

A Catholic Perspective on Climate Change

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Drought and food production in Ethiopia. Courtesy Catholic Relief Services (Climate Change and Global Solidarity toward a Sustainable Energy Future — Policy Brief, September 14, 2015).

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1. CATHOLICISM AND THE NATURAL ENVIRONMENT

[H]ow can we separate, or even set at odds, the protection of the environment and the protection of human life, including the life of the unborn?

—Pope Benedict XVI, Address to the Diplomatic Corps, January, 11, 2010

I should like to address directly my brothers and sisters in the Catholic Church, in order to remind them of their serious obligation to care for all of creation. The commitment of believers to a healthy environment for everyone stems directly from their belief in God the Creator, from their recognition of the effects of original and personal sin, and from the certainty of having been redeemed by Christ. Respect for life and for the dignity of the human person extends also to the rest of creation, which is called to join man in praising God (cf. Ps 148:96).

—Pope Saint John Paul II, World Day of Peace Message, No. 6, January 1, 1990

...the ecological crisis is ... a summons to profound interior conversion. It must be said that some committed and prayerful Christians, with the excuse of realism and pragmatism, tend to ridicule expressions of concern for the environment. Others are passive; they choose not to change their habits and thus become inconsistent. So what they all need is an “ecological conversion”, whereby the effects of their encounter with Jesus Christ become evident in their relationship with the world around them. Living our vocation to be protectors of God’s handiwork is essential to a life of virtue; it is not an optional or a secondary aspect of our Christian experience.

—Pope Francis, *Laudato si’* §217

The last three Popes have each called Catholics to protect our environment — God’s creation — as an integral part of our duty as Christians to protect life. Each gives voice to an authentically theological and conservative tradition of protecting the environment. Pope Francis’ call to *ecological conversion* is a call to turn away from the aspects of modern society that mistreat life in all forms in the pursuit of consumption, and to turn toward protection of God’s creation in the service of our fellow man.

This booklet considers what Catholics might do in response to this call in the context of climate change. It asks what we owe our grandchildren and their grandchildren and what we owe our fellow man, for in the climate change context everyone on earth is truly our neighbor. It begins by examining the evidence supporting the existence of climate change and its human origins. It then addresses the consequences of climate change and actions that we, as Catholics, can take to curb them. Lastly, it considers how these actions align with the whole of church teaching and our Catholic tradition to form an ethical and religious imperative.

As is clear from the foregoing quotes, Pope Francis’ landmark encyclical on the environment, *Laudato si’*, did not arise in isolation, but aligns with nearly 45 years of papal teaching on the environment.¹ A key tenet throughout this period is that Creation (nature) and its bounty should be used for the benefit of all humankind, but with good stewardship and options preserved for future generations.² If we accept that creation is a gift from God that must be nurtured and used for the benefit of all, how should we view climate change? The church’s answer is clear: climate change is a serious environmental problem with significant moral consequences.³ Pope Francis outlines this unequivocally in *Laudato si’* (§23), where he states that:

“The climate is a common good, belonging to all and meant for all. At the global level, it is a complex system linked to many of the essential conditions for human

life. A very solid scientific consensus indicates that we are presently witnessing a disturbing warming of the climatic system. . . . Humanity is called to recognize the need for changes of lifestyle, production and consumption, in order to combat this warming or at least the human causes which produce or aggravate it. It is true that there are other factors (such as volcanic activity, variations in the earth's orbit and axis, the solar cycle), yet a number of scientific studies indicate that most global warming in recent decades is due to the great concentration of greenhouse gases (carbon dioxide, methane, nitrogen oxides and others) released mainly as a result of human activity. Concentrated in the atmosphere, these gases do not allow the warmth of the sun's rays reflected by the earth to be dispersed in space. The problem is aggravated by a model of development based on the intensive use of fossil fuels, which is at the heart of the worldwide energy system.”

Here, again, Pope Francis echoes his predecessors. For example, Pope Benedict XVI said in a Letter of His Holiness Benedict XVI to the Ecumenical Patriarch of Constantinople on the Occasion of the Seventh Symposium of the Religion, Science and the Environment Movement, 2007, that:

“Preservation of the environment, promotion of sustainable development and particular attention to climate change are matters of grave concern for the entire human family.”

Pope Benedict XVI underscored this in his encyclical *Caritas in veritate*,⁴ noting specifically that (§51):

“The Church has a responsibility towards creation and she must assert this responsibility in the public sphere.”

Because some dispute the factual basis for the foregoing statements, it is reasonable to ask whether Pope Benedict XVI and Pope Francis have it right. Is the Earth warming, and if so can it be attributed to human activities? What are the likely consequences of such warming?

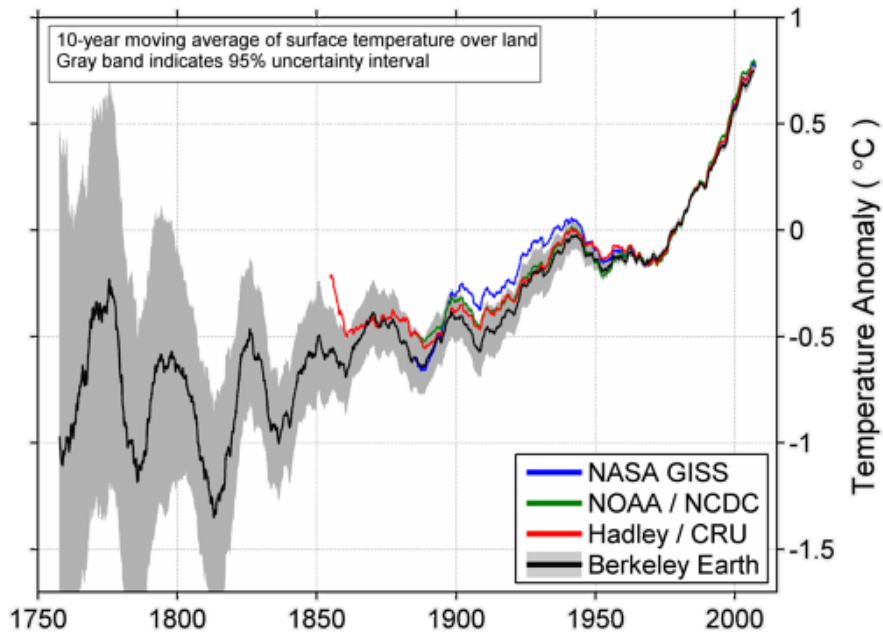
2. GLOBAL WARMING: NATURAL AND HUMAN AGENTS

