

Sustainable Development: “Still” The Opportunity for Irish Economic Policymakers

Presidential Address

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Abstract: - Sustainable Development remains a concept easily ascribed to by populations but deceptively difficult to effectively operationalise in the context of modern economies and societies. This paper draws upon a Barrington lecture to the SSISI thirty years ago setting out the then challenge for Irish economic policymakers to both define and deliver upon a sustainable development future. Three decades later, this paper highlights how this “still” remains the challenge for Ireland as the climatic threat from human induced greenhouse gas emissions leads to “virtual certain” extreme environmental events from global warming. The United Nations Intergovernmental Panel on Climate Change (IPCC) has found that human activity is changing the climate in unprecedented and irreversible ways. Whilst the economic and social progress of Ireland in the last 30 years was inconceivable from the vantage point of the early 1990s, the paper argues that the statistical evidence is that our society has failed to grasp the opportunity from the perspective of having used the time wisely to address the challenge, but that the opportunities from both economic and technical advancement, along with an educated generational behavioural response, still provides the prospect, albeit in a limited timeframe, to achieve a sustainable development outcome.

Keywords: Sustainable Development, Climate Change, Environmental and Natural Resource Economics

JELs: E71, H1, Q01, Q1, Q4

1. INTRODUCTION

It is a great honour to deliver this Presidential Address of the Statistical and Social Inquiry Society of Ireland (SSISI) in its 175th year. The SSISI as an all island society, that has been in continuous existence since 1847, has always strived to tackle the pressing contemporary issues of the time by aligning statistical methods with empirical policy considerations. It is in that “spirit of earnest inquiry”, the title of Mary Daly’s 150th anniversary history of SSISI (Daly,1998), that I chose the subject of my paper.

The choice of a paper on sustainable development was made not just given its topical relevance in advance of the United Nation’s Conference of the Parties on Climate Change - COP26 - in Scotland this year, but also that it provides a 30 year arc back to the Barrington lecture I gave to the Society in the early 1990s. The title of that lecture was *Sustainable Development: The Challenge for Irish Economic Policy-Makers* (McCoy, 1993). It is with little imagination, but with significant more experience, that the title of my current address is merely amended to insert the word “Still”.

Sustainable development, in its operationalising, is still the challenge for the current overlapping generations within the population of Ireland. Since the 1990s, the awareness of environmental and development concerns, triggered in the run-up to the 1992 United Nations’ Earth Summit in Brazil, have at best been considered a subordinate objective to the continued primacy of economic growth as the driving objective of global communities (McCoy, 1992).

In the three decades that have passed, the concept of Sustainable Development has become more refined, but it remains the case that it continues to relate to the concepts of “environment, futurity and equity” as my University College London mentor, the late David Pearce and colleagues set out in their path breaking *Blueprint for a Green Economy* (Pearce *et al.*,1989). Echoing this, the United Nations in developing the **Sustainable Development Goals** (SDGs) within the last decade have defined their mission as “a blueprint to achieve a better, more sustainable future for all people and the world by 2030”.

The SDGs are a collection of 17 interlinked global goals reflecting the wide breath of issues that would come under the concept of sustainable development. The issues range over global imperatives to alleviate hunger, poverty, inequality; to achieve stable peace; enhance education attainment and respect diversity, along with environmental preservation goals which in turn come under a number of further categories related to air, water and biodiversity goals. **Climate action**, is specifically covered as SDG #13, with the ambition to “take urgent action to combat climate change and its impacts”.

My paper will by necessity restrict its focus on this Climate Change SDG, but I am conscious that a systems’ thinking approach to the broader sustainable development agenda requires holistic analysis on how constituent parts interrelate and work overtime within larger systems both physical, political and social. Indeed, one of the lessons I learnt back in the 1990s was not to see the economic production process as linear - with Inputs into Production into Outputs that are Consumed and in turn ending up as Waste, with little concern for feedback loops from pollution and degradation.

