



Laudato Si's View on Integral Ecology in Light of the Planetary Boundaries Concept

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Abstract

Promoting ecological awareness and sustainability of God's creation is now considered as a primary task of the CST. However, from its beginning with *Rerum Novarum*, CST emphasizes the promotion of social justice and equity, and highlights the dangers of economic inequalities between richer and poorer nations and the need for distributive justice. To that effect, human development was its central theme, which is favored by the dominion mandate and is known nowadays as the Anthropocene. Important documents like *Gaudium et Spes* and *Populorum Progressio* are illustrative for this anthropocentric stance, while less attention is given to the wellbeing of nonhuman creatures and natural ecosystems. Nevertheless, from *Octogesima Adveniens* onwards, the CST starts to look into environmental issues. Pope Francis' *Laudato Si'* in 2015 introduces a significant shift by referring to nonhuman creatures as 'our fellow creatures', thereby extending 'intrinsic value' to all nonhuman creatures. In his integral ecology, he promotes a sustainable and integral development that favors the wellbeing of both human and natural environments. In this article, we assess *Laudato Si's* view on sustainability and integral development in confrontation with the wider framework of the Planetary Boundaries's concept of sustainable development.

Keywords

Laudato Si', Integral Ecology, Creation, Integral Development, Sustainability, Planetary Boundaries Concept

I. Introduction

Ecology is a recent concern in Catholic Social Thought.¹ In fact, none of the documents of the Second Vatican Council concentrated

¹ Giampaolo Crepaldi, "Presentation," in *From Stockholm to Johannesburg: An Historical Overview of the Concern of the Holy See for the Environment 1972-2002*, edited by Marjorie Keenan (Vatican: Vatican Press, 2002), 9-10, 9.

on environmental issues.² But not all agree. Some, like Giampaolo Crepaldi, Secretary of the Pontifical Council for Justice and Peace from 2001 till 2009, are of the opinion that the Dogmatic Constitution on the Church *Lumen Gentium* (1964) and the Pastoral Constitution on the Church in the Modern World *Gaudium et Spes* (1965) are not completely devoid of concern for God's creation. These conciliary teachings contributed to providing "solid roots of a formal and informal teaching concerning care for the environment that has consistently grown over the years."³ Peter Raven, member of the Pontifical Academy of Sciences, argues in a similar manner.⁴ As a matter of fact, Raven's opinion is anchored on John XXIII's *Pacem in Terris*, condemning vehemently the use of nuclear weapons, especially "in the wake of the Cuban Missile Crisis,"⁵ and its potential obstructive effect on planet earth.

Also critical is William French who is of the opinion that *Gaudium et Spes* seems to fall short because of its inability "to situate the social question inside the larger frame of the ecological question."⁶ Since *Gaudium et Spes* explores the concept of the 'signs of the times' within modernity, one would have expected that it should include some environmental issues in order to "broaden the understanding of human dignity, solidarity and responsibility," more explicitly towards ecology but this was not the case.⁷ It rather appears to concentrate on "a human-centred personalist philosophy, but fails to envision a broader sense of creation-centred, ecologically-informed frame of understanding."⁸ Indeed, John Hart believes that the Council statements are very anthropocentric in nature. They present "a hierarchically structured pyramid, with humanity at the top as the ultimate and appropriate beneficiary of the goods of the earth."⁹ Despite the fact that many consider *Gaudium*

² Vito Punzi, "A Social Responsibility Guide for Engineering Students and Professionals of all Faith Traditions: An Overview," *Science Engineering Ethics* 24 (2018):1253-1277, 1255. John Hart, *What Are They Saying About Environmental Theology?* (New York: Paulist Press, 2004), 7.

³ Crepaldi, "Presentation," 9. See also, Hart, *What Are They Saying About Environmental Theology?*, 2-3.

⁴ Peter Raven, "Our World and Pope Francis' Encyclical, *Laudato Si'*," *The Quarterly Review of Biology* 91, no. 3 (2016): 247-260, 253.

⁵ Raven, "Our World and Pope Francis' Encyclical, 253.

⁶ William French, "Greening *Gaudium et Spes*," in *Vatican II Forty Years Later: The Annual Publication of the College of Theology and Society 2005 Volume 51*, edited by William Madges (Maryknoll, NY: Orbis Books, 2006), 196-207, 198.

⁷ French, "Greening *Gaudium et Spes*," 197.

⁸ French, "Greening *Gaudium et Spes*," 197.

⁹ John Hart, "Care for Creation: Catholic Social Teaching on the Environment," *Josephinum Journal of Theology*, (2002): 9(1), 120-145. See also, Punzi, "A Social Responsibility Guide," 1255.

et Spes to be a “ground-breaking document on CST,”¹⁰ it is clear that the pastoral constitution places a too exclusive emphasis on the dignity of the human person, created in the image of God, at the expense of non-human creation. French underscores that there is still a possibility for creating an ecologically friendly frame of understanding that accommodates respect for both human and non-human creation without losing anything. In that sense, he states that:

An ecological frame entails no need for a loss of an emphasis on human dignity. But it does require an end to purchasing a celebration of human dignity by a sustained undercutting of any sense of the continuities between humanity and nonhuman creatures, or by a loss of a sense of kinship with the Earth, or by an assumption that the nonhuman natural world is somehow lacking in its own distinct modes of dignity.¹¹

Michael Northcott joins French’ criticism. Drawing upon Thomas Aquinas’ impact in Roman Catholic thought after the council of Trent, he states that the Latin Rite for more than “five hundred years [says] that, the purpose of creation, and species, was an instrumental one, which is to serve and facilitate the redemption of human souls.”¹² The argument holds that non-human creatures “lack intellectual souls, and have no place in the state of the renewal of the universe since they are designed by God for human use.”¹³

In this sense, Lynn White’s accusation that Latin Christianity has been one of the backbones of the ‘Anthropocene’ should gain more attention. Although Roman Catholicism is not directly responsible for the ecologic crisis, it has been a supporter for a modern instrumentalist view of nature via its ‘*dominium terrae*’ theory which has put nature at the service of humankind. As such, Roman Catholicism has been an objective partner and even defender in creating a new epoch, which is called the ‘Anthropocene.’¹⁴ The notion ‘Anthropocene,’ a

¹⁰ Christian Firer Hinze, “Straining Towards Solidarity in a Suffering World: *Gaudium et Spes* “After Forty Years,”” in *Vatican II Forty Years Later: The Annual Publication of the College of Theology and Society 2005 Volume 51*, edited by William Madges (Maryknoll, NY: Orbis Books, 2006), 165-195, 165.

