The Multiple Contexts of the Environmental Crisis

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Environmental disasters in various forms and degrees can be said to have always been a part of the natural processes that take place on earth. However, the environmental crisis in its present form is distinctly a part of what has been called the Age of the Anthropocene, or the Age of Humans. In this unofficial epoch of geologic time, humans' ability to become a force of nature and be able to influence and change the processes in the natural environment has resulted in an escalating global environmental crisis threatening to undermine human progress achieved thus far in economic and social development, and causing future generations to inherit and leaves the next generation with an earth stripped of its power and vigor. The issue has grown into a dilemma that cannot be confined to a single or even a few sectors of society or that can be adequately addressed simply by politicians or scientific experts. The global consensus is that an effective solution to ecological concerns requires an interdisciplinary, dialectical, and dialogical approach enlisting the collaborative minds a diverse contingent of individuals, groups, organizations, and institutions. Among the tasks to be done include applying scientific and technological know-how to social, economic and legal policies, all of which must be undergirded by political will, ethical awareness, and religious and personal commitment to act on behalf of the environment. This paper examines the multi-dimensional environmental challenges in the modern world. Some of the presentation will reflect the way that the environmental crisis is understood and portrayed by mainstream political, social, and religious institutions in their understanding of the crisis – especially in the various ways that the crisis impact human flourishing and social stability. I will not depart from this rather "anthropocentric" way of presenting the crisis here. However, I hope that as we delve deeper into environmental crisis to understand the various dimensions, we begin to see the problem in new light beyond the parameters of social, political and economic indicators.

Overview of the Environmental Crisis

Despite the persistent presence of a number of climate deniers, among them politicians and self-identified scientists, there is tremendous scientific consensus that the ecological crisis is real and increasingly becoming cause for alarm. In fact, according to the American Association for the Advancement of Science (AAAS), "Based on well-established evidence, about 97% of climate scientists have concluded that human-caused climate change is happening. This agreement is documented not just by a single study, but by a converging stream of evidence over the past two decades from surveys of scientists, content analyses of peer-reviewed studies, and public statements issued by virtually every membership organization of experts in this field."[2] In addition to anthropogenic climate change also known as global warming (and related effects such as

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[2] "The Reality, Risks, and Response to Climate Change," AAAS (2014), https://whatweknow.aaas.org/get-the-facts/

decrease in snowfall, extreme heat waves, rise in ocean level, etc), the ecological crisis is also comprised of the depletion of stratospheric ozone, deforestation, the acidification of surface waters, mass extinction of plant and animal species, and grave decline in biodiversity.

In the last twenty years, comprehensive reports have been issued by international organizations to present evidence of the ecological crisis, among them the UN Environmental Programme's assessment entitled "Global Environment Outlook 2000."[3] The report presented two critical observations for the new millennium:

> First, the global human ecosystem is threatened by grave imbalances in productivity and in the distribution of goods and services. A significant proportion of humanity still lives in dire poverty, and projected trends are for an increasing divergence between those that benefit from economic and technological development, and those that do not. This unsustainable progression of extremes of wealth and poverty threatens the stability of the whole human system, and with it the global environment.
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> Secondly, the world is undergoing accelerating change, with internationally-coordinated environmental stewardship lagging behind economic and social development. Environmental gains from new technology and policies are being overtaken by the pace and scale of population growth and economic development. The processes of globalization that are so strongly influencing social evolution need to be directed towards resolving rather than aggravating the serious imbalances that divide the world today. All the partners involved - governments, intergovernmental organizations, the private sector, the scientific community, NGOs and other major groups - need to work together to resolve this complex and interacting set of economic, social and environmental challenges in the interests of a more sustainable future for the planet and human society.

Five years later, in 2005, the "Millennium Ecosystem Assessment," which was initiated in 2001 under the auspices of the United Nations, in collaboration the United Nations Environment Programme and international stakeholders, was published. The project aimed to "assess the consequences of ecosystem change for human well-being and to establish the scientific basis for actions needed to enhance the conservation and sustainable use of ecosystems and their contributions to human well-being."[4] According to the report, "Over the past 50 years, humans have changed the ecosystems more rapidly and extensively than in any comparable period of time in human history."[5] The natural resource depletion taking place in order to satisfy human needs for fresh water, food, timber, fiber, and fuel are largely irreversible and has contributed to immense loss of biodiversity. Over the last several hundred years, human beings have increased the rate of species extinction to as much as 1000 times background rates typical over the planet's history.[6] Some 10 to 30 percent of the mammal, bird, and amphibian species are facing the threat of extinction.

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[3] UNEP, *Global Environment Outlook 2000: Global State of the Environment Report* (New York: Oxford University Press, 1999), xx.
[4] Millenium Ecosystem Assessment, *Ecosystems and Human Well-Being* (Washington, DC: Island Press, 2005), 1.
[5] Ibid.
[6] Ibid., 4.

Nearly a decade after the "Millennium Ecosystem Assessment," the Intergovernmental Panel on Climate Change (IPCC) released its substantial and widely consulted report on the state of the environment, the "Climate Change Report 2014." In it, the intergovernmental body concurred with previous reports that climate change was human caused, and warned about the risk of great harm being inflicted on both human and natural systems because there has not been improvement in regards to the crisis. According to the IPCC, recent anthropogenic emissions of greenhouse gases are the highest in history. The changes observed are unprecedented over decades and even millennia. The average temperature has risen both in the atmosphere as well as on the earth's surface (ocean and land). The period from 1983 to 2012 was likely the warmest 30-year period in the last 1400 years in the northern hemisphere where this kind of assessment is possible. The amounts of snow and ice have decreased, while there is a corresponding increase in sea levels. From 1979 to 2012, the Arctic Sea ice-extent decreased at a rate in the range from 3.5 to 4.1 percent per decade. In the same period, it is estimated that Antarctic Sea ice-extent decreased at a rate in the range of 1.2 to 1.8 percent per decade. In the meantime, from 1901 to 2010, the global mean sea level rose 0.19m. According to the IPCC, the dominant cause for climate change observed is anthropogenic greenhouse gases such as carbon dioxide, methane, and nitrous oxide that have been released into the atmosphere with increasing rates since the pre-industrial age in accordance with population and economic growth. The report claims that the present level of greenhouse gases is at the highest concentration in at least the last 800,000 years.[7]

The broad consensus among scientists as reflected by the IPCC is that the rising emissions of greenhouse gases will lead to increases in global mean temperatures. The globally averaged combined land and ocean surface temperature data as calculated by a linear trend shows a warming of 0.85 [0.65 to 1.06] °C. It is extremely likely that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic forcings together.[8] The evidence presented by these reports were corroborated by reality in January 2017, when both NASA and the National Oceanic and Atmospheric Administration declared that 2016 was the hottest year on record, and the third year in a row to take the number one slot.[9] Incidentally, the five years of 2015-2019 also represent the five hottest years ever recorded thus far.[10] 2020 is on course to be one of the hottest years on record.[11] If present situation continues, by the end of the 21st century, temperature change over pre-industrial levels could exceed 2 degrees centigrade. Such a change, according to climate scientists, would have devastating impact on human and natural systems, causing weather extremes, altered ecosystems and habitats, and risks to human health and society. More frequent and intense drought, storms, heat waves, rising sea levels, melting glaciers and warming acidic oceans can directly harm animals, destroy the places they live, and wreak havoc on people's livelihoods and communities.

Twenty years have passed since the UNEP issued its assessment and the global state of the environment continues to be a matter of great concern. The Intergovernmental Science-Policy

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[7] Intergovernmental Panel on Climate Change, *Climate Change Report 2014*, https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf.
[8] Ibid.
[9] A. Thompson, "2016 Was the Hottest Year on Record," *Scientific American* (18 January 2017), https://www.scientificamerican.com/article/2016-was-the-hottest-year-on-record.
[10] Climate Central, "Top ten warmest years on Record," https://www.climatecentral.org/gallery/graphics/top-10-warmest-years-on-record
[11] Andrea Thompson, "Will 2020 be the hottest year on record?" *Scientific American* (14 August 2020), https://www.scientificamerican.com/article/will-2020-be-the-hottest-year-on-record/

Platform on Biodiversity and Ecosystem Services (IPBES) report published in 2019 presents facts that confirm that the environmental crisis has not improved, but continues to grow in seriousness. The most comprehensive study of life on Earth ever compiled, the report is the first intergovernmental assessment of the state of nature and its contributions to people and the first comprehensive assessment of biodiversity since the release of the Millennium Ecosystem Assessment in 2005. It warns that the natural world is in imminent danger of collapse with about 1 million of plants and animals species being threatened with extinction, more than ever in history. The causes of species decline include land conversion, including deforestation, overfishing, bush meat hunting, poaching, climate change, pollution, and invasive alien species. The accelerated rate of environmental degradation will have negative impact on both the natural world as well as human society, preventing the achievement of Aichi Biodiversity Targets and the UN Sustainable Development Goals (SDGs), in particular SDGs related to poverty (SDG 1), hunger (SDG 2), health (SDG 3), water (SDG 6), cities (SDG 11), climate (SDG 13), oceans (SDG 14) and land (SDG 15). Sir Robert Watson, chair of IPBES declared:

> The overwhelming evidence of the IPBES Global Assessment, from a wide range of different fields of knowledge, presents an ominous picture. The health of ecosystems on which we and all other species depend is deteriorating more rapidly than ever. We are eroding the very foundations of our economies, livelihoods, food security, health and quality of life worldwide.[12]

Social and Economic Dimensions of the Ecological Crisis

Nowadays, it is no longer a daring stance to assert as in years past that the environmental crisis is largely due to human activities. Although climate change is a global phenomenon, its impacts are not evenly distributed. The manifestations of climate change in the phenomena of gradual sea-level rises, greater unpredictable rain and storm patterns, and more weather extremes of hot and cold will affect most strongly low-income countries that are ill equipped to adapt to these drastic changes. In developing countries, the main means for livelihood is through agriculture. Deviations in the climate, even minor ones, can have profound effects on farmers. Kenya is among the many African countries at risk to suffer tremendously from climate change as 70 percent of Kenya's GDP comes from agriculture and agriculture-related industries.[13] According to the Global Climate Risk Index 2015, in the period from 1994-2013, all ten countries that suffered the most from extreme weather events—both in terms of fatalities and economic losses—were developing countries in Asia and Latin America. Honduras, Myanmar and Haiti, the top three countries most affected, are among the low-income countries in the world.[14]

Beside developing countries being the ones most impacted by climate change, other groups often cited as "victims" include children and women. Elizabeth D. Gibbons articulates the

[12] IPBES, "Media release: Nature's dangerous decline 'unprecedented; species extinction rate 'accelerating," https://ipbes.net/news/Media-Release-Global-Assessment

[13] T. Osborn, "Why Developing Countries are Disproportionately Affected by Climate Change — and What Can They Do About It," *The Huffington Post* (20 January 2015), http://www.huffingtonpost.com/tom-osborn/why-developing-countries-_b_6511346.html.

