary means for how to deal with the environmental catastrophe in a right way. Finding the appropriate paradigm is crucial. Sustainable development proved to be inadequate and flawed. In identifying correctly the roots of the environmental problem, we have to look for other paradigms, especially a moral one that could address effectively the environmental crisis we are facing. This dissertation proposes that the moral paradigm would be sustainable community.

Sustainable community is about having a right relationship with one another and the environment. It is about integrating into one our fundamental views about the world, our relationship with one another and our place in the web of life. An ecological relationship is right when human beings deal with each other as subjects and they treat the environment as an integral part of their whole being. The paradigm of sustainable community eliminates the perception of separation

(subject-object)[1] between the human community and environment, between the economic and moral realms, and between the spiritual and physical dimensions. It helps us overcome the environmental crisis by helping us reach the level of wholeness which is needed for environmental sustainability.

In this Chapter, we begin with the concept of sustainable community which demonstrates its significance as a paradigm for environmental sustainability. It is contrasted with the notion of sustainable development to show that the two paradigms differ substantially in their approach to solve the environmental crisis. The awareness that *a)* there is an inseparable relationship between human beings and the environment, and that *b)* sustainable community recognizes the intrinsic value of each human being and the environment, makes the suitability of sustainable community for environmental sustainability convincing.

To have a clear understanding of the word *community*, its concept, etymology, and historical background are also explained. There are varied interpretations of the notion of community. This research takes those points of view that would help us to arrive at a better understanding of the term.

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[1] Martin Buber used the *I-It* framework to explain the cause of the environmental crisis. Since the start of the Industrial Revolution, the environment had become an object to be exploited for economic profit. The expansion of industrial technology largely prevented humanity from respecting the environment as being more than a standing economic reserve. The absence of such respect, Buber argued, has failed to prevent humankind from engaging in the over-exploitation and wanton despoliation of the environment. It is precisely this over-exploitation and wanton plundering of the environment that has brought about the environmental crisis. Buber proposed the *I-Thou* framework to recover respect for the environment. In the *I-Thou*, there is relationship of mutuality based on the principle of respect. See Martin BUBER, *I and Thou*, translated by Walter Kaufmann, New York: Touchstone, 1970, pp. 15-42.

The section on the significance of virtues for communal and environmental sustainability analyzes the nature of virtue, its place in the discipline of virtue ethics and the particular moral virtues (prudence, justice, fortitude and temperance) and theological virtues (faith, hope and charity). It is the argument of this research that environmental sustainability could be achieved when the human community is itself sustainable. The logic of this idea is anchored in the argument that when human beings living in a community become prudent, just, courageous and moderate with each other, they concomitantly relate with the environment in the same way.

It is also explained in this section that the cultivation and practice of the moral virtues is sustained by the theological virtues of faith, hope and charity. In that manner, the consistency of living virtuously could lead the individual and the community to attain the sense of the sacred. The sense of the sacred is the recognition that God is the owner of everything. In that way, human beings care for fellow human beings and the environment as God cares for them.

In the last part of the Chapter, taking the Basic Ecclesial Community as a model, this research demonstrates that the paradigm of sustainable community is possible and its principles applicable for environmental sustainability. The Basic Ecclesial Community which exists as part of the parochial structure of the Catholic parishes throughout the Philippines has a particular dynamism in which its members have heightened awareness of communion, belonging and responsibility for one another. Education for environmental sustainability has to start from small communities. It is important that we have to "think globally but act locally."

3.2. The Concept of Sustainable Community

Sustainable community is primarily about having a vision of a right relationship with the environment. Vision is the mental anticipation of where we want to be and what we want to do. It tells us where we are going. Sustainable community's vision is to live prudently, justly, steadfastly, moderately and as good stewards to one another and the environment for communal and environmental sustainability.

A sustainable community focuses on the deeper questions regarding the environmental problem. It does not concentrate on the question of environmental policy, nor on technological intervention, economic development, and scientific advancement to cope with the environmental crisis. Its frame of reference does not refer to strategies on how to deal with the symptoms of the crisis but on questioning and seeking out the underlying causes. The focus of sustainable community is the need for moral and ecological conversion that will turn the environmental crisis around.

3.2.1. A Sustainable Community that Focuses on the Deeper Causes of the Environmental Crisis

While the dominant paradigm of sustainable development focuses mainly on "*how*" to manage the effects of environmental degradation, the paradigm of sustainable community stresses finding answers to the question "*why*" there is environmental crisis in the first place. While sustainable development emphasizes sustained material prosperity of people as the measure of economic growth and development, sustainable community stresses how people should live fully by nurturing the moral, spiritual, environmental, economic and social dimensions of life.

As we have seen in the previous chapter, sustainable development is based on the core premise that all environmental problems are manageable. The environment is something to be controlled by human ingenuity and to be utilized more efficiently for economic benefit. From this perspective, solving the environmental problems is limited to economic and technological interventions. This effort to palliate human impacts, rather than probe and address the underlying causes, points only to the need of finding superficial solutions. By narrowing down the scope of the problem, sustainable development perhaps inadvertently reduces the supposedly radical solutions to a myopic point of view.

Sustainable community adopts a broader and long-term view. Being doubtful about the economic and technological maneuvering, being critical of the idea of limitless economic growth, and being

opposed to measuring the environment in economic terms, the paradigm of sustainable community challenges the proposed solutions of sustainable development. Drawing on a fundamental premise that everything in this planet has intrinsic value emanating from God, the paradigm of sustainable community argues that the flourishing of the environment and of human beings are fundamentally intertwined in a non-separable relationship.

3.2.2. A Sustainable Community that has an Intertwined Relationship with the Environment

As mentioned, the remedy for environmental problems has to be sought by identifying and responding to the complex root causes of the ecological crisis. The paradigm of sustainable community calls for questioning every human practice, assumption, and value because whatever happens to the environment directly affects every human being and the community. Indeed, as Pope John Paul II said,

> the search for solutions to the present ecological crisis cannot be separated from our basic worldview, from … our relationship to all of creation.[2]

It is clear that one of the root causes of the environmental crisis is the deep disconnection of human beings' core beliefs and actions from their relationship with the earth. Human beings in general do not think consciously how their practices and everyday lifestyle-choices harm the environment. It is a disconnection that *Gaudium et Spes* pointed out:

> a disconnection that leads humanity … to fall into disharmony with oneself, with others, and with all created things.[3]

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[2] JOHN PAUL II, "Peace with God the Creator, Peace with All of Creation," Message for the Celebration of the 23rd World Day of Peace, Rome, 1989, Section II.

[3] SECOND VATICAN COUNCIL, *Gaudium et Spes*, 13.

In this regard, the paradigm of sustainable community demands that human beings should not only focus on how to formulate environmental policies to address the environmental crisis but primarily on changing their basic worldview, values and lifestyle in addressing the environmental problem.

Our worldview should start from the truth that we share with other species a common relationship with the earth. Our belonging to the animal species is a fundamental feature of our existence.[4] We ought to keep in mind that in relation to our planet's natural ecosystems we are but one species among many. We acknowledge that we have the same process of origin. The laws of genetics apply equally to all of us as biological animals and as organisms. In this light, we consider ourselves as one with the rest of nature.[5] We face the same basic conditions of existence that impose necessities on us for survival and well-being. Each animal, plant, or the non-living entity is like us; they have a particular purpose.[6]

The possibility of the extinction of a myriad of species, a possibility that starkly confronts us in our contemporary time, makes us aware of the urgency to recover the moral attitude of respect for other creatures. This is precisely because the well-being of the human community is fundamentally interconnected with the well-being of the rest of the non-human entities. The survival of the human species is intimately intertwined with the survival of other species on earth.

3.2.3. A Sustainable Community that Recognizes the Intrinsic Value of the Environment

Acknowledging the intrinsic value of the environment is one of the exigencies for environmental sustainability. It provides the fundamental impetus for the human community's cultivation and

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[4] See Paul SHEPARD, *The Tender Carnivore and the Sacred Game*, pp. 260-261.

[5] Alston CHASE, *Playing God in Yellowstone*, pp. 32-33.

[6] See John RODMAN, "The Liberation…," p. 96.

practice of the moral virtues of prudence, temperance, justice, and fortitude and the sense of the sacred because the environment is not the human beings' possession. God bestows on human beings the task as stewards of the earth but not to own it. Thus, the human community has to possess the moral commitment to live a lifestyle based on the practice of the moral virtues that abhor abusing the environment to satisfy the insatiable thirst for economic growth and development.

The intrinsic value of the environment has its origin from God. "In the beginning, God created the heaven and the earth" (Gen 1:1). "The earth is the Lord's, and everything in it, the world, and all who live in it" (Ps 24:1). As an act of pure love, God created the world and God "founded the earth to endure" (Ps 119:90-91). After God's creation of the earth, God gave human beings the responsibility over creation: "Let them have dominion over the fish of the sea, and over the birds of the air, over the cattle, and over all the earth" (Gen 1:26). Dominion, however, is understood in the context of stewardship. Human beings are stewards of creation that has intrinsic value because God is its owner.

Since human beings are only stewards of the environment, the human community should recognize the limitations of the use of natural resources considering the delicate ecosystem of the environment. It means the human community needs to abide by the laws of the balance of nature. The balance of nature embodies God's careful plan for the earth, its intrinsic value to endure so that it could last for all generations.

3.3. The Notion of Community

The term *community* is often used to refer to a setting in which people claim a particular belonging. It means that the members of the community have something in common with each other and which also distinguishes them in a significant way from members of other existing groups. The notion of community thus implies similarity.

Since community indicates similarity, it also implies commonality. But commonality need not be uniformity. It is a commonality of forms

(ways of behaving) in which the content (meanings) may vary among its members. In other words, community is enriched by diversities of expressions and the coherent ways of behaving by its members.

3.3.1. Etymology of Community

The word *community* comes from the Latin term *communitatus*. It is made up of three elements: *com*—a Latin prefix meaning with or together, *munis*—which means exchanges that connect and *tatus*—a Latin suffix meaning small or local.[7]

The well-known German sociologist Ferdinand Tönnies made a distinction between the terms *community* (*Gemeinschaft*) and *society* (*Gesellschaft*). Tönnies argued that community is presumed to be more cohesive within the context of the larger society due to the presence of shared goals. He added that family and kinship could be expressions of community but shared characteristics of belief or values are larger in the sense of community than kinship.[8]

Whenever the sense of community exists, it is assumed that freedom of expression and the sense of belonging would exist as well. The community would pursue its own course as members become free enough to share and secure enough to get along. The sense of shared values becomes the fabric that binds the community together.

3.3.2. A Short Historical Background of the Notion of Community

The idea of community can be traced back to Aristotle's concept of a good *polity* or society. For Aristotle, the *polis* is the place in which commonly agreed internal arrangements defined an area where virtues are held as foundational principles. In this sense the key characteristic

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[7] See Adrian LITTLE, *The Politics of Community: Theory and Practice*, Edinburgh: Edinburgh University Press, 2002, pp. 5-10.

[8] See Ferdinand TONNIES, *Community and Society: Gemeinschaft und Gesellschaft*, translated by Charles O. Loomis, New York: Dover Publications, Inc., 2002, pp. 34-38.

of the good polity has to be found in the established arrangements which define relationships.[9] Aristotle identified the *polis* as the venue for the development of virtues associated with community in contrast to other forms of association such as the family or the village.

Aristotle's idea of the concept of the *polis* is important in our understanding of the idea of community because he highlighted the importance of the internal relations within the *polis*. Rather than focusing on a strict definition of the group of people who constituted the *polis*, Aristotle attached primacy to the virtues that characterized the mode of association. The reason could be that Aristotle employed a teleological approach to describe the nature of the ideal *polis*. Aristotle recognized that members of the (political) community or the *polis* may come and go but the virtues would bind the past, present and the future of the community. This point has an important implication in our discussion of the community's practice of the moral virtues for environmental sustainability.

From then on, the Aristotelian notion has become the focal point for propagating visions of cohesive societies. However, since the rise of liberalism, there had been heated debates about individual freedoms and rights in relation to the social context in which communities exist. In the work of Enlightenment philosophers such as Paine and Rousseau, the concepts of freedom and rights have been bound up with conceptual arguments about the meaning of community and the constitution of the good society.[10] This argument was further heightened significantly with industrialization. Ferdinand Tönnies and David Émile Durkheim studied the effects of industrial societies on traditional associational relationships. Their focus was on the ways in which industrialization, urbanism and the rise of the modern state impacted upon traditional forms of community.[11]

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[9] Adrian LITTLE, *The Politics of Community…*, pp. 23-42.

[10] *Ibid.*

[11] *Ibid.*

Ferdinand Tönnies provided an interesting argument on the nature of community when he distinguished the sphere of community (*Gemeinschaft*) from society (*Gesellschaft*). For Tönnies, the sphere of community involves a small-scale but close relationship between members of the community. This thought re-echoed Aristotle's conceptualization of the village. Society or association, on the other hand, has a broader sphere which, following the course of the Industrial Revolution, had been formed by the process of urbanization and the growth of the city. In Tönnies' point of view, this was a questionable development in which community values of kinship and cooperation were eroded.

For David Émile Durkheim, modernity created a natural division of labor that facilitated how individuals acquired organic solidarity. His concern for community concentrated on the need for inclusive communities in which social bonds of mutual respect and care are safeguarded. He further argued that a community is an integrative institution that should play an important role in the evolution of organic social relations. He stressed that the function of the community is ultimately to develop and protect certain values.[12]

The thoughts of Aristotle, Tönnies and Durkheim regarding the notion of community are relevant in our understanding of community. As they have pointed out respectively, virtues and values exist in the context of the community and these have to be safeguarded and nurtured. The nurturance and practice of the virtues are important for communal and environmental sustainability.

3.4. The Significance of Virtues for Communal and Environmental Sustainability

The anthropological and moral assumption of this research is the conviction that as human beings living in the context of community, we are capable of changing our behavior for the sake of the common good. The necessity to cultivate and practice the moral virtues in

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[12] *Ibid*.

the community is aimed at the radical transformation of values and lifestyle so that the environmental crisis can be overcome and environmental sustainability becomes possible.

3.4.1. Definition of Virtue

The *Catechism of the Catholic Church* defines virtue as

> habitual and firm disposition to do the good. It allows the person not only to perform good acts, but to give the best of himself. The virtuous person tends toward the good with all his sensory and spiritual powers; he pursues the good and chooses it in concrete actions.[13]

From the definition given above, virtue means it is a good quality of character as contrasted to vice.[14] More specifically, virtue is a disposition which would eventually become a habit[15] to respond to something in a good way.

3.4.2. A Short Historical Background of the Notion of Virtue

Aretè, the Greek word which was later translated into English as *virtue*, means excellence in any endeavor, e.g., a martial arts artist displays the *aretè* of his or her hands and feet. Alasdair MacIntyre

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[13] *Catechism of the Catholic Church*, 1992, no. 1803, at http://www.vatican.va/archive/ccc_css/archive/catechism/p3s1c1a7.htm (20.11.2014).

[14] Some virtue ethicists insist on a strong correspondence between the virtues and the vices; not only that to each virtue there corresponds at least one particular vice, but also that every vice is opposed to some particular virtue. In this research, the focus of the discussion is on the quality of the virtues which is necessary for communal and environmental sustainability.

[15] A habit is a stable interior disposition that disposes us to do certain good acts. Cf. Oliva BLANCHETTE, *The Perfection of the Universe According to Aquinas: A Teleological Cosmology*, Pennsylvania: Pennsylvania University Press, 1992, pp. 12-54.

pointed out that the term *aretè* which means physical strength could be traced to Homer's works.[16]

Aristotle used the word *phronèsis* which is also translated as virtue but with a different sense from Homeric *aretè*. In *Nichomachean Ethics*, Aristotle explained,

> Virtue is of two sorts, virtue of thought and virtue of character. Virtue of thought arises and grows mostly from teaching, and hence needs experience and time. Virtue of character results from habit (*ethos*); hence its name "ethical."[17]

In Homeric thought, virtue is attributed to physical power. For Aristotle, virtue refers to intellectual capacity. Thus, MacIntyre concluded, "the mind receives from Aristotle the kind of tribute which the body receives from Homer."[18] MacIntyre noted further that in the New Testament, the usage of the term virtue is very different and even contradictory to the Homeric and Aristotelian understanding. The New Testament has the virtues of *faith, hope and charity* which are very different from the Homeric and Aristotelian *aretè* and *phronèsis.* In fact, the New Testament stresses *humility* with *faith*, *hope* and *charity* as virtues that are not in consonance with physical and intellectual power.[19]

St. Thomas Aquinas, however, was able to synthesize the Greek and the New Testament's concept of virtue. For St. Thomas, the New Testament's account of virtue has the same conceptual structure with

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[16] MacIntyre however argues that it would be apt to keep the sense of *aretè* as excellence rather than use *aretè* as virtue in the Homeric sense. See Alasdair MACINTYRE, *After Virtue: A Study in Moral Theory*, First Edition, Notre Dame, Indiana: University of Notre Dame Press, 1981, p. 181.