¹¹ French, “Greening *Gaudium et Spes*,” 198.

¹² Michael Northcott, “Planetary Moral Economy and Creaturely Redemption in *Laudato Si'*,” *Theological Studies* 77, no. 4 (2016): 886-904, 898. See also, Francisco Benzoni, “Thomas Aquinas and Environmental Ethics: A Reconstruction of Providence and Salvation,” *Journal of Religion* 85 (2005): 446-476.

¹³ Northcott, “Planetary Moral Economy,” 899. See also, Thomas Aquinas, *Summa Theologiae* III XP (supplement), q. 91, a. 5, translated by Fathers of the English Dominican Province (New York: Benzinger Bros, 1947), 6644.

¹⁴ Jassica Ludescher Imanaka, “*Laudato Si'*, Technologies of Power and Environmental Injustice: Toward an Eco-Politics Guided by Contemplation,” *Journal of Agricultural and Environmental Ethics* (May 2018), available from <https://link.springer.com/content/pdf/10.1007%2Fs10806-018-9732-9.pdf> [accessed 07/01/2019]. The term ‘Anthropocene’

term coined by the ecologist Eugene F. Stoermer, became popularized by atmospheric chemist Paul J. Crutzen who states that the influence of human behaviour on Earth's atmosphere has been so significant as to constitute a new geological epoch. The new epoch has no agreed start-date, but many scientists propose to let it start with the Industrial Revolution ca. 1780 at the occasion of the invention of the steam engine. The Anthropocene has to be linked to the increasing human impact which differentiates this epoch from the previous period, the Holocene.

Despite the fact that the Industrial Revolution brought about many innovations in technology and mechanization, manufacturing, and drastically improved agricultural food productivity, its aftermath has been blamed not only for encouraging the rapid changes in social and economic imbalances within the global community but also for destabilising atmospheric conditions.¹⁵

To that effect, we assess in this article *Laudato Si's* view on sustainable and integral development, thereby postulating that protecting both the human and natural environment is vital for the sustainability of our common patrimonial home, provided that "some reasonable limits,"¹⁶ which are fundamental in the framework of the Planetary Boundaries concept, are conscientiously observed and incorporated. Before we address the Planetary Boundaries concept of Rockström and colleagues, it is pertinent to explore first the raise of ecological awareness in the Roman Catholic Social Teaching over the years and subsequently deal with the view of Pope Francis on sustainable and integral development.

refers to the epoch that came after the Holocene. In that sense, Anthropocene is the human age when anthropogenic activities are transforming the earth systems in an extraordinary way. This epoch is unlike the Holocene epoch that generated a relative stability and civilization that encouraged agricultural production, see the article of Will Steffen *et al.*, "The Anthropocene: From Global Change to Planetary Stewardship," *Ambio* 40 (2011): 739-761; Rockström *et al.*, "A Safe Operating Space for Humanity," *Nature* 461 (2009): 472-475; Will Steffen *et al.*, "The Trajectory of the Anthropocene: The Great Acceleration," *The Anthropocene Review* 2, no. 1 (2015): 81-98; Johan Rockström, "The Anthropocene, Control and Responsibility: A Reply to Andy Stirling," *Steps Centre: Path to Sustainability* (2015), available from <https://steps-centre.org/blog/johan-rockstrom-on-the-anthropocene/> [accessed 07/01/2019].

¹⁵ Jan Mertl and Radim Valenčík, "The Socioeconomic Consequences of Industrial Development," *Central European Journal of Management* 3, no. 1 (2016): 37-45, 37.

¹⁶ Francis, "*Laudato Si'*: On Care for Our Common Home," §193, available from http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_encyclica-laudato-si.html [accessed 07/01/2019].

II. Ecology in the Catholic Social Teaching

In trying to improve the wellbeing of human persons worldwide and to enhance the development of the peoples, Paul VI's encyclical *Populorum Progressio* places a premium on 'progressive development' that encouraged human development in line with the documents of the second Vatican Council. This kind of development was at the expense of the natural environment that appeared to have favoured a dominion mandate that exploits nature drastically during the Anthropocene and thereby downplaying the contribution of the natural world and nonhuman creatures to human welfare. It explains why, according to Donal Dorr, at that time an adviser to the Pontifical Council for Justice and Peace, *Populorum Progressio* does not concentrate on environmental questions since humanity was not hitherto familiar with immediate harmful effects of the ecological crisis nor aware of the impact of Western lifestyles and ways of living on climate conditions.¹⁷ The concept of authentic development, drawn from the notion of 'integral humanism' by Jacques Maritain,¹⁸ was introduced in *Populorum Progressio*, to qualify for a development that "counts for man – each individual man, each human group, and humanity as a whole To be authentic, it must be well rounded; it must foster the development of each man and the whole man."¹⁹ The Pope called for a 'transcendent humanism' that is above the natural inclination of the earth.²⁰

Remarkably, upon realising the dangers that excessive human development posed to the sustainability of the natural environment, Paul VI made a distinguished intervention in favour of all God's creation in 1971. His apostolic Letter, *Octogesima Adveniens*, which marked eighty years since the publication of *Rerum Novarum*, has been acclaimed as the "first inklings of environmental awareness in CST."²¹ Paul VI acknowledged that any disproportionate exploitation of the natural world in the name of human development was not only a colossal mistake, but rather an "ill considered" demonstration against

¹⁷ Donal Dorr, "The Contribution and Legacy of *Populorum Progressio*": *Lecture Text on Populorum Progressio* in Glasgow on Saturday 18 March 2017," 1-6, 5, available from https://www.caritas.eu/wordpress/wp-content/uploads/2017/03/lecture_on_populorum_progressio_donal_dorr-1.pdf [accessed 07/01/2019].

¹⁸ Jacques Maritain, "Integral Humanism and the Crisis of Modern Times," *The Review of Politics* 1, no. 1 (1939): 1-17.