2.1 RISING TEMPERATURES

Yes, the Earth is warming! In fact, over the last century, it's been warming more than ten times faster than at any other period since the last ice age, 12,000 years ago. Termed the temperature anomaly, the following graph shows the variation in the Earth's average land-surface temperature over a 250-year period relative to the mean value over the 30-year period from 1950 to 1979. The gray band, which reveals the range of uncertainty in the data, decreases over time due to advancements in measurement procedures, and confidence in the results is affirmed by convergence of data independently obtained by four different groups. Similar results are obtained for the average temperature over the world's oceans and for the combined land-ocean surface temperature (BEST, 2015).

The data are clear. Since the late 19th century, the Earth's temperature has been increasing, with much of it occurring over the last 40 years. And it continues to increase. To what can we attribute this warming? Is it due to human activities? Or, is it due to natural variability? To answer this question, we must consider energy flows into and out of the Earth.

Decadal Land-Surface Average Temperature



Global decadal moving average land temperature relative to the 1950-79 mean. From Berkeley Earth Surface Temperature Project (<http://berkeleyearth.org/summary-of-findings>).

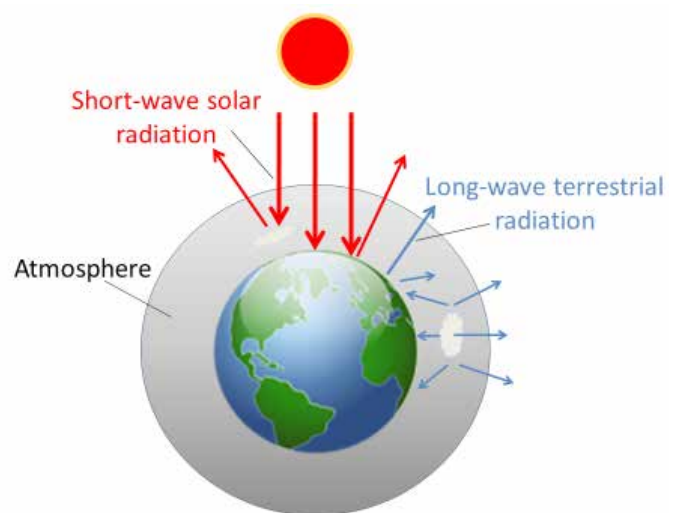
2.2 THE GLOBAL ENERGY BUDGET

As shown in the following sketch, energy enters the Earth's atmosphere as short-wave solar radiation, some of which is reflected back to space. Energy leaves the atmosphere as long-wave radiation from the Earth's surface and the atmosphere itself. If inflow exceeds outflow, the Earth warms; if the inverse is true, it cools. If inflow is balanced by outflow, Earth's average temperature remains unchanged.

It can be said with confidence that recent warming of the Earth is *not* due to changes in the incoming solar radiation. Changes in the Earth's orbit about the Sun and in its tilt affect solar radiation received by the Earth, but only over periods of 40,000 to 100,000 years, well in excess of the 100 years of current warming. If there is no change in energy inflow, could increasing temperatures be due to a reduction in outflow, and if so, what could cause the reduction?

2.3 GREENHOUSE GASES – AND MORE

Onset of the Industrial Revolution in the 18th century marked the emergence of fossil fuels, which have since been critical to global economic development and today comprise more than 80% of the world's primary energy supply. From coal to petroleum and natural gas, these fuels have done much to elevate living standards, particularly in developed nations of the West and more recently in developing nations of the Far East and Southern Hemisphere. But, fossil fuels are hydrocarbons and, when burned, carbon is released to the atmosphere as carbon dioxide (CO₂), where it remains until it is absorbed by plants and the oceans. Since CO₂ is



absorbed more slowly than it is released, it accumulates in the atmosphere, where it can remain for centuries.

The following graph tracks the progress of CO₂ accumulation in the atmosphere from 1959 through 2015 (NOAA, 2015). The red saw-tooth pattern reflects a decrease in concentration during the spring/summer months due to plant growth in the Northern Hemisphere and an increase due to plant decay over the winter months. The black curve represents a seasonal average, which increased from 316 parts per million (ppm) in 1959 to 402 ppm in 2015. Before the Industrial Revolution, the concentration had been 280 ppm, and the current concentration exceeds levels experienced at any time over the past 2 million years. And, the concentration continues to increase by more than 2 ppm per year.

Why is this trend important? Because CO₂ is a *greenhouse gas* (GHG), it absorbs portions of the long-wave radiation leaving the Earth's atmosphere while being virtually transparent to (short wave) solar radiation. By reducing energy leaving the Earth, while having little effect on incoming energy, the CO₂ contributes to global warming.

