

Rowan Williams Lecture

Faith, Ethics and Climate Change

The 2015 Rowan Williams Lecture

Trinity College

University of Melbourne

10 November 2015

The Honorable Kevin Rudd

26th Prime Minister of Australia

I first met Archbishop Rowan Williams at Lambeth Palace in March of 2009. I had not long been elected the 26th Prime Minister of Australia. He had already long been installed as the 104th Archbishop of Canterbury.

I was in London for the second G20 Summit. Together with others, I had been instrumental in the establishment of the G20 at summit level the previous year in response to the global financial crisis. While the initials "GFC" now roll easily off our lips, it's worth reminding ourselves that against all the metrics, this was the biggest global financial and economic crisis since the Great Depression of 1929-32. These were no ordinary times.

I think I can safely say that I was probably the only G20 leader in London at that time who thought it useful to call at Lambeth Palace before going to the G20 conference centre. In those tumultuous times when the world economy stood at the brink, I remember Rowan Williams as pastoral, practical and ethical about the challenges we faced – a combination of Barnabas, the "son of encouragement," Bonhoeffer and his theology of "viewing from below," and William Booth on "what then is to be done".

During that visit, together with Prime Minister Gordon Brown, we also addressed a great gathering at Saint Paul's Cathedral on the impact of the crisis, not on financial markets, but on the world's poor. I am rarely phased, and never intimidated, in public life. But if I am to be honest, on that day, in the midst of a genuinely global crisis, standing in the nave of Wren's great cathedral, that had risen from the ashes of the Great Fire and three centuries later had withstood Hitler's blitz, I was less confident of my own limited powers than ever I had been before. Reflecting on what was unfolding around us, I said that day:

All these things require global action on an unprecedented global scale, just as all those things necessary for the recovery of the general economy as a whole require global action on an unprecedented global scale. And herein lies a further challenge for us all: to act in the global good while recognising at the same time that acting in the global good is also acting in the national good.

For centuries we have been conditioned to think otherwise, whereas the requirement of this age is for global coordination and cooperation on an unprecedented scale. The challenge with the current crisis, as with climate change, now lies beyond the scope of any single nation state to act.

Friends, this brings us back to the question of the values which constitute our moral compass for the uncharted journey that lies ahead. For the last quarter of a century, we have been told through the spirit of the age that our principal values are those of security, liberty and prosperity. These values are entirely

legitimate, but to these values of security, liberty and prosperity must also be grafted the values of equity, of sustainability and community.

As the history of those tumultuous economic times has now been written, we know that the London Conference of March 2009 broke the fall of the global financial crisis. Prior to that conference, global markets had been in free-fall for six months since the Lehman's collapse. Governments acted together with combined fiscal and monetary policy force. Global recession did not become global depression. The slow process of global economic recovery began. And while Australia may have avoided recession altogether, it is sobering to remember that as of today, major economies such as Italy are still more than 10 per cent smaller than they were seven years ago.

The point of all this is that politics matters. Public policy matters. And the ethical judgements that inform public policy priorities (in this case the importance of people rather than the purely clinical demands of markets) also matter. The purpose of this lecture is to articulate an ethical approach for Christians and the Christian Church to engage governments on major matters of politics and public policy, within the robust framework of a secular state. Its second purpose is to apply this approach to the politics and policy of climate change as we approach the critical 21st Conference of the Parties in Paris. Third, within this framework of a Christian discourse on climate change, my purpose is to challenge the ethical, scientific and policy basis of Cardinal Pell's consistent opposition to the priority attached to climate change action, and to contrast that position with the ethical, scientific and policy imperatives contained in the Pope's Encyclical of June 2015 "Laudato Si: On Care for our Common Home."

The truth is there is no such thing as an "ethically neutral" policy position. Whether people are conscious of it or not, ethical judgements, for good or for ill, are made every day in national political life.

Judgements about mass unemployment versus the supposedly "self-correcting" nature of markets.

Judgements about responsibilities for the homeless versus the view that social housing is a waste of public finance.

Judgements about high-speed broadband access for all to enable full participation in the digital economy of the future, not just access for some who happen to live in the smartest suburbs in the largest cities.

Judgements about the position of Indigenous peoples versus a view that past injustices are the responsibility of previous, not present, generations.

Judgements about the "non-refoulement" of asylum seekers versus a view that receiving asylum seekers for the purposes of processing the legitimacy of their claims should yield to the pragmatic need of "turning the boats back," or in the case of Europe, of erecting fences around national boundaries.

Judgements about foreign aid to lift the world's poorest out of poverty versus the view that "charity begins at home."

And on the eve of the Paris Summit on climate change, judgements about the proper stewardship of the planet to ensure basic inter-generational justice for those who follow us, rather than a view that the science is unclear, the future can look after itself, and that technology, if necessary, will solve all.

These are all profoundly ethical judgements. They imbed judgements about what is right and wrong, about what is better or worse, about what should have priority, and what should not. Anyone who claims in making policy judgements they are doing so oblivious to ethical considerations, and instead are simply

acting on a simple, “value-free” premise of “common sense”, is engaged in deep self-delusion. Consciously or not, all our views are shaped by a vast array of ethical assumptions.

That does not mean that policy logic does not enter the equation. It must. Core questions such as “will a given policy course of action produce the results that are sought, or will it produce other unintended consequences;” “what will it cost;” and “can it be funded within the parameters of necessary fiscal discipline” must all be asked and answered. In fact ethics and logic must be equal partners in the public policy process. One is deficient without the other. Noble aspirations, in the absence of an effective machinery of government to translate aspiration into measurable action, is, to paraphrase Saint Paul, a clanging cymbal and a sounding gong.

Ethical considerations should, however, be our starting point. The question arises, therefore, as to how in political life ethical judgments are to be formed, and how are they to be argued in the public square, and in the case of what is called “Christian ethics,” how are these to be reconciled within the legitimately secular framework of contemporary democratic politics.

Faith, Ethics and Public Policy in a Secular Order

Rowan Williams has sought to address these questions in a collection of essays recently collated in a book entitled “Faith in the Public Square.” He wrestles with the core question of whether it is legitimate for any person in a secular state to articulate a policy position grounded in religious faith, rather than arguing that proposition in exclusively secular terms

While it may be seen as an unwelcome view among the community of faith, secularism, in my strongest personal view, is a necessary precondition for modern political discourse. We are all familiar with the multiple abuses of religious authority, Catholic or Protestant, throughout Western history when a particular religious orthodoxy has been preferenced by the political authority of the time. The often bloody history of the institutional Church over eighteen centuries, their Muslim counterparts over fourteen centuries, and more recently between Catholics and Protestants in the centuries following the Reformation of 1517. provide a resounding case for a secular state as the lesser of many evils – a place where propositions can be advanced and argued without recourse to any claims of higher revelation, or recourse to the coercive powers of baser politics in the name of God.