A Material Balance approach, or Circular Economy, draws us into an understanding of the **First and Second Laws of Thermodynamics**. The First Law is that matter is neither created nor destroyed but merely changes composition. The Second Law is that of entropy which is the degree of disorder in a system meaning in effect we can’t fully recycle without losing energy. My layman’s interpretation of these laws is that we have a limited number of resources on Earth and their usable form is likely to be diminishing over time. This would then challenge the conventional linear thinking of maximising the flow through the system, maximising a flow measure like GDP for instance, and instead see conservation of the stock of resources and slowing of the flow as a more optimal strategy.

Ecocentric perspectives would consider the ecological constraints as binding, whereas Technocentric perspectives would see the technical capacity to push back these limits to growth. This debate between **Ecocentrics** and **Technocentrics** on the growth dilemma will re-emerge as the international agreements’ constraints become more binding. Ecocentric viewpoints would see natural capital as being non-compensatable, or unsubstituable, by growth in other capital forms like human, social, technical or financial. This would constitute a **Strong Form** of Sustainable Development. My simple categorisation of Technocentric would ascribe to a **Weak Form** where the capitals are considered substitutable for each other.

Take a simple example to illustrate. A country finds a fossil fuel resource like an oil field. As a non-renewable or exhaustible resource, the Strong Form would recommend that the resource remains untapped whereas the Weak Form might consider the pollution damage from fossil fuel extraction and use to be capable of being compensated by investing the financial resources from its sale and the proceeds used to invest in the country's human capital stock by education and training and/or into social capital by funding social welfare or pension schemes.

The last decade has seen an emphasis on the so-called ESG agenda, covering **Environment-Social-Governance** issues. The ESG agenda is sustainable development redux within a corporate business context.

- The Environment heading covers aspects of circular economy; material balance; decarbonisation; resource efficiency; biodiversity; recycling and waste.
- The Social heading covers aspects of human rights, labour rights, health and safety; diversity and inclusion; skills and talent; ethical sourcing and trading; community engagement and access; responsible marketing.
- The Governance heading covers aspects of compliance and reporting; tax transparency; business ethics; data protection and cyber security.

These lists are non-exhaustive but capture the diversity and complexity involved.

In my role as CEO of Ibec, Ireland's largest business representative organisation, I have witnessed the emergence of a global business focus towards Stakeholder capitalism away from Shareholder capitalism, which would have been the dominant paradigm thirty years ago. Milton Friedman's exhortation that the business credo should be "the business of business is business" and that the single objective should therefore be shareholder value maximisation is still largely the default position (Friedman, 1970). ESG concerns, whilst factored in additively, are still subordinate in most cases to the financial metrics of corporate sustainability or going concern objectives.

The nascent shift in thinking towards stakeholder values being maximised are challenging this dominant shareholder paradigm. Ibec's Business Leaders conference this year on *Stakeholders and Sustainability* captures the corporate zeitgeist where both sustainability and stakeholder engagement are seen as going hand in glove with traditional business objectives.

The other global pendulum swing over recent decades, with relevance for the concept of sustainable development, is **collectivism**. Collectivism is a reaction to the period of individualism that has extended over four decades across the western world. The Great Financial Crisis of a decade ago was a catalyst for revising some of the more extreme aspects of **individualism**, that ultimately gave rise to what many refer to as **precariousness**.

Whilst precariousness may refer to the social and governance aspects of ESG, workers' rights and data protection as examples, it clearly captures the environmental dimension too. The stakeholders in environmental terms must be considered as cross jurisdictional particularly so in the context of Ireland's post Brexit Shared Island initiatives. It is far too short sighted to think that the jurisdictional borders of the island will determine the spillovers on some of the great challenges of our time. The sustainability of our shared natural environment and co-joined energy and waste systems gives tangible expression to this mutual interdependence.