[14] S. Kreft et al, *Global Climate Risk Index 2015* (Bonn: Germanwatch, 2015), 4.

negative consequences of climate change on children in terms of the effects on their physical and mental development:

> Children's bodies and minds are, by definition, developing and thus more susceptible than adults to effects of environmental stressors. Physiological and mental development can slow down or be halted by the unpredictable consequences of increased heat, rain, drought, natural disasters, and rising sea levels. Increasing rates of crop failure and flood-borne diseases leave children exposed to lifelong harm from malnutrition. The very nature of childhood means that children spend more time playing outside, close to the ground and exposed to the elements, than do adults; they depend on adults as their small stature and comparatively weak bodies leave them at a serious disadvantage when trying to escape floods, high winds, and other extreme weather events.[15]

Highlighting the issue of children is to recognize the exceptional circumstances of climate change, where actions that people carry out in the present for their own benefits conflict with the rights and well-being of people in the future. The environmental crisis exemplifies the issue of intergenerational justice which seeks answers to questions such as what are the duties of the present generation to future generations, how are the rights of the future generations to be balanced with the rights of the people living in the present, and how natural resources ought to be managed in order to leave to the future generations a planet that is worthy to live on.[16]

The issue of gender also comes into play in the discourse on climate change and environmental degradation. In 2015, the Georgetown Institute for Women, Peace and Security released a study that highlighted that the social and physical consequences posed by climate change would have greater impact on women than men. Women were more likely to suffer death due to natural disasters and climate change-related events. Those who manage to survive these calamities remain vulnerable because they often lack legal assets and rights to property. Moreover, their ability to rebuild their lives is often hampered by lack of resources.[17] Despite facing more threats, women systematically lack the opportunity to participate in decision-making regarding policies for the future.

While the language of victimhood is used in regards to women and children, it has been noted that it would be mistaken to only perceive women and children in this manner. The writers of the above report affirm that "women have, continue to, and could serve as agents of mitigation and adaptation."[18] As Tarja Halonen, former President of Finland stated, "[Women] are powerful agents whose knowledge, skills and innovative ideas support the efforts to combat climate

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[15] E.D. Gibbons, "Climate Change, Children's Rights, and the Pursuit of Intergenerational Climate Justice," *Health and Human Rights Journal* 16 (2014), 19.
[16] UNICEF, *The Challenges of Climate Change: Children on the Front Line* (Florence: UNICEF, 2015), 57-58.
[17] Alam et al, *Women and Climate Change: Impact and Agency in Human Rights, Security, and Economic Development* (Washington, DC: Georgetown Institute for Women, Peace and Security, 2015), 18.
[18] Alam et al, *Women*, 9.

change."[19] Similarly, advocates affirm that children can also be seen as agents of change, and that it would be wrong to simply perceive children as helpless victims.

> Children whose rights are violated or denied owing to the consequences of climate change could partner with their peers, human-rights defenders and climate change groups in order to initiate strategic litigation aimed at delivering broad social change in the interests of climate change mitigation and adaptation, as well as prevention and redress of environmental degradation.[20]

UNICEF urges partnering with and for young people in order to allow them to be "active and inspiring agents of global change towards a sustainable future for all of us."[21] Indeed, the Fridays for Future climate movement that began with a protest by a young Swedish girl, Greta Thunberg in 2018 is precisely the kind of effort that demonstrates how young people can take charge of the environmental crisis and their own planetary future.[22]

Human consumption of natural resources and the subsequent wastes in solid, liquid and gaseous forms result in environmental degradation as reflected in numerous scientific reports. The project to measure what has been called the Ecological Footprint is an attempt to quantify how much pressure people put on nature through their activities. The Ecological Footprint is basically value derived from the measurement of the demand exerted on nature by humanity against the planet's biocapacity—forests, pastures, cropland and fisheries, etc.—that make up the planet's biologically productive land areas. The value represents the area of productive land needed to provide humanity with the resource that it needs as well as to absorb the waste that is produced. The Ecological Footprint can be calculated for individuals as well as for entire populations. According to the Global Footprint Network, "Since the 1970s, humanity has been in ecological overshoot with annual demand on resources exceeding what Earth can regenerate each year."[23] In 2007 when the first EF report was released, it was said that the earth needed 1.5 years to regenerate the amount of resources used annually. The EF per person worldwide was calculated to be 2.6 global hectares (gha) while the biocapacity available was only 1.8 global hectares. A different picture of how resources are being used, however, can be seen when calculations are made on a national basis. For example, the United Arab Emirates had the highest EF per capita at 10.3 gha. The average American, on the other hand, had an EF of 9.0 gha. While Americans per capita registered lower than the people of UAE, the United States had a much bigger population than the UAE resulting in a much greater use of resources overall. It is said that if everyone in the world were to live like the average American, five planets would be needed to supply the necessary

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[19] "Gender Equality Must be Incorporated into all Matters Connected to Climate Change," *Equal Climate*, http://www.equalclimate.org/en/background/President+of+Finland%2C+Tarja+Halonen%3A+Gender+equality+must+be+incorporated+into+all+matters+connected.9UFRrYYk.ips.

[20] UNICEF, *Challenges,* 63.

[21] UNICEF, *Challenges,* 75.

[22] Fridays for Future: how the young climate movement has grown since Greta Thunberg's lone protest," *The Conversation* (28 August 2020), https://theconversation.com/fridays-for-future-how-the-young-climate-movement-has-grown-since-greta-thunbergs-lone-protest-144781.

[23] Global Footprint Network, *Footprint basics,* 2016, http://www.footprintnetwork.org/en/index.php/GFN/page/footprint_basics_overview on December 1, 2016

resources to accommodate such a lifestyle. It was reported at that time that the U.S. required 23 percent of world biocapacity, with China closely running behind with 21 percent. What China lacked for in term of per capita demand, it made up for with its tremendous population of over one billion people. In 2010, it was reported that China as a country had surpassed the U.S. in energy use.[24]

In 2016, the Global Footprint Network released its "National Footprint Accounts" with updated and refined calculations of the world's Ecological Footprint. In its latest set of data with the most recent year being 2012, the organization places the earth's biocapacity at 1.7 gha while the average EF is 2.8 gha. By country, the United States, although has reduced its EF to 8.2, is still in a significant deficit because the U.S. only has a biocapacity of 3.8 gha. Other countries have even greater deficits than the U.S. Singapore, for example, has a per capita EF of 8.0 gha versus a biocapacity of merely 0.1 gha—a deficit of 7.9 gha. Luxembourg has a deficit of a whopping 14.1 gha! All the other European countries included in the report also have deficits of various amounts. Asian countries with rapidly expanding economies such as China, India and Vietnam also see a strong jump in their EF per capita. However, Vietnam and Cambodia have been noted for their efforts to respond to the increase in EF by concomitantly building up their biocapacity per person in order to buttress the growth.[25] Unfortunately, there are also many countries experiencing increasing EF per capita and decreasing biocapacity.

One of the work of the Global Footprint Network is also to estimate the earth's overshoot day, which it defines as "the date when humanity has used all the biological resources that Earth can renew during the entire year."[26] For the last 15 years, this date has been becoming increasingly earlier as the world continues to consume more resources than the earth is able to renew within the year, mostly falling within the month of August. In 2020, this date was 22 August, more than weeks earlier than 2019. The reason for this later overshoot date, however, is not due to change in human consumption habits, but has been attributed to the coronavirus pandemic, which forced people to use less resources.

The environmental crisis—its origins and its escalation—is almost always discussed in context of technological and economic developments. Some choose to trace the beginning as far back as over 10,000 years ago when pre-historic human beings switched from being nomadic hunter-gatherers to gradually becoming settlers engaged in agriculture, which kick started a series of developments that led to the springing up of civilizations and brought about environmental consequences in the process.[27] Others choose to begin with the dawn of the industrial revolution some 300 years ago that saw drastic increase in energy use in order to achieve high production of material goods for consumption. Technological and economic developments brought modernity and prosperity to different parts of the world, especially in Europe and the United States, but they also facilitated the rapid rise of the global population as never seen in the past. The industrial revolution also brought air pollution to the cities like London and New York, extinction of

[24] S. Swartz and S. Oster, "China tops U.S. in energy use," *The Wall Street Journal* (18 July 2010), http://www.wsj.com/articles/SB10001424052748703720504575376712353150310

[25] GFN, 2016.

[26] GFN, "Earth Overshoot Day," (June 2020), https://www.overshootday.org/newsroom/press-release-june-2020-english/

[27] P. Dauvergne, "Globalization and the environment," In *Global Political Economy,* ed. J. Ravenhill (Oxford: Oxford University Press, 2014), 375.

countless species as their natural habitats were overtaken by human activities, and a host of other environmental problems that make up the environmental crisis as we see it today.

Past and current economic models, especially free market capitalism, have been deemed to exacerbate environmental woes. Rather than using human development index as a criteria, free market capitalism resorts to growth of products to measure progress forgetting that there are limits to economic growth, which to a certain point can negatively affect the quality of the environment as well as human society. Economic globalization which is characterized by liberalizing international economic relations in order to promote international trade, foreign direct investment, capital flows, flows of technologies, and international movement of workers, often looks to economic growth and rate of employment as macroeconomic indicators of progress. While economic globalization can help nations to develop technologically and increase national revenues, the process can also pose a threat to exploitation and degradation of environmental resources. Theoretically, economic growth can take place through technologies and structural changes that do not place high burdens on the environment in terms of productions and services. However, in reality, it is usually the case with many developing countries that economic growth is concomitant with the increase in the country's Ecological Footprint. At the same time, developed economies have long carried out activities that placed great pressures on the global environment. In either case, one sees that the "environment is intrinsically linked to economic development, providing natural resources that fuel growth and ecosystem services that underpin both life and livelihoods."[28] Oil, timber, metals, etc. have been the raw materials that fueled global economic growth, and its use has grown exponentially by large developing economies like China and India. There cannot be any disagreement that these natural resources are limited. The thinking that nonrenewable resources in a finite system will always be around for human use, which continues to rise, is simply an illusion. Scientists say that the productive capacity of nature has already been exceeded by as much as 30 percent, while 60 percent of the ecosystems are currently overused.[29] Sooner or later, the threats of dwindling stocks of natural resources, which in the past has often turned out to be untrue, will be upon us.