Yet support for a secular state must not blind us to the bloody history of state terrorism in the worst forms of twentieth century totalitarian Fascism and Communism. It is a futile exercise to attempt to calculate the atrocities attributable to Hitler, Stalin, Tojo and the Second World War on the one hand, and the Wars of Religion, which in some estimates wiped out one third of the then population of Europe on the other, to provide some sort of moral matrix as to which of the contending “isms” was the least blood-thirsty. The enduring lesson of both extremes is that unless a state is subject to constitutional forms of government which provide effective protection for individual and minority rights, in exchange for people respecting certain defined responsibilities to the state, as part of a political compact between state and people, then systemic abuse is always possible.

Williams argues that there are two forms of secularism in the 21st century: what he calls “programmatic secularism” as opposed to “procedural secularism.” The former he defines as:

“...an exclusive public orthodoxy of a new kind that works on the assumption that only one sort of loyalty is really possible. Loyalty to your faith will be a matter of private preference...but cannot stand alongside loyalty to the state, to the supposedly neutral public order of rational persons.”^[1]

This Williams contrasts with what he calls “procedural secularism” in which “public policy declines to give advantage or preference to any one religious body over others” but in which the state “defines its role as one of overseeing a variety of communities of religious conviction and, where necessary, helping them to keep the peace together.”^[2]

In an age of declining religious conviction, we should add to the latter definition a variety of “communities of conviction,” whether they happen to be religious or not. It is patently absurd to imply in the 21st century that ethical views on the role of the state in general, or on a particular direction in public policy, can only derive from religious communities. The reality today is that there are multiple “ethical communities” which seek to influence government policy, where common policy conclusions may often be reached, while employing radically different ethical methodologies. We see this today for example on the question of climate change where communities of scientists, environmentalists and Christian activists, including no less than the Pope himself, find themselves in common policy cause. And critically, all arguing within a common secular political space.

What then should be the particular ethical contribution of Christians and the Christian Church to such debates? And what is the proper granularity of this contribution where political ethics intersect with detailed policy design including that universal, uncomfortable reality we call public finance? These are complex questions which warrant responses beyond the supreme banality that “the Church should stay out of politics.” This is the simplistic refrain of a political class incapable of dealing with challenges to their own “ex-cathedra”, secular proclamations of what is “right” and “wrong.” “The Church,” it is said by the same class, should “stick to spiritual matters and keep well clear of the political,” invariably leaving undefined what is meant by the term “political” on any given day.

Defining the “Spiritual” and the “Political”

This begs the further question of how these terms “spiritual” and “political” might best be considered in the age-old debate between church and state. If by “spiritual” it is contended that we are dealing with the non-material, then that presents a small problem given the fact that the vast bulk of the gospels are very material indeed, describing how the Jesus of history walked the earth, lived an exemplary ethical life in support of the many underclasses with whom he engaged, and charged his followers to go and live likewise.

Yet according to the very same biblical tradition, this “physical” Jesus, however, was also to become the Christ of eternity with his call to repentance, salvation and resurrection. Christians are not left with a choice between the two. The uncomfortable truth for both the liberal and conservative traditions of the Church is that the gospels speak of *both* the physical and spiritual imperatives to be embraced by his followers.

It follows, therefore, that if we are to be concerned about the “physical” well-being of our fellow human beings, as well as the broader created order that supports them, are we simply to be concerned with individual philanthropic action, or also the collective action of corporations, communities and the state. You would be hard-pressed to find a reference in the gospels to support an entirely privatized or pietistic Christianity which exonerates its adherents from public action in defense of the basic ethical principles both lived and espoused by Jesus of Nazareth.

If that is so, Christians automatically find themselves engaged in political action, whether we choose to explicitly recognize that reality or not. Are we then to contend that there are “no-go” areas where the Church should remain silent? Theological conservatives would argue that if the Church is to be

politically active, it should limit its voice to questions of life, death, sex, sexuality and definitions of the integrity of the family. The Church is perfectly right to engage in these public political debates, as all form part of a comprehensive Christian ethics.

But for such conservatives to contend that ethical considerations beyond these personal domains breach the limits of permissible political participation, either by the Church corporately, or by Christians individually, is without biblical foundation. We are equally called upon to deliberate on the great questions of war and peace, as John Paul II did in relation to the Iraq war which he defined as unjust. We are also called upon to debate the cancer of political corruption in our Western democracies. Just as we are asked to reflect on the central ethical questions of the economy concerning poverty, inequality and sustainability.

The question which then presents itself is if Christian ethics permits, and arguably encourages Christian political engagement across the public policy debate, then what ethical principles should guide this engagement? This is indeed a complex domain in which generations of theologians have been engaged at least since Aquinas, and arguably since Constantine nearly a thousand years before. But certain core principles permeate the tradition, including:

- An acceptance of the inherent, irreducible and universal dignity of human beings;
- A parallel acceptance of the intrinsic equality of all human beings;
- A respect for the moral freedom of individuals to make free moral choices for their lives;
- A requirement to love all human beings consistent with the Great Commandment;
- A universal preferencing of the poor, the marginalized and the oppressed;
- A requirement to support and provide self-giving care for the strangers in our midst, consistent with the challenging parable of the Good Samaritan;
- A requirement to tend, care for and be the stewards of the created order that sustains us all, as reflected in the deep theology of Saint Francis of Assisi.

Each of these is the subject of further definitional debate, including the adequacy of the list itself. And of course there is controversy concerning their specific application of these principles to the particularities of the political and policy circumstances of the time. But we delude ourselves, or perhaps too easily forgive ourselves, if we conclude that the complexities of each of these debates exonerates the Christian community from forming an ethical view on the great questions of our time.

I sat recently in the comfortable pews of an affluent Anglican parish in London where the uncomfortable reading for the day was the parable of the Good Samaritan. This was in the context of the European response to the Syrian refugee crisis. The bold response from the pulpit was that we should pray for our political leaders to have wisdom. Nothing else.

Christian Ethics, Professional Competence and Public Policy

Of course, the critique is then raised, both by the political class and the conservative theological class, that having an informed ethical view is impossible because Christians and the Church collectively do not have the professional or technical competence to offer cogent comment on the specific policy alternatives of the day.

My own view is that unless there is at least one institution, such as the Church, dedicated to posing the ethical dilemmas present in the public policy debate, there is a grave danger that these debates automatically become subsumed by the pragmatic considerations of politics and public finance of the day.