¹⁹ Paul VI, "*Populorum Progressio*," §14, available from http://w2.vatican.va/content/paul-vi/en/encyclicals/documents/hf_p-vi_enc_26031967_populorum.html [07/01/2019].

²⁰ Paul VI, "*Populorum Progressio*," §16.

²¹ Celia Deane-Drummond, "Joining in the Dance: Catholic Social Teaching and Ecology," *New Blackfriars* 93, no. 1044 (2012): 193-212, 195.

the environment.²² If urgent care was not taken, it would degrade not only the natural environment, but also at the same time make humanity “the victim of this degradation.”²³ To that effect, he “listed the environment as one of eleven social problems that the Church should confront.”²⁴

For the first time the CST combines the ‘social question’, started by *Rerum Novarum*, alongside with the ‘ecological question.’²⁵ Pope Paul VI brings to limelight the urgent necessity for ecological sustainability to the cognisance of the global community.

When the CST speaks about ecological sustainability, it does so from the perspective of promoting integral human development.²⁶ To that effect, the Roman Catholic Church has explored her anthropological and theological tradition with regard to the position of humanity vis-à-vis creation. This teaching was also a major highlight of *Iustitia in Mundo* (1971), the concluding document of the World Synod of Catholic Bishops. It is significant to assert that *Iustitia in Mundo*, among other things, challenged the developed countries to rethink their drastic exploitation of the natural world which invariably and drastically impact on ecological sustainability.²⁷

Furthermore, in his address *A Hospitable Earth for Future Generations* to Mr. Maurice Strong, the Secretary General of the United Nations Conference on Environment in Stockholm, in 1972,²⁸ Paul VI made a remarkable plea for the sustainability of God’s creation. He used this occasion, which was the first international conference on the human environment organized by the United Nations, to emphasize the urgent need for the preservation of the natural environment. He states that:

Man and his environment are more inseparable than ever. The environment essentially conditions man’s life and development, while man, in

²² Paul VI, “*Octogesima Adveniens*,” §21, available from http://w2.vatican.va/content/paul-vi/en/apost_letters/documents/hf_p-vi_apl_19710514_octogesima-adveniens.html [07/01/2019].

²³ Paul VI, “*Octogesima Adveniens*,” §21.

²⁴ Raven, “Our World and Pope Francis’ Encyclical,” 254.

²⁵ Russel Butkus and Steven Kolmes, “Ecology and the Common Good: Sustainability and Catholic Social Teaching,” *Journal of Catholic Social Thought* 4, no. 2 (2007): 403-436, 403.

²⁶ José Luis Sánchez García, and Juan María Díez Sanz, “Climate Change, Ethics and Sustainability: An Innovative Approach,” *Journal of Innovation & Knowledge* 3 (2018): 70-75.

²⁷ World Synod of Catholic Bishops, “Justice in the World,” available from, <https://www.cctwincities.org/wp-content/uploads/2015/10/Justicia-in-Mundo.pdf> [accessed 07/01/2019]. See also, Deane-Drummond, “Joining in the Dance,” 195.

²⁸ Paul VI, “A Hospitable Earth for Future Generations: Message of His Holiness Paul VI to Mr. Maurice Strong, Secretary-General of the Conference on the Environment,” available from, http://w2.vatican.va/content/paul-vi/en/messages/pont-messages/documents/hf_p-vi_mess_19720605_conferenza-ambiente.html [accessed 04/01/2019].

his turn, perfects and ennoble his environment through his presence, work and contemplation. But human creativeness will yield true and lasting benefits only to the extent to which man respects the laws that govern the vital impulse and nature's capacity for regeneration. Both are united, therefore, and share a common temporal future. So man is warned of the necessity of replacing the unchecked advance of material progress, often blind and turbulent, with new-found respect for the biosphere of his global domain, which, to quote the fine motto of the Conference, has become "one Earth."²⁹

The idea of sustainability of God's creation has been further developed during the Petrine ministry of pope John Paul II from 1978 till 2005. Having understood the dangers of the destruction of the natural environment, caused by the quest to satisfy human greed, he attributed the harm and abuse done against nature, as crying for redemption. In his first encyclical *Redemptor Hominis* (1979), John Paul II accentuates that God's creation groans profusely and in travail (Rom 8:22) because of human sinfulness.³⁰ He uses the theology of sin in futility with its dimensional consequences as "social devastation, ranging from pollution, destruction of the natural environment, . . . lack of respect for the life of the unborn, alongside the unbridled use of new technology,"³¹ to demonstrate how creation has been passing through pains and suffering. As a result, he brings into play Christ's incarnation and redemption as a sign and hope for a new creation.

According to Celia Deane-Drummond, John Paul II advocates what she regards as "a cosmic Christological mandate to restore not just a broken humanity, in all its social dimensions, but a broken natural world as well, which reflects, in other worlds, what might be termed a cosmic Christology."³² Here the image of the first Adam and the second Adam comes into the scenario. The first Adam brought sin, suffering, and death, while the second Adam came to redeem and to restore all creation to newness of life, and save the world from destruction. Humanity is called to participate in the new creation of Christ in order to save and sustain all creation, not "as a heedless 'exploiter' and 'destroyer', but most specifically, as an intelligent and noble 'master' and 'guardian'."³³

²⁹ Paul VI, "A Hospitable Earth."

³⁰ John Paul II, "*Redemptor Hominis*," §8, available from http://w2.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_04031979_redemptor-hominis.html [accessed 06/01/2019].

³¹ Deane-Drummond, "Joining in the Dance," 195. See also, John Paul II, "*Redemptor Hominis*," §8.

³² Deane-Drummond, "Joining in the Dance," 196.

³³ John Paul II, "*Redemptor Hominis*," §15.

In *Dominum et Vivificantem* (1986), John Paul II asserts that the Holy Spirit and the incarnational event have “a cosmic significance.”³⁴ The incarnation of Christ, “the first-born of all creation” through the Holy Spirit, unites not only all humanity, but also “the whole of creation.”³⁵ In this sense, human beings are called to accept that their vocation within the natural environment is nothing less than to unite creation through intelligent good works.