[17] ARISTOTLE, *Nichomachean Ethics*, translated by Terence Irwin, Indianapolis, Cambridge: Hackett Publishing Company, 1985, p. 33.

[18] Alasdair MACINTYRE, *After Virtue…,* p. 182.

[19] *Ibid.*

the one of Aristotle. Since Aristotle understood virtue as a quality of which the practice leads to the achievement of the *telos* (end) of the person, St. Thomas opined that the *telos* of the person is not only a natural good but also a supernatural one which is a divine gift. In St. Thomas' argument, supernatural grace redeems and completes nature. As a stroke of genius, St. Thomas combined the Greek-based concept of virtue and the idea of virtue in the New Testament by saying that virtue understood from the Greek tradition is acquired and cultivated through human efforts while virtue from the New Testament is divinely infused.[20]

In the context of St. Thomas' arguments, the English term *virtue* must be understood as being derived from the Latin word *virtus* which signifies strength and power (*vir*). It is in this sense that St. Thomas spoke about virtue as a distinctively human power but which is perfected by God's grace.[21] He elaborated that "human virtue, which is operative habit, is a good habit and productive of good works."[22] He further explained that "the efficient cause of infused virtue is God … 'virtue is a good quality of the mind, by which we live rightly, which God works in us. This definition is common to all virtues, both acquired and infused.'"[23] It is here that we see clearly St. Thomas' excellent synthesis that explains the meaning of virtue and its usage and especially its relevance in the context of this research.

3.4.3. The Practice of Moral Virtues and Virtue Ethics

Since the practice of moral virtues falls under the discipline of virtue ethics in moral theology, it is necessary to discuss, before

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[20] Cf. John A. OESTERLE, *Introduction of the English Translation of St. Thomas' Treatise on the Virtues*, Notre Dame: University of Notre Dame Press, 1984, p. xiii.

[21] *Ibid.*

[22] St. Thomas AQUINAS, *The Summa Theologica,* First Part of the Second Part, Question 55, Article 3.

[23] *Ibid.*

proceeding, what virtue ethics is all about. Although a comprehensive explanation of virtue ethics is beyond the scope of this paper, describing its parameters is crucial as it demonstrates the argument why moral virtues are needed for communal and environmental sustainability.

Virtue ethics as a discipline in moral theology emphasizes virtues, or moral character, in contrast to other moral approaches which emphasize duties or rules (*deontology*) or those which emphasize the consequences of actions (*consequentialism/utilitarianism*). Virtue ethics is considered an old moral theory but at the same time a new approach to moral thinking. It is old because it dates back to the writings of Greek philosophers especially Aristotle and Plato, and in the medieval ages, St. Thomas Aquinas. It is, however, considered new because many contemporary moralists[24] argue for the revival of this old moral approach.

The most known advocate for the revival of virtue ethics is Alasdair MacIntyre who, in his book *After Virtue*, declared that there is a failure of what he called the "Enlightenment Project" of modern morality which for him offers nothing but a simulacra or fragments of moral concepts with many different and confusing meanings. He argued that

> what we possess are the fragments of conceptual scheme, parts of which now lack those contexts from which their significance derived. We possess indeed simulacra of morality; we continue to use many of the key expressions. But we have—very largely, if not entirely—lost our comprehension, both theoretical and practical, of morality.[25]

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[24] These include Alasdair MacIntyre, Elisabeth Anscombe, Philippa Foot, Iris Murdoch, Bernard Williams, John McDowell, Martha Nussbaum, Michael Slote and many others who in one way or another have taken the Greek virtue tradition and St. Thomas Aquinas as references.

[25] Alasdair MACINTYRE, *After Virtue…,* p. 2.

MacIntyre's frustration with the "Enlightenment Project" led him to propose a return to the ethics of virtue which is in line with the Aristotelian and Thomistic traditions.

3.4.4. Comparison Between Virtue Ethics, Consequentialism and Deontology

The best way to understand the nature of virtue ethics[26] is to compare it with consequentialism and deontology. In the sphere of moral analysis, most actions are assumed as having at least three distinguishable parts. The three parts refer to the *moral agent* (the person who does the action), the *action* that is actually done by the moral agent, and the *consequences* that follow the action. From the point of view of virtue ethics, the person doing the action is central to the moral evaluation. Deontology, however, considers the act as crucial in determining the moral value of the action. Consequentialism,

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[26] Some authors argue that virtue ethics can be of two types. If a virtue ethics pays no attention to consequences and obligations, it is a radical form. If it pays some attention to other things, but all final decisions depend on the agent's character, then it is a more moderate form of virtue ethics. Daniel Statman argues that virtue ethics is most of the time in radical form because the basic judgements are judgements of character. It indicates that what must be first considered is not right or wrong behaviour but rather the virtues or the character of the agent on the basis of which the action was performed. The radical virtue ethics rejects deontology and consequentialism. G. E. M. Anscombe strongly points out that virtue ethics could be done without deontic notions, and that it would be proper to use such words as "untruthful" or "unjust" rather than terms such as "morally wrong" and so on, thus implying that in the radical version, judgements of character become the measure for determining the moral factor and judgements based on deontology can be neglected or can be subsumed under the former. The calculation of moral worth is thus independent of deontological and consequential concerns. See more of this in Daniel STATMAN, ed., *Virtue Ethics: A Critical Reader*, Edinburgh: Edinburgh University Press, 1977, p. 2; Michael SLOTE, *From Morality to Virtue*, New York, Oxford: Oxford University Press, 1992, pp. 89-94; G. E. M. ANSCOMBE (1958), "Modern Moral Philosophy," *Philosophy* XXXIII, pp. 8-16; Robert B. LOUDEN, "On Some Vices of Virtue Ethics," in *Virtue Ethics: A Critical Reader*, ed. Daniel Statman, Edinburgh: Edinburgh University Press, 1997, p. 191.

on the other hand, takes the consequences as the deciding factor in moral judgment.

An example may help us understand better the difference of the three moral approaches. We take the following:

1. After attending an environmental forum, Inday became aware that carbon dioxide and carbon monoxide coming from industries and motor vehicles that use gasoline are some of the culprits of global warming.

2. Inday felt she had to do something about it. She resolved to use her bicycle in going to her office, setting aside convenience and comfort from using her car.

3. She is firm in her decision not to use her car except in emergency situations.

Virtue ethics would emphasize Inday's character in helping reduce carbon dioxide in the atmosphere by her virtue of temperance in moderating her desire for luxury and comfort. The deontological perspective would focus on the question, "Ought Inday's act of refraining from using her car be right?" Deontology is concerned with the "ought," "right" and "wrong" of the action. It implies that the act must be performed for itself regardless of the consequences. On the other hand, moving away from the action, the consequentialist approach would focus on the question, "Did the action bring the most excellent consequences or could the consequences have been better if rather than refraining from the use of her car, Inday could have launched an awareness campaign or head a demonstration in the center of Metro Manila?" And so each of the three theories offers a methodology through which actions can be evaluated as moral or immoral.

Thus, virtue ethics tries to explain morality from the perspective of the character of the person who is performing the action. In the example given above, Inday is a morally good person because her character, the circumstance when her decision was made, and the

virtue which she holds important tell us about her being virtuous vis-à-vis her contribution to minimize carbon dioxide emission to the atmosphere. In virtue ethics, the agent's dilemma-solving-capacity based on character is indispensable in moral situations. The role of the moral agent is especially significant in virtue ethics' moral evaluation.

In other words, virtue ethics is suitable as a framework for environmental sustainability because it does not focus on individual acts (*deontology*) and their consequences (*consequentialism/ utilitarianism*) but on the long-term patterns of action. It seems then that to act rightly with regard to the environment, acting with the right disposition is the primary criterion for sustainable living.

3.4.5. Cultivation of Moral Virtues and Indispensability of the Theological Virtues for Communal and Environmental Sustainability

As mentioned earlier, living a virtuous life requires, first of all, cultivation of virtues. The moral virtues of prudence, justice, fortitude and temperance do not merely fall from the sky nor would God infuse every human being with the theological virtues[27] of faith, hope and charity spontaneously so that each one would act accordingly to each other as human beings and treat the environment as God teaches (cf. Gen 1:28). God needs human cooperation and effort for a sincere virtuous life to happen. Cultivating the virtues is a lifelong task because no human being is perfect, yet we believe that grace makes it possible. Despite the human being's imperfections, selfishness and greed, all human beings are capable of living great virtuous lives of prudence, justice, fortitude, temperance, faith, hope and charity.

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[27] The *Catechism of the Catholic Church* defines the theological virtues as "the foundation of Christian moral activity; they animate it and give it its special character. They inform and give life to all the moral virtues. They are infused by God into the souls of the faithful to make them capable of acting as his children and of meriting eternal life. They are the pledge of the presence and action of the Holy Spirit in the faculties of the human being." See *Catechism of the Catholic Church*, 1814.

This dissertation has already stated the point that all that God created has intrinsic value in and for themselves. Every human person and the environment are not objects for other human beings to exploit for economic reasons. In this regard, the point of departure in arguing for the cultivation of virtues for communal and environmental sustainability is the assumption that loving God and one's neighbors includes all of God's creation.[28] Jesus' concise summary of his teachings—"You shall love the Lord your God with all your heart, and with all your soul, and with all your mind," and "You shall love your neighbor as yourself" (Mk 12:30-31)—emphasizes that God who is the creator of everything should be the ground of our being and the habitual focus of all our thoughts and actions.[29] To love God, in other words, is an orientation of character, an awareness that the whole self exists by God's grace and for God's purposes—that in God "we live and move and have our being" (Acts 17:28).

It is indeed important to understand that if love of God defines who we are, the love of neighbor and all of creation defines what we do. Loving all of God's creation—the human community and the environment—as we love ourselves means practicing a deep and abiding care for all and focusing on what connects us rather than what separates us. The Incarnate Word, the "Word became flesh" (Jn 1:14) became one like us because God "so loved the *world*" (cf. Jn 3:16; *italics mine*), *not* only human beings.[30] Loving God in return includes loving everything that God has made and loves.

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[28] See some of these arguments in Larry L. RASMUSSEN, *Earth Community, Earth Ethics,* Maryknoll, NY: Orbis Books, 1996; Sally McFAGUE, *Supernatural Christians: How We Should Love Nature,* Minneapolis: Fortress, 1997; and Steven BUOMA-PREDIGER, *For the Beauty of the Earth: A Christian Vision for Creation Care,* Grand Rapids: Baker Academic, 2010.

[29] See William JAMES, *Varieties of Religious Experience: A Study of Human Nature,* New York: Routledge, 2002, p. 155.

[30] Cf. J. Matthew SLEETH, *Serve God, Save the Planet: A Christian Call to Action,* White River Junction, VT: Chelsea Green, 2006, pp. 31-32.

Cultivating the virtues logically grows out of our love of God and neighbor. If Jesus is to be found among the "least of these brothers and sisters" (Mt 25:40), then surely our neighbors include those who suffer as environmental refugees—those driven by rising sea level due to climate change, devastating floods, droughts and other calamities. Our neighbors also include those who suffer due to air, water and land pollution, the victims of poverty due to systemic corruption, those who lose a land to till due to soil erosion because of other's greed for short-term financial gain.

The environmental crisis we face as a global community is a complex one. There are no clear-cut methodologies or formulae for how to solve it. It is certainly a daunting task but it is a call to be creative and it demands concerted effort and collaboration that depends on our character rather than simply on rules. Living virtuously is one of the creative responses we could do. But a virtuous life is never lived in isolation nor would cultivation of virtues only be a personal project. Sustaining and cultivating the virtues would never be the work of a lone individual; it is always a communal effort.

Having said so, we are now ready to tackle in the succeeding subsections the seven Christian virtues of prudence, justice, fortitude, temperance, faith, hope and charity to emphasize their relevance for communal and environmental sustainability. The moral virtues are taken first, followed by the theological virtues.

3.4.6. The Moral Virtues for Communal and Environmental Sustainability

St. Thomas Aquinas explained that the moral virtues of prudence, justice, fortitude and temperance should be the guiding principles of human relationship and with other beings in the environment.[31] St. Thomas clarified that the moral virtues are only innate to the individual potentially. They are like seeds that are naturally present in

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[31] St. Thomas AQUINAS, *Summa contra Gentiles,* Book 1: 92, at http://dhspriory.org/thomas/ContraGentiles1.htm#92 (21.11.14).

human reason and must be cultivated.[32] When the moral virtues are perfected in the individual and the community, the moral virtues will guide every human being to act correctly.[33]

The moral virtues predispose human beings to act morally toward one another and toward other beings in the community of God's creation. It is explained in this subsection that prudence provides the reason for relating with other beings in appropriate ways[34] whereas justice, fortitude and temperance guide the human being to act according to what prudence instructs. These moral virtues are indeed very significant for living appropriately to sustain the human community and the environment.

3.4.6.1. The moral virtue of prudence

The virtue of prudence is defined by the *Catechism of the Catholic Church* as

> the virtue that disposes practical reason to discern our true good in every circumstance and to choose the right means of achieving it … it is not to be confused with timidity or fear, nor with duplicity or dissimulation. It is called *auriga virtutum* (the charioteer of the virtues); it guides the other virtues by setting rule and measure. It is prudence that immediately guides the judgment of conscience. The prudent man determines and directs his conduct in accordance with this judgment. With the help of this virtue we apply moral principles to particular cases without error and overcome doubts about the good to achieve and the evil to avoid.[35]

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[32] St. Thomas AQUINAS, *The Summa Theologica,* First Part of the Second Part, Question 58, Article 1.

[33] *Ibid.,* First Part of the Second Part, Question 58, Article 3.

[34] *Ibid.,* First Part of the Second Part, Question 58, Articles 4-6.

[35] *Catechism of the Catholic Church*, 1806.

The moral virtue of prudence is regarded as the mother of all moral virtues. The *Catechism* calls it the *auriga virtutum* meaning one that directs the other virtues. It is also called practical reason[36] because it involves what the individual wants to do and how to do it correctly.

For St. Thomas Aquinas, prudence is the habit of being judicious.[37] Exercising the moral virtue of prudence, however, involves several steps. First, the moral virtue of prudence demands that the person who will do the action should be careful in choosing the means of acting through moral deliberation; second, the moral agent has to form a good judgment; and third, the person has to command correctly.[38]

Moral deliberation comes from the act of inquiry which is to find out the suitable method to attain a particular objective. The good of the individual and the community (common good) are always considered together in moral deliberation. St. Thomas argued that the good of the individual is not possible unless the common good of others is assured.[39] The prudent individual therefore forms a good judgment by considering what is good for one's self and what is good for the community. The execution or command, which is the final step in the practice of prudent decision-making, has three important elements: anticipation, cautiousness, and attentiveness.[40] In anticipation, the individual foresees that what is being deliberated upon is lasting not only for the present time but especially for future generations. With the other element of cautiousness, the individual discerns the option

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[36] See St. Thomas AQUINAS, *The Summa Theologica*, Second Part of the Second Part, Question 47, Article 2.

[37] *Ibid*.

[38] Cf. Jame SCHAEFER, *Theological Foundations for Environmental Ethics: Reconstructing Patristic and Medieval Concepts*, Washington, DC: Georgetown University Press, 2009, p. 232.

[39] St. Thomas AQUINAS, *The Summa Theologica,* Second Part of the Second Part, Question 47, Article 11.

[40] Jame SCHAEFER*, Theological Foundations for Environmental Ethics….*

of finding the proper way to attain the goal of the action but with consideration for circumstances that may interfere. In attentiveness, the individual is cautious to discern what is good to avoid evil.[41]

Applying the practice of the moral virtue of prudence to communal and environmental sustainability, the individual's character becomes consistent in assuring that the community and the environment will be in harmony and that the environment will last for future generations. Being morally aware to find suitable means for environmental sustainability, the individual exercises caution by avoiding what is detrimental to the community and the environment and safeguards the common good.