In fact my further view is that it is the legitimate function of the Church in the collective West of the 21st century to make the state permanently ethically uncomfortable with itself because of the

compromises the State will inevitably make with the passage of each law, or the determination of each executive government policy. Again unless there is at least one institution seeking to construct, maintain and argue the continuing ethical parameters within which the stated purposes and unintended consequences of government action should be considered, then there is a greater risk that public policy simply degenerates into “interest group politics,” where the voices of the most powerful will prevail, or even worse, retail politics by another name.

Again it must be emphasized that Christians have no natural monopoly in framing the ethical dimensions of any public policy debate. Within William’s construct of “procedural secularism,” Christian ethical perspectives should simply be one of a number of ethical voices seeking to obtain traction in the public square. Nor should Christians enjoy any particular privilege. It is also important that the Church argue its perspective from both a Christian worldview, and where possible from a rational worldview, given that the latter is the common language of multiple voices contending to be heard in the public square. To be clear, there should be no apology for advancing an ethical proposition anchored in Christian theology. But to be effective in the public discourse of a secular state, its translation into parallel rational propositions which nonetheless share a common ethical end-point is optimal, although not essential. Given the long historical discourse within the Church, beginning with the Thomists, between faith and reason, and between evidence and revelation, Christians should be entirely comfortable in bridging, wherever possible, the contending disciplines of theology and the academy when addressing the ethics of public policy.

This brings us to a final question of the particular responsibilities of a Christian legislator, active in the community of faith, while also needing to communicate an ethical position in the common language of the secular political discourse. This, in particular, requires a comfortable relationship between faith and reason of the type that Catholic and Anglican social teachings have long embraced. The worst that can occur, in the post-Christian collective West, is for Christians active in the political process to publicly rely on either divine revelation or theological abstraction to argue an ethical proposition in the public square. The Christian Church can do so, if it so chooses. But the Christian legislator, if she or he is to be effective, cannot. The process of translation, from the imperatives of faith, however deeply held, to the methodologies of reason and empiricism, is fundamental.

Christian Ethics and Climate Change

Given these various considerations concerning the interrelationship between Christian ethics and the public policy process, how do these principles apply to the great, continuing global debate on climate change? This is important given that the 21st Conference of the Parties to the International Framework Convention on Climate Change to be held in Paris, is now a matter of only weeks away. It is doubly important because the Australian Christian community, like the Australian political community, remains divided on climate change – just as there remain divisions around the world.

My position on climate change derives from a combination of factors: my personal conclusions on the ethics; the objective conclusions of the science as reflected in the long-term analysis of the International Panel of Climate Change scientists; and the established capacity of national and international public policy to make a difference in shaping climate futures. All three considerations were relevant, and remain relevant in shaping my own position on climate change. For me, the principles of intergenerational justice were particularly important, and the responsibilities that flow from these for those in public office today.

I signed the ratification instrument for the Kyoto Protocol as my first act as Prime Minister in 2007, consistent with pre-election commitments, and within an hour of swearing the oath of office. For me this was no small matter. There was also a practical reason for this. The 14th Conference of the Parties was at the same time convening in Bali. Global negotiations had ground to a halt, aided by the fact that both the United States and Australia were the only major developed economies to have refused to ratify Kyoto since it was first adopted in 1997. It was important to provide those negotiations with fresh momentum. That is why I then travelled to Bali to deliver personally the instrument of ratification to the UN Secretary General. The United States as a result was left isolated on the conference floor. The

Conference subsequently agreed on what became known as the “Bali Roadmap” which succeeded in keeping international negotiations alive over subsequent years with that road ultimately leading to Paris. It is fair to state that the radical change in the Australian negotiating position on climate change made a contribution to this conference outcome.

Signing an international protocol is one thing. Fulfilling the national obligations that flow from such a protocol on targets and timelines for reducing greenhouse gasses is another. Just over a year on, we had legislated, notwithstanding a hostile Senate, for a Mandatory Renewable Energy Target of 20 per cent of total electricity supply by 2020. As of 2007, total renewable energy accounted for only 5 per cent of total supply.^[3] As of 2014 just after the government left office, it accounted for 13 per cent of supply, enough to power some 4.5 million average homes for a year, or nearly half the total national housing stock.^[4]

In 2008-9, the government sought to legislate twice for a national Emissions Trading Scheme but was defeated in the Senate before a carbon tax was finally introduced in 2012, before being repealed in 2014 by the succeeding conservative government.

We also engaged in direct subsidy programs to improve household energy efficiency and the installation of solar panels on roofs: from only 8000 homes in 2007 to more than a million by 2014, or nearly 15 per cent of the total housing stock.^[5]

On coal, given Australia was one of the largest coal exporters in the world, the government invested in the world’s largest carbon capture project with the establishment of the Global Carbon Capture and Storage Institute with the object of bringing CCS projects to scale.^[6]

In addition, the government introduced the Clean Energy Future Plan, which included the Carbon Pricing Mechanism, plus the establishment of the Clean Energy Regulator, the Carbon Farming Initiative, the National Greenhouse and Energy Reporting System, the Clean Energy Finance Corporation and the Australian Renewable Energy Agency (ARENA). The government also introduced the Greenhouse and Energy Minimum Standards (GEMS) which became a national framework for appliances and equipment energy efficiency in Australia.^[7]

Each of these policy measures was controversial. Each involved considerable political and industry opposition, often vociferous, and invariably well-funded. But the impact of these various measures on actual greenhouse gas reductions was measurable. As of 2007, Australian total annual greenhouse gas emissions were 602.5 million tonnes of carbon equivalent.^[8] As of 2014, this had reduced to 563.5 mtc or by nearly 7% compared to when the government first came to office.

According to Reputex, one of the leading modeling agencies working on the cumulative impact of greenhouse gas mitigation measures, the current Government’s ‘direct action’ model will see greenhouse gas emissions increase from 563.5 mtc in 2014 to 613 mtc by 2020.^[9] This would represent an 8.5 per cent increase in annual GHG emissions against the level we had managed to reduce them to as of 2014.

Furthermore, this nearly 7% reduction in GHG emissions between 2007 and 2014 as a consequence of the previous government’s policy also stands in stark contrast to the Australian emissions record prior to 2007. Under the Howard Government, GHG emissions during its last 8 years in office increased from 566.7 mtc to over 600 mtc or by about 8.5 percent.^[10]

While some may argue that this was a natural reduction arising from reduced economic activity during the GFC, unlike other developed economies the Australian economy actually continued to grow during this period. In other words, we were able to establish the basic proposition that public policy actually worked in delivering real reductions in greenhouse gasses.