Economic globalization does not necessarily have to generate only negative impact on the environment. Optimists point to a number of environmental opportunities that this process might bring. For example, as a result of economic growth, the increase in national revenue allows for resources allocated towards environmental protection. Second, development of "cleaner" technologies can enable us to extract more from nature without causing as much harm as previously seen. Third, global interactions create opportunities for exchanging environmental knowledge as well as methods that would safeguard the environment. These interactions would facilitate the development of a global environmental consciousness due to the emergence of global environmental networks and civil society movements. Environmentalism, therefore, can become a global norm rather than reserved for a particular group of people as seen in the past.

While the discussion on the economic dimension of the environmental crisis often focuses on the impact of economic growth on the environment, one often fails to consider the potential

[28] Adil Najam et al, *Environment and Globalization: Five Propositions* (International Institute for Sustainable Development, 2007), 7.
[29] World Wildlife Fund. (2016). Deforestation overview. Retrieved from http://www.worldwildlife.org/threats/deforestation on October 11, 2016.

economic losses of environmental degradation. Wang Hongchang has carried out a study of income lost in China as a result of deforestation, environmental pollution, and degradation of natural resources. In this study, "loss" was defined as the difference between potential and actual economic income resulting from environmental degradation. The result of this study, which estimated losses for the year of 1992, indicated that the total loss for the year was 382.61 billion yuan, representing 18.9% of China's total national income for the year. Among the different forms of environmental degradation, deforestation accounted for the largest amount of income lost (12.1 percent).[30] In another study on China, the economic costs of death and illnesses associated with air pollution amounted to 157.3 billion yuan in 2003, or 1.16 percent of GDP.[31]

In the United States, the costs due to damage to natural systems and people by the use of pesticides in farming was estimated in 1990 to be $8 billion per year.[32] In Australia, the cost of land and water degradation has been estimated at $2 billion per year.[33] In 2012, in a study published by DARA and the Climate Vulnerable Forum, it was estimated that climate change cost the world over 1.2 trillion dollars, or 1.6 percent of global GDP, in 2010. This cost may be more than doubled by 2030, amounting to 2.5 percent of global GDP.[34] Most recently, the United Nations published a paper authored by Tord Kjellstrom claiming that by 2030, the world economy could face a loss of two trillion dollars in loss of productivity because it simply becomes too hot to work in certain parts of the world.[35] In just Southeast Asia alone, as much as 20 percent of annual work hours could be lost due to unbearable heat.

While it is uncertain whether the various calculations of economic loss due to environmental degradation are accurate, what they aim to and persuasively demonstrate is that calculations of loss due to environmental degradation need to be figured into the total revenue figures nationally and globally. This will present a more accurate picture of how much economic gain is truly realized in various economic ventures carried out by individual companies or governments. Awareness of economic loss due to environmental degradation also brings to mind what has been labeled as the "cost of inaction," which is the economic consequence of not introducing environmental policies or doing so in a haphazard or in an untimely manner.[36]

The Environment and Digital Development

[30] Homer-Dixon, "Project on environmental scarcities, state capacity, and civil violence," http://www.homerdixon.com/projects/state/chinaeco/summary.htm.
[31] The World Bank, *Cost of pollution in China*, 2007, http://siteresources.worldbank.org/INTEAPREGTOPENVIRONMENT/Resources/China_Cost_of_Pollution.pdf
[32] M.A. Altieri, "Ecological impacts of industrial agriculture and the possibilities for truly sustainable farming," *Monthly Labor Review* 121, no. 7 (1998): 60-71.

[33] S. Lockie, "Positive futures for rural Australia," in *Rurality Bites: The Social and Environmental Transformation of Rural Australia,* eds. S. Lockie & L. Bourke (Annondale, NSW: Pluto Press, 2001).
[34] DARA, Climate vulnerability monitor, 2012, http://daraint.org/wp-content/uploads/2012/09/CVM2ndEd-FrontMatter.pdf.
[35] "Global warming to cost $2 trillion in lost productivity by 2030," VOA (19 July 2016), http://www.voanews.com/a/global-warming-cost-two-trillion-dollars-lost-productivity/3424781.html
[36] OECD, *Costs of Inaction on Environmental Policy Challenges: Summary Report*, 2008, Retrieved from https://www.oecd.org/environment/ministerial/40501169.pdf.

A question of particular concern is whether this ecological crisis will be exacerbated as human society becomes increasingly defined by digital technology, with cyberspace ever encroaching upon physical space in terms of our awareness and preoccupation of the former over the latter. The ushering in of the digital era some three decades ago with the introduction and eventual prolific use of the internet and its numerous applications has led to the creation of a new entity called cyberspace. This notional environment or metaphorical space is increasingly becoming an important place where people exchange information and experience a sense of social interaction and interconnectivity. People's lives, especially the younger generation, also referred to as the "digital natives," have become greatly attached to this non-physical environment as the place where they go for engaging in online activities, relationships, and finding news, information and entertainment. According to We Are Social, which tracks the global digital landscape, as of July 2020, the world population total was 7.79 billion with an urbanization rate of 56 percent. At the same time, the global internet penetration was 59 percent (4.57 billion) while social media penetration reached 51 percent (3.96 billion).[37] The organization noted that "growth trends indicate that an average of more than 1 million people started using social media for the first time every single day over the past 12 months, equating to almost 12 new users every second."[38] On average, people used the internet nearly 7 hours each day, a significant portion of which was by way of the mobile phone. During the Covid-19 pandemic, as many countries went into lockdown, people also significantly increased their online time.

The few general data presented here is adequate to remind us that human life is increasingly preoccupied with digital technology reflected in the multiple gadgets that we own—mobile phones, tablets, notebooks, smart TVs, game consoles, fitness trackers, smart watches, and so on. Statistics also show that a significant portion of our waking hours is spent in cyberspace, oftentimes multi-tasking using our gadgets. At the same time that we are experiencing the degradation of physical nature, there is a growing trend of incorporating technological nature into human life. Instead of hiking in a mountain, we can take a walk or exercise in a simulated natural setting using immersive virtual environments (IVE) technology.[39] There is also a trend toward owning robot animals instead of the traditional dogs and cats as "pets." According to *Wired*, "Robotics startups are rolling out more and more companion bots, designed for the sole purpose of friendship."[40] Another popular trend in modern society is live streaming webcams of natural places and animals. There are live webcams streaming activities of bears in Alaskan national parks as well pandas in the zoos in the US and China.

While technological development is inevitable, it is important to reflect on the ramifications of a digital technology based society. We must raise the question of what is the prospect of environmental degradation in an age where people seem increasingly removed from nature while opting for more technologically based methods of managing our lives as well as keeping ourselves entertained. Nature or the natural environment, as used in this discussion is an extremely elastic category. While there is a variety of senses depending on whether one refers to nature philosophically or scientifically, for our purposes here, nature, or the natural environment,

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[37] We Are Social, "Digital use around the world in July 2020," https://wearesocial.com/blog/2020/07/digital-use-around-the-world-in-july-2020.

[38] *Ibid.*

[39] Giovanna Calogiuri et al., "Experiencing Nature Through Immersive Virtual Environments: Environmental Perceptions, Physican Engagement, and Affective Responses During a Simulated Nature Walk," *Frontiers in Psychology* (23 January 2018), https://doi.org/10.3389/fpsyg.2017.02321

[40] "The second coming of the robot pet," Wired (1 July 2019), https://www.wired.com/story/the-second-coming-of-the-robot-pet/.

is what we generally have in mind when we think of places that are untouched or minimally intruded by human intervention. In this sense, it may include not only wild nature, consisting of plants and animals species, that has not been interfered by human activities, but also eco-systems that, despite human interference, still retain characteristics that may be described as natural. However, in addition to animal and plant species, we can also consider material features such as mountains, caves, sand dunes, the atmosphere, and so on. It is also these entities that often come to our mind when we think of the on-going environmental degradation, exploitation and destruction.

The relationship between human and nature in many cultures, especially in the past, is characterized by intimacy, connectedness, and symbiosis, so much so that one can even claim that nature and human beings constitute a single entity or organism.[41] This kind of horizontal human-nature relationship of interdependency is often seen in nomadic societies where environmental sustainability is essential to such a way of life. For example, in Mongolia, where the nomadic culture is prominent, the concept of ecological protection and reverence is embedded in the collective consciousness of the nation in a systematic manner and expressed in multiple ways.[42] According to Zhang et al., "Mongolian nomadic culture is virtually closer to the basic meaning of ecological culture because it obeys the principles of revering nature, cherishing nature, and promoting the harmonious coexistence between humans and all other creatures of the world."[43]

Indeed, the importance of the natural environment has always been detected in the cultural sensibility of the people of Asia. In Vietnam, for example, the word for country – *đất nước* – is a combination of the two words "earth" and "water." As a country that borders the Pacific Ocean on the east and has within its territories 2,360 rivers,[44] it is not surprising why Vietnamese would employ these two words to refer to country. Another word combination that Vietnamese people often use to refer to their sovereign nation is "*sông núi*" which literally means "river and mountains." The expression is indicative of Vietnam's geography which besides having thousands of rivers, also has long mountain ranges, with the highlands making up three quarters of the country's land area. Vietnam's two river deltas, the Red River Delta in the north and Mekong River Delta in the south are seen as the rice baskets that feed the people. Water geographical features have always been important to the Vietnamese way of life, as well as elsewhere in Southeast Asia. In Thailand, the original saying that expressed one's optimism for the abundance that nature brought to their life is: "There is rice in the field and fish in the waters."

Modernization or urbanization which is a technology driven process is seen to create dynamics that go against the natural affinity that human beings have towards the natural environment. The British writer and environmental activist George Monbiot calls this phenomenon the human "estrangement from the ecosystem" in which there is a "gradual loss of meaningful involvement" with nature with the benefits as well as dangers that it presents.[45] While this process of estrangement may have started as early as the beginning of the agricultural revolution and escalated during the industrial revolution, it is manifesting itself dramatically in this digital age. In this era, relationships (whether human-human or human-nature) are less and less the result of direct

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[41] A. Miller, *Gaia Connections: An Introduction to Ecology, Ecoethics, and Economics* (Lanham: Roman & Littlefield, 1991).