3.4.6.2. The moral virtue of justice

The *Catechism of the Catholic Church* defines the virtue of justice as

> the moral virtue that consists in the constant and firm will to give their due to God and neighbor. Justice toward God is called the "virtue of religion." Justice toward men disposes one to respect the rights of each and to establish in human relationships the harmony that promotes equity with regard to persons and to the common good. The just man, often mentioned in the Sacred Scriptures, is distinguished by habitual right thinking and the uprightness of his conduct toward his neighbor.…[42]

The virtue of justice is important for environmental sustainability because justice is the recognition that each part of a complex system of the environment—the human community and the different species/organisms—has its role. St. Thomas Aquinas, as pointed out by Jame Schaefer in her book *Theological Foundations for Environmental Ethics*, argued that justice predisposes the individual human person to relate to others in the community in a manner which is favorable to attain the temporal common good as they seek out the eternal common good

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[41] *Ibid.*

[42] *Catechism of the Catholic Church*, 1807.

with God.[43] It means that since everyone in the community is uniquely connected as part of the whole, the individual good is contributory to the common good of the community.[44] It is understood that everyone in the community should have enough resources to sustain themselves. Thus, the individual member of the community is directed by the moral virtue of justice to use the resources of the environment in a way that other members of the community would be able to provide for their needs and no one is being deprived. In other words, a vice which is unjust and sinful is for the individual to amass huge amounts of resources of the environment while others wallow in deprivation. In this case, excessive consumption is immoral because it violates the common good of the community and the limited resources of the environment.

The argument of St. Thomas Aquinas for the moral virtue of justice which stresses that human beings are members of the community is very relevant to argue for communal and environmental sustainability. The virtue of justice urges human beings both individually and as a community to use the resources of the environment only for what is necessary for the flourishing of the human community, not the excessive consumption that characterizes today's society. Justice directs human beings to use the goods of the planet in ways that ensure their availability to meet the needs of future generations.[45]

As argued by St. Thomas, God wills the good of the whole universe.[46] God is the exemplar for human beings to follow by doing the morally appropriate way which is geared toward the good of the human community and the environment.[47] The moral virtue of justice

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[43] Jame SCHAEFER, *Theological Foundations for Environmental Ethics…*, p. 234.

[44] *Ibid.*

[45] Cf. *Our Common Future…*, p. 41.

[46] St. Thomas AQUINAS, *De potentia Dei*, Question 3, 6, at http://dhspriory.org/thomas/QDdePo-Tentia3.htm#3:6 (21.11.14).

[47] *Ibid*.

demands that human beings have to give what is due to fellow human beings and the environment: their good, not destruction.

3.4.6.3. The moral virtue of fortitude

The virtue of fortitude is defined by the *Catechism of the Catholic Church* as

> the moral virtue that ensures firmness in difficulties and constancy in the pursuit of the good. It strengthens the resolve to resist temptations and to overcome obstacles in the moral life. The virtue of fortitude enables one to conquer fear, even fear of death, and to face trials and persecutions. It disposes one even to renounce and sacrifice his life in defense of a just cause.…[48]

The virtue of fortitude is synonymous with strength or courage. It can be described as persistence, determination and firmness of the will. For communal and environmental sustainability, it enables the individual person and the community to persevere in living a simple lifestyle, not to give in to the vice of social and cultural pressure of consumption which is destructive to the environment. The moral virtue of fortitude strengthens justice to predispose human beings individually and communally to be committed to look after the good of other human beings by nurturing the environment for the present and future generations.[49] It also sustains the virtue of temperance so that the individual and the community would use the resources of the environment for what is necessary for human flourishing rather than to satisfy the vices of selfishness and greed.[50]

The preservation and protection of the good of all human beings in the community and the environment would be the result of the practice of the moral virtue of fortitude because fortitude is directed

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[48] *Catechism of the Catholic Church*, 1808.

[49] Jame SCHAEFER, *Theological Foundations for Environmental Ethics…*, p. 235.

[50] *Ibid*.

toward the common good. Like prudence, fortitude directs and strengthens the human community in their efforts to find the best way possible to preserve the environment and to allow other living and nonliving entities to flourish according to their God-given purpose.

When the practice of the moral virtue of fortitude becomes habitual, the individual and the community will acquire a particular attitude of minimally using the resources of the environment so that environmental sustainability is assured for the present and future generations.

3.4.6.4. The moral virtue of temperance

The virtue of temperance is defined by the *Catechism of the Catholic Church* as

> the moral virtue that moderates the attraction of pleasures and provides balance in the use of created goods. It ensures the will's mastery over instincts and keeps desires within the limits of what is honorable. The temperate person directs the sensitive appetites toward what is good and maintains a healthy discretion: "Do not follow your inclination and strength, walking according to the desires of your heart." Temperance is often praised in the Old Testament: "Do not follow your base desires, but restrain your appetites." In the New Testament it is called "moderation" or "sobriety." We ought "to live sober, upright, and godly lives in this world."[51]

The moral virtue of temperance enables the individual and the community to focus on having restraint of wanting to have more, recognizing that there are higher values than the immediate satisfaction of temporal and material wants. In the practice of the moral virtue of temperance, the individual and the community attain a sense of contentment which means not wanting to desire more than that which the individual and the community already have. Thus it urges human beings to act according to what the virtue of prudence dictates

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[51] *Catechism of the Catholic Church*, 1809.

by controlling irrational wants and passions for bodily pleasures and material things.[52]

As cited by Jame Schaefer, St. Thomas Aquinas emphasized that God intends that the resources of the environment will serve as means for sustaining human life while human beings aim to ultimately have eternal happiness with God. Thus, the individual and the community should not take excessive pleasure in material things because these will distract them from their path toward God.[53]

It is in this context that the habitual practice of the moral virtue of temperance is very important for communal and environmental sustainability. The individual and the community would refrain from the vices of overconsumption and accumulation because their ultimate goal is not happiness in possessing material things but eternal happiness with God. Excessive standards of living would be ruled out in any circumstance in order to avoid diverting the focus of the individual and the community from the ultimate goal. In other words, the virtue of temperance would direct the individual and the community to cultivate and nurture self-restraint because the vice of overindulgence to possess the resources of the environment would be contrary to union with God.

3.4.7. The Theological Virtues for Communal and Environmental Sustainability

The cultivation and habitual practice of the moral virtues of prudence, justice, fortitude and temperance need to be sustained by the theological virtues of faith, hope and charity. To faithfully live prudently, justly, steadfastly and moderately for one another and the environment requires grace because every human being struggles with imperfection.

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[52] Jame SCHAEFER, *Theological Foundations for Environmental Ethics…*, p. 232.

[53] *Ibid*., p. 233.

With God's gifts of faith, hope and charity, the human community could experience the sense of the sacred in everything that God has created. Although it is a broad topic to discuss the sense of the sacred in this subsection, suffice it to say that we need it for communal and environmental sustainability. Without experiencing the sense of the sacred, setting limits to our wants and desires to wantonly possess the resources of the environment will remain empty rhetoric.[54] The sense of the sacred graced by faith, hope and charity is in fact the fundamental condition for living out the moral virtues for communal and environmental sustainability.

Heightened sensibilities of the sacred always have an important connection to the essence of the human community and the environment. With the spiritual sense of the sacred, the human community and the environment become a tangible sign of God's presence,

> where the energy permeating all beings is made manifest, the opportunity for the revelation of the mystery dwelling in the totality of all things.[55]

Seeing the environmental destruction in Chapter One, we could rightfully say that one of the deeper causes of the environmental crisis is humanity's loss of the spiritual sense of the sacredness of the environment. This is the reason why there is a necessity to retrieve and nurture the sense of the sacred.[56]

Human beings' exploitative worldview has reduced the environment to a commodity to be used for economic growth and development. The sense of mystery, of awe and wonder, had been replaced with the economic view of the environment. If we do not

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[54] See Roger S. GOTTLIEB, ed., *This Sacred Earth: Religion, Nature, Environment*, New York: Routledge, 1996, pp. 41-49.

[55] Shirley NICHOLSON and Brenda ROSEN, *Gaia's Hidden Life*, Wheaton, IL: Quest Books, 1992, pp. 120-121.

[56] Roger S. GOTTLIEB, ed., *This Sacred Earth…*, p. 52.

manage to recover and nurture the sense of the sacred, we will not be able to guarantee the sustainability of the environment for future generations. Environmental policies will become merely techniques on how to manage and perhaps minimize human voracity but not to overcome it. We need to nurture the sense of the sacred, the re-enchantment, and awe for the environment that God has created[57] so that the environment becomes sustainable for the present and future generations.

The sense of the sacred in fact emanates from the understanding that the whole of creation—the human community and the environment—is God's handiwork and that it belongs to God (Ps 24:1). Every human person and the environment has intrinsic value because God created and values them (Prov 8:29-31). God delights in the human being and the environment and desires their wholeness and well-being.

God created the earth, affirmed that it was good, and established an everlasting covenant with humanity to take responsibility for the whole of his creation. God declared that all of creation was good (Gen 1:1-31). Our worldview and our relationship with the environment should flow directly from the affirmation of God as Creator.

God is deeply involved in what happens to the human community and the environment. As argued earlier, God is intimately connected to all creation when the Word became flesh (Jn 1:14). In the mystery of the Incarnation, God takes on the earthly form, e.g., human life. Through Christ, God is reconciled to "all things, whether on earth or in heaven" (Col 1:20). The Incarnation has saving significance for a creation that longs for fulfillment (Rom 8:18–25). Christ taught us how to live and move and have our being in creation. The Incarnation of the Son of God had sanctified all that exists.

The truth of the Incarnation makes us aware to be responsive to God's self-revelation in creation. God has given us the gift of reason and infused in us faith, hope and charity which would enable us to

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[57] *Ibid*., p. 53.

perceive and reflect upon God's presence within us and around us. In other words, human beings have the moral responsibility to recognize and express God's image within and around us by caring for each other in the community and the environment.

Indeed, every human being and all the living and the non-living creatures are bound together. We stand as God's creatures in God's vision of all that he created, our lives being interconnected and interdependent. We depend upon God, who gives us existence with other human beings in the community and with the rest of all beings in the environment.

In its essence, the experience of the sense of the sacred in the human community and the environment is anchored in God, the alpha and omega of all created things.[58] God, who is the Trinity, provides us a vision of relationships, reciprocities, and communion.[59] With the Trinity, we express our fundamental faith-experience that God is calling us to communion with all of the created beings in this planet.

St. John Paul II put it so well during his visit to Latin America on January 28, 1979, in Puebla, Mexico:

> There is a profound and beautiful saying that our God, in His innermost mystery, is not aloneness but a family … God embodies paternity, filiation, and the essence of the family that is love.[60]

Communion between human beings and the environment happens when every individual person and the community become the image of God who loves and cares for all, "for God so loved the

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[58] See Pierre Teilhard de CHARDIN, *The Divine Milieu: An Essay on the Interior Life*, New York: Harper & Row, 1965, p. 135.

[59] See R. PANIKKAR, *The Trinity and the Religious Experience of Man*, NY: Orbis Books, 1973, p. 85.

[60] JOHN PAUL II, quoted in John EAGLESON and Philip SCHARPER, eds., *Puebla and Beyond*, Maryknoll, NY: Orbis Books, 1979, p. 78.

world…" (cf. Jn 3:16, Rom 8:21–22, Mt 5:43–48). The human community and the environment become sustainable when God's love and goodness are mirrored in a right relationship of communion seen in faith, sustained by hope and nurtured by charity.

In this context, we are now ready to proceed to the discussion of the three theological virtues in the succeeding subsections.

3.4.7.1. The theological virtue of faith

The theological virtue of faith is defined by the *Catechism of the Catholic Church* as

> the theological virtue by which we believe in God and believe all that he has said and revealed to us, and that Holy Church proposes for our belief, because he is truth itself. By faith "man freely commits his entire self to God." For this reason the believer seeks to know and do God's will.[61]

Faith is an infused theological virtue which makes us believe in God, to commit ourselves entirely to God and to God's purpose for all beings in the environment. It is not merely an assent to a precept but more broadly about commitment and engagement to do God's will. As a theological virtue, faith forms our moral conscience and it entails belief in the goodness of God and God's creation.

The theological virtue of faith requires a particular commitment to respond to the damage human beings have done to God's creation. It is the commitment to undergo ecological conversion which calls for repentance, discipline and self-sacrifice. The Greek words for conversion (*metanoein* and *epistrephein*) mean "to turn around."[62] Conversion means turning around, going in a different direction and

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[61] *Catechism of the Catholic Church*, 1814.

[62] See Orlando E. COSTAS, "Conversion as a Complex Experience: A Personal Case Study," in *Down to Earth: Studies in Christianity and Culture*, eds. John R. W. Stott and Robert Coote, Grand Rapids, Mich: Eerdmans, 1980, pp. 35-36.

making a new start. In other words, the old values and habits are left behind as the new path is being set. As the Sacred Scriptures tell us, "For the former things have passed away.… 'Behold I make all things new'" (cf. Rev 21:4, 5).

Human beings have to recognize that the obsession for economic growth and development at the expense of the common good of the community and the environment is wrong and repentance is demanded. Repentance is the first step to conversion. Repentance means to face up honestly to the past and to turn from it.[63] When repentance leads to conversion, we would replace the economic paradigm with the communion paradigm. Communion with one another in the community and the environment means that there would be no social and environmental injustice, no obsession with economic growth and development, no excessive consumption but with respect for the intrinsic value of each other in the community and of the different species of this planet.

The theological virtue of faith aligns more fully our desires and inclinations with the environment God wants for us. It means committing ourselves to nurture one another and the environment. It enables us to see the beauty of God's creation, the acknowledgement of our interconnectedness and interdependence with one another as every being and species is called to communion with the divine wholeness.

3.4.7.2. The theological virtue of hope

The theological virtue of hope is defined by the *Catechism of the Catholic Church* as

> the theological virtue by which we desire the kingdom of heaven and eternal life as our happiness, placing our trust in Christ's promises and relying not on our own strength, but on the help of the grace of the Holy Spirit.… The virtue of hope responds to the aspiration to happiness

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[63] See Walter E. CONN, ed., *Conversion: Perspectives on Personal and Social Transformation,* Staten Island, New York: Alba House, 1978, pp. 24-32.

> which God has placed in the heart of every man; it takes up the hopes that inspire men's activities and purifies them so as to order them to the Kingdom of heaven; it keeps man from discouragement; it sustains him during times of abandonment; it opens up his heart in expectation of eternal beatitude. Buoyed up by hope, he is preserved from selfishness and led to the happiness that flows from charity.[64]

The theological virtue of hope is understood primarily as reliance and trust that God will complete God's plan for humanity and the world. The Old Testament basically used the meaning of hope as searching for

> refuge in God … trusting confidently in God to fulfill the promises of blessing, and waiting patiently on God to accomplish God's plans.[65]

The individual and the community hold on to hope because God is faithful to the promises God has made. As human beings, our capacity to hope is one of the most important things that distinguish us from other beings of the planet. St. Augustine explained that hope is directed toward God.[66] He emphasized that hope is one of the three essential dimensions in a Godly life, the others being faith and charity.[67]

St. Thomas Aquinas, on the other hand, emphasized that hope as a theological virtue is central to our Christian life because God is both its efficient cause and its object.[68] In St. Thomas' view, the

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[64] *Catechism of the Catholic Church*, 1817 and 1818.

[65] See Hermann COHEN, *Reason and Hope,* translated by Eva Jospe, New York: W. W. Norton, 1971, pp. 122-128.

[66] St. AUGUSTINE, *On Christian Doctrine,* 1,37-4, at http://faculty.georgetown.edu/jod/augustine/ddc1.html (05.01.15).

[67] *Ibid.*

[68] St. Thomas AQUINAS, *The Summa Theologica,* Second Part of the Second Part, Question 17, Articles 1, 5, 6.

ultimate object of hope is the joy of union with God.[69] Hope can lead the individual and the community to act in accordance with virtue and godliness.[70]

As a theological virtue for environmental sustainability, hope is the habit of looking at the future good as an eschatological reality. Thus, we could hope for the recovery of a good human community and a healthy environment. We could hope for the flourishing of human life and other species of this planet. Hope gives us human beings the capacity to affirm that God's creation is good and that humankind is an integral part of creation. With hope, there is a moral conviction that God intends the well-being of humankind and the rest of creation. We rely on God's infinite power which exists entirely beyond the grasp of our understanding and experience.

3.4.7.3. The theological virtue of charity

Charity is defined by the *Catechism of the Catholic Church* as

> the theological virtue by which we love God above all things for his own sake, and our neighbor as ourselves for the love of God.… The fruits of charity are joy, peace, and mercy; charity demands beneficence and fraternal correction; it is benevolence; it fosters reciprocity and remains disinterested and generous; it is friendship and communion. Love is itself the fulfillment of all our works. There is the goal; that is why we run: we run toward it, and once we reach it, in it we shall find rest.[71]

The theological virtue of charity is called by St. Thomas Aquinas as "the mother of the other virtues"[72] and it requires commitment.

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[69] *Ibid.,* Second Part of the Second Part, Question 17, Articles 2-4.

[70] *Ibid.,* Second Part of the Second Part, Question 20, Article 3.

[71] *Catechism of the Catholic Church*, 1822 and 1829.

[72] St. Thomas AQUINAS*, The Summa Theologica,* Second Part of the Second Part, Question 23, Article 8.