Australia also went within a few months from being a global pariah state on climate change to one of the leading global actors in trying to frame a binding global agreement by the time of the Copenhagen Summit at the end of 2009. We were co-founders of the so-called “Cartagena Group” of states which worked tirelessly through a series of international video-conference calls in the months leading up to Copenhagen to drive consensus across the international community. In the end, the Copenhagen conference failed to produce a binding global agreement. This was not through any lack of effort, including in the negotiating room in Copenhagen, where some 25 of us, including the Presidents or Prime Ministers of the US, Germany, France, Britain, Japan, Brazil, Mexico, Indonesia and Australia, met for nearly two days with little sleep to try and hammer out an agreement.

In the absence of a binding global treaty, we still managed to produce a Copenhagen Declaration which for the first time reached global agreement on a 2 degrees centigrade target; on the joint responsibility of both developed and developing countries; and on a global system of global measurement, reporting, and verification. And it was the contents of this Declaration that was then formally gavelled into international legal recognition in 2010 at the 15th Conference of the Parties in Cancun.

The reason I render these policy measures and their results in some detail is because in government I judged it necessary not simply to state an ethical proposition concerning climate change, but also to act on the proposition through practical policy initiatives whose effect could subsequently be measured. I was attacked from all sides for stating that “climate change was the greatest moral challenge of our time.” I stand by that statement today. My reasoning was based on the official advice of the government’s scientific advisors that the impact of global warming in excess of 2 degrees centigrade this century was both dangerous and potentially irreversible.^[11] Moreover, this impact would be experienced first and most severely by the poorest and most vulnerable members of the human family who lack the most basic social protections,^[12] though a combination of the coastal inundation of river delta areas such as the Ganges and the Irrawaddy,^[13] the disappearance of small island states such as Kiribati and the Maldives altogether,^[14] the increased frequency and intensity of extreme weather events, food and water insecurity^[15] and new patterns of exotic diseases^[16] in developing regions from the Americas to Africa to South Asia.

Furthermore, the impact on other life forms and the earth itself raised deep questions about our proper stewardship of the wider natural order, well beyond the particular needs of the human family. In other words, the all-encompassing scale of the consequences of a failure to act effectively on climate change was, in my view, sufficient to support its description as the greatest ethical challenge of our time. I also believe over the decades ahead, this statement will stand the test of time.

Those who attacked this particular formulation were not only the usual legion of climate change skeptics and deniers. It included those corporations who concluded that policy change would be financially injurious to their bottom line, and who therefore found it convenient to join forces with the deniers.

But it also included those who accused me of not living up to my word by accepting the advice of my most senior ministers that following the second defeat of the government’s emissions trading scheme legislation, we should defer its implementation for two years until the conclusion of the Kyoto Protocol’s commitment period until 2012.^[17] As I was Prime Minister at the time, I accept responsibility for this decision and for the poor communication of it to the Australian public.

As for the related attack that my stated belief in the moral significance of climate change should have resulted in a double dissolution, I would draw attention to the fact that as of June 2010, the window for calling a double dissolution was still open and remained open until August of that year,^[18] notwithstanding the fact that the most senior ministers in the government were fundamentally opposed to such a course of action. Once again, as the Prime Minister of the day, I have taken and continue to take full responsibility for the decisions taken at this time.

As a political leader in the midst of a bloody political debate on one of the most contentious policy issues before the government, I readily concede, as I have on many previous public occasions, that I could have

done many things better in managing the climate change debate than I did. That is a truth confronting. The fact remains, however, that the real climate change measures we were able to enact did have the effect of reducing Australian greenhouse gas emissions by nearly 7%. More needed to be done. More needs to be done. But the Australian people spoke on this key electoral matter in 2013 when they supported a political party that committed itself to repealing a carbon price. And this the new government did.

The Church on Climate Change

Whatever the real or perceived successes or failures of the government in its ethics and its actions on climate change during its period in office, the fact remains that there was not just a debate in the parliament on this contentious issue. There was a wide public debate on climate change as well. This debate did not only include the usual range of interest groups. It also included the Australian Churches. I emphasize this because my subject in this lecture is “Faith, Ethics and Climate Change.” I have already sought to describe how I framed my own position. Many of the Christian Churches supported that position. Others opposed. And in this context, the leader of the Christian opposition was Cardinal George Pell, until recently the Cardinal Archbishop of Sydney, and now the Prefect for the Economy of the Holy See in Rome.

Cardinal Pell’s position on climate change is worth exploring. His policy positions are stated with great clarity. Given his status they should be treated with respect and engaged on their merits. And given his recent appointment in Rome, his views are now not just relevant to Australia, but also to the world.

This is particularly the case as we approach the Paris Climate Summit, where Cardinal Pell’s position on climate change is publicly at variance with that of the Pope and the latter’s most recent Encyclical “Laudato Si.”

Furthermore, Cardinal Pell’s position continues to be widely reported in Australia where public and political opinion also remains divided on Australia’s national and international climate change policies – policies that the Australian Government will be required to take to Paris in two weeks’ time. For these reasons, it’s important to analyze Cardinal Pell’s position clearly, and to provide a response to them.

Lest there be any doubt, it is important we understand the time sequence. The Pope’s Encyclical which deals with human responsibility for the environment in general, and in part with climate change more specifically, was released on 18 June 2015. On 16 July, barely a month later, Cardinal Pell, in speaking about the Encyclical, is quoted in the Financial Times^[19] as stating that, “It’s [the Encyclical] got many, many interesting elements. There are parts of it which are beautiful,” he says. “But the Church has no particular expertise in science . . . the Church has got no mandate from the Lord to pronounce on scientific matters. We believe in the autonomy of science,” added Cardinal Pell...”

This statement is directly targeted at the fundamental scientific underpinnings of the ethical and policy positions espoused in Papal Encyclical. This is not a new position for Cardinal Pell. Yet it is remarkable, given his standing, that he would launch such a public broadside against an Encyclical carrying Papal authority almost immediately upon its release.

In multiple public articles, Cardinal Pell, as a non-scientist, has over many years consistently attacked^[20] the scientific consensus agreed by the Intergovernmental Panel on Climate Change, as well as the overall merit of the policy actions embraced within the framework of the International Convention on Climate Change. Cardinal Pell variously described these as “hysterical,” and “an example of pagan emptiness,” including the remarkable statement that “in the past, pagans sacrificed animals and even humans in vain attempts to placate capricious and cruel Gods, while today they demand reductions in carbon emissions.”^[21] Cardinal Pell has in the past has accused me of inflated rhetoric. Perhaps on some questions he was right. But such rhetoric, it seems, is not the exclusive province of Prime Ministers. Princes of the Church are apparently not entirely immune.