[42] MunkhDalai A. Zhang et al., "Mongolian nomadic culture and ecological culture: On the ecological reconstruction in the agro-pastoral mosaic zone in Northern China," *Ecological Economics* 62 (2007): 21.

[43] *Ibid.*, 22.

[44] WEPA, "Vietnam," http://www.wepa-db.net/policies/state/vietnam/surface.htm

[45] George Monbiot, "The hunters and the hunted," The Guardian (3 March 1995), http://www.monbiot.com/archives/1999/03/03/thehunters-and-the-hunted.

interaction and increasingly mediated by digital technology. In the past when infants cried, they were picked up by grandmas and aunts who would comfort them so that they would stop crying. Nowadays, when children cry, they are more likely to be given a smart phone to watch Youtube videos so that the adults can go about doing their business. A 2015 study by the American Academy of Pediatrics (AAP) showed that 96.6% of American children owned a mobile device, most began using one before the age of 1.[46] The same study indicates that 70% of parents gave their children a mobile device when doing household work, 65% to keep children calm, and 29% let their children play with a mobile device at bedtime.[47] In addition, "Young children in an urban, low-income, minority community had almost universal exposure to mobile devices, and most had their own device by age 4."[48] Children are not only using mobile devices as toys, however; many also use them as a way to communicate with their parents who live and work away from home. Many children of Burmese and Cambodian migrant workers in Thailand are only able see their parents a few times a year because the parents have to migrate to the neighboring country to make a living. Thus, parent-child bond has to be mediated by digital technology, particularly social network applications such as Line and Facebook Messenger. Human-nature relationship, likewise, is affected in the digital age. In the past, children in Vietnam and the Philippines used to amuse themselves by making rifles out of banana leaf stalks and duel with one another. Now, children are more likely to get their adrenaline rush by racing cars on a tablet or a smart phone. In the past, people went to sleep and woke up basically in accordance with the natural cycle of day. However, with digital technology presenting distractions such as on-demand entertainment programs, online video games, and social networks that allow continuous connection with people all over the world, many forget the natural body rhythms for work and rest that have evolved over millions of years.

One must admit that in many cases technology has helped in promoting environmental sustainability and conservation. The development of the light bulb, for example, consumes 50 times less energy than the kerosene lamp used in many developing countries. The ability to send correspondences by email reduces the need for paper products. Nowadays, the International Anti-Poaching Foundation (IAPF) trains Green Army rangers to use surveillance technology such as thermal imaging cameras and drones to monitor animals and their habitats in order to prevent poachers from hunting endangered species. The Japan Agency for Marine-Earth Science and Technology (JAMSTEC) uses sophisticated sensors to monitor the pH levels of the Pacific Ocean in order to help take preventative measures to preserve marine ecosystems.[49] With the development of advanced digital technology, there is great optimism that such things as artificial intelligence (AI), robotics, drones, and the internet of things (IoT) will contribute to better monitoring and prevention of environmental degradation. In 2018, Intel and the research firm Concentrix conducted a study of over 200 business decision-makers working in environmental sustainability. The results indicated that 74% of respondents believed that AI will help solve long standing environmental problems. At the same time, 64% agreed that environmental issues could benefit from the development of IoT.[50] In addition to the potential of digital technology to help tackle

[46] Hilda K. Kabali et al., "Exposure and Use of Mobile Media Devices by Young Children," AAP (2015), https://pediatrics.aappublications.org/content/pediatrics/136/6/1044.full.pdf
[47] *Ibid.*
[48] *Ibid.*
[49] Shay Menecke, "5 ways tech will save the environment," Make Use Of (14 August 2015), http://www.makeuseof.com/tag/5-ways-tech-will-save-environment/.
[50] Todd Brady, "Intel study: Applying emerging technology to solve environmental challenges," Intel Newsroom (13 December 2018), https://newsroom.intel.com/editorials/intel-study-applying-emerging-technology-solve-environmental-challenges/#gs.dwvagb

environmental challenges, digital technology has also helped us to see and experience nature in wonderful ways, allowing us to discover details that were unavailable to the average person before. Access to information, photographs and videos of natural places all over the earth are available with a few clicks or touches on the smart phone or tablet.

Despite all the positive things that technology, especially digital technology has brought to human life and the effort to promote environmental sustainability, the question remains whether these technological developments have reduced the feeling of estrangement and drawn us back into a more intimate relationship with the natural environment. In many ways, one can argue that technology has further hindered opportunities for encounter between human beings and the natural environment. Nowadays, people can easily take a tour of any part of the world—both natural and man-made—by searching for videos on Youtube and other internet applications. One can even take virtual tours of the majestic redwood forests in California or the awe inspiring Son Doong Cave in Vietnam.[51] Technology has enabled us to "experience" the most extraordinary events and places in the world with just a click of a button. Such digitally mediated encounters often serve as the only mode of interaction between human and nature. After all, why spend money and time getting on a ship heading into the ocean for days on end without knowing if you'll actually encounter a blue whale if you can see it up close and personal via Youtube? In fact, the virtual tours and the recording of natural places and events are oftentimes much more picturesque and exciting than the experience of going to the actual place. Many have been let down after having seen photos or taken a virtual tour of a particular place only to be sorely disappointed upon making the actual visit to that place. For those who do get to a picturesque spot, many are more concerned with taking selfies of themselves and loading the photos onto Instagram than really taking the time to engage in anything meaningful with that particular place. The natural setting becomes nothing more than an interesting background to highlight one's own image to be broadcasted to friends and followers. Some are so absorbed in the act of picture taking that they do not even pay attention to where they are standing, thus causing self-injury and even death. On Wikipedia, there is an incomplete list of selfie-related injuries and deaths that go back as far as 2011.[52] Among them, quite a few involved natural settings such as mountain and seaside cliffs. Therefore, the irony of the digital age for human relationship with nature is that while it seems to help bring us closer to nature intellectually and even physically, this closeness often does not translate into emotional connection and intimacy. The prospect of further human estrangement from the natural environment due to increasing preoccupation with digital technology and space does not bode well for the ecological crisis, the solving of which requires a high level of human awareness of the destruction taking place in the natural environment and the desire to rectify the problem.

Religion and the Environment

In the modern globalized world, one of most persistent and stable dimensions of human life continues to be religious belief. This was affirmed by a major study conducted by the Pew Research Center (2010), in which the results indicated that the overwhelming majority (84 percent) of the global population continue to maintain a religious affiliation. Of the remaining 16 percent who reported no religious affiliation, many indicated that they held religious or spiritual

[51] A virtual tour of Son Doong Cave can be taken on the National Geographic website, https://www.nationalgeographic.com/news-features/son-doong-cave/2/#s=pano37

[52] "List of selfie-related injuries and deaths," Wikipedia, https://en.wikipedia.org/wiki/List_of_selfie-related_injuries_and_deaths

beliefs such as in God or some transcendent powers. Although social scientists since the last century have been predicting religion's demise in the face of increasing secularization, reality has not corroborated these predictions. Admittedly, secularization has been observed to be in the uptrend in Europe and North America; however, religion in other parts of the world increased in prominence and number of adherents. Empirical evidence also indicates that no society in the past or present—even the most technologically advanced—is without the presence of religion.[53] The persistence of religion in human society testifies to the ongoing human effort towards social, cultural and spiritual advancement in addition to strides in other aspects of human life. Frederick Streng describes this goals of "ultimate transformation" as encompassing the personal, social, political, and the cosmic transformation that changes the very core of the human being. According to Streng, religion serves as the means to this kind of transformation. He writes:

> An ultimate transformation is a fundamental change from being caught up in the troubles of common existence (sin, ignorance) to living in such a way that one can cope at the deepest level with those troubles. That capacity for living allows one to experience the most authentic or deepest reality--the ultimate.[54]

The desire for integral transformation allows human beings to continually reflect on their present situation and strive to correct deficiencies in their lives. Religions naturally have the tools to help facilitate the process of self-cultivation in order address personal and communal issues in society. Modern day environmental concerns easily fall into the category of issues that religions could help to address. Unfortunately, the role of religion in this way has not always been valued. Oftentimes, emphasis is placed on the conflicts that stem from religious differences and intolerance, and how religious violence is the cause for the failure of particular development endeavors.[55] The havoc caused by religious extremist organizations such as the Islamic State (IS), Hindu and Christian fundamentalists has fueled the thinking in the general population and even among academics of various disciplines that religion is particularly violence-prone.[56] Development institutions and agencies, when choosing religious partners, prefer those that are seen as having humanistic leanings without strict creeds and codes. In his book *A Greener Faith: Religious Environmentalism and Our Planet's Future*, Roger S. Gottlieb lists and refutes the common points against religion's involvement in social and political issues, namely: (1) Religion, in essence is undemocratic and oppressive; (2) Religious beliefs are irrational or at best nonrational, and thus have no place in the organization of society; (3) Religious values are, at best, peripheral to environmentalism, which should be shaped by science, not faith; (4) Involvement in politics is bad for religion, and (5) Religion has become increasingly irrelevant to modern life, so a religious environmentalism is not needed and will make no real contribution.

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[53] One may argue that even in societies where conventional religion is greatly diminished, much of the internalized values essential to the community are those rooted in religion. In other instances, conventional religion are replaced by other ideologies such as nationalism that arguably have some of the same characteristics as religion, such as transcendence, ritual, etc.

[54] Frederick Streng, *Understanding Religious Life* (Belmont, CA: Wadsworth Publishing Co, 1984), 2.

[55] J. Ogbonnaya, *African Catholicism and Hermeneutics of Culture: Essays in the Light of African Synod II* (Eugene, Or: Wipf and Stock, 2014), 55.

[56] W.T. Cavanaugh, *The Myth of Religious Violence* (Oxford: Oxford University Press, 2010), 4.