Charity could be properly understood in relation to faith and hope. It could be said that faith precedes hope because faith provides knowledge which arouses hope for the things we have to know and commit to. Hope comes before charity because hope desires the goal which charity attains. Thus, the nature of charity is to fulfill the works of faith and hope. Charity directs faith and hope toward God for love of Him. Charity embodies union of God with human beings, and in the same way it embodies union of human beings with the environment, God's creation.

Agapé is the Greek word for charity which means unconditional commitment to another.[73] It does not depend on any action or quality of the beloved. God loves human beings and the environment without condition. Thus, human beings are called to cultivate the virtue of loving one another in the same way. "We love because God first loved us" (1 Jn 4:19).

For environmental sustainability, loving our neighbor reminds us that we must pay careful attention to human lives and human well-being that are at stake in every environmental intervention. Preventing the rising of sea water level caused by climate change would be an expression of love for the highly vulnerable people who happen to be the poor and marginalized that inhabit the coastlines. Preventing toxic waste from seeping into an aquifer is an expression of love both for neighbors who drink that water and for God who created them. Indeed, the theological virtue of charity enables us human beings to live out the love of God by loving our neighbor and God's creation—the environment.

3.5. Modelling the Paradigm of Sustainable Community Based on Virtuous Living

Having presented and analyzed the seven Christian virtues in the preceding subsections to emphasize the utmost relevance of the virtues for communal and environmental sustainability, this subsection

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[73] See Jim NOLLMAN, *Spiritual Ecology: A Guide to Reconnecting with Nature,* New York: Bantam, 1990, pp. 87-89.

intends to demonstrate that the paradigm of sustainable community is possible by taking the Basic Ecclesial Community in the Philippines as a model.

Before proceeding to the discussion of the Basic Ecclesial Community, though, the context of the environmental issues in the Philippines has to be considered. The case of the Philippines is taken as an example for this research.[74]

3.5.1. Environmental Issues in the Philippines

The Philippines is a country located across 7,107 islands forming an archipelago in Southeast Asia. The country lies squarely in the typhoon belt, and is affected by an average of 20 typhoons annually. Most of the population of 92 million[75] is at risk from serious environmental problems. The following are the country's environmental issues.

3.5.1.1. Impact of Climate Change

The Philippines is a contributor to total global carbon emissions. The country's emission of carbon dioxide into the atmosphere rose by 40 percent between the years 2005–2010.[76] An estimated 73 percent of emissions come from liquid fuels, 18 percent from solid fuels, and 9 percent from cement manufacturing.[77] Climate change has already cost the Philippines billions in lost agricultural production, reduced fish yields, storm damage, and flashfloods.

With over 36,000 km. of shoreline, a rising sea level will have devastating consequences for the Philippines. Some projections show a 100 cm rise in ocean levels along the Philippine coast by 2080. In

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[74] The map of the Philippines is Appendix 1.

[75] See REPUBLIC OF THE PHILIPPINES, National Statistics Office, at http://web0.psa.gov.ph/ (16.01.2015).

[76] "Climate Change Scenarios for the Philippines," Climatic Research Unit, University of East Anglia, at www.cru.uea.ac.uk (12.11.14).

[77] *Ibid.*

the heavily populated capital city of Manila, for example, this rise could potentially displace up to 2.5 million people, and put millions more at risk from flooding from storm surges.

3.5.1.2. Deforestation

The Philippines is a richly endowed archipelagic country. The Philippine forests are considered some of the world's richest in terms of variety of plant and animal species. Because the country is an archipelago with diverse terrain, flora species vary. The Philippine forests are categorized into five: *mossy* (19.29%), *dipterocarp* (65.58%), *pine* (4.23%), s*ub-marginal* (8.61%), and *mangrove* (2.88%).[78] There are 8,120 species of flowering plants, 3,500 species of indigenous trees, 33 species of gymnosperms, 640 species of mosses, 2,400 species and sub-species of fish, 32,500 species of wild fauna, 230-240 species and sub-species of mammals, 240-250 species and sub-species of reptiles, and 950 species and sub-species of birds.[79]

In the 1960s right up to the next two decades, however, rampant deforestation and the resulting loss of biodiversity has been the problem in the Philippines.[80] This has been attributed to a number of causal factors that include uncontrolled logging, forest conversion for monocrop plantation and mining activities. Consequently, the proportion of land with forest cover declined from about 49 percent in 1950 to 22 percent in 1987, and down to 18 percent at the present. Although the Philippines ranked 7th out of 17 megadiversity countries (countries holding two-thirds of the earth's biological resources) in the last half of the 20th century, 60 percent of Philippine flora have become extinct. Today, the Philippines has 13,500 plant species remaining,

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[78] David M. KUMMER, *Deforestation in the Postwar Philippines*, Quezon City and Chicago: Ateneo de Manila University Press and the University of Chicago Press, 1992, pp. 35-64.

[79] *Ibid.*

[80] *Ibid.,* p. 12.

which represent five percent of the world's flora. From this figure, 32 percent is endemic and found mostly in the remaining forests.[81]

The country's timber industry based on the export of logs and lumber reached its peak in terms of output in the 1960s and early 1970s. In the 1970s, the logging and wood processing industries were included in the country's top ten principal export earners, contributing 12.5 percent to the gross domestic product. In the 1980s, output began to decline due to decreasing timber resources, finally resulting in a log export ban in 1986 and a lumber export ban in 1989. Under the Marcos regime, as early as 1979, with Presidential Decree No. 1159, logging firms were required to reforest their concession areas with the same species harvested, replacing each cut or damaged tree with at least three seedlings.[82]

However, government officials continued to grant vast forest concessions, through the Timber License Agreement system, to private timber companies, which engaged in direct lumber business. The Timber License Agreement system degenerated into a patrimonial mechanism under Marcos, where forest concessions were awarded on the basis of political connections.[83]

World attention was drawn to the problem of deforestation in the Philippines due to the intensity of environmental disasters that occurred. These included the floods in Negros Oriental, Samar and the most known disaster in Ormoc, Leyte, which caused tremendous damage to lives and properties. The flash flood that swept through the city of Ormoc killed more than 6,000 people. It was the most devastating flood that ever hit a populated area in the Philippines.

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[81] Eric HYMAN (1983), "Forestry Administration and Policies in the Philippines," *Environmental Management* 7(6), pp. 511-524.

[82] *Ibid*., p. 24.

[83] *Ibid*.

3.5.1.3. Dwindling Water Resources

About 90 percent of the country's freshwater resources are potable for human use. On top of the steady precipitation and average run-off, the country is theoretically assured of enough water for its needs. Inland water resources are composed of 421 principal rivers, 69 natural lakes, and more than 100,000 hectares of freshwater swamps, and there are groundwater sources on every major island.[84]

However, the freshwater ecosystem is threatened due to deforestation, destruction of watershed areas and pollution. About 58 percent of underground wells are contaminated with coliform. Forty of the country's major river systems have already been pronounced biologically dead. While the government warned that the freshwater supply at 1,907 cubic meters per annum is nearing critical level,[85] it still continues to give away water permits and allow unchecked wastage by big business establishments and firms engaged in mining, golf courses, dams, and other industrial sectors.

3.5.1.4. Marine and Coastal Damage

The country is rich in marine biodiversity with around 2,500 fish species. The country's marine area measures about seven times more than its land area. It also has a long discontinuous coastline (22,450 miles) due to its being an archipelago. About 488 coral species in 78 genera are found in the Philippines out of the 800 known coral species worldwide. The coastal and marine ecosystems provide food and ecological balance. About 10 million fishermen and 50 million people are dependent on the country's seas for their livelihood.[86]

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[84] *Ibid*.

[85] *Ibid*.

[86] Alan T. WHITE and Annabelle CRUZ-TRINIDAD, *The Values of Philippine Coastal Resources: Why Protection and Management are Critical,* Cebu City, Philippines: Coastal Resource Management Project, 1998, pp. 1-2.

In fact, the country has the second largest coral reef system in Southeast Asia, covering around 25,060 square kilometers. But it is estimated that 30 percent of the Philippine coral reefs are dead and 39 percent are dying.[87] The issue of climate change will complicate the problem. As temperatures rise due to global warming, coral bleaching is expected to become more severe, leading to the death of more areas of the reef ecosystem. The impact will be detrimental to the country. It will destroy the important habitat of different species of fish, thus destroying the livelihood of millions of the country's population along the coast. It will reduce an important source of food and it will make the coast more vulnerable to storm surges and rising tides as bleached reefs have been shown to be less of a buffer to sea level rise.[88]

3.5.1.5. Environmental Damage due to Mineral Extraction

Mining or mineral extraction has been a major industry in the Philippines ever since the Spanish colonizers opened the first commercial mines in Benguet province over 200 years ago.[89] The country is a major producer of metallic products such as gold, copper, nickel, and chromite, and non-metallic minerals as well such as limestone and marble.

There are two categories of mining operations in the Philippines. First, there is large-scale mining which is operated by multinational companies like Oceana Gold Philippines Incorporated in Kasibu, Nueva Vizcaya. Second, there is small-scale mining which is operated by the local community which is commonly known as "People's Small Scale Mining" like in Mount Diwalwal, Compostela Valley.

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[87] *Ibid*.

[88] *Ibid.*, pp. 7-10.

[89] Marit Stinus REMONDE and Chris VERTUCCI, eds., *Minding Mining!: Lessons from the Philippines,* Quezon City: Philippine International Forum, 1999, pp. 15-20.

When the Philippine government issued the Mining Act of 1995 which allowed internationally owned mining companies to explore, control and utilize the country's mineral resources, land and forest damage was extensive. The main problem of mining is the reduction of soil fertility. In general, mining operations have always been equated with environmental destruction, deforestation, slope destabilization, soil erosion, desertification, crop damages, siltation, alteration of terrain and sea-bottom topography, increased water turbidity and air pollution.[90] It causes a lot of damage to the environment and people's lives.

3.5.1.6. Poverty, Corruption and Environmental Degradation

Poverty has always been a socio-economic and political problem of the Philippines. It is closely connected to systemic corruption and environmental degradation. The wanton exploitation of forests, reefs, and fisheries has eroded ecosystems, wiped out species, and brought enormous environmental damage to the country.

The degradation of the forests and fisheries worsened the situation of poverty in the provinces, which in the 1970s and 1980s exacerbated the country's overall economic decline. Fleeing both environmental degradation and the persistent military conflicts,[91] growing numbers of local refugees moved to the cities especially in Metro Manila, where they built squatter settlements that lined up in waterways and covered empty lots.

The most serious problem connected to poverty and environmental degradation is systemic corruption. In the beginning of the presidential term of President Benigno Aquino III, he declared that fighting

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[90] *Ibid.*

[91] The Philippines is technically under armed conflict. It is at war with insurgent and separatist groups: the New People's Army and the Muslim separatists.

corruption was his administration's priority.[92] But until now, nothing substantial had been achieved. Illegal logging and massive mining are still operating with impunity in the countryside, destroying ecosystems, polluting rivers and displacing local inhabitants especially the indigenous minorities.

Change of personalities of those who run the government after every election did not alter the face of corruption in government at all. The structure of elitist and corrupt government built up over the years remains in place. The unequal distribution of wealth remains an issue of social justice, with so much wealth scandalously concentrated in the hands of a few families and corporations while the vast majority of Filipinos are in poverty.[93]

In the Philippines, poverty, corruption and environmental degradation are intertwined. What had been a relatively prosperous nation in the Southeast Asian region after World War II has been environmentally, economically and politically ruined due to social injustice and systemic corruption.

3.5.2. The Notion of Basic Ecclesial Community

Given the environmental problems discussed above, the Philippines is in need of a kind of environmentalism that has a holistic approach. It needs to treat environmental sustainability as a moral and spiritual commitment rather than plainly an economic and socio-political one. The Filipinos are generally religious and expressive of their faith. The component of the faith is an essential factor that could guide communities in rebuilding the country given the environmental, socio-political, and economic disarray. It is in this regard that we now proceed to the discussion of the Basic Ecclesial

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[92] Sheila CORONEL, "Investigating the President," Philippine Center for Investigative Journalism, March 20, 2000, sec. 2A, p. 5.

[93] Arsenio M. BALICACAN (1992), "Rural Poverty in the Philippines: Incidence, Determinants and Policies," *Asian Development Review* 10(1), pp. 125-163.

Community in the Philippines as a sustainable community model for environmental sustainability.

The Second Plenary Council of the Philippines defined the Basic Ecclesial Community as

> small communities of Christians, usually of families, who gather around the Word of God and the Eucharist. These communities are united to their pastors but are ministered to regularly by lay leaders. The members know each other by name and share not only the Word of God and the Eucharist but also their concerns both material and spiritual. They have a strong sense of belongingness and of responsibility for one another.[94]

The definition could be understood well by explaining the three words. The word *Basic* in Basic Ecclesial Community refers to both the size and the social location of the community.[95] Fr. Amado Picardal explained that

> a basic community is small enough for the members to know each other well and relate deeply as friends but not too small that it turns into a primary group or *barkada* (peer group) instead of a community.[96]

The members may be composed of forty to two hundred families and could be subdivided into different cells or groupings of five to ten families. As a social location, the community means the members are in the grassroots, or those who are considered the simple group of people living together as a community.

The word *Ecclesial*, on the other hand, stresses the notion that the Basic Ecclesial Community is the manner in which the Church lives

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[94] SECOND PLENARY COUNCIL OF THE PHILIPPINES, *Episcopal Committee on Basic Ecclesial Communities*, 138, at http://cbcpbec.com/?p=323 (11.01.15).

[95] *Ibid.*

[96] *Ibid.*

its mission. Under the principle of subsidiarity, it is the Church that is being "realized, localized and experienced at the grassroots, in the neighborhood."[97] As communities, they serve as a microcosm of the Church and therefore not as administrative units within the structure of the parish.

The term *Community* means that the members of the Basic Ecclesial Community live as a community. They are not merely considered as a group or an association but a community whose members live in close proximity and interact with each other regularly. The mandated organizations found in the parishes (e.g., Knights of Columbus, Legion of Mary) and renewal movements (e.g., Charismatics, Focolare, Couples For Christ, Neo-Catechumenate, El Shaddai, etc.) are not considered Basic Ecclesial Communities because these are specialized groups with a specific purpose as parochial organizations.[98]

3.5.2.1. A Short Historical Background of Basic Ecclesial Community

The Basic Ecclesial Community had its precursor, the Basic Christian Community-Community Organizing. From a historical perspective, under the conditions of Martial Law (1972-1986) during the Marcos regime in the Philippines, the Catholic Church emerged as the major voice for the rights of the poor and oppressed. Church leaders referred to Vatican II's (1962-1965) social teachings to promote social justice, human dignity, and the rights of the Filipino people. Prior to Vatican II, bishops, priests and nuns in the Philippines had already spoken against tyranny, corruption, and injustice. Pope Leo XIII's encyclical, *Rerum Novarum*, and Pope Pius XI's *Quadragesimo Anno* addressed issues of social justice and these social teachings were used by the religious groups working among the poor in the Philippines in the 1930s and 1950s.

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[97] *Ibid.*

[98] *Ibid.*

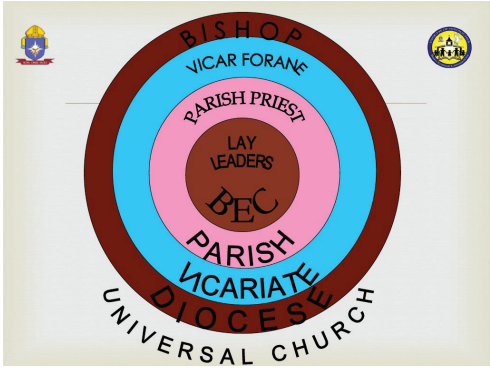
Since Vatican II, more and more religious and lay leaders in the Philippines have been working to organize the people to heighten their moral, spiritual and socio-political consciousness. The Basic Christian Community movement was officially recognized at the Mindanao-Sulu Pastoral Conference in 1971, in Davao City, Philippines. The Catholic Bishops Conference, the National Secretariat for Social Action, and the United Church of Christ (a coalition of Protestant churches) endorsed the Basic Christian Community movement in 1977. At that time, more and more people from the religious groups were helping to organize the rural and urban poor into small Christian communities.

The annual Mindanao-Sulu Pastoral meeting provided a forum to openly discuss issues such as the question of the nature of lay participation in the Basic Christian Communities and in the organizational structure of the church. Initially, the Basic Christian Community model was understood as a way to encourage the lay people to become more actively involved in the liturgy of the word, especially in remote rural barrios where there were not enough priests to perform the sacraments. The training of lay ministers was seen as a way to provide people in rural areas with religious instruction and communion services when priests were not available.

Questions were raised and debates ensued later regarding the political involvement of some of the members of Basic Christian Communities especially those that had more or less leftist orientations. The controversy led to the new use of the term Basic Ecclesial Communities in place of Basic Christian Communities. The term *ecclesial* was seen as more appropriate because it refers to the people of God as the body of the church.