Elsewhere Cardinal Pell has described global warming as simply “today’s most powerful and pervasive myth.”^[22] Two years into my own government and struggling to secure passage of an emissions trading scheme through a hostile Australian Senate, the Cardinal Archbishop of Sydney made his point with crystal-clear clarity: “Most Australians, for the moment seem to believe in global warming primarily induced by humans or even in humanly-induced catastrophic global warming. There is not sufficient scientific evidence for either of these claims, less evidence that we could influence or reverse such climate outcomes, and less again that we could afford to attempt to attempt this. Religion has no monopoly on truth or human folly.”^[23]

Cardinal Pell wrote this in October 2009, less than two months before the Copenhagen Conference on climate change, which, as noted above, failed to reach agreement on a globally binding treaty. This failure continues to cast a long shadow over the Paris conference 6 years later. In 2011, the Cardinal expanded on his pessimism about the pointlessness of public policy responses to what he continued to contend to be the uncertain science of climate change:

“The rewards for proper environmental behavior are uncertain, unlike the grim scenarios for the future as a result of human irresponsibility, which have a dash of the apocalyptic about them. The immense financial costs true believers would impose on economies can be compared with the sacrifices offered traditionally in religion, and the sale of carbon credits with the pre-reformation practice of selling indulgences...The costs of attempts to make global warming go away will be very heavy. They may be levied initially on ‘the big polluters’ but they will eventually trickle down to the end-users. Efforts to offset the effects on the vulnerable are well-intentioned, but history tells us will they can only be partially successful.”^[24]

In summary, Cardinal Pell’s position on climate change is clear. First, he argues it is a matter for science and that the Church has “no mandate from the Lord to pronounce on scientific matters”. Second, he argues, based on his own extensive reading of what he calls “this stuff”,^[25] by which he presumably means “the science”, that there is no scientific proof of global warming to the extent that it should cause policy makers to be concerned. Yet in doing so, the Cardinal appears not to reflect on the profound contradiction in his position that as a non-scientist he then proclaims: that the conclusions of the International Panel of Climate Change scientists, made up of thousands of scientists from almost all UN member states, are not simply open to question, but simply wrong. Third, the Cardinal asserts the cost of any policy intervention to arrest global warming is prohibitive for the economy and unfair on the poor, when measured against any modest gain to be derived for the planet from so acting.^[26]

My argument is not that Cardinal Pell should not be free to make such commentary on climate change, notwithstanding the fact that his position happened to mirror almost precisely that of former Opposition Leader and later Prime Minister Tony Abbott, whose considered conclusion on these subjects was that the “climate change argument is absolute crap.”^[27] I believe Cardinal Pell’s position on climate change should feature as much in the public debate as anybody else’s. Just as he should be entirely free to opine on the ethics of economic policy, social policy, including those policy debates traditionally associated with the “life issues.” I might agree or disagree with him on some or all of the above.

But to contend that a necessary pre-requisite for engagement in these ethical debates in the public square is to be a professionally qualified climate scientist, life scientist or even economist would by definition also render his own contribution to these debates null and void, as I understand Cardinal Pell is qualified in none. Nor am I so qualified. But the absence of necessary technical qualifications should not prevent any Christian, of properly informed conscience, from reflecting an ethical view on important public policy debates being conducted in the public square. And in doing so we should seek to bring to bear the core and continuing ethical principles referred to earlier.

On the substance of Cardinal Pell’s position, it will come as no surprise that I fundamentally disagree with his conclusions on climate change – on the science, on the policy and on the ethics. On the science, the Intergovernmental Panel on Climate Change scientists, have concluded that anthropogenic climate change is a scientific reality, that based on “business as usual” we are currently on track to see a temperature increase of 4 degrees,^[28] and that this in turn will have catastrophic consequences for

human-kind, bio-diversity and the planet.^[29] While there are questions and debates about precisely when and how climate change impacts will manifest, 97-98 per cent of peer reviewed scientific literature agrees that the world is getting significantly warmer as a result of human activities.^[30]

On policy, the same IPCC scientists tell us that the only way to avoid these consequences is to keep temperature increases within 2 degrees centigrade by radically reducing the annual amount of greenhouse gas emissions to the level that they peak at 450 parts per million of carbon equivalent.^[31] This requires a range of policies to reduce demand for fossil-fuel energy, and to convert to clean, or at least cleaner, energy solutions on the supply side. As for the argument that these measures have no effect, as noted above, the data demonstrates that in Australia's case alone, the policy measures introduced from 2007 saw Australia's greenhouse gas emissions fall significantly. Furthermore, this downward emissions trajectory has occurred alongside growing incomes, which increased by 22.75% between 2007 and 2014 in real terms according to World Bank figures.^[32] Australia's experiences, like a growing number of others around the world, demonstrate that economic growth need not depend on runaway greenhouse gas emissions.^[33] These uncomfortable truths would tend to undermine Cardinal Pell's proposition that it is unproven that climate change policy does not have any effect and that these policies impair the economy and people's incomes. On this, in fact, the data demonstrates that he is just plain wrong.

On ethics, I believe that when national political leaders are provided with unambiguous scientific advice from the authoritative international scientific body established for this purpose some 27 years ago (ie the IPCC), then those political leaders have an ethical responsibility to act to avoid the consequences of the threat of which they have been warned. In fact, I do not believe that political leaders have the moral latitude to dismiss the official long-standing scientific consensus based on their own personal scientific readings. Cardinal Pell might enjoy this moral luxury. Prime Ministers do not.

Furthermore, political leaders face the unique challenge of acting in the interests not just of this generation but also the next, raising in turn profound ethical questions of intergenerational justice, way beyond the responsibilities arising from any near-term electoral cycle.

Finally, from a Christian perspective, there is also an ethical imperative arising from preferencing the poor as the most vulnerable to climate change, as well as our common responsibilities for the proper stewardship of the natural order on which human beings depend.

Pope Francis on Climate Change

Pope Francis' Encyclical entitled "Laudato Si – On Care for our Common Home" speaks with equal clarity as Cardinal Pell. But with radically different conclusions. Francis states that the purpose of his Encyclical is to, "draw on the results of the best scientific research available today, letting them touch us deeply and provide a concrete foundation for the ethical and spiritual itinerary that follows".^[34] And lest we should conclude that this is simply a part of broader academic teaching, Francis then states that he intends to "advance some broader proposals for dialogue and action which will involve each of us as individuals, and also affect international policy".^[35]

Furthermore, his Encyclical has an urgency attached to it. He states,

"I urgently appeal then for a new dialogue about how we are shaping the future of our planet. We need a conversation which includes everyone, since the environmental challenge we are undergoing, and its human roots, concern and affect us all."^[36]

The Pope defines climate as "a common good, belonging to all and meant for all".^[37] He then outlines how, based on the science, this common good for our common creation is now threatened by climate change:

“There is a very solid scientific consensus that now indicates that we are presently witnessing a disturbing warming of the climatic system. In recent decades this warming has been accompanied by a constant rise in the sea level and, it would appear, by an increase in extreme weather events, even if a scientifically determinable cause cannot be assigned to each particular phenomenon. ... It is true that there are other factors (such as volcanic activity, variations in the Earth’s orbit and axis, the solar cycle) yet a number of scientific studies indicate that most global warming in recent decades is due to the great concentration of greenhouse gasses (carbon-dioxide, methane, nitrogen oxides and others) released mainly as a result of human activity. Concentrated in the atmosphere, these gasses do not allow the warmth of the sun’s rays reflected by the Earth to be dispersed into space. This problem is aggravated by a model of development based on the intensive use of fossil fuels, which is at the heart of the worldwide energy system. Another determining factor has been the increase in changed uses of the soil, principally deforestation for agricultural purposes.”^[38]

The Encyclical goes on to outline the impact of global warming:

“Global warming has effects on the carbon cycle. It creates a vicious circle which aggravates the situation even more, affecting the availability of our central resources like drinking water, energy and agricultural production in warmer regions and leading to the extinction of part of the planet’s biodiversity. The melting of the polar icecaps ... can lead to the dangerous release of methane gas while the decomposition of frozen organic material can further increase the emission of carbon dioxide... Carbon dioxide pollution increases the acidification of the oceans and compromises the marine food chain. If present trends continue, this century may well witness extraordinary climate change and an unprecedented destruction of eco-systems, with serious consequences for all of us.”^[39]

As for the ethical imperative, Pope Francis is clear cut:

“Climate change is a global problem with grave implications: environmental, social, economic, political and for the distribution of goods. It represents one of the principal challenges facing humanity in our day. Its worst impact will probably be felt by developing countries in coming decades. Many of the poor live in areas particularly affected by phenomena related to warming, and their means of subsistence are largely dependent on natural reserves and eco-systemic services such as agriculture, fishing and forestry.”^[40]

On the question of public policy, Pope Francis is equally clear cut:

“There is an urgent need to develop policies so that, in the next few years, the emission of carbon dioxide and other highly polluting gasses can be drastically reduced, for example, replacing fossil fuels and developing sources of renewable energy.”^[41]

As for urgency, Pope Francis, as noted already, contrasts the nature of the scientific evidence, the impacts on the human family and biodiversity with the weakness of public policy response to date. speaking of the environment more broadly, the Pope states:

“These situations have caused Sister Earth, along with all the abandoned of our world, to cry out, pleading that we take another course. Never have we so mistreated our common home as we have in the last 200 years... It is remarkable how weak international political responses have been. The failure of global summits on the environment make it plain that our politics in subject to technology and finance. There are too many special interests, and economic interests easily end up trumping the common good and manipulating information so that their own plans will not be affected.”^[42]

As for those sceptical about the environmental consequences of current patterns of human behaviour, the Pope is scathing:

“As often happens in periods of deep crisis which require bold decisions, we are tempted to think that what is happening is not entirely clear... Such evasiveness serves as a license to carry on with our present lifestyles and models of production and consumption. This is the way human beings contrive to feed their self-destructive vices: trying not to see them, trying not to acknowledge them, delaying the important decisions and pretending that nothing will happen.”^[43]

On specific policy recommendations to deal with climate change, Pope Francis treads carefully. He is clear on the science. He is clear on the ethics. He is clear on the imperative for policy action. But he is mindful of the complexity of the technical policy debate about particular policy responses. Francis says,

“On many concrete questions, the Church has no reason to offer a definitive opinion; she knows that honest debate must be encouraged among experts while respecting divergent views.” But we need only take a frank look at the fact to see that our common home is falling into serious disrepair. The Pope would have us recognize that there is always a way out and that we can always redirect our steps, that we can always do something to solve our problems. Still, we see signs that things are now reaching a breaking point, due to the rapid pace of change and degradation...^[44]

It is plain that Pope Francis’ position on the science, ethics and policy imperatives of climate change are fundamentally different to those articulated by Cardinal Pell both before the Papal Encyclical, and since. Conservatives in the Church often speak of the danger of causing confusion among the laity among the many complex questions arising from the Church’s social teachings. These concerns have been reflected more broadly in the most recent Synod on the Family. We must, however, have some sympathy for confusion among the laity in this other area of the Church’s social teaching (namely climate change and the environment) where a Prince of the Church elects to embrace a position in such fundamental contradiction to that of a Papal Encyclical.

The Pope says the science on climate change is sufficiently clear. Cardinal Pell says it is not, and further that the purported science is without foundation. The Pope says all of humanity faces a common ethical challenge to protect the planet from climate change. Because Cardinal Pell disputes the science, he says there is little if any ethical imperative at all. And on the question of the policy imperative, the Pope speaks with urgency. Cardinal Pell describes policy measures as an unnecessary fad and an unacceptable cost to both companies and consumers.

A careful reading of the Encyclical also will see perhaps a preemptive Papal riposte to climate change skeptics within the Church. This can be found at paragraph 217:

“The external deserts in the world are growing, because the internal deserts have become so vast”. For this reason, the ecological crisis is also a summons to profound interior conversion. It must be said that some committed and prayerful Christians, with the excuse of realism and pragmatism, tend to ridicule expressions of concern for the environment. Others are passive; they choose not to change their habits and thus become inconsistent. So what they all need is an “ecological conversion”, whereby the effects of their encounter with Jesus Christ become evident in their relationship with the world around them. Living our vocation to be protectors of God’s handiwork is essential to a life of virtue; it is not an optional or a secondary aspect of our Christian experience.^[45]

Perhaps the Pope had Cardinal Pell in mind when this paragraph was written for the encyclical. Of course Cardinal Pell, and those who would support him in this debate, might argue that these conflicting positions on climate change are legitimate debates within the Church and that those outside the Church have no business involving themselves in these debates. There is, however, a problem with this logic. Namely that the Pope in his Encyclical explicitly addresses his remarks to the wider community when he says, “in this Encyclical, I would like to enter dialogue with all people about our common home”.^[46] In doing so, of course, Pope Francis follows in the long tradition of Pope Paul VI, John Paul II and Benedict XVI in addressing their concerns about environmental degradation to all peoples of good will.

After many years of silence in response to Cardinal Pell's public critique of my government's policy on climate change, the reason I have chosen to enter the debate now is, on the eve of the Paris Conference, we once again enter into a critical time both for Australia and the world. Prime Minister Turnbull will be carefully considering what approach Australia should adopt, both in Paris and beyond. So too will the rest of the international community as each nation prepares its own national policy commitments for the Paris Conference.