While in the scope of this paper, it is not possible to go through Gottlieb's arguments point by point, it suffices to say that he rejects these positions because of a fundamental fact that "environmental problems can *only* be solved collectively."[57] Religious environmentalism only exists when there is a recognition that religions have as much a role in this problem as much as any other secular group and institution. Religions themselves have a vested interest in the human lot, and see the contribution of the religious perspective in social development as a natural aspect of the religious task. In particular Catholic social teaching has been a significant force in advocating for social justice and calling for integral human development. Pope Francis, for example, states in his 2014 World Day of Peace Message that authentic development is not about "mere technical know-how bereft of ideals and unconcerned with the transcendent dimension of man."[58]

Environmental concerns in the last several decades have increasingly become a religious preoccupation because of the connection between environmental sustainability and human well-being. The crisis benefits from religion's involvement because the religious contribution is unique in multiple ways. Hans Küng points out the absolute nature of religious teachings as an essential factor in encouraging commitment to solving environmental problems. According to Küng, the authoritativeness that religion exerts on its followers is able to impel them to follow espoused "norms unconditionally, i.e. in every case and everywhere–even where they run quite contrary to my own interest" (Küng, 2004, p.52). An advantage of religion is that it is able to propose a "categorical ought" that goes beyond the finite conditions of human existence, human urgencies, even the need for the survival of humanity (Küng, 2004, p.53). The historian Lynn White Jr sees the relevance of religion in addressing the crisis because what people do about their ecology depends on what they think about themselves in relation to things around them. According to White, "Human ecology is deeply conditioned by beliefs about our nature and destiny—that is, by religion."[59] How we interpret our own story and our destiny as well as how we relate to other human beings and to nature are all informed by our religious belief. Because of the fundamental role of religious beliefs in human life as "primordial, all-encompassing, and unique" world views, they have the ability to mobilize the human will and effort in order to achieve desired transformations.[60] E.N. Anderson asserts that "All traditional societies that have succeeded in managing resources well, over time, have done it in part through religious or ritual representation of resource management."[61] The Muslim scholar, Seyyed Hossein Nasr points out that the reality of the vast majority of the peoples of the world still living within a religiously bound universe means that religious ethics remain the most practical vehicle for solving the environmental crisis. Nasr writes:

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[57] Roger S. Gottlieb, *A Greener Faith: Religious Environmentalism and Our Planet's Future* (Oxford: University Press, 2006): 59

[58] Pope Francis, "World Day of Peace Message 2014," http://w2.vatican.va/content/francesco/en/messages/peace/documents/papa-francesco_20131208_messaggio-xlvii-giornata-mondiale-pace-2014.html

[59] L. White Jr., "The Historical Roots of Our Ecologic Crisis," *Science* 155, no. 3767 (1967): 1205.

[60] M.E. Tucker, and J. Grim, "Series foreword," In *Buddhism and Ecology*, ed. M.E. Tucker and D.R. Williams (Cambridge: Harvard University Press, 1997), xi-xii .

[61] Quoted in Tucker and Grim, "Series," xviii.

> The fact remains that the vast majority of people in the world do not accept any ethics which does not have a religious foundation. This means in practical terms that if a religious figure, let us say, a *mulla* or a *brahmin* in India or Pakistan, goes to a village and tells the villagers that from the point of view of the *Sharī'ah* (Islamic law) or the Law of Manu (Hindu law) they are forbidden to cut this tree, many people would accept. But if some graduate from the University of Delhi or Karachi, who is a government official, comes and says, for rational reasons, philosophical and scientific reasons, that it is better not to cut this tree, few would heed his advice.[62]

When it comes to the environmental crisis, intellectual awareness and scientific know-how are not enough to solve the problem. In the decades following a major gathering of representatives of governments, scientific and social institutions, and major nongovernmental organizations (NGOs) in Stockholm in 1972, much has been done to publicize the truth of the crisis. However the problem remains and the world is not yet heading out of the dangers. In this first United Nations meeting, scientists made powerful presentations about the consequences of destruction of rainforests by countries who were selling their resources out of poverty and opportunism. The presentations instead of contributing to assuaging the problem, actually gave ideas to politicians and business people in a number of countries about ways to make money previously unknown to them. After this particular event, the world actually witnessed a jump in forest depletion.[63] On the other hand, religious involvement has been seen to be effective in promoting environmental agenda throughout the world. In Tanzania, for example, fishermen on an island off the country's coast changed their fishing methods to a more sustainable habit after they were instructed by their imam that the method they were presently using was destructive to the environment and went against the teaching of the Qur'an. The Muslim religious leader was able to do what government officials and international groups for years tried to accomplish without success.[64] The case of the fishermen in Tanzania and many other cases of effective religious intervention in addressing issues of justice, peace, and environmental sustainability demonstrate that the role of religion cannot be excluded from the discourse on the analysis on globalization and sustainable human and environmental development. Max Stackhouse opines that "The neglect of religion as an ordering, uniting and dividing factor in a number of influential interpretations of globalization is a major cause of misunderstanding and a studied blindness regarding what is going on in the world."[65] Fortunately, as religious leaders have begun to take more proactive roles in involving themselves in the environmental discourse, the presence of religion in the conversation has garnered more attention than before. Even in communist China,

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[62] S.H. Nasr, "Religion and the Environmental Crisis," In *The Essential Seyyed Hossein Nasr*, ed. W.C. Chittick (Bloomington: World Wisdom Inc., 2007), 31.
[63] M. Palmer and V. Finlay, *Faith in Conservation: New Approaches to Religion and the Environment* (Washington D.C., World Bank, 2003), xiv-xv.
[64] E. Barclay, "African Fishermen Find Way of Conservation in the Koran," *The Christian Science Monitor* (31 October 2007), http://www.csmonitor.com/2007/1031/p01s04-woaf.html.
[65] M.L. Stackhouse, *God and Globalization: Volume 4 (Globalization and Grace)* (New York: Continuum Publishing Group, 2007), 57.

there is a resurgence of public interest in Buddhism, Confucianism and Daoism and how these traditions can affect the course of national development.[66]

Religious Environmentalism and Politics

The argument that religion should stay away from politics and policy issues such as the environmental crisis would be more convincing if national and international political parties demonstrated the political vigor and determination to resolve the crisis using their respective sources of authority. However, in reality, discourses pertaining to the environmental crisis often lament that local, national, and international political institutions lack the "political will" needed to address the problem. Traditionally, political will is understood as the willingness by a governmental body to implement the necessary and appropriate policy by making use of its available institutional capacity to address a situation, in which it has adequate knowledge of impending consequences.[67] The scope of this essay does not make it possible to discuss the political will of particular national governments or institutions. However, the environmental crisis presents tremendous challenges to governmental bodies all over the world when it comes to balancing national interests with environmental sustainability. The problem of climate change, according to *The Economist*, is the "hardest political problem the world has ever had to deal with. It is a prisoner's dilemma, a free-rider problem and the tragedy of the commons all rolled into one."[68] Brian Spak outlines the following assessment of the difficulties involved:

> People today bear the costs to mitigate the greenhouse gas emissions causing climate change, but future generations, by and large, experience the benefits. Likewise, local or national communities incur the cost to reduce emissions, but the benefits are realized globally. In addition, developed countries are responsible for most greenhouse gas emissions that exist in the atmosphere, but developing countries will be most impacted by climate change. The large developing countries, though not responsible for the lion's share of emissions in the atmosphere, will nevertheless need to reduce their emissions in the future to avoid catastrophic climate change. Some of the countries, particularly those with territorial claims to mineral rights in Arctic seabeds, that stand to benefit from some level of climate change are also among the biggest emitters. Finally, high per-capita GDP correlates strongly with high per-capita emissions, and no large country has ever experienced lasting economic growth without simultaneously increasing emissions.[69]

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[66] J. Sawyer, "Introduction," In *Ecological Civilization* ed. J. Sawyer and D. Jin. (Beijing: Pulitzer Center, 2015), Kindle edition.
[67] L. Woocher, "Deconstructing 'Political Will': Explaining the Failure to Prevent Deadly Conflict and Mass Atrocities," *Journal of Public and International Affairs*, 12 (2001): 182.
[68] "Getting Warmer," *The Economist* (3 December 2009), http://www.economist.com/node/14994872 .
[69] B. Spak, "The Success of the Copenhagen Accord and the Failure of the Copenhagen Conference," 2010, https://www.american.edu/sis/gep/upload/Brian-Spak-SRP-Copenhagen-Success-and-Failure.pdf.

It is these and other difficulties that despite over four decades of attempting to address environmental problems, progress has not been satisfactory. Environmental awareness heightened in the 1960s when for the first time humanity was able to see the earth from outer space. From afar, the earth seemed as fragile and vulnerable as it was beautiful. Global environmental problems first received serious attention in 1968 at the United Nations Biosphere Conference. This event was followed by the United Nations Conference on the Human Environment, held in Stockholm, Sweden, in June 1972. Although this meeting was attended by over 1,200 delegates from more than 100 countries, only two countries sent head of states to the event—Swedish Prime Minister Olaf Palme and Indian Prime Minister Indira Gandhi. In this meeting, tension between the northern developed states and southern developing states were obvious. While the North wanted to address environmental problems that arose out of economic development, the South was anxious about the North forcing unfair terms of trade onto the South and preventing it from economic and industrial development. While the discussions did lead to group consensus that address both northern concerns for global environment and southern need for economic development, the resolutions and declarations that came out of the conference contained few practical commitments towards change.[70] Something substantial did take place after the Stockholm Conference, which was the creation of the United Nations Environment Programme (UNEP) in the following year. For the next two decades following Stockholm, scholars continued to carry out research on environmental issues. Various protocols and conventions were developed at the international level addressing issues such as ozone depletion and hazardous wastes. The concept of sustainable development, which was introduced years earlier, was officially defined in 1987 by the World Commission on Environment and Development (Brundtland Commision) as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

While the issue of the environment did not get lost among other global concerns, at times it did suffer from lack of attention during the late 1970s until the late 1980s. It was not until 1989 that the United Nations resolved to hold what came to be known as the United Nations Conference on Environment and Development (UNCED) or more popularly known as the Earth Summit in Rio de Janeiro, Brazil in 1992. Unlike the Stockholm Conference, this gathering had 117 head of states as well as thousands of participants from non-governmental organizations. The largest UN conference to date was hailed by many as a great success because it resulted in a host of documents that articulated the rights and responsibilities of states, and outlined principles and an action program to promote sustainable development, as well as creating two conventions—the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity. This conference also resulted in the establishment of the UN Commission on Sustainable Development to monitor and evaluate progress on implementing the objectives laid out at Rio. However, one of the biggest criticisms was that the funds "promised" by various countries, especially from the North, were not nearly enough to respond to the 300-page action program called Agenda 21. The Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of

[70]Dauvergne, "Globalization," 378.

Forests, which originally was intended to be a legally binding document, finally ended up being non-legally binding due to irreconcilable differences over the terms of the agreement.