The Basic Ecclesial Communities thrived throughout the country. In 1991, at the Second Plenary Council of the Philippines held in Cebu City, the Basic Ecclesial Community model was officially decreed by the church hierarchy as the new way of being church. The Basic Ecclesial Community is acclaimed as a community that has integrated liturgical, social, cultural, political, economic, and environmental components in its setup.

3.5.2.2. The Basic Ecclesial Community in the Parish Structure



In the parish structure, the Basic Ecclesial Community is part of the bigger faith community—the parish, diocese, and the universal church. The Basic Ecclesial Community is a minuscule community that has its own dynamism within the larger hierarchical community of the worldwide Church.

The authority and leadership of the parish priest and the local bishop is being recognized as an indispensable part in the running of the Basic Ecclesial Community. It is through them that the members affirm their communion with the universal church through the leadership of the Pope. As part of the parish structure, the members of the Basic Ecclesial Community through their respective officers actively participate in the running of the parish programs.

The different groups in the parish which are oftentimes called ministries function as specialized groups that focus on different areas of concern. In most parishes in the Philippines, the ministries are as follows: Worship Ministry (Liturgical Affairs), Education Ministry (Formation), Social Services Ministry, Temporalities Ministry, Youth Ministry, Family Life Ministry and Public Affairs Ministry.

3.5.2.3. Continuing Formation of Basic Ecclesial Community under Education Ministry

As mentioned earlier, the education ministry is tasked to focus on the area of formation. The ministry ensures the continuous education

and implementation of different formation programs for the varied groups in the parish. Formation programs and follow-ups for continuing education on different areas of concern are the expected output of the education ministry.

The education ministry, in view of the environmental crisis the Philippines and the world are facing, could design a formation program on the environment based on the contents of this research.[99] The formation program is important in forming the moral conscience of the members of the Basic Ecclesial Community so that, starting from their small community, they could become the "salt of the earth … and light of the world" (Mt 5:13-14) for communal and environmental sustainability.

3.5.2.4. Living Virtuously for Communal and Environmental Sustainability

There is environmental sustainability when there is sustainable community as well. Through the formation program to educate and form the moral conscience of the members of the Basic Ecclesial Community, the members learn to integrate the faith-life continuum in their practice of the moral virtues, and in nurturing the sense of the sacred for communal and environmental sustainability. They become prudent, just, courageous and moderate in their relationship with one another and with the environment. To aptly put it, communal and environmental sustainability is achieved when there is a virtuous community which is made up of virtuous individuals who are grounded in their shared faith, hope and love of God, the creator and sustainer of everything. The next subsections explain the attributes of virtuous living that could be seen hopefully in the Basic Ecclesial Community.

3.5.2.4.1. Living Prudently

The Basic Ecclesial Community would live prudently so that each one would be able to discern how to respond appropriately to

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[99] The suggested modules for the formation program of the Basic Ecclesial Community are in Appendix 2.

the environmental crisis the Philippines and the world are facing. The individual and all community members are helped to discover the facts and choose the means of acting in the light of the social teachings of the Church. The principle of subsidiarity is very relevant in this regard. The Basic Ecclesial Community assumes responsibility and they are given the opportunity to participate in decision-making for communal and environmental sustainability.

Individually and as a community, the members will make use of the available sources of information on possible strategies for action so that they could form a sound judgment about the best means to stop or at least minimize the environmental degradation of the country and the world to restore its integrity. In the process of forming judgment, the members are also helped to discern how the needs of the individual members and the community could be met without making a destructive impact on the environment. The members will recognize that environmental balance is essential to the well-being of all that exist.

In considering sustainability, the members become morally conscientious about how to use the resources of the environment responsibly considering not only their individual needs but also the needs of others in the community and the needs of future generations. As prudent members of the Basic Ecclesial Community, they exercise their foresight in discerning the appropriate means to safeguard the common good in order to provide for the necessities of life that will sustain the community and the environment.

As prudent individuals and community, they do not see the dichotomy between themselves and the environment, between their moral and economic concerns, and between the spiritual and physical aspects of their lives because by their practice of the virtue of prudence they reach the level of wholeness with one another, their interconnectedness with the environment, and they understand their place in the whole web of life.

Being prudent, the members of the Basic Ecclesial Community know that their destiny is connected with the fate of other species

and they become deeply engrossed in their faith that it is God, not humankind, who is the owner of the earth. They therefore do their part to minimize carbon emission by using other means of transportation like Inday in the example given earlier; they plant trees to reforest the deforested areas of the country; they shield the water resources from contamination; they network with other environmental groups to save the coral reefs; they protect the remaining forests and land from mining; they protest against systemic corruption; they share resources especially with the poor members of the community and find ways to alleviate poverty by providing means of stable livelihood.

3.5.2.4.2. Living Justly

As members of the Basic Ecclesial Community, the individual and the community would live justly because they know that the common good is at stake due to environmental degradation. As they strive to promote the common good, they are committed to protest against environmental and social injustice.[100] As people who cultivate and practice the moral virtue of justice, they know that the poor and the minorities[101] are more vulnerable to catastrophes such as flooding, landslides due to deforestation, pollutants, toxicants, and hazardous materials due to mining, rising sea water level due to climate change and other devastating calamities.

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[100] Leonardo Boff argues that today we are faced with two types of injustice: social injustice, which is the result of unequal distribution of the earth's resources, and environmental injustice, which is violence against the environment, particularly against the atmosphere, against the ozone layer and against the seas and rivers. For Boff, social injustice affects individuals and social groupings directly. Environmental injustice affects them indirectly but with immediate harmful consequences because the decline in the quality of their surroundings produces social tensions, violence, disease, malnutrition and even death. Boff argues that environmental justice is essential for social justice. See Leonardo BOFF*, Cry of the Earth…,* pp. 5-8.

[101] Cf. Clodomero L. ACUNA-SILLER (2011), "Los Indigenas, el mundo y la ecologia, hoy," *Spiritus: Conciencia, ecologia y misìon*, Edicion hispanoamericana, 52/12: 203, p. 22.

Living justly, the members of the Basic Ecclesial Community are not engaged solely in the debate on environmental policies nor about technological intervention *per se* but in nurturing the sense of the sacred whose loss led to incessant pre-occupation with economic growth and development. The forests, water resources, coral reefs, and mineral resources are viewed as held in common to be shared with one another and not only by those who hold power and influence in Philippine society. Their overuse and abuse will be avoided, and regulations will be established to prevent manipulation by those who are in power.

Living a virtuously just life, the members of the Basic Ecclesial Community treat each one fairly. They become channels of those whose voices could not be heard like the Filipino minorities, the poor and the different species of the environment endangered by extinction. As just people, they will demand the remediation of contaminated areas that have toxic wastes and pesticides so that they do not harm the health and well-being of all. They will demand cleanup of areas that cause injury to the vulnerable and the powerless.

Being just, the individual and the community would work toward personal and communal change. Their practice of the moral virtue of justice ensures that all human beings in the present and in the future will be able to sustain themselves not only economically but morally, spiritually, socially, and culturally as they aim for the fullness of life in God. They would actively participate in God's ongoing creation—beginning with small and communal choices—to build a more just world. They see all people and different species in the environment as members of God's family. They strive to achieve God's vision of harmony and sustainability, of a right relationship with each one and the environment by giving everyone his or her due, treating each one fairly, treating them as they really are—God's creation with intrinsic value.

3.5.2.4.3. Living Steadfastly

The Basic Ecclesial Community members would become steadfast and courageous to resist the lures of excessive living and

the "throwaway culture"[102] of the present time. They are morally convinced that it is wrong to acquire excessive material wealth while others are destitute. They do not waste the natural resources of the environment by providing for their needs only rather than their wants. They consciously strive to integrate their faith and their daily life in their solidarity with one another.

In persevering to seek the common good they maintain a courageous stance even when it is unpopular. Even if their protest seems fruitless against environmental injustice where the poor suffer the most from the effects of environmental degradation, they persevere quietly and confidently to fight for what is right.

By their habitual practice of the virtue of fortitude, they are sustained to persevere through difficult times. Courage is what one does in the face of threats and uncertainty. It takes the moral virtue of fortitude to remain strong when one is afraid. It takes fortitude to avoid irrational actions when one is provoked by anger or even panic. Since the Basic Ecclesial Community regularly gathers around the Eucharist and shares the word of God ("*Bibliarasal*"—*Biblia at Dasal* or *Bible and Prayer*), they do not falter and they remain resolute even if their actions would put them in danger because their moral conviction is sustained by their spiritual life.

The members of the Basic Ecclesial Community would learn from the examples of Filipinos who sacrificed their lives for the cause of the environment and for the good of others. They learn from the Filipino environmental martyrs[103] who, in their commitment to protect the

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[102] Pope Francis used the phrase "throwaway culture" when he visited and gave a talk to the community of Sant' Egidio in Trastevere, Rome, on June 16, 2014. See http://en.radiovaticana.va/news/2014/06/16/pope_francis_visits_santegidio_community/1101809 (12.01.15).

[103] There have been three cases since October 2011 that Human Rights Watch in the Philippines has documented. The victims were critics of mining and energy projects who were killed allegedly by paramilitary forces directed by the military. They were very active in opposing mining and energy operations which they said threatened the environment and would displace

environment, had been killed and eliminated by the plunderers of the environment who have power and political clout.

Being steadfast in their moral conviction, however, they avoid harsh judgment or uncontrolled anger. They are strengthened by their use of prudent decision-making to live steadfastly for communal and environmental sustainability.

3.5.2.4.4. Living Moderately

In the practice of living the moral virtue of temperance, the Basic Ecclesial Community members become modest in their use of the resources of the environment. They develop the ability to control their wants and shun the vice of excessive consumerism. They have a sharpened moral consciousness to distinguish needs from wants. They know that the material things parodied as needs by media technology would lead to undue waste which has environmentally destructive consequences.

Practicing the moral virtue of temperance would make the individual and the community *selfless* rather than *selfish*. By living

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tribal communities from their land. Margarito J. Cabal, 47, an organizer of a group opposing a hydroelectric dam in Bukidnon province, was gunned down on May 9, 2012. Relatives allege that the police have not investigated the killing, and no suspect has been arrested. Cabal had told relatives that he was under military surveillance and had been called to meet the military regarding his activities. On March 5, a leader of a paramilitary group with a dozen of his men allegedly shot dead Jimmy Liguyon, a village chief in Dao, San Fernando town, Bukidnon province, in front of family members. Relatives said he was killed because he refused to sign an agreement needed to secure a mining investment, and that he had been under military surveillance. The local paramilitary group Bagani ("tribal warriors"), reportedly under military control, was allegedly responsible for the fatal shooting of Italian priest Father Fausto Tentorio, 59, in Arakan, North Cotabato province on October 17, 2011. Fr. Tentorio was a long-time advocate of tribal rights and opposed mining in the area. No one has been arrested for the killing. See HUMAN RIGHTS WATCH, *Philippines: Killings of Environment Advocates Unpunished,* at http://www.hrw.org/news/2012/07/18/philippines-killings-environment-advocates-unpunished (21.01.15).

moderately, the Basic Ecclesial Community goes beyond mere self-preservation to solidarity with one another in the spirit of the common good.

As pointed out by St. Thomas Aquinas, the way to cultivate and practice the moral virtue of temperance is to pay careful attention to natural desires, to consume what we need but not more than what is good for us. St. Thomas was emphatic in saying that the virtue of temperance "takes the needs of this life as the rule governing the pleasurable things one uses; namely that one should use them insofar as the needs of this life require their use."[104] As members of the Basic Ecclesial Community, the individual and the community would know how to temper their needs and wants in relation to the needs of others in the community.

Living moderately, the Basic Ecclesial Community members follow the "*Sapat na!* Principles: 1. *Sapat na ang pagkasira ng kalikasan.* (Enough of the destruction of the environment.); 2. *Sapat lamang ang dapat kunin mula sa kalikasan.* (Take from nature only that which is enough.); 3. *Sapat lamang ang dapat kanin at bilhin.* (Eat and buy only what is enough and needed.); 4. *Sapat dapat mayroon ang bawat isa sa kanyang mga pangangailangan upang mabuhay ng malusog at may dangal.* (Each person must have enough to sustain a healthful and dignified life.)"[105]

3.5.2.4.5. Living as Good Stewards

Infused by God with the virtues of faith, hope and charity, the members of the Basic Ecclesial Community nurture the sense of the sacred by being good stewards to one another and the environment.

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[104] St. Thomas AQUINAS, *The Summa Theologica,* Second Part of the Second Part, Question 142, Article 6.

[105] The *Sapat na!* Principles had become a popular slogan among environmentalists in the Philippines. The origin of the concept can be traced to the Franciscan Missionaries of Mary, a sisters' congregation that has a strong environmental advocacy in their apostolate. See http://www.svdcuria.org/public/jpic/jpichb/jpichben/section1.htm (14.01.15).

The individual and the community know that it is their moral responsibility to care for one another and the environment as God loves and cares for them. They understand that this moral responsibility does not grant them the right to dominate other human beings and the environment in a manner which is incongruous with God's own manner of governance.[106]

Since the first moment of creation, God has provided for the needs of his creatures, and likewise, has ordered all of creation to its perfection. Hence, the individual's and the community's moral responsibility for creation must be exercised in accordance with God's vision. The dominion referred to in Gen 1:26—"And God said, Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the birds of the heavens, and over the cattle, and over all the earth, and over every creeping thing that creeps upon the earth"—means responsible stewardship. Such stewardship must uphold the common good of all, respecting the intrinsic value and purpose for which every creature was intended by God.[107] If the individual and the community in the Basic Ecclesial Community would exercise dominion in a way that would destroy the environment such as contributing to the emission of carbon dioxide, deforestation, wasting water resources, irresponsible mining, destruction of corals, and committing corruption, such actions would constitute an offense against God's original plan for creation.

In exercising responsible stewardship, the individual and the community are committed to be faithful in doing what God intends for the good of the human community and of the other species of the environment. The United States Catholic Conference, in their pastoral statement, rightly pointed out:

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[106] See H. MONTEFIORE, *Man and Nature*, London: Collins, 1975, p. 224.

[107] See Drew CHRISTIANSEN and Walter GRAZER, eds., *"And God Saw That It Was Good": Catholic Theology and the Environment,* Washington, DC: U.S. Catholic Conference, 1996, p. 32.

> As faithful stewards, fullness of life comes from living responsibly within God's creation.[108]

In being good stewards, creation is not viewed as something to be abused and manipulated for economic growth and development. The Basic Ecclesial Community would regard God's creation as *Oikos*[109] which depends upon our care. As the United States Catholic Conference explained,

> Human beings bear a unique responsibility before God: to safeguard the created world and by their creative labor should even enhance it.[110]

As rational beings, endowed with the creative capacity to participate in God's continuing creative power over the environment, the members of the Basic Ecclesial Community would protect all forms of life on this earth and at the same time enhance it in a responsible manner. In this regard, technology should be at the service of responsible stewardship. The members of the Basic Ecclesial Community would not use technology to sustain economic growth and development by cutting more trees, destroying land and forests in search of minerals, polluting the rivers and seas, and emitting more carbon dioxide into the atmosphere. The members of the Basic Ecclesial Community know that they have the power, intelligence, and moral responsibility to nurture and help order the world in accordance with God's plan,[111] not to satisfy greed and selfishness.

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[108] UNITED STATES CATHOLIC CONFERENCE, *Pastoral Statement Renewing the Earth: An Invitation to Reflection and Action on Environment in Light of Catholic Social Teaching*, November 14, 1991, II. A.

[109] From which the word *ecology* is derived. It is explained in the definition of terms.

[110] *Ibid*., III, A.

[111] See Thomas DERR, *Ecology and Human Need*, Philadelphia: Fortress, 1975, pp. 122-126.

The sense of the sacred in which the Basic Ecclesial Community nurtures communal and environmental sustainability would be sustained by their life of prayer and meditation. The time for prayer and meditation would offer a way for the individual and the community to slow down the incessant activity of our modern lifestyle and to awaken the deep connection between the individual, the community and the environment.[112] The members know that integrating contemplative and ritual practices with environmental activism sustains and deepens their commitment to heal the broken relationship with one another and the environment.[113] They always find strength in their moral commitment for communal and environmental sustainability by praying constantly the Canticle of St. Francis of Assisi:[114]

Brother Sun, Sister Moon
Most high, all-powerful, all good, Lord!
All praise is yours, all glory, all honour
And all blessing.
To you, alone, Most High, do they belong.
No mortal lips are worthy

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[112] Ken WILBER, *The Marriage of Sense and Soul*, New York: Random House, 1998, pp. 49-52.