A couple of years before, in *Laborem Exercens* (1981) Pope John Paul II speaks about creation in the context of human work. He defines human work as, dignifying, good, worthy, and as something that gives identity to the human person. Human work is only highly commended towards preserving and continuing creation if it respects the natural world, while at the same time bringing about something good for all humanity, as a way of expressing humanity’s noble dominion over the earth.³⁶ But the pope admits that the interpretation of “dominion over creation” with regard to human development and the advancements in science and technology, and the way humanity is called to “subdue” the natural world by his/her work and creativity has been “interpreted as oppressively anthropocentric, even if the intention is theocentric.”³⁷ Therefore, we need a fair interpretation of dominionship.

Thus, in *Sollicitudo Rei Socialis* (1987), he tried to balance the tension between humanity’s ability to embark on developmental activities and the issue of upholding a responsible and respectful use of the cosmos.³⁸ In that sense, he demonstrates that the aim of *Sollicitudo Rei Socialis* is to “nuance the concept of development.”³⁹ With the notion ‘authentic development’ he wants to indicate how development should incorporate the wellbeing of non-human creatures and the interests of future generations.⁴⁰ Authentic human development not only considers the social questions as they affect the true human development of peoples in all its ramifications, but is also concerned with the fact that nonhuman creatures such as “living or inanimate – animals, plants, the natural elements - simply

³⁴ John Paul II, “*Dominum et Vivificantem*,” §50, available from http://w2.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_18051986_dominum-et-vivificantem.html [accessed 06/01/2019].

³⁵ John Paul II, “*Dominum et Vivificantem*,” §50.

³⁶ John Paul II, “*Laborem Exercens*,” §9, available from http://w2.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_14091981_laborem-exercens.html [accessed 06/01/2019].

³⁷ Deane-Drummond, “Joining in the Dance,” 198.

³⁸ John Paul II, “*Sollicitudo Rei Socialis*,” §34, available from http://w2.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_30121987_sollicitudo-rei-socialis.html [accessed 06/01/2019].

³⁹ John Paul II, “*Sollicitudo Rei Socialis*,” §4.

⁴⁰ Deane-Drummond, “Joining in the Dance,” 200.

as one wishes, according to one's own economic needs."⁴¹ He goes further to expatiate that since the material resources of the Earth community are precise and limited, their administration and use should be governed by moral principles so that human development can be authentic and be classified as having a moral character.

However, the problem that militates against the actualization of the moral character towards achieving an authentic human development with regard to the ecological question, according to John Paul II, in *Centesimus Annus* (1991), is 'an anthropological error.'⁴² The basis of this error is a vitiation of the mandate to care for, to preserve, and to sustain all creation, that was originally bestowed on humanity in the Garden of creation. It is essentially an absurdity and an abuse of power; and it is "the root of the senseless destruction of the natural world" in the name of human development.⁴³ There is no doubt that any disproportionate depletion of the natural resources of the earth drastically influences the natural environment, and therefore, at the same time, affects the authentic actualization of human development as well as human dignity.

Given the fact that human development is essential to enable humans to enhance their livelihood and carry out their God-given mandate within creation as human beings, therefore they need to relate well with all creation, and at the same time to be at peace with God the Creator with regard to harmony and orderliness within the natural world. Because whenever "the relationship between human activity and the whole of creation" is not in accord with God's plan, it "provokes a disorder which has inevitable repercussions on the rest of the created order. If man is not at peace with God, then earth itself cannot be at peace: "Therefore the land mourns and all who dwell in it languish, and also the beasts of the field and the birds of the air and even the fish of the sea are taken away" (*Hos* 4:3)."⁴⁴

Furthermore, John Paul maintains that the "ecological crisis is a moral problem."⁴⁵ That is why he continues to insist on the good formation of the moral character of the human person, since all human conduct is being governed by moral virtues. This initiative has been welcomed and expressed by many Episcopal Conferences worldwide, especially by the United States Conference of Catholic

⁴¹ John Paul II, "*Sollicitudo Rei Socialis*," §34.

⁴² John Paul II, "*Centesimus Annus*," §37, available from http://w2.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_01051991_centesimus-annus.html [accessed 06/01/2019].

⁴³ John Paul II, "*Centesimus Annus*," §37.

⁴⁴ John Paul II, "Peace with God the Creator, Peace with All of Creation, Address of the Holy Father on World Day of Peace Message, January 1, 1990," §5, available from http://w2.vatican.va/content/john-paul-ii/en/messages/peace/documents/hf_jp-ii_mes_19891208_xxiii-world-day-for-peace.html [accessed 07/07/2019].

⁴⁵ John Paul II, "Peace with God the Creator," §6.

Bishops (USCCB) in their pastoral statement on environmental care, “Renewing the Earth” (1991). For them, the ecological crisis “requires a rethink on how we use and share the goods of the earth.”⁴⁶ This rethinking of human attitudes towards the natural environment is what John Paul refers to as a moral duty for all humanity in the realm of protecting ‘human ecology’ that is relevant if any conscientious effort is needed to ‘preserve’, sustain, and ‘safeguard’ our ecology.⁴⁷

More so, the sustainability of ‘human ecology’ is paramount to human development. To that effect, human ecology, a term that was first used in CST by John Paul II in his *Centesimus Annus* (1991), and again in *Evangelium Vitae* (1995) and *Pastores Gregis* (2003), became the driving force in projecting human development, since the wellbeing of the human person appears to dominate the interests of other nonhuman creatures who only count indirectly. In *Evangelium Vitae*, he expanded the definition of the notion ‘human ecology’ to include the protection of the ‘physical ecology’ which in essence implies a representation of the natural environment. A more in-depth consideration of what the concept of ‘human ecology’ should encapsulate, is developed in *Caritas in Veritate* (2009) by Pope Benedict XVI, the immediate successor of John Paul II, who interprets the term as implying that true and authentic development must include the totality of the human and natural environments.

Talking about sustainability, all kinds of ecologies must be promoted and preserved. In fact, for Benedict XVI, all ecologies, including social ecology, are classified under the “ecology of nature”.⁴⁸ To that effect, in *Caritas in Veritate*, he espouses that the promotion of both human and natural ecologies is the vocation of all humanity.⁴⁹ Whatever affects human ecology invariably disrupts at the same time ‘environmental ecology,’ and can never promote the sustainability of

⁴⁶ United States Conference of Catholic Bishops (USCCB), “Renewing the Earth,” available from <http://www.usccb.org/issues-and-action/human-life-and-dignity/environment/renewing-the-earth.cfm> [accessed 26/09/2018].