After the grand display at Rio, environmental issues again slipped to the background as the international community turned its attention to other matters that required their attention such as global terrorism and the global financial crises. When the world came together for the World Summit on Sustainable Development in Johannesburg, South Africa a decade later, despite the fact that there were even more delegates and participants than at the Rio Summit, only about 100 heads of states attended the gathering—fewer than at Rio. This latest event once again refocused the international community on the environmental problem, affirmed the need for sustainable development, and added new dimensions to the entire environmental discourse with its discussion on the role of globalization in contributing benefits as well as negative effects on the situation. Nonetheless, critics saw this meeting, as well as the last two, as not having enough content to stem the tide against ecological destruction or restrain the economic mechanisms that led to environmental degradation.

The criticisms towards international action on behalf of the environment are not unjustified considering the lack of unity and consistency in how the international community has come together on the major environmental issues. Despite the United Nations Framework Convention on Climate Change (UNFCCC) having entered into force for many years, the task of establishing a global plan to reduce emissions that would be accepted by all the major emitters has been a monumental challenge. The Kyoto Protocol, which was adopted in 1997 and entered into force in 2005, represented a global effort to reduce emission in the developed world; however, it had never been ratified by the United States, which until recently was the world's largest emitter. The failure of the international community to come to a consensus was put on spectacular display at the 15th session of the UNFCCC in Copenhagen in 2009. Despite mounting scientific evidence of global warming that required urgent and decisive action, in the end it seemed that politics trumped science. Some placed the blame on the inability of the U.S. president Barack Obama to persuade the U.S. Congress to adopt more extensive pledges. Others blamed China for obstructing the negotiations. Still, others blamed both China and the U.S. Either way, all agreed that Copenhagen was a disaster because the majority of the 45,000 delegates comprising of members of civil society, faith groups, business and industry, the investment community, scientists, engineers and professional organizations who attended this climate summit all felt that it was due time for a new global agreement on climate change. However, what they ended up getting was a last minute backroom agreement, in the form of a meager three-page document, drafted by the United States and the BASIC countries (China, India, South Africa, and Brazil). The accord is a non-legally binding agreement that does not commit countries to agree to a binding successor to the Kyoto Protocol, which ended in 2012. The accord itself set no real targets to achieve in emission reductions. While the agreement stated that there would be mobilization of 100 billion dollars annually to developing countries for the purpose of mitigation and adaptation, this would not occur until 2020, and there was no specification of where these funds would actually come from. Critics also contended that the actual amount needed to be three or four times as much as what had been proposed. In the end, this accord was simply "noted" rather than adopted by the participating governments in the conference. In a commentary in the *BBC News*, Malini Mehra characterized the outcome as an

"agreement for business-as-usual."[71] Mehra wrote, "The Copenhagen Accord is a cruel blow for millions around the world who had put their faith in their leaders to deliver on climate protection." Nowhere was the lack of political will so disastrously on display as what took place in Copenhagen in December, 2009.

The international community, however, did have a chance to redeem itself in December 2015 at the Paris Climate Conference (COP21) where an agreement on greenhouse gas emissions mitigation, adaptation and finance starting in the year 2020 was negotiated. On the opening day of November 30, over 150 heads of states and governments congregated in Paris—the largest attendance ever witnessed at a UN event on a single day. In the opening address, François Hollande, the president of France, remarked, "Never before has a conference received so many authorities from so many countries. And never – truly never – have the stakes of an international meeting been so high. For the future of the planet, and the future of life, are at stake."[72] The UN Secretary General Ban Ki-Moon reminded the delegates in attendance of the meaning of the momentous occasion: "We have never faced such a test. But neither have we encountered such great opportunity. You have the power to secure the well-being of this and succeeding generations."[73] Ban tried to convince the national leaders in attendance that bold climate actions were ultimately beneficial to their national interests. Part of the bold actions that the UN Secretary General was referring to included those needed to limit global temperature rise to below 2 degrees Celsius. The IPCC has indicated that even a 2-degree change would already present serious economic, social and political consequences to the world. Exceeding this limit would prove disastrous. According to climate scientists, the goal should be to keep temperature rise to about 1.5 degrees Celcius. If this were to be achieved, according to Ban Ki-Moon, there needed to be four criteria:

> First, the agreement must be durable. It must send a clear signal to markets that the low-emissions transformation of the global economy is inevitable, beneficial and already under way…. Second, the agreement must be dynamic. It must be able to accommodate changes in the global economy, and not have to be continually renegotiated. ..The third requirement for success is an agreement that embodies solidarity with the poor and most vulnerable. It must ensure sufficient and balanced adaptation and mitigation support for developing countries. Fourth, the agreement must be credible. Current ambition must be the floor, not the ceiling, for future efforts. Five-year cycles, beginning before 2020, are crucial.

Whether because of the desire to make up for the Copenhagen disaster, or pressure exerted by international public will, or ripened environmental consciousness, COP21 concluded on December 12, 2015 with the Paris Agreement adopted by 195 countries and the EU. Along

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[71] M. Mehra, "Copenhagen – The Munich of Our Times?" *BBC News* (2 February 2010), http://news.bbc.co.uk/2/hi/science/nature/8490935.stm.

[72] "COP21 Opening Speech: President François Hollande," http://www.ambafrance-rsa.org/COP21-opening-speech-President-Francois-Hollande.

[73] "COP21: Ban Ki-Moon Full Speech at Start of Paris Climate Change Talks," http://www.ibtimes.co.uk/cop21-ban-ki-moon-full-speech-start-paris-climate-change-talks-1531133.

with the PA was the COP decision entitled Paris Decision, which addresses details and work programmes related to the PA, as well as issues related to the pre-2020 period. The agreement, expected to enter into force in 2020 is the result of negotiations that spanned nearly a decade under the UNFCCC. Unlike the outcomes at the previous conferences, the Paris Agreement is legally binding, and was open for signature in April, 2016. The allotted time for signing to take place is a year, after which sufficient number of parties must ratify before entering into force. By October 2016, the three largest emitters in the world—China, the U.S. and India—had already ratified the agreement.

One of the benchmarks of the Paris Agreement is the specific target of holding temperature rise "well below" 2 degrees Celsius compared to pre-industrial levels, and even pursuing efforts to stay below 1.5 degrees Celsius by 2100. In order for such an objective to be achieved, a long-term emission reduction programme must be implemented by both developed as well as developing countries. While the global emissions rate should peak "as soon as possible" and then rapidly decline, the peaking schedule will vary from country to country, depending on the level of development of the particular country. The effort to curb emissions, under the agreement, is not regulated by a central committee, but by each country's own government in a program called "nationally determined contributions" (NDCs). Each country is expected to submit its own NDCs upon ratification at the latest. While submitting the NDCs is prescriptive, fulfilling them is not legally binding. The Paris Agreement only asks that the parties pursue measures "with the aim of achieving the objectives of such contributions." The timeframe for submitting the NDCs are also not uniformly determined. Some countries submitted programmes for implementation up to 2025, while others up to 2030. Some will begin in 2020 while others in 2021.

The lack of uniformity in the details of the Paris Agreement as well as the lack of any enforcing agency for the implementation of the NDCs, needless to say, has garnered some criticisms. Based on the NDCs that were handed in before Paris, it seemed unlikely that the effort to stay below the 2 degree threshold would be possible, less so for the 1.5 degree target. If the NDCs do not become more bold and ambitious over time, then there would be no chance for achieving the set objective. Countries are expected to submit NDCs every five years, each successive submission to be more substantial than the previous one. However, there is no body to assess the ambition of individual NDCs.

The financial issue was also a disappointing part of the Paris Agreement for many people. The Copenhagen Accord had specified an amount of 100 billion dollars to be mobilized to support developing countries in mitigation and adaptation. The Paris Agreement, however, neither made any reference to this commitment nor any other quantified financial obligations. What the Paris Agreement had left out, the Paris Decision picked up by referring to the 100 billion as a goal in which developed countries "intended" to continue until 2025. Before the year is up, however, a new goal will be set in which the USD 100bn will serve as the floor. The Paris Agreement itself does little more than "encouraging" voluntary support from developed countries and mobilizing climate finance from multiple sources. Despite this and other flaws of the Paris Agreement, many saw it as real progress. Kumi Naidoo, executive director of Greenpeace International, commented:

> It sometimes seems that the countries of the UN can unite on nothing, but nearly 200 countries have come together and agreed a deal. Today, the human race has joined in a common cause. The Paris Agreement is only one step on a long road and there are parts of it that frustrate, that disappoint me, but it is progress. The deal alone won't dig us out of the hole that we're in, but it makes the sides less steep.[74]

While the Paris Agreement represents progress in the global effort to address the environmental crisis, the true test of political will will be seen in how each country, especially the major emitters, implement their NDCs and support developing countries in their effort to curb emission without jeopardizing technological and economic development. The political will will also be examined through each national government's ability to resist the forces exerted by climate change deniers and political groups and parties who have a vested interest in this denial. The withdrawal of the United States headed by President Donald Trump from the Paris Agreement on June 1, 2017 represents the first great challenge for the sustainability and durability of this international effort to rectify climate change issues. At least in the near future, the agreement will have to be implemented without the leadership and cooperation of the largest economy in the world, a reality that may have tremendous impact on the attitude and morale of other nations who take their cues from the United States as they determine their own level of commitment in the agreement. As long as individuals and governments succumb to rhetoric of climate change deniers, there will always be basis and rationale for not fully adopting full-fledged sustainable development programs. Overconsumption and environmentally destructive behavior will continue to be socially acceptable while political will to implement sustainable development programs will suffer. In November 2020, the world was scheduled to gather in Glasgow for COP26 to assess the progress since COP21. However, this had to be postponed due to the outbreak of the Covid-19 pandemic.

It should be noted that the apparent success of the Paris Agreement was not void of religious contribution. It is not entirely coincidental that the 195 member states of the United Nations adopted the Sustainable Development Goals (SDGs) after Pope Francis addressed the UN General Assembly on September 25, 2015, in which he spoke forcefully about the need to care for the earth as humanity's common home. The Papal Encyclical *Laudato Si* released in June 2015 as well as his environmental advocacy was judged by many as influential in the proceedings at the Paris Conference and the subsequent endorsement of the Paris Agreement on Climate Change. In that conference, Pope Francis was quoted at least ten times in speeches delivered by country leaders.[75] As the conference was taking place, *Time Magazine* published an article authored by Christopher J. Hale calling on world leaders to heed the message of Pope Francis. Hale writes:

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[74]F. Harvey, "Paris Climate Change Agreement: The World's Greatest Diplomatic Success," *The Guardian* (14 December 2015), https://www.theguardian.com/environment/2015/dec/13/paris-climate-deal-cop-diplomacy-developing-united-nations.