[113] *Ibid.*

[114] E. A. Armstrong says the very structure of the *Canticle* reveals the search for and the encounter with overall unity. The number seven in the verses shows the emergence of this deep structure; it is made up of 3 + 4, the greatest symbols of totality and unity. Vertical and horizontal lines cross in the hymn. Together they form a well-known symbol of cosmic totality. The first moment goes upward toward God: *Most high, all-powerful, all good, Lord!* That is the search for transcendence. But St. Francis then became aware that he was not succeeding in singing to God alone. He then turned to the horizontal dimension where all creatures are, for they speak of God. He then opened the horizontal and universal dimensions of kinship. He sang to creatures that bear the likeness of God. It means that, if we cannot speak of God, we can speak to creatures who are marked by the sacramentality of God's presence. See E. A. ARMSTRONG, *Saint Francis, Nature Mystic: The Derivation and Significance of the Nature Stories in the Franciscan Legend*, Berkeley: University of California Press, 1973, pp. 152-158.

To pronounce your name.
All praise be yours, my Lord, through all that you have made,
And first my lord Brother Sun,
Who brings the day; and light you give to us through him.
How beautiful is he, how radiant in all his splendour!
Of you, Most High, he bears the likeness.
All praise be yours, my Lord, through Sister Moon and Stars;
In the heavens you have made them, bright
And precious and fair.
All praise be yours, my Lord, through Brothers Wind and Air,
And fair and stormy, all the weather's moods,
By which you cherish all that you have made.
All praise be yours, my Lord, through Sister Water,
So useful, lowly, precious and pure.
All praise be yours, my Lord, through Brother Fire,
Through whom you brighten up the night.
How beautiful is he! Full of power and strength.[115]

3.6. Conclusion

In this final chapter, the paradigm of sustainable community is presented as the appropriate paradigm for environmental sustainability. As argued in this research, a community which is sustained by the habitual practice of the virtues also sustains the environment because when human beings would treat each other with prudence, justice, fortitude, temperance, faith, hope and charity, they would act toward the environment in the same manner.

It is the assertion of this research that the ramification of human action on the environment depends on the perspective that defines the relationship between the human community and the environment. As we have seen in Chapter Two, the paradigm of sustainable development stresses that human intervention on the environment would be focused on sustaining economic growth and development. For sustainable community, however, human action on the environment is motivated not by the idea of economic growth but by the virtues. Thus, a sustainable environment could be attained if

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[115] Reprinted in *Spirituality Today* 24, Spring 1984, p. 22.

there would be a shift of paradigm from sustainable development to sustainable community since the pattern of human intervention on the environment would not be coming from the economic point of view but from the moral and spiritual one.

Indeed, the environmental problems that we are facing are interconnected. Climate change, for example, drives different species and organisms from their habitat and are thus at great risk of extinction while deforestation increases the rate of climate change. In the same way, the approach to handle the environmental crisis has to be framed in an interdisciplinary manner. As we have said in this Chapter, where there is sustainable community there is also a sustainable environment. The human community and the environment are distinct but they are always bound together as God's creation.

The argument for sustainability intended for both the human community and the environment is framed within the concept of the Christian virtues. The habitual practice of the virtues is the moral expression of our love of God and neighbor (Mk 12:30-31), of living out God's vision of right relationship based on communion with all God's creation on this planet. In such a manner, we may be able to recover our "attitude of wonder," as Pope Francis put it succinctly, "of contemplation, of listening to creation and being able again to interpret the rhythm within it [of] the love story between God and man."

This paper has argued emphatically the need for a paradigm shift from sustainable development to sustainable community to sustain the environment. The arguments for doing so had been laid out in this chapter. Although the global community needs sustainable development, our paradigm should not stop where economic growth and development are the only criteria of living. Living virtuously, this dissertation asserts, should be the norm to sustain ourselves and the environment.

The Basic Ecclesial Community was used as a model to show that a sustainable community is not an abstract idea. The members of the Basic Ecclesial Community will become examples of virtuous living

for communal and environmental sustainability. It reminds us of the common saying that if we want to change the world, we have to start from ourselves. However, we should not forget that to learn to live virtuously and sustainably is a process; it does not happen all at once. In the same way, communal and environmental sustainability is a long route. In fact, it is a lifetime undertaking. We may fail but at least we resolve to do the task steadfastly and consistently.

GENERAL CONCLUSION

"What should we do?" "How do we live sustainably?" These questions were answered by the speaker I mentioned in the General Introduction by presenting sustainable development as the paradigm for environmental sustainability. I have argued and demonstrated in this paper, however, that sustainable development does not fit well into the question about environmental sustainability. To live sustainably with one another and with the environment, we need to live virtuously.

As we have seen, the dominant economic system of free-market capitalism, obsessed with short-term profit and perpetual growth, feeds human wants and needs and it is damaging the planet. Mahatma Gandhi is quoted to have said, "There is enough for everyone's need, but not enough for everyone's greed."[1] The ecological crisis challenges us to make a reassessment of our understanding of ourselves, our relationship to each other and the environment. The paradigm of sustainable community which this paper proposes for environmental sustainability invites us to reorient our thinking to who we are and what we are for and to change our behavior in every significant area of our human endeavor. We have to take into account our values and lifestyle, our relational and moral choices in view of preserving the common good.

When we set goals, establish objectives, or intend a new course of action, it would be a moral exigency to consider their consonance with the sustainability of the community and the environment. In

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[1] Joseph H. HULSE, *Sustainable Development At Risk: Ignoring the Past*, New Delhi: Cambridge University Press India Pvt. Ltd., 2007, p. xiii.

a world dominated by short-term strategic planning for economic growth and development, we need to cultivate and practice the moral virtues and nurture the sense of the sacred for long-term communal and environmental sustainability. In this regard, I would like to bring out the following important points:

1. Living Sustainably

The principle to live sustainably for communal and environmental sustainability is actually not new to our consciousness. It is part of the Church's desire for communal and individual holiness. As we see in the lives of the saints, especially in the life of St. Francis of Assisi, holiness implies virtuous living, and virtuous living means prudent, just, steadfast and moderate lifestyles. This does not mean that we do not enjoy the beauty and goodness of God's creation. It means that we do so prudently, justly, steadfastly and moderately so that creation's goodness and beauty can be passed along to future generations.

Indeed, to live sustainably is to live more simply.[2] To live more simply is to unburden ourselves from the preoccupation of *having more* to *being more*.[3] Simplicity is not to be understood as living with less than what we need to flourish but to live with balance in order to find a life of greater purpose and fulfillment. It is unjust to talk about living sustainably while we are not conscious of the millions of people who do not have enough of the basic necessities of life. To live sustainably and simply is to be in solidarity with the poor, the disadvantaged and the marginalized and to help improve their quality of life.

Sustainable living demands that the new pattern of our acting is to live virtuously. The new pattern requires a significant change of

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[2] E. F. Schumacher, who wrote the book *Small Is Beautiful*, opined that "an attitude to life which seeks fulfillment in the single-minded pursuit of wealth—in short, materialism—does not fit into this world, because it contains within itself no limiting principle, while the environment in which it is placed is strictly limited." See E. F. SCHUMACHER, *Small Is Beautiful: Economics As If People Mattered,* New York: Harper and Row, 1973, p. 21.

[3] This phrase is cited in Chapter Two, footnote number 46.

attitudes and values; it requires an ecological conversion. Ecological conversion is about seeking harmony with other human beings in the community and with the environment because it is what God intends for all creation. To be in harmony is not to take what is due for others; it is not to take more from what the environment can replenish. God's creation—the environment—has limits. Its resources are not infinite. The habitual practice of the virtues is the principle of living sustainably within earth's limits.

As emphasized in this research, all life on this planet is part of the great interconnected and interdependent system. Damaging one part of the system affects the whole as we have seen the connection between disproportionate use of fossil fuels, climate change and the rising sea levels. In the same way, our human communities throughout generations are interdependent; the future generations would be affected by our present actions.

To live sustainably for the present and future generations, shaped by the cultivation and practice of the moral virtues and the sense of the sacred, we conserve life-support systems in which we keep the planet fit to nourish life, we conserve biodiversity in which a variety of species and other organisms are being protected because they are all components of our life-support system, and we ensure the right use of renewable resources of the environment that include soil, wind, forests, and marine and freshwater ecosystems.

Fossil fuels such as coal, oil, natural gas, plastics, and heavy metals are non-renewable resources. As virtuous human beings, we should learn how to "reduce, reuse, and recycle,"[4] in which we use less of these non-renewable resources and switch to renewable resources as much as possible. Most of the creative and productive interventions like these start in small communities. A coherent small community provides the most readily accessible means to take environmentally valuable actions since people are formed and informed of their indispensable role in creating a sustainable community and environment. The Basic Ecclesial Community is an illustration of this.

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[4] See http://www2.epa.gov/recycle (10.02.15).

A coherent small community such as the Basic Ecclesial Community facilitates human beings' commitment to work for sustainability where their care for the community and the environment is expressed by using natural resources frugally and sustainably, by recycling materials, and by minimizing wastes and disposing of them safely. They would make this their priority because they are given the necessary mutual support to use their creativity, intelligence and experience to care for one another and the environment.

2. Having an Ethic of Personal Responsibility

The universal moral responsibility to care for the community and the environment ultimately boils down to personal responsibility.[5] Every person can make a small or great effort that could nourish or damage the community and the environment. Each person can decide to choose ways and means to foster or destroy communal and environmental sustainability. Inday was our example in the previous discussion. Another example that could illustrate this point is what G. Huber commented:

> The risks of overeating are at the most private end of the spectrum, the risks of contaminates in mass-produced food toward the public end.… Still more "public" are risks of diffuse pollution.… Finally, there are risks of a global character—the "greenhouse effect" … the risks of nuclear war. These are the most public risks of all—universally shared and individually inescapable.[6]

Ways of eating and what to eat seemingly belong to the personal realm. When eating becomes excessive, however, when other members

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[5] Michael Boylan called this "Personal Worldview Imperative" in which he argues that "all people must develop a single, comprehensive and internally coherent worldview that is good and that we strive to act out in our daily lives." See Michael BOYLAN, *Basic Ethics,* Upper Saddle River, New Jersey: Prentice Hall, 2000, p. 27.

[6] See G. HUBER, "Public/Private," as quoted in *The Environment in Question: Ethics and Global Issues*, eds. David E. Cooper and Joy A. Palmer, London and New York: Routledge, 1992, p. 201.

of the community are deprived of the basic necessities of life such as food, it becomes a communal problem. Individual responsibility is very important for communal and environmental sustainability. The Sacred Scriptures clearly emphasize the importance of personal responsibility when Jesus said that "you can tell a tree by its fruit" (Mt 12:33). In the same manner, Jesus emphasized the essential link between the individual person and the community: "As often as you did it for one of my least brothers, you did it for me" (Mt 25:40).

An ethic for sustainable living thus starts with the individual. Taking this as an example, to eat well is to practice the virtue of temperance. In the light of the environmental crisis, right eating is that which brings the human being's natural desires for food in view of the limits of the resources of the earth and in consideration of others' fundamental needs. In line with the discussion of the moral virtue of temperance, overindulgence is morally wrong. According to St. Thomas Aquinas, "excessive sense desire is a childlike sin … it is to be expected of babies or adolescents who are still essentially slaves."[7] The practice of the virtue of temperance as an exercise of personal responsibility means the individual has gained the moral capacity to control urges and to consider the consequences of one's tendencies for overindulgence. The implication of St. Thomas' argument is the necessity to give careful attention to natural desires, to consume only what we need, not more than what is necessary.

One of the teachings of Pope Benedict XVI also centered on personal responsibility. As he said in his message for World Peace Day 2009,

> Does not every one of us sense deep within his or her conscience a call to make a personal contribution to the common good and to peace in society?[8]

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[7] St. Thomas AQUINAS, *The Summa Theologica,* Second Part of the Second Part, Question 142, Articles 2 and 4.

[8] BENEDICT XVI, "Message of His Holiness Pope Benedict XVI for the Celebration of the World Day of Peace," January 1, 2009, at http://

Personal responsibility, however, should always be understood in the context of the community. We are bound to others. An ethic of personal responsibility is always directed to the protection and preservation of the common good. To be virtuous and coherent persons, we must commit ourselves to the care of the human community and the environment. We always have to focus on the question about the ultimate meaning of what, why, how and who we are. If we truly do this, our way of thinking, of acting, would be entirely transformed. We would realize that the violence we do to the community and the earth is violence done to ourselves. We would realize that continuing to misuse the earth's limited resources in the name of economic growth and development is nothing short of being morally irresponsible.

3. Restoring the Bond

As argued in this research, the environmental problems we have at the present are contrary to God's will. Human beings' penchant for economic growth and development has led us to the sad state of the environment. The environment has been destroyed and devastated by human maneuvering with short-term and long-term effects we are all now facing.

We have failed our role as caretakers—as stewards—of one another and of God's creation. We have broken the bond that God has created between us and the environment. Sustainable development could not help us either to restore the bond. In fact, it perpetuates the kind of relationship based on irresponsibility, misuse and carelessness. What is required is a change of our understanding that should start with the recognition that everything owes its existence to God. In doing so, as we have pointed out earlier, we have to make concrete the two-fold commandment of love of God and love of neighbor (Lk 10:27). The sad state of the environment summons us to love God by loving His creation, not to manipulate it according to our whims, and to love

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w2.vatican.va/content/benedict-xvi/en/messages/peace/docu-ments/hf_benxvi_mes_20081208_xlii-world-day-peace.html (11.02.15).

our neighbor especially those who suffer much from the effects of the environmental destruction and the next generations of human beings who have the right to inherit a healthy environment.

Addressing the roots of the environmental problem is what this research is all about. We have to identify the ways to change our core values and paradigms so that the bond could be restored and a meaningful, fulfilling relationship with one another and the environment would happen. The question precisely in this endeavor is what is going to bring about the change and the transformation that is necessary. Sustainable development is needed but it is not the paradigm that could facilitate this transformation. As argued in this paper, sustainable development is not able to attain its objective—environmental sustainability. The materialistic model it espouses betrays its objectives. The essence of its concept lies in the principle of economic profit at the expense of the human community and the environment.

In this sense, we need the moral paradigm that this paper had argued for persistently—sustainable community. An essential and substantial transformation will happen when the individual and the community recover the bond that morally and spiritually connects each one in the community and with the environment. When human beings in the community live prudently, justly, steadfastly, and moderately with faith, hope, and charity, communal and environmental sustainability happens. It is for this reason that this research reasonably concludes that sustainable community is what we need as a paradigm for a sustainable environment, not sustainable development.

RECOMMENDATIONS

This research paper does not claim to be exhaustive. The issues involving the state of the environment, sustainable development and sustainable community are very wide in scope and the available literature on those topics is huge. The interconnected problems of the environment, for example, may not have been explored here in depth but the data are sufficient to inform the reader of the enormity of the environmental problems. This paper made every effort to be concise so as not to overwhelm the reader with encyclopedic data for easier comprehension. The reader is therefore encouraged to use this research as a beginner's tool kit to learn more.

The following items are specific points that this paper would like to bring out for further research and action:

1. The data used in this research is time-bound. It means that, as regards the data of climate change and global warming, scientists continue to do research and monitoring and they gather new facts with corresponding explanations of the implications of the new data for the global human community. The Intergovernmental Panel on Climate Change has been giving a regular report to the United Nations once in every four to seven years or depending on the need since its establishment in 1988. In other words, the reader needs to be updated of the data from time to time.

2. Chapter One on the state of the environment may have barely scratched the surface of the environmental problems. Other issues like desertification, energy efficiency,

alternative sources of energy, carbon footprints, endangered species, ocean acidification, disruption of the hydrologic cycle, and many more may deserve further attention since these have not been discussed here. Meanwhile, new environmental problems are being identified all the time. To have a comprehensive grasp of the problems, the reader is urged to read other sources of information regarding these issues.

3. This research proposes that the contents of the modules for the continuing formation of the Basic Ecclesial Community have to be translated into the local language of the community. The Philippines has eight major languages but dialects are estimated to be more than a hundred in number. The use of the major languages normally corresponds to the big ethnic groupings. The official national languages of the country are Pilipino (based on Tagalog, one of the eight major languages which is spoken in Manila, central and south-central Luzon, and the islands of Luzon and Marinduque) and English for the formal medium of instruction in schools and other institutions. Pilipino has the most widespread written literature among the other languages. Cebuano is the second widely spoken language of the country especially in the provinces of Cebu, Negros Oriental, Western Leyte, and parts of Mindanao. Ilocano is the local language of the northern part of the country; it is the third widely spoken language.[1] English, together with Pilipino, are the official languages of the country but English is used normally in formal settings. Daily conversations of the local community are done in their local language. The members of the Basic Ecclesial Community are often the common people; they are not highly sophisticated in terms of the use of languages other

[1] See http://www.britannica.com/EBchecked/topic/456399/Philippines/23731/Languages (10.02.15).

than their own. Expressions of thoughts and ideas are best done therefore in their own local tongue.