⁴⁷ John Paul II, “*Evangelium Vitae*,” §42, available from http://w2.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_25031995_evangelium-vitae.html [accessed 07/01/2019]. See also, John Paul II, “*Centesimus Annus*,” §38; Keith Warner, “Bonaventure in Benedict: Franciscan Wisdom for Human Ecology,” in *Environmental Justice and Climate Change: Assessing Pope Benedict XVI's Ecological Vision for the Catholic Church in the United States*, edited by Jame Schaefer and Tobias Winright (Lanham, MD: Lexington Books, 2013), 4-18.

⁴⁸ Benedict XVI, “The Human Person, the Heart of Peace: World Day of Peace Message, January 1, 2007,” §8, available from http://w2.vatican.va/content/benedict-xvi/en/messages/peace/documents/hf_ben-xvi_mes_20061208_xl-world-day-peace.html [accessed 07/01/2019].

⁴⁹ Benedict XVI, “*Caritas in Veritate*,” §11, available from http://w2.vatican.va/content/benedict-xvi/en/encyclicals/documents/hf_ben-xvi_enc_20090629_caritas-in-veritate.html [accessed 07/01/2019].

God's creation. The simple reason is that, "the book of nature is one and indivisible: it takes in not only the environment but also life, sexuality, marriage, the family, social relations."⁵⁰ Essentially, this type of understanding is what he qualifies as 'ecological responsibility,' that is, a responsible attitude towards "safeguarding an authentic human ecology" that promotes not only human but also environmental ecology.⁵¹

More so, in creating awareness for both human and environmental ecologies, Benedict XVI insists that caution should be taken not to "absolutize nature, that is, to consider it more important than the human person."⁵² This implies that the central focus consists more in encouraging the wellbeing of the human person. In fact, he argues that humanity should never engage in the 'self-destruction' of the human person in order to promote the sustainability of the natural environment. Nor should the social magisterium give in to the ideologies of some environmental movements that promote ecocentrist and biocentrist ideologies. These movements appear to place the human person and other nonhuman creatures on the same level. In that sense, to buttress his point, he states that:

[They] eliminate the difference of identity and worth between the human person and other living things. In the name of a supposedly egalitarian vision of the "dignity" of all living creatures, such notions end up abolishing the distinctiveness and superior role of human beings. They also open the way to a new pantheism tinged with neopaganism, which would see the source of man's salvation in nature alone, understood in purely naturalistic terms.⁵³

Despite his anxiety for non-anthropocentric positions in ecology, Benedict XVI has been acclaimed the 'green pope' in 2008.⁵⁴ This follows his admiration for "Saint Bonaventure who conveyed the insights of Saint Francis of Assisi in his philosophy and theology, as well as the Franciscan wisdom towards engaging Catholics to care for creation."⁵⁵ As a matter of fact, for this reason Saint Francis known for his deep love and recognition for all creatures has led him to be

⁵⁰ Benedict XVI, "*Caritas in Veritate*," §51.

⁵¹ Benedict XVI, "If You Want to Cultivate Peace, Protect Creation," World Day of Peace Message, January 1, 2010, §12, available from http://w2.vatican.va/content/benedict-xvi/en/messages/peace/documents/hf_ben-xvi_mes_20091208_xliii-world-day-peace.html [accessed 07/01/2019].

⁵² Benedict XVI, "If You Want to Cultivate Peace, Protect Creation," §12.

⁵³ Benedict XVI, "If You Want to Cultivate Peace, Protect Creation," §13.

⁵⁴ Jean-Louis Brugués, "Foreword: The Urgency of a Human Ecology," in *Benedict XVI: The Garden of God: Towards Human Ecology*, edited by Maria Milvia Morciano (Washington, D.C.: The Catholic University of America Press, 2014), ix-xvii, ix-x.

⁵⁵ Warner, "Bonaventure in Benedict," 3-4.

applauded by John Paul II in 1979 yet, the Patron Saint of ecology and the “promoter of ecology” par excellence.⁵⁶

III. *Laudato Si'*'s View on Sustainable and Integral Development

There is no doubt, our common home - Mother Earth -, is being confronted with massive environmental challenges.⁵⁷ This is reflected by Pope Francis' *Laudato Si'* when it stated that “the harm we have inflicted on her [our Mother Earth] by our irresponsible use and abuse of the goods with which God has endowed her. We have come to see ourselves as her lords and master, entitled to plunder her at will.”⁵⁸ Modernity has drastically exploited the natural world in the name of development and progress, according to Pope Francis.

He speaks about ‘arrogance’ and an ideology that makes humanity ‘to assume the place of God’⁵⁹ thereby turning against nature and nonhuman creatures. The proponent of this narrative (‘Anthropocene’) appears to be unaware of the importance of nature for supporting the whole creation. Thus, the refusal to understand the integral nature of creation, while promoting a dichotomy between human environment and natural environment, is according to Michael Northcott at “the heart of the ecological crisis . . . and the quintessential root of what theologians call sin.”⁶⁰ As a matter of fact, it hinders us to attain a more sustainable and integral development. Changing this paradigm is difficult because it has generated a deep-rooted ‘technocratic paradigm,’ that only tends towards self-interest and profit to the detriment of the environment.⁶¹

Nevertheless, since the publication of *Laudato Si'*, the first encyclical of its kind specifically focusing on the social and environmental crises of our times,⁶² a dialogue among scholars from different backgrounds all over the world has started. They agree on how indispensable care for God's creation and ecology is, even beyond

⁵⁶ John Paul II, “Peace with God the Creator,” §16.

⁵⁷ Christine Wamsler *et al.*, “Mindfulness in Sustainability Science, Practice, and Teaching,” *Sustain Science* 13 (2018):143-162, 143.

⁵⁸ Francis, “*Laudato Si'*,” §2.

⁵⁹ Paul Scherz, “Living Indefinitely and Living Fully: *Laudato Si'* and the Value of the Present in Christian, Stoic, and Transhumanist Temporalities,” *Theological Studies* 79, no. 2 (2018): 356-375, 360.

⁶⁰ Michael Northcott, *A Moral Climate: The Ethics of Global Warming* (Maryknoll, NY: Orbis Book, 2007), 16.