It is, therefore, no small matter, at this most critical of times, for the ethical waters, at least in the community of faith, to be so deeply muddled, by such radical climate change skeptics as Cardinal Pell, and for his commentary to largely go by without challenge. Of course he is free to contribute to the public policy debate in any manner he wishes. But it is equally important, particularly now that Cardinal Pell has become a global figure, to have his own almost "ex cathedra" statements on climate change challenged by others in the public space. It is high time his views were confronted head on. The stakes are now far too high for us all.

Conclusion:

As the Paris Conference of Parties approaches, there are grounds for both optimism and caution concerning the most likely outcome. There is optimism that the international community may have learned some of the lessons from Copenhagen. To some extent, this is reflected in radically changed policy positions both in Beijing and New Delhi, and further change in Washington as well

The truth is there still remains a vast gap between aspiration and reality. The cold hard reality is that based on the aggregation of current international commitments on greenhouse gas reduction, the planet will not be able to sustain temperature increases within the 2 degree threshold. In fact several recent calculations conclude that current national commitments will still see temperatures increasing by 3.5 per cent by century's end.^[47] While this is better than "business as usual", it still falls short of the reductions necessary to achieve our 2 degree target. There is much more work, therefore, to be done.

From both a scientific, ethical and practical policy perspective, it is critical that when governments gather in Paris that their agreement countenances the possibility of governments reconvening in the future in order to revisit the inadequacy of the international commitments made thus far. Current commitments go one-quarter of the distance, or based on other calculations, perhaps a third the distance they need to travel. If the Paris Agreement, including the national statements associated with it, do not embrace the possibility of an early return to the conference table so that more ambitious commitments can be made, there is a danger we will fall radically short of the mark. Ultimately, the planet does not lie.

Pope Francis' Encyclical provides us with the clarity of ethical guidance on the question of climate change the international community needs. He reflected this also in his recent address to the United Nations General Assembly. His address was remarkably well-received by the international community, Christian and non-Christian alike. The responsibility of the rest of us, including governments around the world, is to respond to his unequivocal, universal, ethical call to action, and those like it from other religious and non-religious leaders around the world. And to do so with concrete policy action which sustains our common home for the future.

[1] Williams, Rowan. *Faith in the public square*. A&C Black, 2012: p. 3.

[2] Williams, Rowan. *Faith in the public square*. A&C Black, 2012: p. 2.

[3] Australian Bureau of Statistics, 2010, 'Energy Production from Renewable Resources', 15 September. Accessed 2 November 2015

via:[http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1370.0~2010~Chapter~Renewable%20Energy%20\(6.5.3\)](http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1370.0~2010~Chapter~Renewable%20Energy%20(6.5.3))

[4] Clean Energy Council. 2014. "Clean Energy Australia Report 2014". Accessed 9 November 2015 via: <http://www.cleanenergycouncil.org.au/cleanenergyaustralia>

[5] Flannery, Tim Fridtjof, and Veena Sahajwalla. *The Critical Decade: Australia's Future: Solar Energy*. Climate Commission Secretariat, Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education, 2013: p. 4.

[6] Global CCS Institute. 2015. 'Large Scale CCS Projects'. n.d. Accessed on 9 November 2015 via: <http://www.globalccsinstitute.com/projects/large-scale-ccs-projects>

[7] Parliamentary Library. 2015. 'Australian climate change policy to November 2013: a chronology' 9 September 2015. Accessed 9 November 2015 via http://parlinfo.aph.gov.au/parlInfo/download/library/prspub/2875065/upload_binary/2875065.pdf;fileType=application%2Fpdf

[8] Department of the Environment, 'Summary of Annual Emissions – Quarterly Update of Australia's National Greenhouse Gas Inventory: June 2014', Department of the Environment website, p. 1, accessed 9 November 2015.

[9] Mark Butler. 2015. 'Speech to EUAA annual energy conference, Amora Hotel, Sydney'. 07 October 2015. Accessed 9 November 2015 via <http://markbutler.alp.org.au/news/2015/10/07/speech-to-euaa-annual-energy-conference-amora-hotel-sydney>

[10] Department of the Environment, 'Summary of Annual Emissions – Quarterly Update of Australia's National Greenhouse Gas Inventory: June 2014', Department of the Environment website, p. 1, accessed 9 November 2015.

[11] IPCC 2015, *Climate Change 2014 Synthesis Report*, p. 20. Accessed 2 November via: https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full.pdf

[12] IPCC 2015, *Climate Change 2014 Synthesis Report*, p. 20. Accessed 2 November via: https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full.pdf

[13] IPCC 2014, Chapter 5, Coastal Systems, Section 5.4.2.7.1, p. 380-381 – "The major impacts of sea level rise are changes in coastal wetlands, increased coastal flooding, increased coastal erosion, and saltwater intrusion into estuaries and deltas (McLeod et al., 2010), which are exacerbated by increased human-induced drivers (very high confidence). <https://goo.gl/1pv1tr>

[14] IPCC 2014 Synthesis Report, Section 3.2.1, p. 67 – "Coastal systems and low-lying areas will increasingly experience submergence, flooding and erosion throughout the 21st century and beyond, due to sea level rise (very high confidence)". <http://goo.gl/1RkoUO>

[15] IPCC 2014 Synthesis Report, Section 1.4, p. 53 – "Impacts of such climate-related extremes include alteration of ecosystems, and disruption of food production and water supply." <http://goo.gl/1RkoUO>; and Ibid., p. 54 – "Climate-related hazards affect poor people's lives directly through impacts on livelihoods, reductions in crop yields or the destruction of homes, and indirectly through, for example, increased food prices and food insecurity."

[16] IPCC 2014 Synthesis Report, Section 2.3.2, p. 69 – "Risks from vector-borne diseases are projected to generally increase with warming, due to the extension of the infection area and season, despite

reductions in some areas that become too hot for disease vectors (medium confidence).” <http://goo.gl/1RkoUO>

[17] Kevin Rudd. 2010. ‘Transcript of doorstep Nepean Hospital, Penrith’ *PM Transcripts*. 27 April 2010. Accessed 9 November 2015 via: <https://pmtranscripts.dpmc.gov.au/release/transcript-17250>

[18] Anthony Green. 2009. ‘A Double Dissolution in September 2010?’ *ABC*. 27 September 2009. Accessed 9 November 2015 via: <http://blogs.abc.net.au/antonygreen/2009/09/a-double-dissolution-in-september-2010.html>

[19] Rachel Sanderson and James Politi. 2015. ‘Reformer tries to bring light to closed world of Vatican finance’ *Financial Times*. 16 July 2015. Accessed 9 November 2015 via: <http://www.ft.com/intl/cms/s/0/7f429c28-2bc6-11e5-acfb-cbd2e1c81cca.html#axzz3qytmCN5s>

[20] Mischa Schubert. 2007. ‘Pell, the sceptic, not convinced world is warmer’ *The Age*. 04 October 2007. Accessed 9 November 2015 via <http://www.theage.com.au/news/national/pell-the-sceptic-not-convinced-world-is-warmer/2007/10/03/1191091193879.html>

[21] Linda Morris. 2006. ‘Pell challenges Islam – o ye, of little tolerant faith’ *The Sydney Morning Herald*. 05 May 2006. Accessed 9 November 2015 via <http://www.smh.com.au/news/national/pell-challenges-islam-o-ye-of-little-tolerant-faith/2006/05/04/1146335872951.html>

[22] Cardinal George Pell. 2010. *Test Everything: Hold Fast to What is Good*, Connor Court Publishers.