4. There should be follow-up sessions and assessments to be done by the Education Ministry so the expected output of the formation program for communal and environmental sustainability of the Basic Ecclesial Community will be monitored. It is important to point out that when the virtues become habitual, the awaited results of the formation program become more concrete and promising.

5. A papal encyclical devoted to ecology is expected to come out after the first quarter of 2015. It would be interesting to know what the present pope—Pope Francis—would say about the problems of the environment. He had already said a lot about the issue but a papal encyclical dedicated solely to the environment, which is unprecedented in the history of papal encyclicals, would be a thought-provoking material. This paper would be enriched if this would be read in the light of the soon-to-come-out papal encyclical.

APPENDIX 1: MAP OF THE REPUBLIC OF THE PHILIPPINES



APPENDIX 2: SUGGESTED MODULES FOR COMMUNAL AND ENVIRONMENTAL SUSTAINABILITY

1. Introduction

The modules are designed to be as simple as possible to provide a flexible framework for the formation program of the Basic Ecclesial Community for communal and environmental sustainability. It is to empower the individual and the community to use their creativity and initiative by cultivating and practicing the virtues to help solve the environmental problem. The Education Ministry of the parish where the respective Basic Ecclesial Communities belong is free to revise, adapt, and integrate the suggested modules to meet their needs.

2. Format

The modules contain their respective purpose, importance, activities and deepening/processing of the experience. Each module starts with a call to prayer and ends with a prayer.[1] The same prayers are retained for each module because repetition helps in integrating the words into one's consciousness which hopefully could be formed into a habit.

The activities are specific so that the Basic Ecclesial Community members can easily understand and connect environmental issues with the need to live out the virtues for communal and environmental sustainability.

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[1] The prayers are inspired from *Worship Resources, Earth Day Sunday* by NATIONAL COUNCIL OF CHURCHES, Alabama: New Day Publishing, 2002.

MODULE 1: BEING AWARE OF THE ENVIRONMENT

Call to Prayer:

Leader: We gather today in the presence of God and in communion with those who have gone before us and those who will come after.

Community: On this Earth, we open our minds to learn about ecological threats to the health of present and future generations and to the whole community of life.

Leader: We open our hearts to the message of hope that comes to us through Jesus Christ.

Community: We reach out our hands to bring healing and change, for the sake of the children of the earth—past, present, and future.

Leader: And we raise our voices to join with the rest of creation in singing praise to God, whose steadfast love and faithfulness endures to all generations.

Objectives:

Upon completing this module, the Basic Ecclesial Community will be able to:

1. Recognize that the environment is God's gift;
2. Appreciate the environment through their immediate surroundings;
3. Become familiar with the nature of a small area of their neighborhood.

Rationale:

Direct contact is the best way of appreciating the beauty of the environment. In this activity, the members of the Basic Ecclesial Community are asked to go to an area in order to observe its diversity of the species around it. In this way, they will better understand what the environment is all about and the human being's place in it.

Activity:

Choose an easily accessible area for the activity. Divide the community into small groups and ask each group to choose a plot. Discuss with the groups that the purpose of performing the activity is to become familiar with the environment that is around them. Once the groups are back in the session hall, ask each group to write a report on their respective areas and describe it to the assembly.

Deepening and Processing:

Synthesize all the sharing and the inputs with the section on the virtues and on living virtuously for communal and environmental sustainability, especially focusing on being aware of one's environment.

Closing Prayer:

Leader: Life-giving God, we offer ourselves in service to you.

Community: We are connected to other people of faith and conscience around the world who are working for a peaceful, just, and sustainable world.

Leader: This global community supports us—we support one another.

Community: We are connected with those who have gone before us: the martyrs and heroes, all who offer their lives for the sake of future generations, and we are connected with those who will come after us.

Leader: We are related to the earth and all its creatures in a web that cannot be broken without injury to all.

Community: The earth and our fellow creatures support us—we are their advocates.

Leader: We are connected to Jesus Christ, who reveals God to us, sends us the Spirit, and sends us out in his name.

Leader: Therefore, let us lay aside every weight and sin that clings so closely, and let us run with perseverance the race that is set

before us, looking to Jesus, the pioneer and perfecter of our faith, resisting all powers that destroy, bringing healing and hope to the world.

People: O God, Creator, Redeemer, Sustainer, we offer our lives in service to you.

MODULE 2: BEING AT HOME WHERE I AM

Call to Prayer:

Leader: We gather today in the presence of God and in communion with those who have gone before us and those who will come after.

Community: On this Earth, we open our minds to learn about ecological threats to the health of present and future generations and to the whole community of life.

Leader: We open our hearts to the message of hope that comes to us through Jesus Christ.

Community: We reach out our hands to bring healing and change, for the sake of the children of the earth—past, present, and future.

Leader: And we raise our voices to join with the rest of creation in singing praise to God, whose steadfast love and faithfulness endures to all generations.

Objectives:

Upon completing this module, the Basic Ecclesial Community will be able to:

1. Identify aspects of different environments in which they feel comfortable;
2. Consider a variety of factors that could damage those places; and
3. Understand that the environment, no matter how large or small, can be changed in a variety of ways.

Rationale:

This activity allows the individual and the community to begin to think about their own environment and what they want from their surroundings. There are important things to consider when one becomes conscious with the environment—things that relate to air, land and water pollution, or climate. The individual and the community need to understand unity—that even places close to home are affected by what happens in other parts of the planet. They must also understand that what they do in one place has an effect on life in another place.

Activity:

1. Ask each one to remember a place that made him/her happy and list the characteristics of the place that made it wonderful.

2. Divide the group into pairs and ask everyone to share their list with their partner.

3. After a few minutes, ask the pairs to find another partner with whom to exchange their lists.

Deepening and Processing:

In deepening and processing the sharing of the experiences, use the discussion of this research on *Intrinsic Value* in Chapters Two and Three. Synthesize all the sharing and the inputs with the section on the virtues and on living virtuously for communal and environmental sustainability, focusing on the point "where one feels at home."

Closing Prayer:

Leader: Life-giving God, we offer ourselves in service to you.

Community: We are connected to other people of faith and conscience around the world who are working for a peaceful, just, and sustainable world.

Leader: This global community supports us—we support one another.

Community: We are connected with those who have gone before us: the martyrs and heroes, all who offer their lives for the sake of future generations, and we are connected with those who will come after us.

Leader: We are related to the earth and all its creatures in a web that cannot be broken without injury to all.

Community: The earth and our fellow creatures support us—we are their advocates.

Leader: We are connected to Jesus Christ, who reveals God to us, sends us the Spirit, and sends us out in his name.

Leader: Therefore, let us lay aside every weight and sin that clings so closely, and let us run with perseverance the race that is set before us, looking to Jesus, the pioneer and perfecter of our faith, resisting all powers that destroy, bringing healing and hope to the world.

People: O God, Creator, Redeemer, Sustainer, we offer our lives in service to you.

MODULE 3: WHAT I DO EVERY DAY FOR THE ENVIRONMENT

Call to Prayer:

Leader: We gather today in the presence of God and in communion with those who have gone before us and those who will come after.

Community: On this Earth, we open our minds to learn about ecological threats to the health of present and future generations and to the whole community of life.

Leader: We open our hearts to the message of hope that comes to us through Jesus Christ.

Community: We reach out our hands to bring healing and change, for the sake of the children of the earth—past, present, and future.

Leader: And we raise our voices to join with the rest of creation in singing praise to God, whose steadfast love and faithfulness endures to all generations.

Objective:

Upon completing this module, the members of the Basic Ecclesial Community will be able to recognize the impact of their actions on the environment.

Rationale:

This activity gives the individual and the community a chance to be more conscious of the relationship between their actions and the environment in which they live. If the individual and the community express powerlessness to change anything, reinforce the idea that we all affect the environment. For example, stress that every drop of water that one person conserves leaves water for the next person. When each one can understand his/her role in the environment, all can begin to understand that they too can make a positive difference.

Activity:

Convey to the group that they may not be conscious of spending time in the environment. They may think of the environment as an abstract idea and not related to their daily activities. But where they live is the environment. So ask the group to make a list of *What I Did Today* from the time they wake up until they go to sleep. Tell them to be very specific. Ask the group to think about how each of their activities may have affected the environment. As they review each activity, ask them to think about the following questions: Did your activities add to air or water pollution? Did your activities involve the use of some form of energy? Was the environment changed in some way by the activity? Divide the big group into smaller groups of three. Tell them to discuss their lists and the potential consequences their actions may have on the environment. Then have each group brainstorm what they might do differently that would not affect the environment in a negative way or that might actually help the environment.

Deepening and Processing:

Synthesize all the sharing and the inputs with the section on the virtues and on living virtuously for communal and environmental sustainability, focusing on "what one does every day for the environment."

Closing Prayer:

Leader: Life-giving God, we offer ourselves in service to you.

Community: We are connected to other people of faith and conscience around the world who are working for a peaceful, just, and sustainable world.

Leader: This global community supports us—we support one another.

Community: We are connected with those who have gone before us: the martyrs and heroes, all who offer their lives for the sake of future generations, and we are connected with those who will come after us.

Leader: We are related to the earth and all its creatures in a web that cannot be broken without injury to all.

Community: The earth and our fellow creatures support us—we are their advocates.

Leader: We are connected to Jesus Christ, who reveals God to us, sends us the Spirit, and sends us out in his name.

Leader: Therefore, let us lay aside every weight and sin that clings so closely, and let us run with perseverance the race that is set before us, looking to Jesus, the pioneer and perfecter of our faith, resisting all powers that destroy, bringing healing and hope to the world.

People: O God, Creator, Redeemer, Sustainer, we offer our lives in service to you.

MODULE 4: NURTURING THE SENSE OF COMMUNITY

Call to Prayer:

Leader: We gather today in the presence of God and in communion with those who have gone before us and those who will come after.

Community: On this Earth, we open our minds to learn about ecological threats to the health of present and future generations and to the whole community of life.

Leader: We open our hearts to the message of hope that comes to us through Jesus Christ.

Community: We reach out our hands to bring healing and change, for the sake of the children of the earth—past, present, and future.

Leader: And we raise our voices to join with the rest of creation in singing praise to God, whose steadfast love and faithfulness endures to all generations.

Objectives:

After this module, the group will be able to:

1. Examine the idea of community as it relates to environmental concepts; and
2. Understand the connections among many parts of the environment, not just human beings.

Rationale:

Most human beings live in communities in which they interact with each other to meet their needs. When we think of communities, we usually think of people, but non-living elements are important parts of communities as well. Without minerals, air, water, and sun, there would be no human community. Yet we often take these things for granted. Part of the purpose of this module is to help the group be more conscious of the elements on which humans and other living

creatures depend. With that awareness will come the realization that we must care for and conserve the elements essential to our existence.

Activity:

Divide the big group into smaller ones and ask the groups to define community. After ten minutes, ask the groups to share their definitions. Ask them to identify the points they think are most important. When all have reported, see if there is one definition on which everyone agrees—one that has the important elements of community. Each group then represents one of the non-living essentials for life. Ask each one in each group to identify the ways in which that element is essential to living creatures, and write each response on large sheets of paper. When the groups have completed their work, ask each to share what they have discovered. Tell the group that animals also need these elements. As we, humans, use animals or affect them, we affect the lives of other living creatures, not just ourselves. Remind them that humans have the ability to affect all other living things and so we have a large responsibility to take care of them. End the activity by emphasizing the interdependence and interconnectedness of all creatures.

Deepening and Processing:

Use the section on the concept of sustainable community in Chapter Three to integrate the sharing. Synthesize all the sharing and the inputs with the section on the virtues and on living virtuously for communal and environmental sustainability, focusing on the need to nurture the sense of community.

Closing Prayer:

Leader: Life-giving God, we offer ourselves in service to you.

Community: We are connected to other people of faith and conscience around the world who are working for a peaceful, just, and sustainable world.

Leader: This global community supports us—we support one another.

Community: We are connected with those who have gone before us: the martyrs and heroes, all who offer their lives for the sake of future generations, and we are connected with those who will come after us.

Leader: We are related to the earth and all its creatures in a web that cannot be broken without injury to all.

Community: The earth and our fellow creatures support us—we are their advocates.

Leader: We are connected to Jesus Christ, who reveals God to us, sends us the Spirit, and sends us out in his name.

Leader: Therefore, let us lay aside every weight and sin that clings so closely, and let us run with perseverance the race that is set before us, looking to Jesus, the pioneer and perfecter of our faith, resisting all powers that destroy, bringing healing and hope to the world.

People: O God, Creator, Redeemer, Sustainer, we offer our lives in service to you.

MODULE 5: CARING FOR THE ENVIRONMENT

Call to Prayer:

Leader: We gather today in the presence of God and in communion with those who have gone before us and those who will come after.

Community: On this Earth, we open our minds to learn about ecological threats to the health of present and future generations and to the whole community of life.

Leader: We open our hearts to the message of hope that comes to us through Jesus Christ.

Community: We reach out our hands to bring healing and change, for the sake of the children of the earth—past, present, and future.

Leader: And we raise our voices to join with the rest of creation in singing praise to God, whose steadfast love and faithfulness endures to all generations.

Objectives:

Upon completing this module, the group will be able to:

1. Look at the environment from a different perspective; and
2. Write a Declaration of Personal Commitment to care for the environment.

Rationale:

Many questions related to the environment entail making decisions and choices that affect us and other people—people we may not know, people in generations to come. People may find it difficult to see beyond today, especially when they are facing the challenges of economic, social, and political situations. But when it comes to matters that affect the environment, we must think beyond today and see the global interconnectedness of our world. This module on taking care of the environment is of great importance because it helps the group to look at the environment from a different perspective based on understanding and responsibility. It makes them think consciously about moral problems such as: What real needs do I have? Is my behavior toward the environment responsible?

Activity:

Ask each one to write a Declaration of Personal Commitment to care for the environment and share it with the other members of the group. Ask each group to brainstorm their respective declaration based on their discussion and sharing.

Deepening and Processing:

Synthesize all the sharing and the inputs with the section on the virtues and on living virtuously for communal and

environmental sustainability, focusing on the commitment to care for the environment.

Closing Prayer:

Leader: Life-giving God, we offer ourselves in service to you.

Community: We are connected to other people of faith and conscience around the world who are working for a peaceful, just, and sustainable world.

Leader: This global community supports us—we support one another.

Community: We are connected with those who have gone before us: the martyrs and heroes, all who offer their lives for the sake of future generations, and we are connected with those who will come after us.

Leader: We are related to the earth and all its creatures in a web that cannot be broken without injury to all.

Community: The earth and our fellow creatures support us—we are their advocates.

Leader: We are connected to Jesus Christ, who reveals God to us, sends us the Spirit, and sends us out in his name.

Leader: Therefore, let us lay aside every weight and sin that clings so closely, and let us run with perseverance the race that is set before us, looking to Jesus, the pioneer and perfecter of our faith, resisting all powers that destroy, bringing healing and hope to the world.

People: O God, Creator, Redeemer, Sustainer, we offer our lives in service to you.

MODULE 6: AWARENESS OF GLOBAL WARMING

Call to Prayer:

Leader: We gather today in the presence of God and in communion with those who have gone before us and those who will come after.

Community: On this Earth, we open our minds to learn about ecological threats to the health of present and future generations and to the whole community of life.

Leader: We open our hearts to the message of hope that comes to us through Jesus Christ.

Community: We reach out our hands to bring healing and change, for the sake of the children of the earth—past, present, and future.

Leader: And we raise our voices to join with the rest of creation in singing praise to God, whose steadfast love and faithfulness endures to all generations.

Objectives:

Upon completing this module, the group will be able to:

1. Understand how everyone's lifestyle impacts global warming;
2. Understand how the Philippines contributes to global warming; and
3. Develop ideas on how to counter global warming.

Rationale:

Global climate changes have occurred naturally throughout Earth's history, usually over long periods—sometimes millions of years. But in our time, we are witnessing a rapid climate change due to the emission of greenhouse gases, including carbon dioxide, that result from industrialization and modern lifestyles revolving around the burning of fossil fuel. The emissions from motor vehicles, industries,

and others contribute to global warming, which could raise the surface temperature of the Earth enough to cause ecological damage.

Activity:

1. Write the phrase "Think Globally, Act Locally" on the board. Ask the group what they think it means and how this kind of thinking might help solve the problem of global warming.

2. Ask the group to think of what they and their family, the Philippines, and the international community can do to solve the problem of global warming.

Deepening and Processing:

Synthesize all the sharing and the inputs with the section on the virtues and on living virtuously for communal and environmental sustainability, focusing on the awareness of the effects of global warming.

Closing Prayer:

Leader: Life-giving God, we offer ourselves in service to you.

Community: We are connected to other people of faith and conscience around the world who are working for a peaceful, just, and sustainable world.

Leader: This global community supports us—we support one another.