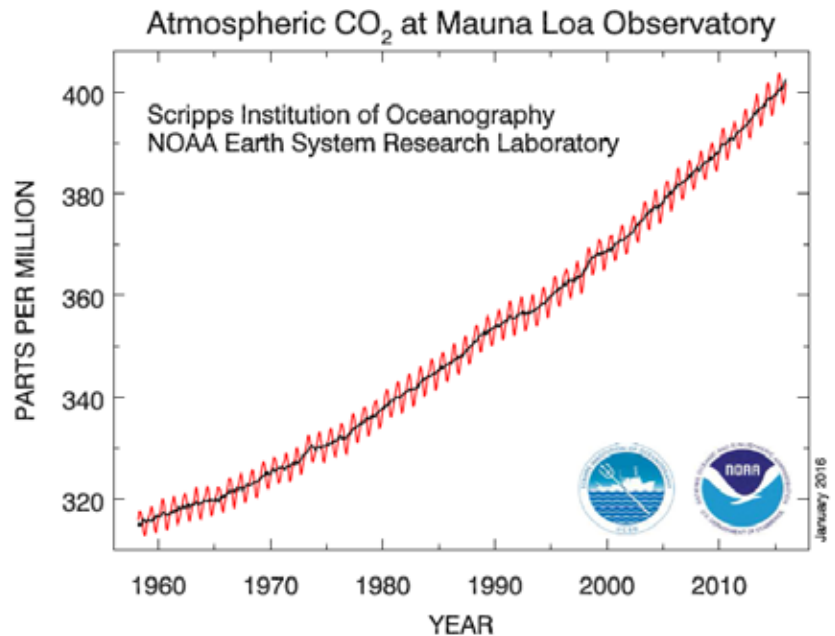
Because more CO₂ is being added to the atmosphere than is removed by plants and the oceans, the amount in the atmosphere increases over time, which in turn increases global warming.

Other GHGs, which are also accumulating in the atmosphere and contribute to global warming, include methane, nitrous oxide and hundreds of synthetic chemicals. The stock of GHGs in the atmosphere has been increasing since the Industrial Revolution, and historically the largest contributions to this stock have been made by the developed economies of Western nations. But that's not the whole story. Warming introduces *positive feedback mechanisms* that further amplify the warming (Incropera, 2015). For example, as Arctic Sea ice melts due to warming, incident solar radiation that would otherwise have been reflected by the ice is now absorbed by the water, adding to the warming effect.

The foregoing arguments are consistent with those made by Pope Francis in *Laudato si'*. The Earth is warming, and it is due to human activity. An atmospheric CO₂ concentration of 450 ppm represents a threshold beyond which an increase in the earth's average surface temperature would eventually exceed 2°C (3.6°F). At that point the effects of warming would become yet a greater, potentially unmanageable threat. The temperature has already increased by 1°C, and with *business-as-usual*, 450 ppm will be exceeded by 2040. The 450 ppm and 2°C thresholds represent real threats, and serious efforts must be made to avert them. To do so, it would be necessary to reduce the rate at which GHGs are currently discharged to the atmosphere by about 80%.

3. CLIMATE CHANGE: EFFECTS ON HUMANS AND THE PLANET

In *Laudato si'* (§24), Pope Francis identifies a range of threats to humankind and the natural environment that are attributable to global warming and climate change.⁵ Sea



levels are rising, caused in one case by melting ice sheets and glaciers and in another by the increase in volume that accompanies an increase in the temperature of the water. As temperatures of the ocean and atmosphere increase, more energy is added to the atmosphere, increasing the frequency and intensity of *extreme weather events* (NAP, 2016). Weather and rainfall patterns are changing, resulting in more intense heat waves, droughts, wild fires, storms, and floods. Global warming is also stressing many plant and animal species – in some cases entire ecosystems – increasing migration toward the poles and rates of species extinction. Warming also increases the spread of infectious diseases, while increasing atmospheric concentrations of CO₂ contributes to ocean acidification.

The foregoing changes are not hypothetical. They are real and pose significant threats to people and the natural environment. Millions living in low-lying coastal areas are seeing their homes and livelihoods affected by the combination of rising sea levels and more intense storms. Prolonged drought in some regions – accompanied by wild fires of growing intensity – and torrential rains and flooding in others are increasing damage to the natural and built environments. The reach of vector-borne tropical diseases such as the Zika virus, malaria and dengue fever, are spreading as temperatures rise and tropical areas expand. Combined with warming, ocean acidification is disrupting important ecosystems and food chains, while agricultural production is being impaired by drought, flooding, and salinization of water supplies. Significant stress on sources of potable water and agricultural production can weaken already fragile governments, creating political instability, conflict in nations most affected and least able to deal with the effects of climate change, and the specter of mass migrations of climate refugees.

The damage inflicted on the environment by climate change affects all of us, but none more so than the poor and future generations. In his World Day of Peace Message (WDPM, 2010), Pope Benedict XVI asked (§4): “Can we remain indifferent before the problems associated with such realities as climate change, desertification, the deterioration and loss of productivity in vast agricultural areas, the pollution of rivers and aquifers, the loss of biodiversity, the increase of natural catastrophes and the deforestation of equatorial and tropical regions? Can we disregard the growing phenomenon of “environmental refugees”, people who are forced by the degradation of their natural habitat to forsake it – and often their possessions as well – in order to face the dangers and uncertainties of forced displacement? Can we remain impassive in the face of actual and potential conflicts involving access to natural resources? All these are issues with a profound impact on the exercise of human rights, such as the right to life, food, health and development.”

4. WHAT CAN BE DONE?

There is sufficient evidence to conclude that humankind and the natural environment are being imperiled by global warming and climate change and that business-as-usual cannot continue. Measures must be taken on two fronts, the first involving *mitigation*, which deals with reducing GHG emissions, and the second *adaptation*, which deals with increasing resilience to the effects of warming.