[23] Cardinal George Pell. 2009. ‘Without God We Are Nothing’ *Archdiocese of Sydney*. 04 October 2009. Accessed 9 November 2015 via: http://www.sydneycatholic.org/people/archbishop/addresses/2009/2009104_470.shtml

[24] Cardinal George Pell. 2011. ‘Be prudent with climate claims’ *The Australia*. 27 October 2011. Accessed 9 November 2015 via: <http://www.theaustralian.com.au/national-affairs/opinion/be-prudent-with-climate-claims/story-e6frgd0x-1226177730473>

[25] Cardinal George Pell. 2011. ‘Pell row with climate scientist heats up’ *Sydney Morning Herald* 14 March 2011. Accessed 9 November 2015 via: <http://www.smh.com.au/environment/climate-change/pell-row-with-climate-scientist-heats-up-20110313-1bsx6.html>

[26] Cardinal George Pell. 2011. ‘One Christian Perspective on climate change’. *The Global Warming Policy Foundation 2011 Annual GWPF Lecture*. 26 October 2011. Accessed 9 November 2015 via http://www.thegwpcf.org/images/stories/gwpcf-reports/pell-2011_annual_gwpcf_lecture_new.pdf

[27] Giles Parkinson. 2015. ‘Tony Abbott doesn’t believe in climate change, his business advisor says’ *RenewEconomy*. 17 March 2015. Accessed 9 November 2015 via: <http://reneweconomy.com.au/2015/tony-abbott-doesnt-believe-in-climate-change-his-business-advisor-says-77562>

[28] IPCC. 2014. *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.* (2014): 19.

[29] IPCC, 2013: Summary for Policymakers. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge: Cambridge University Press, Cambridge. Accessed 2 November via: http://www.climatechange2013.org/images/report/WG1AR5_SPM_FINAL.pdf

[30] John Cook et al. 2013. 'Quantifying the consensus on anthropogenic global warming in the scientific literature'. *Environmental Research Letters* 8.

[31] IPCC 2015, *Climate Change 2014 Synthesis Report*, p. 20. Accessed 2 November via: https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full.pdf

[32] World Bank 2015, Data Bank Figures. These per capita figures are adjusted for PPP. Accessed 2 November via: <http://databank.worldbank.org/data/reports.aspx?source=2&country=AUS&series=&period=>

[33] World Bank 2015, Data Bank Figures. These per capita figures are adjusted for PPP. Accessed 2 November via: <http://databank.worldbank.org/data/reports.aspx?source=2&country=AUS&series=&period=>

[34] Pope Francis. 2015. "Laudato si' – Encyclical Letter, Pope Francis." Vatican: the Holy See. Vatican Website. Libreria Editrice Vaticana, 24 May 2015. Accessed 9 November 2015 via: http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html: p. 13

[35] Pope Francis. 2015. "Laudato si' – Encyclical Letter, Pope Francis." Vatican: the Holy See. Vatican Website. Libreria Editrice Vaticana, 24 May 2015. Accessed 9 November 2015 via: http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html: p. 14

[36] Pope Francis. 2015. "Laudato si' – Encyclical Letter, Pope Francis." Vatican: the Holy See. Vatican Website. Libreria Editrice Vaticana, 24 May 2015. Accessed 9 November 2015 via: http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html: p. 12

[37] Pope Francis. 2015. "Laudato si' – Encyclical Letter, Pope Francis." Vatican: the Holy See. Vatican Website. Libreria Editrice Vaticana, 24 May 2015. Accessed 9 November 2015 via: http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html: p. 18

[38] Pope Francis. 2015. "Laudato si' – Encyclical Letter, Pope Francis." Vatican: the Holy See. Vatican Website. Libreria Editrice Vaticana, 24 May 2015. Accessed 9 November 2015 via: http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html: p. 18

[39] Pope Francis. 2015. "Laudato si' – Encyclical Letter, Pope Francis." Vatican: the Holy See. Vatican Website. Libreria Editrice Vaticana, 24 May 2015. Accessed 9 November 2015 via: http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html: p. 19-20

[40] Pope Francis. 2015. "Laudato si' – Encyclical Letter, Pope Francis." Vatican: the Holy See. Vatican Website. Libreria Editrice Vaticana, 24 May 2015. Accessed 9 November 2015 via: http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html: p. 20

[41] Pope Francis. 2015. "Laudato si' – Encyclical Letter, Pope Francis." Vatican: the Holy See. Vatican Website. Libreria Editrice Vaticana, 24 May 2015. Accessed 9 November 2015 via: http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html: p. 21

[42] Pope Francis. 2015. "Laudato si' – Encyclical Letter, Pope Francis." Vatican: the Holy See. Vatican Website. Libreria Editrice Vaticana, 24 May 2015. Accessed 9 November 2015 via: http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html: p. 29-30

[43] Pope Francis. 2015. "Laudato si' – Encyclical Letter, Pope Francis." Vatican: the Holy See. Vatican Website. Libreria Editrice Vaticana, 24 May 2015. Accessed 9 November 2015 via: http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html: p. 43

[44] Pope Francis. 2015. "Laudato si' – Encyclical Letter, Pope Francis." Vatican: the Holy See. Vatican Website. Libreria Editrice Vaticana, 24 May 2015. Accessed 9 November 2015 via: http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html: p. 44

[45] Pope Francis. 2015. "Laudato si' – Encyclical Letter, Pope Francis." Vatican: the Holy See. Vatican Website. Libreria Editrice Vaticana, 24 May 2015. Accessed 9 November 2015 via: http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html: p. 158

[46] Pope Francis. 2015. "Laudato si' – Encyclical Letter, Pope Francis." Vatican: the Holy See. Vatican Website. Libreria Editrice Vaticana, 24 May 2015. Accessed 9 November 2015 via: http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html: p. 4

[47] Climate Action Tracker. 2015. 'Comparison between Climate Action Tracker and Climate Interactive assessments'. 19 October 2015. Accessed 9 November 2015 via: <http://climateactiontracker.org/global/227/Comparison-between-Climate-Action-Tracker-and-Climate-Interactive-assessments.html>