⁶¹ Francis, “*Laudato Si'*,” §109.

⁶² Quirin Schiermeier, “Why Pope's Letter on Climate Change Matters,” *Nature* (2015), available from <https://www.nature.com/news/why-the-pope-s-letter-on-climate-change-matters-1.17800> [accessed 04/12/2018].

institutional and doctrinal corpuses.⁶³ In calling for a dialogue, Pope Francis challenges all humanity to rethink our position within the natural world, how we relate with our fellow human beings, especially those who are poor, and how/why we should tend towards achieving a sustainable progress and development.⁶⁴

Significantly, his view about the promotion of the sustainable and integral development began unfolding right from the inception of his Petrine ministry in 2013. During his homily at the inaugural Mass, on March 19, 2013, Pope Francis started by calling on all human beings to “be ‘protectors’ of creation, protectors of God’s plan inscribed in nature, protectors of one another and the environment.”⁶⁵ The simple reason for this special call is because it is mankind’s vocation right from the time of creation as human beings. Subsequently, in *Laudato Si'*, the second encyclical of his pontificate, Pope Francis upholds the ecological tradition of his predecessors, specifically among other teachings, with regard to what an authentic human development entails, the God-given mandate of dominion over the earth, and the stewardship model to care for, sustain, and keep all God’s creation.

But remarkably he makes a significant contribution by referring to nonhuman creatures as our “fellow creatures of this world,”⁶⁶ thereby extending ‘intrinsic value’ to all nonhuman creatures,⁶⁷ which is a radical shift from previous CST documents. With this, Pope Francis opens a new chapter about a “theology of the natural world”⁶⁸ in the magisterial teachings of the Roman Catholic Church that hitherto was reluctant to convey explicitly an intrinsic value to nonhuman creatures of the world. This serves as a new dawn and a break in tradition from the time of Thomas Aquinas. What Pope Francis implies now is that nonhuman creatures have “value in themselves,” “in the eyes of God,” in each one of them, which is “independent of their usefulness.”⁶⁹ The exceptional message is that nonhuman creatures should no longer be seen as mere objects to be drastically exploited since they can equally be “the locus” through which we

⁶³ Gregor Schmiegel *et al.* “Modelling Normativity in Sustainability: A Comparison of the Sustainable Development Goals, the Paris Agreement, and the Papal Encyclical,” *Sustain Science* 13 (2018): 13:785-796, 786.

⁶⁴ Eoin O’Neill, “The Pope and the Environment: Towards an Integral Ecology?,” *Environmental Politics* 25, no. 4 (2016): 749-754, 749.

⁶⁵ Pope Francis, “Be Protectors of Creation: Inaugural Mass of Pope Francis,” available from http://w2.vatican.va/content/francesco/en/homilies/2013/documents/papa-francesco_20130319_omelia-inizio-pontificato.html [accessed 07/01/2019].

⁶⁶ Francis, “*Laudato Si'*,” §92.

⁶⁷ Johan De Tavernier, “*Laudato Si'*: Pope Francis’ Ecology,” *Tijdschrift voor Theologie* 56, no. 3 (2016): 218-243.

⁶⁸ Denis Edwards, ““Sublime Communion”: The Theology of the Natural World in *Laudato Si'*,” *Theological Studies* 77, no. 2 (2016): 377-391, 377.

⁶⁹ Francis, “*Laudato Si'*,” §33, 69, 76, 140.

meet and relate with and praise God.⁷⁰ All creatures are looking forward to participate in the New Creation when everything will be restored and made whole.⁷¹

In his integral ecology, Pope Francis promotes a sustainable and integral development that seeks the wellbeing of both the human and natural environment. The word 'integral' makes a 'huge' and 'substantial' difference. In elucidating what Pope Francis entails, Cardinal Peter Turkson asserts that:

This might seem like merely adding the extra word "integral", but that extra word makes all the difference! In Catholic social teaching, integral human development refers to the development of the whole person and every person. Such multi-faceted development goes well beyond an ever-expanding GDP, even a better-distributed one, and merely economic or material progress. It encompasses the cultural, social, emotional, intellectual, aesthetic, and religious dimensions. It is an invitation for each person on the planet to flourish, to use the gifts given to them by God to become who they were meant to be.⁷²

Furthermore, by 'sustainable and integral development', Pope Francis demonstrates that, "everything in the world both human and other nonhuman creatures are closely connected and interconnected."⁷³ This means that everything is directly or indirectly interwoven and interdependent on each other for development, survival, and existence. What this demonstration in nature infers is that, by integral ecology, Pope Francis states that there is no separation between human, natural, environmental, physical, and social ecologies. Therefore, whatever affects the natural environment, directly or indirectly also affects the human environment. This invariably means that both environments will "deteriorate together."⁷⁴

So, according to Pope Francis, in order to eschew the deterioration of the earth community and prevent the abuse done to our common home, there is need to "seek for a sustainable and integral development" which allows for the development of the human person and at the same time promoting the wellbeing of the natural environment.⁷⁵ Jeffrey Sachs underscores this while stating that, "the

⁷⁰ Francis, "Laudato Si'," §11, 72, 88, 91.

⁷¹ Nathan O'Halloran, "Each Creature, Resplendently Transfigured": Development of Teaching in *Laudato Si'*," *Theological Studies* 79, no. 2 (2018): 376-398.

⁷² Cardinal Peter Turkson, "Catholic Social Teaching, Integral Ecology and Sustainable Development," *Conference: "Global Responsibility 2030: The MDGs and the Post-2015-Process as a challenge for the Universal Church"* Katholisch-Soziales Institut, Bad Honnef, Germany, 5 March (2016): 1-9, 7, available from https://ordosocialis.de/pdf/Turkson/2016.03.04_Turkson_CST_SDGs_Honnef.pdf [accessed 28/09/2018].

⁷³ Francis, "Laudato Si'," §6, 16, 42, 70, 73, 91, 92, 111, 117, 137, 162.

⁷⁴ Francis, "Laudato Si'," §48.

⁷⁵ Francis, "Laudato Si'," §13, 18.