4.1 MITIGATION

Mitigation is the first line of defense against global warming and should be pursued vigorously. It is about advancing and implementing technology on two fronts. The first involves increasing the efficiency of every aspect of energy production and utilization, from the many devices we use on a daily basis, to heating and cooling systems, and to utility scale power plants. Energy efficiency implies using technology to reduce the

energy required to achieve a specific objective — in a sense, doing the same or even more with less.

The second front involves decarbonizing the world's energy portfolio. Power generation can be decarbonized by transitioning to carbon-free sources such as solar, wind and nuclear energy. Transportation can be decarbonized by transitioning to electric vehicles using decarbonized electricity. Implementation must proceed rapidly, while research and development continue to improve performance and reduce costs. The electricity grid must be expanded to better accommodate intermittent wind and solar energy, while battery technologies must be advanced to enhance energy storage for electric vehicles and intermittent sources (wind and solar) of power generation. Storage of carbon in the natural environment should also be enhanced by curtailing deforestation and encouraging reforestation of open areas.

Unfortunately, in the face of global economic development and aspirations among the poor and underserved for improved living standards, technology alone will not suffice. It must be augmented by a spirit of conservation. In contrast to efficiency, which implies doing the same or more with less, conservation implies simply doing less. It involves moving from a culture of consumption to one in which moderation and prudence become core social values. It implies a need for people in developed nations to moderate their consumption and for people in developing nations to moderate their aspirations. Moderation is not incompatible with achieving a good standard of living, but it is incompatible with waste and overconsumption. Pope Francis is unambiguous in attributing much of the current state of affairs to human habits of consumption, and calls for rebirth of a conservation mindset, particularly in developed nations of the world.⁶

4.2 ADAPTATION

What if the foregoing efforts are unable to reduce atmospheric GHG concentrations to acceptable levels, a scenario that is not unlikely? The second line of defense involves preparing for such an eventuality by implementing adaptation measures to reduce the impact of climate change. Today it is clear that mitigation and adaptation must occur concurrently; mitigation to reduce the extent to which adaptation is needed and adaptation to protect against deficiencies in mitigation.

Adaptation addresses questions such as: Where will flooding be most acute? Where will drought and water shortages be most pronounced? Where will climate change spawn the propagation of vector-borne diseases? How should coastal regions be managed, communities developed, food and water security maintained, and human health preserved? Consider, for example, the effects of a one-meter rise in sea level. Almost 24 million people along the Ganges, Mekong, and Nile deltas could be displaced and more than 1.5 million hectares could be removed from agricultural production.

All nations will be affected by climate change, but a Catholic response recognizes that the poorest among them will be most afflicted, least able to deal with the consequences, and most in need of assistance. Resources must be devoted to increasing the resilience of nations to the effects of climate change with emphasis on those most vulnerable to the effects.

4.3 HISTORY OF CLIMATE CHANGE POLICY

Because emissions in any location impact the global atmosphere, not just the location of the emissions, climate change is a global problem. The first, definitive global public policy response occurred in 1992, when the nations of the world gathered in Rio de

Janeiro for the Earth Summit and adopted the United Nations Framework Convention on Climate Change (UNFCCC). In principle, the UNFCCC provided a framework for the world's nations to cooperate in solving the problem of climate change, but in practice cooperation proved to be elusive. The major obstacle was a large divide between the views of developing and developed nations. The poorer, developing nations believed that, because the richer, developed nations had been the principal contributors to GHG emissions, they created the problem and should therefore take responsibility for its solution. This view is rooted in the premise that liability should be allocated in accordance with "historical responsibility." Developed nations should therefore shoulder the responsibility for reducing emissions, while developing nations increase their emissions as needed to achieve decent living standards for their people, but at a reduced rate through emissions reduction technologies provided by the developed countries. A corollary of historical responsibility is that the developed nations will assist developing nations with adaptation to the effects of climate change.

For nearly 20 years, the divide between developing and developed nations limited progress on addressing climate change. However, in recent years, as the gravity of the problem became more evident, views began to shift, with developing nations accepting an eventual role in solving the problem and developed nations recognizing the need to contribute more to the solution and to assist the developing nations.

This shift in views resulted in the nations of the world making headway at a 2015 meeting in Paris, where 192 of the 197 nations that are parties to the UNFCCC made nonbinding commitments to reduce their GHG emissions. It is now up to each government, including state and local levels, to create a regulatory environment that mitigates GHG emissions to achieve these voluntary commitments. Measures could take any number of forms, including direct regulations of emissions, incentives to reduce emissions, or other market signals encouraging businesses to participate in establishing a productive, post-GHG economy. Specific regulations could include energy efficiency and fuel economy standards, as well as renewable portfolio standards for power production. Financial incentives could involve investment and production tax credits and pricing GHG emissions through a carbon tax or cap-and-trade system. Measures could also include investments in public transportation and adaptation to the effects of climate change. Another positive outcome of the Paris meeting was the extent to which global businesses committed to reducing their emissions.

By achieving consensus that, over time, each nation must address climate change, the Paris meeting may well be a turning point. However, even if all commitments are met, emissions will exceed 450 ppm and the earth's average temperature will rise by more than 2°C. For the Paris agreement to be truly effective, they must be honored and be followed by additional commitments that will reduce emissions to acceptable levels.

5. WHAT CAN WE DO AS EXPRESSIONS OF OUR FAITH?

The Church teaches us that our advocacy for life includes understanding and modifying our behavior to avoid harm to God's creation from climate change. It speaks to our individual behavior and how we should live our personal lives. While this Church teaching does not extend to advocating any specific policy response to climate change, it undeniably has some measure of authoritative weight for, and should be taken very seriously by, Catholics considering climate policy issues. In this context, and with expressions of our faith in mind, this booklet provides potential responses that align with the teachings of Pope Saint John Paul II, Pope Benedict XVI and Pope Francis.