[75] J. Ware, "COP21: Laudato Si' a Major Talking Point at Climate Change Talks in Paris," *The Tablet* (6 December 2015), http://www.thetablet.co.uk/news/2885/0/cop21-laudato-si-a-major-talking-point-at-climate-change-talks-in-paris.

> Pope Francis has laid the groundwork for clear and effective action in Paris. He's also pointed a new way forward for discussion. Climate change policy discussions too often happen from above. Francis wants them to begin from below. Citing the "ecological debt" rich countries owe poor countries, Francis wants to make sure policy makers put developing countries in the center of the decision making.[76]

Of course, the role and hard work by countless NGOs and other individuals such as the UN Secretary General Ban Ki Moon and the Executive Secretary of the UNFCCC, Christiana Figueres cannot be denied. In this particular situation, however, one sees clearly that political will also needs a big dose of religious inspiration. Of course, what we see in Pope Francis with respect to the environmental crisis is not so different from what we have witnessed in the work of Ghandi on behalf of the people of India and Martin Luther King Jr. in the American Civil Rights Movement. In all these instances, we see that religious leaders made tangible impact on the political process, appealing to human ethical ideals and conscience across religious and cultural traditions, all the while doing so from being deeply rooted in their own religious belief. Religion was never meant to replace or overtake politics, but it contributes to the democratic process by presenting its voice in the public forum to enrich the political discourse. As Roger Gottlieb writes, "I am confident that secular culture, including politics and science, can learn a great deal from religious traditions and temperament. For all their limitations, religions still have a great deal to offer. There is, in fact, much in common between the secular goals of freedom, democracy, and human rights and religious aspirations toward justice and compassion."[77]

Religious Environmentalism and Science

In May 1992, 150 religious leaders and scientists who had gathered in Washington D.C. issued a historic joint appeal for the environment. In the opening sentence of the statement, the signatories admitted that they belonged to groups that "for centuries, often have traveled different roads." Nevertheless, the escalating environmental crisis had brought them together "in a common endeavor to preserve the home we share." The statement goes on to declare:

We believe that science and religion, working together, have an essential contribution to make toward any significant mitigation and resolution of the world environmental crisis. What good are the most fervent moral imperatives if we do not understand the dangers and how to avoid them? What good is all the data in the world without a steadfast moral compass? Many of the consequences of our present assault on the environment, even if halted today, will take decades and centuries to play themselves out. How will our children and grandchildren judge our stewardship of the Earth? What will they think of us? Do we not have a solemn obligation to leave them a better world and to insure the integrity of nature itself? Insofar as our peril arises from a neglect of moral values, human pride, arrogance, inattention, greed, improvidence, and a penchant for the short-term over the long, religion has an essential role to play. Insofar as our

[76] C. Hale, "World Leaders Must Listen to Pope Francis on Climate Change," *Time Magazine Online* (December 2, 2015), accessed December 12, 2016, http://time.com/4132104/paris-climate-conference-pope-francis/.
[77] Gottlieb, A Greener Faith, 59.

peril arises from our ignorance of the intricate interconnectedness of nature, science has an essential role to play.[78]

The declaration indicates that religion and science have a collaborative relationship in addressing the environmental crisis, which the signatories believe to be a moral issue requiring effective resolutions from political leaders.

The joint declaration is significant because it reflects convergence in heart and mind by individuals who come from sides that have a very complex relationship with one another. Part of the complexity come from the personal beliefs of the individuals themselves. Not all scientists are atheists; in fact, a good many adhere to some religious traditions or privately hold religious or spiritual beliefs. On the other hand, people of religion are just as likely to subscribe to or agree with many scientific theories and explanations for phenomena taking place in the natural world. In centuries past, religious institutions were places of scientific research and discoveries that contributed to the development of science as is known today. Scientific research, conferences, symposiums and journal publication continue to take place in academic institutions of religion throughout the world, and even at the Vatican, the center seat of the Catholic Church itself. The fact that science and religion seemed to part ways during the Englightenment does not negate the fact that religion and science continue to be in relationship with one another, even though the exact nature of the relationship cannot be easily defined. Science and religion vis-à-vis the environmental crisis are also bound to one another because oftentimes, they are both implicated in the crisis, either by maintaining philosophical approaches that cause for the problem to come about or by maintaining outlooks that lead to disinterest in addressing the issue.

The environmental crisis has forced science and religion to not only admit their respective responsibilities in the problem, but also created opportunities for recognizing the symbiotic relationship between the two sides and the strengths that each brings to the discourse. Religion cannot be simply critical of the scientific metaphysics that look upon nature merely as an object to be investigated, manipulated and controlled without admitting that the environmental crisis cannot be resolved without admitting that the assessment of the environmental crisis and remedies now greatly depend on the expertise of scientists. Religious leaders such as Pope Francis the Dalai Lama come to the conclusion that the environmental crisis is a real and serious problem that must be resolved based not only on their empirical observation (which may be very short-sighted and misleading) but on the evidence presented by credible scientists and on scientific consensus. This is clearly evident in the declarations by various religions regarding climate change. In the statement entitled "The Time to Act is Now: A Buddhist Declaration on Climate Change" (2015), a significant portion of the statement is devoted to citing scientific evidence of climate change. It also supports targets that had been proposed by the scientific community.[79] Likewise, in the preparation process for *Laudato Si* (2015), Pope Francis and his collaborators consulted extensively with scientists. The act of listening to the scientific community and presenting information based on scientific consensus is

[78] Joint Appeal by Religion and Science for the Environment, "Declaration of the 'Mission to Washington,'" (12 May 1992), https://www.bnl.gov/envsci/schwartz/jointappeal.html
[79] "A Buddhist Declaration on Climate Change," 14 May 2015, https://fore.yale.edu/files/buddhist_climate_change_statement_5-14-15.pdf

reflected in the very first chapter of the encyclical. Here the pope writes, "A very solid scientific consensus indicates that we are presently witnessing a disturbing warming of the climatic system"[80] and that "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."[81] According to Mary Evelyn Tucker and John Grim, Pope Francis' encyclical "has elevated the level of visibility and efficacy of this conversation between science and religion as perhaps never before on a global level."[82]

It goes without saying that essential as science is, neither Pope Francis nor any religious leader would advocate science to be the sole approach to addressing the environmental crisis. Otherwise, there would not be any need for a discipline called religious environmentalism. Pope Francis realizes that "science and religion, with their distinctive approaches to understanding reality, can enter into an intense dialogue fruitful for both."[83] Science needs the moral strength supported by religion to not only devise solutions that are effective but are also carried out by people of faith.

Any technical solution which science claims to offer will be powerless to solve the serious problems of our world if humanity loses its compass, if we lose sight of the great motivations which make it possible for us to live in harmony, to make sacrifices and to treat others well. Believers themselves must constantly feel challenged to live in a way consonant with their faith and not to contradict it by their actions. They need to be encouraged to be ever open to God's grace and to draw constantly from their deepest convictions about love, justice and peace. If a mistaken understanding of our own principles has at times led us to justify mistreating nature, to exercise tyranny over creation, to engage in war, injustice and acts of violence, we believers should acknowledge that by so doing we were not faithful to the treasures of wisdom which we have been called to protect and preserve. Cultural limitations in different eras often affected the perception of these ethical and spiritual treasures, yet by constantly returning to their sources, religions will be better equipped to respond to today's needs.[84]

Prominent scientists such as Thomas Lovejoy, E.O. Wilson, Jane Lubchenco, Peter Raven, and Ursula Goodenough understand that religious and cultural values play important roles in addressing environmental concerns. Holmes Roston III asserts that science and religion need to enter into dialogue on the matter of the environment because there are fundamental human concerns that are relevant to both spheres:

> Both science and religion are challenged by the environmental crisis, both to reevaluate the natural world and to reevaluate their dialogue with each other. Both

[80] Pope Francis, *Laudato Si* (Vatican: Vatican Press, 2015), 18.
[81] Pope Francis, *Laudato Si*, 19.
[82] M.E. Tucker and J. Grim, "The Movement of Religion and Ecology," In *Routledge Handbook of Religion and Ecology*, ed. W. Jenkins, M.E. Tucker and J. Grim, (New York, NY: Routledge, 2017), Kindle edition.
[83] Pope Francis, *Laudato Si*, para. 62.
[84] Pope Francis, *Laudato Si*, para. 200.

> are thrown into researching fundamental theory and practice in the face of an upheaval unprecedented in human history, indeed in planetary history.[85]

When it comes to the environment, we have seen scientists who do not adopt traditional theistic worldviews speak of the need for caring for the planet with a vision of the sacred. In the early 1990s, a group of scientists including Stephen Jay Gould, Hans Bethe, Stephen Schneider, and Carl Sagan issued a statement which contained the following sentiment:

> As scientists, many of us have had profound personal experiences of awe and reverence before the universe. We understand that what is regarded as sacred is more likely to be treated with care and respect. Our planetary home should be so regarded. Efforts to safeguard and cherish the environment should be infused with a vision of the sacred.[86]

Interreligious Dialogue

Religious environmentalism necessarily entails an interreligious dimension because religions can hardly dialogue with science and politics if they refuse to dialogue among themselves. In the "Islamic Declaration on Global Climate Change," it is stated: "We call on all groups to join us in collaboration, co-operation, and friendly competition in this endeavour, and we welcome the significant contributions taken by other faiths, as we can all be winners in this race."[87] The statement by the Sikh religion likewise appeals to individuals in both the secular and religious spheres to "take concrete action toward reducing carbon emissions and protecting the environment."[88] Within the Christian tradition, the World Council of Churches called "for deepening dialogue on ecological debt and the building of alliances with ecumenical, religious, economic and political actors and between the churches in Southern and Northern countries."[89] In reality, it is not difficult to find ecumenical declarations or collaborative actions among Christian denominations as well as various religious groups.[90]

The importance of dialogue with other religions and Christian denominations, same as dialogue with the scientific community, was emphasized in Pope Francis' Encyclical Laudato Si. Already in the Prologue, LS references the Patriarch Bartholomew I (7-9) who has spoken in environmental issues for many years. LS also makes references to Judaism (LS 15, 67, 76, 78, 237), Islam (223) and indigenous spirituality (146, 179). In regards to indigenous communities, Pope Francis writes, "They are not merely one minority among others, but should be the

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[85] H. Roston III, "Science and Religion in the Face of the Environmental Crisis," In *The Oxford andbook of Religion and Ecology,* ed. R.S. Gottlieb (New York: Oxford University Press, 2006), 376.
[86] Quoted in C.L. Harper, "Religion and the Environment," *Journal of Religion and Society,* Supplement Series, (2008): 20.
[87] http://www.ifees.org.uk/wp-content/uploads/2016/10/climate_declarationmMWB.pdf
[88] Sikh Statement on Climate Change, September 2014, http://www.arcworld.org/downloads/Sikh-Statement-on-Climate-Change.pdf
[89] Statement on eco-justice and ecological debt, 2 September 2009, https://www.oikoumene.org/en/resources/documents/central-committee/2009/report-on-public-issues/statement-on-eco-justice-and-ecological-debt
[90] Jaime Tatay and Catherine Devitt, "Sustainability and Interreligious Dialogue," *Islamochristiana* 43 (2017): 125.

principal dialogue partners, especially when large projects affecting their land are proposed." Indeed for Pope Francis, religion and interreligious dialogue is essential to address to complexity of the environmental crisis. "Given the complexity of the ecological crisis and its multiple causes, we need to realize that the solutions will not emerge from just one way of interpreting and transforming reality. Respect must also be shown for the various cultural riches of different peoples, their art and poetry, their interior life and spirituality. If we are truly concerned to develop an ecology capable of remedying the damage we have done, no branch of the sciences and no form of wisdom can be left out, and that includes religion and the language particular to it" (63). Moreover, this dialogue is a matter of urgency "since the environmental challenge we are undergoing, and its human roots, concern and affect us all" (14).