Pope's emphasis on "integral" reflects the need to consider the human person in all contexts: as a moral agent, a member of society, an agent in the economy, and a part of nature itself, bound by natural laws and highly vulnerable to the degradation of the physical environment."⁷⁶ This means that an authentic integral development seeks to develop and improve every aspect of the human being, morally, psychologically, spiritually, culturally, politically, intellectually, economically and physiologically with no detriment to the natural environment.⁷⁷

This presupposes that for development to be sustainable and integral, it must encapsulate all components of the human person, and still not be subject to drastic depletion of the natural world. In that sense, like Pope Francis, Benedict XVI explains that integral human development is another name for the promotion of both human and natural ecologies and is the vocation of all humanity. Anything short of that type of development becomes "a dehumanized form of development."⁷⁸ Therefore, this resonates with the comprehension that integral human development implies a conscientious taking care of both human ecology and environmental ecology.

Furthermore, for Pope Francis, in pursuing a sustainable and integral human development, the principle of the common good, which allows for inclusion with regard to accommodating everybody's social and cultural backgrounds, should always be seriously considered in order to benefit the interests of all humanity both present and in the future. In that sense, the notion of the common good and the tenets of integral ecology and human development cannot be separated from each other in showing 'intergenerational solidarity,' especially in the administration and consumption of the natural resources of the earth.⁷⁹ Thus, in considering the wellbeing of both the present and future generations, he calls on the international community to always support the initiatives of the sustainable development project. This support should continue even though there is a "lack of political will . . . lack of suitable mechanisms for oversight, periodic review" and non-existence of how to punish offenders with regard to those countries who do not fulfil their commitments.⁸⁰

This involves advocating for "a change in models of global development" since our current system of economic development places

⁷⁶ Jeffrey Sachs, "Happiness and Sustainable Development: Concepts and Evidence," in *World Happiness Report Vol. 1*, edited by John Helliwell, Richard Layard and Jeffrey Sachs (2016): 57-65, 59, available from https://s3.amazonaws.com/happiness-report/2016/HR-V1Ch4_web.pdf [accessed 28/09/2018].

⁷⁷ Francis, "*Laudato Si'*," §6. See also, Benedict XVI, "*Caritas in Veritate*," §51.

⁷⁸ Benedict XVI, "*Caritas in Veritate*," §11.

⁷⁹ Francis, "*Laudato Si'*," §18, 156-159.

⁸⁰ Francis, "*Laudato Si'*," §166, 167.

a premium on quick ‘financial gain,’ ‘maximization of profits,’ and ‘unlimited material progress’ at the expense of nature and the protection of the environmental ecology.⁸¹ Pope Francis, therefore, condemns any form of “a misguided anthropocentrism which leads to a misguided lifestyle,” and a technocratic paradigm that is unethical to human development in case it is unsustainable.⁸² Therefore, it is apposite that in the pursuit of integral human development, the sustainable development project should uphold features that promote both the quality of life and the overall wellbeing of the natural ecology given the fact that there is no sustainable growth if the environment is finally destroyed.⁸³

As a result, for sustainable development to be effective, it must strive towards “containing growth by setting some reasonable limits that should help to retrace our steps before it is too late.”⁸⁴ However *Laudato Si'* does not seem to show explicitly how these ‘reasonable limits’ are expected to work. Nonetheless, with regard to establishing conscientious limits that will guide human and economic development in order not to destabilize the resilience of our common home in our contemporary times when a ‘misguided anthropocentrism’ is encouraging the ecological crisis, it rather becomes indispensable to integrate and evaluate human development into the wider framework of newer visions on sustainable development, such as the Planetary Boundaries concept.

IV. The Planetary Boundaries Concept: A New Vision on Sustainability

One of the beauties of *Laudato Si'* which many scholars in academia continue to comment, is its simplicity of tone, its inclusion of a wide range of sources that are uncharacteristic of papal encyclicals, e.g. the inclusion of a ninth century Muslim mystic and Sufi poet, Ali al-Khawwas.⁸⁵ This distinguishing gesture of inclusion reflects indeed that the message of this papal document is absolutely designed to capture the attention of “all people of goodwill”, regardless of creed, race, nationality, walk of life, and background.⁸⁶

Further on, it is outstanding that eminent scholars in science have welcomed the publication of *Laudato Si'*, despite some open

⁸¹ Francis, “*Laudato Si'*,” §194-195.

⁸² Francis, “*Laudato Si'*,” §118-119, 122, 109.

⁸³ Francis, “*Laudato Si'*,” §194.

⁸⁴ Francis, “*Laudato Si'*,” §193.

⁸⁵ Francis, “*Laudato Si'*,” §233.

⁸⁶ Francis, “*Laudato Si'*,” §62.

“reservations by some politicians in the US.”⁸⁷ Among them, Johan Rockström of the Stockholm Resilience Centre in Sweden, who praises “the encyclical for supporting the science of climate change.”⁸⁸ Rockström introduced the planetary boundaries concept within the broader discussion on the Anthropocene. Therefore, *Laudato Si'* does not mention the term ‘Anthropocene.’ However, this is coupled with the fact that *Laudato Si'* highlights humanity as the driving force within the natural world, and as such, being simple in nature, *Laudato Si'* never wanted to use an ambiguous concept. In fact, the term ‘Anthropocene’ represents concisely, “that humanity is the dominant force of change” with its consequential negative effects on the Earth System.⁸⁹ Maybe, the omission could be explained as a kind of avoidance of blaming too much humanity’s role?

Rockström and colleagues introduced in 2009 the concept of Planetary Boundaries in their epoch-making article “A Safe Operating Space for Humanity.”⁹⁰ This scientific essay aims to offer a new way of understanding sustainable development that will address, scrutinize and access humanity’s activities within the process of development of planet earth, taking into consideration that there are planetary boundaries which may not be transgressed in order to avoid unprecedented environmental changes towards destabilizing the Earth System.

The Planetary Boundaries should be considered as “a new framework to redefine global development by reconnecting economics and societies to the planet; and to create a tool providing a practical and comprehensive way to measure human impacts on Earth, and guide our common endeavour toward a sustainable world development, before it is too late.”⁹¹ Its focus is to provide “a new paradigm for development, one that pursues alleviation of poverty and economic growth while staying within the safe planetary boundaries that define a stable and resilient planet.”⁹² While the planetary boundaries concept does not place a premium on economic growth and humanity’s advancements with regard to progress, it rather identifies “a safe

⁸⁷ Paul Lynch, “On Care for Our Common Discourse: Pope Francis’s Nonmodern Epideictic,” *Rhetoric Society Quarterly* 47, no. 5 (2017): 463-482, 465.