The European Union, as part of the international environmental agreement set out in Paris in 2015, aims to substantially reach a net zero carbon union by 2050, with an intermediate target of reducing greenhouse gas emissions by 55% of 2018 levels by 2030. This intermediate target constitutes a near doubling of the output ambition outlined just three years ago. Given the costs of abatement are nonlinear, in that they will increase very significantly for greater percentage reductions, the costs will significantly be more than doubled. Post the disruption from the global Covid pandemic, there is also less time to 2030 to achieve the target. Whilst the benefits of swift action are also potentially non-linear, the test now is to do more, at significantly higher costs and with less time. It certainly falls under the title of "**Challenge**".

The public discourse, such as it is, appears to be firmly focused on mitigation with less emphasis on adaption as was the case 30 years ago. Discussions on what forms of sustainable development, have still in my view, yet to be articulated. What trade-offs are acceptable and, crucially, correctly valued. These valuations and trade-offs, and the consequent opportunities of the transition to a net zero carbon world, will depend on whether an ecocentric or technocentric viewpoint is dominant.

The paper is broken down into three phases. I examine the recent past looking back on the past thirty years, then assess where we are in the present day whilst concluding on what prospects for the future might hold and how a future Presidential address to the Society might judge how wrong I got it in this earnest inquiry.

2. THE PAST IS ANOTHER COUNTRY

When reflecting upon my Barrington lecture from the early 1990s, L.P Hartley's words of "the past being a foreign country: they do things differently there" was on my mind. In 1990, when I first joined the Economic & Social Research Institute (ESRI), the existence of both the SSISI and the topic of environmental economics were a revelation to me.

The first revelation was SSISI. My office at the ESRI offered me the opportunity to witness a group of senior academics meet regularly early evenings after work in the then Institute Director Kieran Kennedy's office. On inquiring, I was told it is either the Council of SSISI, which I had never heard of, or the Board of Directors of Home Farm FC, which I had. Both meetings seemed to have a significant overlap of membership, but another great personal mentor, and legendary statistician, Denis Conniffe put me on the path to SSISI today. Home Farm's fortunes appear to have not been too sustainable since, but I don't think my choice of company mattered.

The second revelation under the guidance of another former SSISI President, John FitzGerald, was to delve into the deep end of the environmental agenda, of which I knew: precisely nothing. My familiarity with the scientific periodic table was stretched as I had to quickly learn what sulphur, carbon and ozone were about and identify their symbols too. As the Irish Government in 1990 held the then European Community rotating Presidency, with the lofty ambition of it being declared a "Green Presidency", there was plenty of interest in the work. John and I worked on topics like acid rain, nitrate pollutants and carbon pricing. Our joint work on energy sustainability and potential double dividends from carbon taxes within a macroeconomic model (FitzGerald and McCoy, 1992) felt like being at a knowledge frontier, particularly as the UN Earth Summit in 1992 brought forward many research requests which could best be summarised as "what's all this environmental stuff about?". Perhaps, some things remain constant.

The Irish economy and society were also remarkably at different stages of relative development to other nations in the early 1990s, with conversations on "jobless growth" and rising greenhouse emissions and pollution alongside age-old emigration patterns. The remarkable economic growth turnaround story and the development of rising population, employment and wealth is well documented but my focus here is on how the concept of sustainable development failed to advance in lockstep. What surprises me is that the past may indeed be another country, if not quite foreign, but that the issues of the 1990s as captured in my Barrington lecture are still germane.

The first IPCC report in the late 1980s was certain that the natural greenhouse effect was already keeping the Earth warmer than it otherwise would be. Emissions resulting from human activities were substantially increasing the atmospheric concentrations of the greenhouse gases like carbon dioxide, methane and nitrous oxides. The main greenhouse gas, water vapour was substantially enhancing global warming. Based on certain models in the 1990s it was expected that the average pace of increase of global mean temperature during the next century of about 0.3°C per decade would arise under business as usual. This was expected to increase global mean temperature by 1% above 1980 values by 2025. Land surfaces were expected to warm more rapidly than the oceans. The oceans act as a heatsink and so delayed the full effect of a greenhouse warming. The report considered that global mean surface air temperature had increased by between 0.3-0.6°C over the previous 100 years.