As individuals, a first step would be to give more thought to how we use energy and

to undertake simple measures for reducing consumption, measures that will also save money. In the West, and particularly the U.S., we do not need to supersize our homes and vehicles. We can make sure our homes are well insulated, and we do not have to overcool them in the summer or overheat them in winter. Setting the thermostat a few degrees higher in summer and lower in winter makes a difference. We can use more efficient light bulbs and turn them off when they serve no useful purpose. We can emphasize fuel economy when we purchase our next vehicle and drive fewer miles by combining trips. We can walk, bicycle or take public transportation when it is convenient to do so. We can look for ways to reduce our air travel. All these things can be done without impairing the quality of our lives.

Some may scoff at such individual measures, claiming them to be inconsequential in the grand scheme of things but, when adopted by many, they make a difference. *Laudato si'* affirms that these are good, initial steps toward a true ecological commitment.⁷ They also fall within Pope Benedict XVI's broader teaching in *Caritas in veritate* (§51):

“The way humanity treats the environment influences the way it treats itself, and vice versa. This invites contemporary society to a serious review of its life-style, which, in many parts of the world, is prone to hedonism and consumerism, regardless of their harmful consequences. What is needed is an effective shift in mentality which can lead to the adoption of new life-styles in which the quest for truth, beauty, goodness and communion with others for the sake of common growth are the factors which determine consumer choices, savings and investments.”

Pope Saint John Paul II approached this from the perspective of consumerism, mincing no words in his encyclical *Centesimus annus* (§37), by stating:

“Equally worrying is the ecological question which accompanies the problem of consumerism and which is closely connected to it. In his desire to have and to enjoy rather than to be and to grow, man consumes the resources of the earth and his own life in an excessive and disordered way.”

Beyond consuming more efficiently or reducing our consumption, another response is to seek change by advocating for environmental issues. Remembering that public policy is important to transforming our energy systems, we can speak up and let our representatives know we favor policies that promote clean energy and reduce GHG emissions. But, we must remain mindful that laws and regulations alone are not enough. They must be accompanied by a true change of heart, whereby we are motivated not only to accept these measures but also to change our own behavior.

True agents of change will also attempt to impact business. When many advocate for environmental issues, including mitigation of GHG emissions, it sends a powerful social signal to business that we, as consumers, are no longer willing to accept goods and services that entail steep environmental costs. *Laudato si'* envisions that the cumulative impact of many true ecological conversions will trigger precisely such a consumer movement.⁸

In recognition of our historical responsibility for climate change, a true behavioral change also entails advocating on behalf of the poor and most vulnerable. Developed countries have been the biggest contributors to GHG emissions and the biggest beneficiaries of the wealth derived from using the fossil fuels that produced the emissions. However, the worst effects of climate change are being felt by developing countries that lack the resources to cope. Without assistance from the developed countries, they cannot be expected to transform their transportation and energy systems and to adapt to effects such as prolonged drought, flooding, and other extreme

weather events. Pope Francis specifically advocates these acts of solidarity on behalf of those in need, especially children.⁹

Turning away from our consumerist lifestyle toward a more ecologically-minded lifestyle does not occur overnight. It starts with steps to reduce consumption, but it goes much further. It recognizes that environmental, social, human and economic issues are inextricably intertwined, that our social, political and economic behavior drives environmental changes, including GHG emissions. It calls on us to respond by living lives that may appear smaller on the outside but are much bigger on the inside, as they replace overconsumption, self-centeredness and pursuit of self-gratification with family, God and community. In this context, *Laudato si'* blames mankind's inability to address climate change and to pursue the global common good on an ethical and cultural decline that has accompanied deterioration of the environment. Viewed through this lens the last three Popes have each called for a break in the logic of exploitation and selfishness that mistreats life in all forms in the pursuit of consumption. Most pointedly, Pope Benedict XVI taught in *Caritas in veritate* (§51) that:

“The way humanity treats the environment influences the way it treats itself, and vice versa. This invites contemporary society to a serious review of its life-style, which, in many parts of the world, is prone to hedonism and consumerism, regardless of their harmful consequences. What is needed is an effective shift in mentality which can lead to the adoption of new life-styles in which the quest for truth, beauty, goodness and communion with others for the sake of common growth are the factors which determine consumer choices, savings and investments.”

Because it collides with our sense of mastery over our environment, *Laudato si'* recognizes the barriers to embracing this framework, and encourages us to include the integrity of human life in our perception of ecosystems.¹⁰ The call to include the integrity of human life echoes similar calls of Pope St. John Paul II and Pope Benedict XVI at the beginning of this booklet, each of which ties protection of our environment to advocacy of all human life.

As 21st century Catholics we should consider how the Church fathers would have responded in these circumstances. How would the martyrs of the early Church react to contemporary society's pursuit of self-gratification and consumerism that mistreats life of all kinds, both human life and the natural life of our environment? How would the desert fathers or the monks of the monastic period, with their life comprising *ora et labora* (prayer and work), address the challenges of climate change? By reaching back into our tradition we see how the Church fathers responded to similar challenges. Viewed through this lens, we see the Church calling upon us to respond to climate change by embracing virtues such as prudence, moderation and justice, virtues that contribute to the common good.

6. AN ETHICAL AND RELIGIOUS IMPERATIVE

Climate change raises a host of ethical issues, not least among them the plight of the poor and future generations. How do we balance our responsibilities to ourselves, our families and our parishes against responsibilities to others, especially the poor, the underserved and those displaced by climate change? How do we weigh the needs of the present against those of the future, of the living against those of the unborn? What do we owe our grandchildren and their grandchildren?