⁸⁸ Johan Rockström, “Why the Pope Embrace of Science Matters,” *Science* (2015), available from <https://ideas.ted.com/why-the-popes-embrace-of-science-matters/> [accessed 28/09/2018].

⁸⁹ Johan Rockström, “Bounding the Planetary Future: Why We Need a Great Transition,” *Great Transition Initiative: Towards a Transformative Vision and Praxis* (2015), 1, available from https://www.greattransition.org/images/GTI_publications/Rockstrom-Bounding_the_Planetary_Future.pdf [accessed 05/10/2018].

⁹⁰ John Rockström *et al.*, “A Safe Operation Space for Humanity,” *Nature* 461 (2009): 472-475.

⁹¹ Johan Rockström and Mattias Klum, *Big World Small World: Abundance Within Planetary Boundaries* (Sweden: Bokförlaget Max Ström, 2015), 9.

⁹² Rockström and Klum, *Big World Small World*, 8.

space in the planetary system within which human beings can operate and flourish indefinitely.”⁹³

The framework provides boundaries and limits on the environmental ceiling that are “safe and just” within the perimeters that humanity is allowed to perform activities without mounting undue pressure to the planetary system.⁹⁴ The nine environmental boundaries include: climate change, biodiversity loss, change of land use systems, chemical pollution, nitrogen and phosphorus cycles, stratospheric ozone depletion, ocean acidification, global freshwater use, and atmospheric aerosol loading.⁹⁵ According to their last update, the first four boundaries have already exceeded their proposed limits if one wants to keep temperature rise below 2°C.⁹⁶

The Planetary Boundaries presumes that anthropogenic factors caused the transgression of the natural boundaries, and consequently, humankind runs the risk that human developmental activities might reach a tipping point that will drastically affect the environmental capacity of the natural world. To that effect, there is an urgent concern to “reconnect human development and progress to the biosphere” so that human, economic growth and development must be within a safe operating space in order to uphold the resilience of the Earth System,⁹⁷ thereby avoiding triggering an unprecedented ecological catastrophe.

V. Conclusion

The notion ‘integral development’ in CST has been identified in different ways. Since ecological awareness is a rather late concern in the history of modern CST it has challenged the notion ‘integral

⁹³ Mark Lynas, *The God Species: Saving the Planet in the Age of Humans* (Washington, D.C.: National Geographic Society, 2011), 9.

⁹⁴ Kate Raworth, “A Safe and Just Space for Humanity: Can we Live within the Doughnut?,” *Oxfam Discussion Papers* (Oxford, UK: Oxfam, 2012), 8. See also, Daniel O’Neill, “A good life for all within planetary boundaries,” *Nature Sustainability* 88, no. 95 (2018): 1-16.

⁹⁵ Will Steffen *et al.*, “Planetary Boundaries: Guiding Human Development on a Changing Planet: (Summary),” *Science* 347, no. 6223 (2015).

⁹⁶ Steffen *et al.*, “Planetary Boundaries: Guiding Human Development.” See also, John Carey, “The 9 Limits of our Planet ... and How We’ve Raced Past 4 of Them,” *Science* (2015), available from <https://ideas.ted.com/the-9-limits-of-our-planet-and-how-weve-raced-past-4-of-them/> [accessed 04/10/2018]; Eva Furman *et al.*, “A Future the Planet Can Accommodate,” *Views on Environmental Policy: Syke Policy Brief* (2018): 1-4; Paul Lucas and Harry Wiltling, *Using Planetary Boundaries to Support National Implementation of Environment-Related Sustainable Development Goals: Background Report* (The Hague: PBL Netherlands Environmental Assessment Agency, 2018).

⁹⁷ Carl Folke *et al.*, “Reconnecting to the Biosphere,” *Ambio* 40 (2011): 719-738. See also, Rockström, “Bounding the Planetary Future,” 2.

development'. CST was for a long time preoccupied with highlighting the unjust conditions and inequalities between the rich and the poor. Pope Francis' notion of integral ecology takes as starting point that, 'everything in the world is connected, interconnected and interdependent.' Therefore, without any intent to deny the unique and distinctive dignity and identity of the *imago Dei* in human beings, there is no dichotomy between humanity and the natural world.⁹⁸ The new vision rather asserts that human ecology and natural ecology are interwoven. To that effect, anything that affects either of the ecologies leads to the deterioration of both ecologies.

Furthermore, for a sustainable and integral development which promotes the wellbeing of both human and natural environments to be possible, authentic human development must recognize that, 'a misguided anthropocentrism' that generates 'a misguided lifestyle' and a technocratic paradigm that places a premium on 'maximization of profits' must be rethought since they cannot guarantee a true, genuine, and conscientious human development that cares for and protects both human dignity and all God's creation, according to Pope Francis.

More significantly, as Pope Francis updates the social teachings of the Roman Catholic Church by remarkably extending 'intrinsic value' to nonhuman creatures as our 'fellow creatures' it calls for all human beings to be more conscious about their relationality with the natural environment, especially in the pursuit of economic and developmental processes. In addition, for *Laudato Si'* to advocate for the establishment of 'setting some reasonable limits' as guiding principles towards achieving a sustainable development makes Pope Francis' position to be synonymous with what is the core message of the Planetary Boundaries framework, although not offering concrete steps towards respecting planetary limits.

Further on, since establishing a reasonable safe operating space for humanity is basis of Rockström's planetary boundaries concept, it becomes indispensable that all human, economic, social and developmental activities in the Anthropocene must respect 'a safe operating space.' This is to make sure that human activities must be within the planetary boundaries and limits of environmental ceiling in order not

⁹⁸ Kingsley Ndubueze, "Responsible Environmental Stewardship for Sustainable Development in Africa: Edward Schillebeeckx's Co-Humanity and Creatuality and Pope Francis' Integral Ecology," *African Ecclesial Review* 60, no. 1 & 2 (2018): 119-139, 119.

to transgress nor destabilize the resilience of the Earth System that has encouraged civilization over the years.

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