Whilst the numbers and model sophistication has changed, the statistical probabilities of warming sound remarkably like today. The 1990s consideration of climate change response strategies presented formidable difficulties for policymakers as they do now, with uncertainty in respect to how effective specific response options would be in actually averting potential climate change. Another uncertainty common to then and now is in respect to cost effects on economic growth and other economic and social implications of specific response options. The degree to which options are viable will also vary considerably depending on the region or country involved. For each country the implications are specific options will depend upon its social, environmental and economic context. New policies would be required. All sounds familiar to today, the past may not be that foreign.

Environmental objectives can be pursued through regulations or by market based economic instruments - the latter through their encouragement of flexible selection of abatement measures to encourage innovation and the development of improved technologies and practices for reducing emissions. Market based solutions frequently offered the possibility of achieving environmental improvements at lower costs than through regulatory

mechanisms. It was conceded then too that it was not likely, however, that only market based instruments would be applicable to all circumstances.

Factors were considered as potential barriers to the operation of markets in achieving environmental objectives included information problems which can often cause markets produce less effective or unfavourable environmental outcomes. Existing measures like subsidies for heavy polluters and institutions which encourage individuals behave in environmentally damaging ways were other forms of market failures. Property rights that lack characteristics of universality, exclusivity, enforceability and transferability given rise to long identified problem outcomes in the overuse of natural resources in the tragedy of open access, externalities from too much pollution and so on.

Governments were encouraged to undertake accelerators and coordinated research programmes to reduce scientific and socio-economic uncertainties to improve the basis for response strategies and measures. The progress over the decades were not consummate with the challenge. Developing countries need additional financial resources to promote efficient use of energy resource and the development of cleaner renewable energy such as biomass wind power wave power hydroelectric and solar, for utilisation of forest management and agricultural techniques. Facilitating the development and transfer of clean and safe technologies were highlighted as crucial.

The science of global warming was still contested in the early 1990s and the statistical models used had greater unknowns and uncertainty embedded. The impact of clouds for instance on the Albedo Effect was one such contested factor as to whether they absorbed or reflected heat. The inherent limitations or ability to estimate future rates of population, levels of economic growth, individual behaviour responses, technological innovation and other factors which are crucial for determining emission rates over the course of the next century gave rise to uncertainty in the projections of greenhouse gas emissions. These inherent difficulties meant that the IPCC statements on global warming were much less assertive in the 1990s than they have increasingly become since.

By 1994, the United Nations Climate Change Framework Convention was set up with the first Conference of the Parties, COP1, meeting in Berlin in 1995. Twenty-five COPs later, we see the assertions from the global panel of scientists on global warming becoming more trenchant in its warnings and recommendations. By midway through this epoch the Stern Review in 2006, under the Chairmanship of Sir Nick Stern at the London School of Economics, addressed the economics of climate change. The Review (Stern, 2006) concluded that having assessed a wide range of evidence and using several different techniques to assess costs and risks that there was a simple conclusion: the benefits of strong and early action far outweigh the economic costs of not acting.

The view which appeared to have widespread and building support was that there was still time to avoid the worst impacts of climate change, if strong action was taken then. That climate change could have very serious impacts on growth and development with the costs of stabilising the climate being significant but manageable. Delay was considered to be dangerous and much more costly, whilst action on climate change is required across all countries, but it need not cap the aspirations for growth of rich or poor countries. The Stern Review stated that a range of options existed to cut emissions; strong, deliberate policy action is required to motivate their take-up; and climate change demanded an international response, based on a shared understanding of long-term goals and agreement on frameworks for action.