Laudato si' responds to these questions unambiguously. In terms of our failure to respond to those displaced by climate change, it states (§48): “Our lack of response to these tragedies involving our brothers and sisters points to the loss of that sense of

responsibility for our fellow men and women upon which all civil society is founded.” It inextricably ties the interwoven nature of social and environmental degradation to the resulting loss of life: “The human environment and the natural environment deteriorate together; we cannot adequately combat environmental degradation unless we attend to causes related to human and social degradation. ... The impact of present imbalances is . . . seen in the premature death of many of the poor, in conflicts sparked by the shortage of resources, and in any number of other problems which are insufficiently represented on global agendas.” It views climate change as an issue of fundamental justice, with the developed countries that created the problem indebted to developing nations that must endure its repercussions.¹¹

Pope Benedict XVI agreed in his World Day of Peace Message (WDPM, 2010), where he states (§5): “Our present crises – be they economic, food-related, environmental or social – are ultimately also moral crises, and all of them are interrelated.” The crises, and our corresponding responsibilities, extend well beyond the living to future generations, including our grandchildren and their grandchildren.¹² We must therefore be transparent in recognizing environmental costs and ensuring equitable apportionment. That is, those who contributed most to environmental damage should bear most of the costs.¹³ Nothing short of assuming this responsibility would fulfill our obligations to the poor and future generations.

Viewed more broadly, as a manifestation of our Catholic faith, our movement from a world of excess consumption and self-gratification toward a commitment to environmental responsibility must extend to all aspects of our lives and behavior. But it cannot stop there. It must extend to the collective work within our parish communities and to the goals and actions of our larger societies. Pope Francis aligns himself with Pope Benedict XVI’s teaching in *Caritas in veritate* by speaking directly to societal issues, asserting that social and economic development should target integral human development – holistic development of the human person, covering all aspects of life: social, economic, political, cultural, environmental, personal and spiritual in a manner that promotes human dignity, equality and the common good of all people – not simply the endless pursuit of profit, consumption and self-gratification, which have created our wasteful and consumerist society and have failed to address detrimental impacts on human beings and the natural environment.

How does this teaching – that we must prioritize integral human development recognizing the interconnectedness of environmental, social, human and economic issues – align with previous church teaching? As discussed previously, it is the culmination of nearly 45 years of papal teaching on the environment and aligns with the whole of Catholic social teaching. By understanding that the Church’s teaching regarding integral human development is a key objective of our social and economic systems we see human and environmental issues within a single book of nature that conjoins environmental issues with the Church’s teaching regarding life, sexuality, marriage, the family and social relations, which Pope Benedict XVI ties to the Church’s advocacy for life itself.¹⁴

Responding to the calls made by the last three Popes therefore entails acceptance of the goodness and worthiness of all aspects of God’s creation and God’s gift of life. It pursues all aspects of integral human development, not simply technological advancement or profit, as our social and economic goal. Within this context, our pursuit of other goals has led mankind to pollute the atmosphere with greenhouse gases that contribute to global warming and climate change.

Climate change presents very real threats to humankind, especially the poor and

vulnerable, and the natural environment. Church teachings, including those of Pope Paul VI, Pope John Paul II, Pope Benedict XVI and, most recently, Pope Francis, encourage us to re-examine our lifestyles and priorities and to address the problems of modern society in pursuit of the common good. They also encourage us to consider the plight of future generations, who are especially vulnerable to the environmental effects of our actions. They oblige us to integrate economic, social and environmental goals in a manner that fosters integral human development. In the end, it demands that we champion life in all its forms, in particular the poorest and most vulnerable.

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ENDNOTES

1 Pope Paul VI in an Apostolic Letter (Octogesima Adveniens, 1971) bore witness to social injustices manifested by environmental degradation when he wrote of "... the dramatic and unexpected consequences of human activity. Man is suddenly becoming aware that by an ill-considered exploitation of nature he risks destroying it and becoming in his turn the victim of this degradation . . . thus creating an environment for tomorrow which may well be intolerable. This is a wide-ranging social problem which concerns the entire human family."

In an Encyclical Letter (Redemptor Hominis, 1979), St. Pope John Paul II wrote that "it was the Creator's will that man should communicate with nature as an intelligent and noble 'master' and 'guardian,' and not as a heedless 'exploiter' and 'destroyer.'" In a subsequent Apostolic Blessing (Sollicitudo Rei Socialis, 1987), he described the natural world as God's gift to the entire human race, and unbridled consumerism, as well as disparities in the fruits of development, as abuses of the gift. Later, in Evangelium Vitae (1995), he quotes from Genesis 1:28, which states that "God blessed them [humankind], and God said to them, Be fruitful and multiply, and fill the earth and subdue it; and have dominion over the fish of the sea and over the birds of the air and over every living thing that moves on earth." The quote could be considered an invitation to exploit the Earth's resources in the name of human development. But drawing from Genesis 2:15 in which man is called to care for God's gift of creation, the Pope reminds us of God's satisfaction and pleasure with creation and that "man has a specific responsibility towards the environment in which he lives . . . ranging from the preservation of natural habitats of the different species and animals and of other life forms to human ecology . . . which finds in the bible clear and strong ethical direction." In his World Day of Peace Message (WDPM, 1990), he also stated: "Faced with widespread destruction of the environment, people everywhere are coming to understand that we cannot continue to use the goods of the earth as we have in the past."