Laudato Si and various declarations from religious groups have translated into joint efforts on behalf of the environment as seen in the Interfaith Climate Change Statement to World Leaders (2016) signed by 270 high-level religious leaders and 176 groups on the occasion of the Paris Agreement Signing Ceremony. The statement urged heads of states to "promptly sign and ratify the Paris Agreement."[91] The statement affirmed that "Caring for the Earth is our shared responsibility. Each one of us has a 'moral responsibility to act,' as so powerfully stated by the Pope's Encyclical and in the climate change statements by Buddhist, Christian, Hindu, Jewish, Muslim, Sikh, and other faith leaders."

While the aim of interreligious dialogue on the environmental crisis is aimed at leading to collective and individual concrete and practical actions on behalf of the environment, there is no requirement that religions must agree on a single set of spiritual and ethical principles or the same set of actions to resolve the crisis. While the sense of shared responsibility compels religion to come together in dialogue and action, interreligious dialogue must leave room for a plurality of principles and approaches that are particular to each cultural and social context. While Hindus and Jains might make vegetarianism an important element of the environmental response, theistic religions might emphasize sustainable management of natural resources as part of the program to care for creation. Interreligious dialogue unites people of various faiths together and motivate them for action, but it will not establish a universal environmental ethic; neither should this be the aim of interreligious dialogue. While the desire to develop a meta-ethics for the environment that could be adopted and applied universally sounds honorable, such effort may hinder creative and context-specific approaches that are appropriate to each particular culture and situation. Moreover, one finds that even within the same religious tradition, there could be multiple approaches proposed due to a plurality of ways that sacred texts, history, and tradition are interpreted. Therefore, the effort to arrive at a universal monistic ethics might be better served when plurality is recognized, respected and listened to. This does not mean, however, that religions cannot be challenged by other religions to rethink their own framework and approaches. Paul Knitter's Catholic understanding of environmentalism as part of the work to establish the Kingdom of God imbued with peace, justice and harmony on earth that necessarily involves the collaboration of all religions[92] could elicit positive responses from people of other faiths even if they are non-theistic. One does not have to accept the existence of God to support the goal of

[91] http://www.mipandl.org/faith_resources/Interfaith_Climate_Change_Statement_2016.pdf
[92] Paul F. Knitter, *Jesus and the Other Names: Christian Mission and Global Responsibility* (Maryknoll: Orbis Books, 1996): 1-22.

building a society characterized by the utopian values that are espoused. In a similar manner, the Hindu doctrine of transmigration of souls, in which souls undergo countless lifetimes in various sentient beings may challenge people from the Abrahamic tradition to re-examine their attitude and relationship toward non-human animals in the world and look for resources in their own traditions to re-envision that relationship in ways that enhance environmental well-being. Thus, interreligious dialogue aims towards transformation in the mind and heart of people who will translate their new awareness into concrete actions that promote environmental flourishing. In this regard, the desire and effort to create meta-narratives might prove to be unnecessarily time consuming and ultimately unhelpful to the overall goal of addressing the environmental crisis.

The dialogue which religions engages with one another as well as with other fields must begin with a deliberative process that takes place internally so that it is able to formulate coherent ethical and spiritual ideas appropriate to present concerns. Environmental theologians such as Thomas Berry advocates that just as religious ethics have been advanced on genocide, homicide and suicide, religions must also develop ethics that address biocide and ecocide. Mary Evelyn Tucker and Jim Grim suggest that this developmental process comprises of three aspects: retrieval, reevaluation and reconstruction. In retrieval, theologians and religious experts peruse scriptural and commentarial sources in order to uncover and highlight aspects of the tradition that are relevant to human-Earth relations as well as identify applicable ethical codes for practice. Reevaluation involves the examination of traditional teachings, customs, and religious tendencies and models of ethics in order to discover their impact on the environment. Finally, reconstruction involves the creative effort by religions to adapt their teachings to address the contemporary circumstances.

This deliberative process is no small challenge for religions. To address ecological issues, the religious traditions must maneuver between "bilingual languages, namely, their languages of transcendence, enlightenment, and salvation" and the "languages of immanence, sacredness of Earth, and respect for nature."[93] Even within the same Christian tradition, very different conclusions have been arrived at on the issue of the environment. For example, on April 27, 2015, prior to the release of *Laudato Si*, Pope Francis received an open letter from the Cornwall Alliance which raised concerns about the accurateness of some of the climate science. It claimed that empirical evidence suggests that there was "no rational basis to forecast dangerous human-induced global warming, and therefore no rational basis for efforts to reduce warming by restricting the use of fossil fuels or any other means." The letter also questioned the validity of the worldviews underpinning some of the policies advanced by environmental advocates.[94] The stance of the Cornwall Alliance is clearly distinguishable from that of the UK based Christian evangelical coalition called Operation Noah. In a document entitled "Climate Change and the Purposes of God," the coalition asserted that taking responsibility for the well-being of creation and acting

[93] Tucker and Grim, "Movement," Kindle edition.

[94] "An Open Letter to Pope Francis on Climate Change," Cornwall Alliance, accessed October 11, 2016, http://cornwallalliance.org/anopenlettertopopefrancisonclimatechange/.

justly to the poor who suffer from the consequences of environmental degradation are integral to the gospel message.[95]

Despite differences, one increasingly finds that there is greater consensus within and across religious traditions on environmental concerns. This is nowhere more evident than the witness exhibited by Pope Francis and the Ecumenical Patriarch Bartholomew who have joined hands in calling for the care of creation. Not only did Pope Francis quote the leader of the Orthodox church in *Laudato Si*, in 2015 he also instituted the World Day of Prayer for Care of Creation to be celebrated on September 1, which the Orthodox Church has done since 1989. Bartholomew commented, "We count it as a true blessing that we are able to share a common concern and a common vision for God's creation."[96] In the common declaration by the two church leaders on the occasion of meeting Jerusalem in 2014, they stated:

> It is our profound conviction that the future of the human family depends also on how we safeguard – both prudently and compassionately, with justice and fairness – the gift of creation that our Creator has entrusted to us. Therefore, we acknowledge in repentance the wrongful mistreatment of our planet, which is tantamount to sin before the eyes of God.[97]

Indeed, on numerous occasions in writings as well as speeches, both leaders have emphasized the need for people to recognize their culpability in environmental degradation and taking the step to confess their environmental sins. The environmental sins that the two church leaders mention reflect part of what Pope John Paul II continually emphasized throughout his papacy—the culture of death. For Pope John Paul II, the culture of death not only includes the lack of respect of human life in all its stages but also the lack of respect for nature as reflected in the "technical and scientific way of thinking, prevalent in present-day culture [that] rejects the very idea that there is a truth of creation which must be acknowledged, or a plan of God for life which must be respected."[98] The lack of peace, Pope John Paul II argued, was not just due to regional conflicts, abortion, poverty, and the like but also due to plundering nature's resources.[99] Similar to other social problems, the ecological crisis is a moral issue reflecting a disharmonious relationship between humanity and God. John Paul II warned, "If man is not at peace with God, then earth itself cannot be at peace."[100]

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[95] "Climate Change and the Purposes of God," Noah Operation, accessed October 11, 2016, http://operationnoah.org/articles/read-ash-wednesday-declaration/.

[96] Time Magazine, Patriarch Bartholomew on Pope Francis' climate encyclical, Retrieved from http://time.com/3926076/pope-francis-encyclical-patriarch-bartholomew/ on October 11, 2016.

[97] Pope Francis and the Ecumenical Patriarch Bartholomew, "Common Declaration of Pope Francis and the Ecumenical Patriarch Bartholomew I," accessed October 11, 2016, https://w2.vatican.va/content/francesco/en/speeches/2014/may/documents/papa-francesco_20140525_terra-santa-dichiarazione-congiunta.pdf.

[98] Pope John Paul II, *Evangeliuum Vitae*, accessed March 26, 2016, http://w2.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_25031995_evangelium-vitae.pdf.

[99] Pope John Paul II, "World Day of Peace Message 1990," accessed March 25, 2016, https://w2.vatican.va/content/john-paul-ii/en/messages/peace/documents/hf_jp-ii_mes_19891208_xxiii-world-day-for-peace.pdf.

[100] Pope John Paul II, "World."

Summary

In this paper, I have attempted to present the environmental crisis in context of ecological, social, political, economic, technological and religious realities. It should be apparent to everyone that this crisis is extremely complex. As it affects multiple stakeholders – humans and nonhumans – any approach aimed at resolving or mitigating the crisis must necessarily be interdisciplinary, collaborative and dialogical. Shunning voices or any offer of contribution from segments of society can only be detrimental to the endeavor of finding a remedy. Scientific know-how is insufficient without political will. Political will is insufficient without moral and ethical foundations. Moral and ethics can be greatly enhanced by religious teachings. And religious teachings can only be carried out when there is a spirituality that goes beyond legalism and dogmatism. But spirituality must be grounded in reality in order to respond to situations in a practical manner.