Community: We are connected with those who have gone before us: the martyrs and heroes, all who offer their lives for the sake of future generations, and we are connected with those who will come after us.

Leader: We are related to the earth and all its creatures in a web that cannot be broken without injury to all.

Community: The earth and our fellow creatures support us—we are their advocates.

Leader: We are connected to Jesus Christ, who reveals God to us, sends us the Spirit, and sends us out in his name.

Leader: Therefore, let us lay aside every weight and sin that clings so closely, and let us run with perseverance the race that is set before us, looking to Jesus, the pioneer and perfecter of our faith, resisting all powers that destroy, bringing healing and hope to the world.

People: O God, Creator, Redeemer, Sustainer, we offer our lives in service to you.

MODULE 7: AIR POLLUTION

Call to Prayer:

Leader: We gather today in the presence of God and in communion with those who have gone before us and those who will come after.

Community: On this Earth, we open our minds to learn about ecological threats to the health of present and future generations and to the whole community of life.

Leader: We open our hearts to the message of hope that comes to us through Jesus Christ.

Community: We reach out our hands to bring healing and change, for the sake of the children of the earth—past, present, and future.

Leader: And we raise our voices to join with the rest of creation in singing praise to God, whose steadfast love and faithfulness endures to all generations.

Objectives:

Upon completing this module, the group will be able to:

1. Identify sources of air pollution;
2. Describe the causes and effects of air pollution; and
3. Recognize some of the steps they can take to prevent air pollution.

Rationale:

Everyone needs to breathe in order to survive. The quality of the air we breathe is very important for our health. But in many urban and industrial areas, various factors, such as factories and transportation, have combined to cause pollution, which lowers the quality of our air. Usually air pollution will be at its worst on calm, cloudy days because there is little wind to disperse it. We can see thick smog and smell air pollution in Metro Manila, for example. Some forms of pollution, however, are invisible. These include carbon monoxide, carbon dioxide, sulfur dioxide, nitrogen oxides, and chlorofluorocarbons.

One of the greatest causes of air pollution is the burning of fossil fuels. Fossil fuels are composed of non-renewable resources like coal, oil, and natural gas. We use them to heat our homes, run industrial plants, and fuel our cars. Until there is a commitment to using alternate sources of energy, the world will continue to be dependent on fossil fuels, and their widespread use will cause great problems. In the long run, this will cause a lot of damage to the environment.

Activity:

Form the group into pairs and ask each pair to think of some local sources of air pollution and write them down. Have each pair develop five questions and ask the pair to present their questions to the big group. Write on the board the identified list of local sources of air pollution. Ask the big group to brainstorm ways they can reduce air pollution.

Deepening and Processing:

Synthesize all the sharing and the inputs with the section on the virtues and on living virtuously for communal and environmental sustainability, focusing on how to stop or at least minimize air pollution.

Closing Prayer:

Leader: Life-giving God, we offer ourselves in service to you.

Community: We are connected to other people of faith and conscience around the world who are working for a peaceful, just, and sustainable world.

Leader: This global community supports us—we support one another.

Community: We are connected with those who have gone before us: the martyrs and heroes, all who offer their lives for the sake of future generations, and we are connected with those who will come after us.

Leader: We are related to the earth and all its creatures in a web that cannot be broken without injury to all.

Community: The earth and our fellow creatures support us—we are their advocates.

Leader: We are connected to Jesus Christ, who reveals God to us, sends us the Spirit, and sends us out in his name.

Leader: Therefore, let us lay aside every weight and sin that clings so closely, and let us run with perseverance the race that is set before us, looking to Jesus, the pioneer and perfecter of our faith, resisting all powers that destroy, bringing healing and hope to the world.

People: O God, Creator, Redeemer, Sustainer, we offer our lives in service to you.

MODULE 8: WATER POLLUTION

Call to Prayer:

Leader: We gather today in the presence of God and in communion with those who have gone before us and those who will come after.

Community: On this Earth, we open our minds to learn about ecological threats to the health of present and future generations and to the whole community of life.

Leader: We open our hearts to the message of hope that comes to us through Jesus Christ.

Community: We reach out our hands to bring healing and change, for the sake of the children of the earth—past, present, and future.

Leader: And we raise our voices to join with the rest of creation in singing praise to God, whose steadfast love and faithfulness endures to all generations.

Objectives:

Upon completing this module, the group will be able to:

1. Describe the sources of water pollution and how they affect water quality;
2. Identify ways to limit water pollution; and
3. Understand how difficult it can be to remove pollutants from water.

Rationale:

Water pollution is a threat to the Earth's water. Although it can be caused by natural processes such as erosion, volcanic activity, and the decay of organic matter, it is generally caused by human activities. Chemical spills, toxic runoff especially from mining, and untreated wastes all contribute to water pollution. It must be emphasized how difficult it can be to treat water pollution.

Activity:

Prepare a glass full of water and have a sachet of food coloring. Illustrate water pollution by pouring some food coloring into the glass of water to simulate a chemical spill. This chemical spill has contaminated the water. Have the group identify pollutants that are most common in local water, where these pollutants originate, and what harms they cause to every organism's health and the environment.

Deepening and Processing:

Synthesize all the sharing and the inputs with the section on the virtues and on living virtuously for communal and environmental sustainability, applying these to the environmental problem of water pollution.

Closing Prayer:

Leader: Life-giving God, we offer ourselves in service to you.

Community: We are connected to other people of faith and conscience around the world who are working for a peaceful, just, and sustainable world.

Leader: This global community supports us—we support one another.

Community: We are connected with those who have gone before us: the martyrs and heroes, all who offer their lives for the sake of future generations, and we are connected with those who will come after us.

Leader: We are related to the earth and all its creatures in a web that cannot be broken without injury to all.

Community: The earth and our fellow creatures support us—we are their advocates.

Leader: We are connected to Jesus Christ, who reveals God to us, sends us the Spirit, and sends us out in his name.

Leader: Therefore, let us lay aside every weight and sin that clings so closely, and let us run with perseverance the race that is set before us, looking to Jesus, the pioneer and perfecter of our faith, resisting all powers that destroy, bringing healing and hope to the world.

People: O God, Creator, Redeemer, Sustainer, we offer our lives in service to you.

MODULE 9: DEFORESTATION

Call to Prayer:

Leader: We gather today in the presence of God and in communion with those who have gone before us and those who will come after.

Community: On this Earth, we open our minds to learn about ecological threats to the health of present and future generations and to the whole community of life.

Leader: We open our hearts to the message of hope that comes to us through Jesus Christ.

Community: We reach out our hands to bring healing and change, for the sake of the children of the earth—past, present, and future.

Leader: And we raise our voices to join with the rest of creation in singing praise to God, whose steadfast love and faithfulness endures to all generations.

Objectives:

Upon completing this module, the group will be able to:

1. Define the functions of the forest and how the forest affects human life and the whole ecosystem;
2. Identify causes of deforestation;
3. Understand the negative effects of deforestation; and
4. Define their own role and the role of human society in protecting the forest and preventing deforestation.

Rationale:

The forest is one of the planet's essential ecosystems. Throughout history, people have treated it only in terms of its economic value. Forests help to establish and preserve the equilibrium of the atmosphere. They play a major role in cleaning our atmosphere

by removing carbon dioxide. Plants remove carbon dioxide from the air and transform it into organic matter through the process of photosynthesis. As the end result of this process, plants release oxygen into the air. Trees serve as a filter to clean air by absorbing pollutant gases and dust from the atmosphere. This filtering capacity helps to stabilize air quality, thus promoting the survival of flora and fauna that live in the forest.

Forests regulate the amount and improve the quality of water within local watersheds and rivers, and they preserve humidity. Forests prevent erosion because the roots of trees hold tightly to the soil, preventing rain from washing excessive amounts of soil into rivers. In the same way, they prevent mudslides. Forests play a role in the circulation of water, carbon, nitrogen, and oxygen in nature. These ecological functions are greater than the value of the forest products, like timber, that result from its exploitation and destruction.

Activity:

Show photos of deforestation as a result of logging, forest-clearing for single crop plantation, and others. Explain the consequences of deforestation for the air, water and soil and other organisms. Create a flowchart illustrating the effects of deforestation. Emphasize the need for trees on our planet. Encourage them to plant seedlings and sustain reforestation.

Deepening and Processing:

Synthesize all the sharing and the inputs with the section on the virtues and on living virtuously for communal and environmental sustainability, applying these to the environmental problem of deforestation.

Closing Prayer:

Leader: Life-giving God, we offer ourselves in service to you.

Community: We are connected to other people of faith and conscience around the world who are working for a peaceful, just, and sustainable world.

Leader: This global community supports us—we support one another.

Community: We are connected with those who have gone before us: the martyrs and heroes, all who offer their lives for the sake of future generations, and we are connected with those who will come after us.

Leader: We are related to the earth and all its creatures in a web that cannot be broken without injury to all.

Community: The earth and our fellow creatures support us—we are their advocates.

Leader: We are connected to Jesus Christ, who reveals God to us, sends us the Spirit, and sends us out in his name.

Leader: Therefore, let us lay aside every weight and sin that clings so closely, and let us run with perseverance the race that is set before us, looking to Jesus, the pioneer and perfecter of our faith, resisting all powers that destroy, bringing healing and hope to the world.

People: O God, Creator, Redeemer, Sustainer, we offer our lives in service to you.

MODULE 10: REDUCE, REUSE, RECYCLE

Call to Prayer:

Leader: We gather today in the presence of God and in communion with those who have gone before us and those who will come after.

Community: On this Earth, we open our minds to learn about ecological threats to the health of present and future generations and to the whole community of life.

Leader: We open our hearts to the message of hope that comes to us through Jesus Christ.

Community: We reach out our hands to bring healing and change, for the sake of the children of the earth—past, present, and future.

Leader: And we raise our voices to join with the rest of creation in singing praise to God, whose steadfast love and faithfulness endures to all generations.

Objectives:

Upon completing this module, the group will be able to:

1. Identify the many different types of waste; and
2. Identify the appropriate methods of waste management.

Rationale:

We live in a "throwaway" society where consumers are encouraged to purchase new, often unnecessary things, and to discard their older things. Most people fail to realize that this lifestyle has an adverse effect on the environment. We use up raw materials to produce things we do not really need and create tremendous waste problems. We should all realize that the environment will be healthier if we own and use fewer products and recycle the possessions we have.

Our handling of waste affects our community in many ways. Many of the products we throw in the garbage do not decay properly and can spread diseases. Chemical substances or coloring agents that people place in the trash or flush down the toilet pollute the environment. Plastic bags and other materials threaten animal life if not discarded properly. This activity teaches that they can do something to prevent unnecessary pollution in their daily lives and shows them how solid wastes can be handled in environmentally acceptable ways.

Activity:

1. Lead a discussion about reusable and recyclable wastes. You may suggest some examples such as plastic, paper, glass, aluminum, etc.

2. Ask the group to do a waste checklist activity—counting their trash and dividing the waste they find in their home into reuse and recycle. Ask the group to calculate how much trash each one and their families would generate in a month and in a year. Ask for their ideas on how to develop ways of limiting the waste they cannot reuse or recycle.

Deepening and Processing:

Synthesize all the sharing and the inputs with the section on the virtues and on living virtuously for communal and environmental sustainability, applying these to the necessity to reduce, reuse, and recycle.

Closing Prayer:

Leader: Life-giving God, we offer ourselves in service to you.

Community: We are connected to other people of faith and conscience around the world who are working for a peaceful, just, and sustainable world.

Leader: This global community supports us—we support one another.

Community: We are connected with those who have gone before us: the martyrs and heroes, all who offer their lives for the sake of future generations, and we are connected with those who will come after us.

Leader: We are related to the earth and all its creatures in a web that cannot be broken without injury to all.

Community: The earth and our fellow creatures support us—we are their advocates.

Leader: We are connected to Jesus Christ, who reveals God to us, sends us the Spirit, and sends us out in his name.

Leader: Therefore, let us lay aside every weight and sin that clings so closely, and let us run with perseverance the race that is set

before us, looking to Jesus, the pioneer and perfecter of our faith, resisting all powers that destroy, bringing healing and hope to the world.

People: O God, Creator, Redeemer, Sustainer, we offer our lives in service to you.

MODULE 11: AWARENESS OF HOME ENERGY USE

Call to Prayer:

Leader: We gather today in the presence of God and in communion with those who have gone before us and those who will come after.

Community: On this Earth, we open our minds to learn about ecological threats to the health of present and future generations and to the whole community of life.

Leader: We open our hearts to the message of hope that comes to us through Jesus Christ.

Community: We reach out our hands to bring healing and change, for the sake of the children of the earth—past, present, and future.

Leader: And we raise our voices to join with the rest of creation in singing praise to God, whose steadfast love and faithfulness endures to all generations.

Objectives:

Upon completing this module, the group will be able to extend their new awareness of energy consumption and explore options for reducing consumption.

Rationale:

Unfortunately, a large portion of energy home use is wasted through poor insulation, use of energy-inefficient appliances, etc. Because we usually generate energy through the burning of fossil fuels that put toxic gases and particles into the air, we can help the

environment and save money by making our homes more energy-efficient. Decreasing the number of appliances can help us save energy. It will also help the environment by limiting pollution (a result of energy generation) and waste (a result of our "throwaway society"). This module helps the community understand this concept by viewing their homes as an energy system with interdependent parts.

Activity:

Ask the group to do a complete audit of their home energy use. Divide them into small groups of three to discuss how to make their homes more energy-efficient.

Deepening and Processing:

Synthesize all the sharing and the inputs with the section on the virtues and on living virtuously for communal and environmental sustainability, applying these to the issue of awareness of home energy use.

Closing Prayer:

Leader: Life-giving God, we offer ourselves in service to you.

Community: We are connected to other people of faith and conscience around the world who are working for a peaceful, just, and sustainable world.

Leader: This global community supports us—we support one another.

Community: We are connected with those who have gone before us: the martyrs and heroes, all who offer their lives for the sake of future generations, and we are connected with those who will come after us.

Leader: We are related to the earth and all its creatures in a web that cannot be broken without injury to all.

Community: The earth and our fellow creatures support us—we are their advocates.

Leader: We are connected to Jesus Christ, who reveals God to us, sends us the Spirit, and sends us out in his name.

Leader: Therefore, let us lay aside every weight and sin that clings so closely, and let us run with perseverance the race that is set before us, looking to Jesus, the pioneer and perfecter of our faith, resisting all powers that destroy, bringing healing and hope to the world.

People: O God, Creator, Redeemer, Sustainer, we offer our lives in service to you.

MODULE 12: SOCIAL NETWORKING FOR THE ENVIRONMENT

Call to Prayer:

Leader: We gather today in the presence of God and in communion with those who have gone before us and those who will come after.

Community: On this Earth, we open our minds to learn about ecological threats to the health of present and future generations and to the whole community of life.

Leader: We open our hearts to the message of hope that comes to us through Jesus Christ.

Community: We reach out our hands to bring healing and change, for the sake of the children of the earth—past, present, and future.

Leader: And we raise our voices to join with the rest of creation in singing praise to God, whose steadfast love and faithfulness endures to all generations.

Objectives:

Upon completing this module, the group will be able to:

1. Understand that each ecological problem is a moral, social and political problem; and

2. Understand that we should all work, both individually and collectively, to solve the environmental problems.

Rationale:

The individual and the community should work with other groups and individuals especially with those in the position of power, e.g., government officials, non-governmental organizations, etc., to effect change on a larger scale. Social networking is one of the most effective ways to campaign for the protection of the environment by letter-writing, joining mobilizations, social media and through other means of communication.

Activity:

Brainstorm with the group about the possible targets for social networking. Have the list written on the board. Ask the following questions: How can this person/group contribute to the solution? Where does this person/group stand on the problem?

Deepening and Processing:

Synthesize all the sharing and the inputs with the section on the virtues and on living virtuously for communal and environmental sustainability, applying these to the need to have social networking for the environment.

Closing Prayer:

Leader: Life-giving God, we offer ourselves in service to you.

Community: We are connected to other people of faith and conscience around the world who are working for a peaceful, just, and sustainable world.

Leader: This global community supports us—we support one another.

Community: We are connected with those who have gone before us: the martyrs and heroes, all who offer their lives for the sake of future generations, and we are connected with those who will come after us.

Leader: We are related to the earth and all its creatures in a web that cannot be broken without injury to all.

Community: The earth and our fellow creatures support us—we are their advocates.

Leader: We are connected to Jesus Christ, who reveals God to us, sends us the Spirit, and sends us out in his name.

Leader: Therefore, let us lay aside every weight and sin that clings so closely, and let us run with perseverance the race that is set before us, looking to Jesus, the pioneer and perfecter of our faith, resisting all powers that destroy, bringing healing and hope to the world.

People: O God, Creator, Redeemer, Sustainer, we offer our lives in service to you.

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