In his encyclical Caritas in veritate (§50), Pope Benedict XVI taught that: "It is likewise incumbent upon the competent authorities to make every effort to ensure that the economic and social costs of using shared environmental resources are recognized with transparency and fully borne by those who incur them, not by other peoples or future generations: the protection of the environment, of resources and of the climate obliges all international leaders to act jointly and to show a readiness to work in good faith, respecting the law and promoting solidarity with the weakest regions of the planet. One of the greatest challenges facing the economy is to achieve the most efficient use – not abuse – of natural resources ..." And now, in his encyclical Laudato si' (§139), Pope Francis reminds us that, "When we speak of the 'environment', what we really mean is a relationship existing between nature and the society which lives in it. Nature cannot be regarded as something separate from ourselves or as a mere setting in which we live. We are part of nature, included in it and thus in constant interaction with it."

2 The Catechism (§299) tells us that, "God willed creation as a gift addressed to man, an inheritance destined for and entrusted to him."

3 Consider the following excerpts from a 2001 Statement of the U.S. Conference of Catholic Bishops (USCCB, 2001):

(1) "Global climate is by its very nature a part of the planetary commons. The earth's atmosphere encompasses all people, creatures and habitats."

(2) "In facing climate change, what we already know requires a response; it cannot be fully dismissed. . . if enough evidence indicates that the present course of action could jeopardize humankind's wellbeing, prudence dictates taking mitigating or preventive action. This responsibility weighs more heavily upon those with the power to act because the threats are often greatest for those who lack similar power, namely, vulnerable poor populations, as well as future generations. . . [T]he impact of prudent actions taken today can potentially improve the situation over time, avoiding more sweeping action in the future."

(3) "All nations share the responsibility to address the problem of global climate change. But historically the industrial economies have been responsible for the highest emissions of greenhouse gases . . . [and] significant wealth, technological sophistication, and entrepreneurial creativity give these nations a greater capacity to find useful responses to this problem. To avoid greater impact, energy resource adjustments must be made both in the policies of richer countries and in the development paths of poorer ones."

4 In his encyclical Caritas in veritate (§48) Pope Benedict XVI taught that: "Today the subject of development is also closely related to the duties arising from our relationship to the natural environment. The environment is God's gift to everyone, and in our use of it we have a responsibility towards the poor, towards future generations and towards humanity as a whole. When nature, including the human being, is viewed as the result of mere chance or evolutionary determinism, our sense of responsibility wanes. In nature, the believer recognizes the wonderful result of God's creative activity, which we may use responsibly to satisfy our legitimate needs, material or otherwise, while respecting the intrinsic balance of creation. If this vision is lost, we end up either considering nature an untouchable taboo or, on the contrary, abusing it. Neither attitude is consonant with the Christian vision of nature as the fruit of God's creation."

"Nature expresses a design of love and truth. It is prior to us, and it has been given to us by God as the setting for our life. Nature speaks to us of the Creator (cf. Rom 1:20) and his love for humanity. It is destined to be "recapitulated" in Christ at the end of time (cf. Eph 1:9-10; Col 1:19-20). Thus it too is a "vocation". Nature is at our disposal not as "a heap of scattered refuse", but as a gift of the Creator who has given it an inbuilt order, enabling man to draw from it the principles needed in order "to till it and keep it" (Gen 2:15). But it should also be stressed that it is contrary to authentic development to view nature as something more important than the human person. This position leads to attitudes of neo-paganism or a new pantheism — human salvation cannot come from nature alone, understood in a purely naturalistic sense. This having been said, it is also necessary to reject the opposite position, which aims at total technical dominion over nature, because the natural environment is more than raw material to be manipulated at our pleasure; it is a wondrous work of the Creator containing a "grammar" which sets forth ends and criteria for its wise use, not its reckless exploitation. Today much harm is done to development precisely as a result of these distorted notions. Reducing nature merely to a collection of contingent data ends up doing violence to the environment and even encouraging activity that fails to respect human nature itself. Our nature, constituted not only by matter but also by spirit,

and as such, endowed with transcendent meaning and aspirations, is also normative for culture. Human beings interpret and shape the natural environment through culture, which in turn is given direction by the responsible use of freedom, in accordance with the dictates of the moral law. Consequently, projects for integral human development cannot ignore coming generations, but need to be marked by solidarity and inter-generational justice, while taking into account a variety of contexts: ecological, juridical, economic, political and cultural.”

5 Laudato si’ (§24) states: “Warming ... creates a vicious circle which aggravates the situation even more, affecting the availability of essential resources like drinking water, energy and agricultural production in warmer regions, and leading to the extinction of part of the planet’s biodiversity. The melting in the polar ice caps and in high altitude plains can lead to the dangerous release of methane gas, while the decomposition of frozen organic material can further increase the emission of carbon dioxide [two more positive feedback mechanisms]. Things are made worse by the loss of tropical forests, which would otherwise help to mitigate climate change. Carbon dioxide pollution increases the acidification of the oceans and compromises the marine food chain. If present trends continue, this century may well witness extraordinary climate change and an unprecedented destruction of ecosystems, with serious consequences for all of us. A rise in the sea level, for example, can create extremely serious situations, if we consider that a quarter of the world’s population lives on the coast or nearby, and that the majority of our megacities are situated in coastal areas.”

6 In Laudato si’ (§22), Pope Francis states that: “We have not yet managed to adopt a circular model of production capable of preserving resources for present and future generations, while limiting as much as possible the use of non-renewable resources, moderating their consumption, maximizing their efficient use, reusing and recycling them. A serious consideration of this issue would be one way of counteracting the throwaway culture which affects the entire planet, but it must be said that only limited progress has been made in this regard.” He goes on to say (§27) that: “Other indicators of the present situation have to do with the depletion of natural resources. We all know that it is not possible to sustain the present level of consumption in developed countries and wealthier sectors of society, where the habit of wasting and discarding has reached unprecedented levels. The exploitation of the planet has already exceeded acceptable limits and we still have not solved the problem of poverty.”

7 In Laudato si’ (§211) Pope Francis states: “Only by cultivating sound virtues will people be able to make a selfless ecological commitment. A person who could afford to spend and consume more but regularly uses less heating and wears warmer clothes, shows the kind of convictions and attitudes which help to protect the environment. There is a nobility in the duty to care for creation through little daily actions, and it is wonderful how education can bring about real changes in lifestyle. Education in environmental responsibility can encourage ways of acting which directly and significantly affect the world around us, such as avoiding the use of plastic and paper, reducing water consumption, separating refuse, cooking only what can reasonably be consumed, showing care for other living beings, using public transport or car-pooling, planting trees, turning off unnecessary lights, or any number of other practices. All of these reflect a generous and worthy creativity which brings out the best in human beings.”

8 In Laudato si’ (§206), Pope Francis states: “A change in lifestyle could bring healthy pressure to bear on those who wield political, economic and social power. This is what consumer movements accomplish by boycotting certain products. They prove successful in changing the way businesses operate, forcing them to consider their environmental footprint and their patterns of production. When social pressure affects their earnings, businesses clearly have to find ways to produce differently. This shows us the great need for a sense of social responsibility on the part of consumers.”

9 Laudato si’ (§208) states: “We are always capable of going out of ourselves towards the other. Unless we do this, other creatures will not be recognized for their true worth; . . . Disinterested concern for others, and the rejection of every form of self-centeredness and self-absorption, are essential if we truly wish to care for our brothers and sisters and for the natural environment. These attitudes also attune us to the moral imperative of assessing the impact of our every action and personal decision on the world around us. Unfortunately, the same mindset that impedes prudent action to mitigate our GHG emissions in response to climate change also impedes our ability to eliminate poverty.”

10 Laudato si’ (§224) states: “Sobriety and humility were not favourably regarded in the last century. And yet, when there is a general breakdown in the exercise of a certain virtue in personal and social life, it ends up causing a number of imbalances, including environmental ones. That is why it is no longer enough to speak only of the integrity of ecosystems. We have to dare to speak of the integrity of human life, of the need to promote and unify all the great values. Once we lose our humility, and become enthralled with the possibility of limitless mastery over everything, we inevitably end up harming society and the environment. It is not easy to promote this kind of healthy humility or happy sobriety when we consider ourselves autonomous, when we exclude God from our lives or replace him with our own ego, and think that our subjective feelings can define what is right and what is wrong.”

11 Pope Benedict XVI in Caritas in veritate (§48) teaches: “The environment is God’s gift to everyone, and in our use of it we have a responsibility towards the poor, towards future generations and towards humanity as a whole.” Laudato si’ (§51) states: “A true ‘ecological debt’ exists, particularly between the global north and south, connected to commercial imbalances with effects on the environment, and the disproportionate use of natural resources by certain countries over long periods of time The warming caused by huge consumption on the part of some rich countries has repercussions on the poorest areas of the world, especially Africa, where a rise in temperature, together with drought, has proved devastating for farming.”

12 Pope Saint John Paul II, in his World Day of Peace Message, No. 6, January 1, 1990, taught that: “. . . we cannot interfere in one area of the ecosystem without paying due attention both to the consequences of such interference in other areas and to the well-being of future generations.” Pope Benedict XVI agreed in his 2010 World Day of Peace Message, No. 8, January 1, 2010, where he taught that “A greater sense of intergenerational solidarity is urgently needed. Future generations cannot be saddled with the cost of our use of common environmental resources.” Laudato si’ (§159) states: “The notion of the common good also extends to future generations. The global economic crises have made painfully obvious the detrimental effects of disregarding our common destiny, which cannot exclude those who come after us. We can no longer speak of sustainable

development apart from intergenerational solidarity. Once we start to think about the kind of world we are leaving to future generations, we look at things differently; we realize that the world is a gift which we have freely received and must share with others. Since the world has been given to us, we can no longer view reality in a purely utilitarian way, in which efficiency and productivity are entirely geared to our individual benefit. Intergenerational solidarity is not optional, but rather a basic question of justice, since the world we have received also belongs to those who will follow us. . . . [We must] acknowledge this obligation of justice: 'The environment is part of a logic of receptivity. It is on loan to each generation, which must then hand it on to the next'. An integral ecology is marked by this broader vision."

13 Pope Benedict XVI, 2010 World Day of Peace Message, No. 11, January 1, 2010, said: "In a word, concern for the environment calls for a broad global vision of the world; a responsible common effort to move beyond approaches based on selfish nationalistic interests towards a vision constantly open to the needs of all peoples." Laudato si' (§195) states: "businesses profit by calculating and paying only a fraction of the costs involved. Yet only when 'the economic and social costs of using up shared environmental resources are recognized with transparency and fully borne by those who incur them, not by other peoples or future generations', can those actions be considered ethical."

14 In Caritas in veritate (§51) Pope Benedict XVI stated: "In order to protect nature, it is not enough to intervene with economic incentives or deterrents ... These are important steps, but the decisive issue is the overall moral tenor of society. If there is a lack of respect for the right to life and to a natural death, if human conception, gestation and birth are made artificial, if human embryos are sacrificed to research, the conscience of society ends up losing the concept of human ecology and, along with it, that of environmental ecology. It is contradictory to insist that future generations respect the natural environment when our educational systems and laws do not help them to respect themselves. The book of nature is one and indivisible: it takes in not only the environment but also life, sexuality, marriage, the family, social relations: in a word, integral human development. 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."