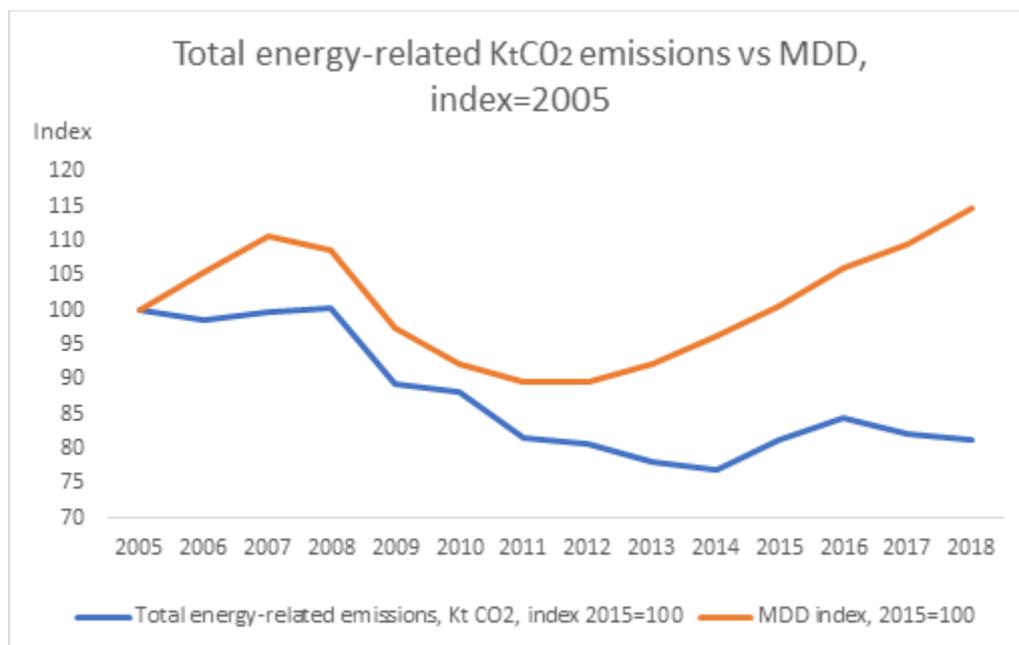
The momentum for action in 2006 was palpable, the success of the UN Millennium Goals on poverty demonstrated that countries acting globally around a shared purpose could yield remarkable results, but the Great Financial Recession of 2007 appears to have relegated the global climate response once more. The Paris Agreement under COP21 in 2015, appeared to have put target ambitions back on track with 191 countries signed up to the targets of keeping mean global temperatures well below 2°C on pre-industrialised levels with a preference to limits to 1.5°C. In contrast to the 1997 Kyoto Protocol the distinction between Developed and Developing countries is less distinctive under the Paris Agreement, reflective of convergence in economic development.

In Ireland, the trajectory of GHGs between 1990-2019 has risen from 54.4 million tonnes in 1990 to a peak of 70.5 million tonnes in 2001 with an oscillation around an average of 64 million tonnes since (EPA, 2020). There is no clear downward trend despite the international commitments. Many sectors have been remarkably stable without any discernible downward trend apart from Waste, Industrial Process and Residential. Transport has been the most substantial increase doubling in emissions with Agriculture, despite much public comment, being quite stable if rising. Economic output during this period trebled indicating the most remarkable decoupling with GHG emissions, see Table 1 and Figure 1 which uses Modified Domestic Demand (MDD) to strip out the impacts of foreign direct investment in the Irish output numbers demonstrates this.

Table 1: Carbon Dioxide CO₂ equivalent emissions 1990-2019

Greenhouse gas emissions, KtCO ₂ eq.	Waste	Agriculture	F-Gases	Industrial Processes	Transport	Commercial Services
1990	1552.05	19333.88	34.59	3274.57	5148.44	994.85
2009	521.65	19117.71	1151.27	1660.01	12461.38	752.99
2019	904.85	21148.5	916.47	2267.56	12199.8	891.48
%Change, 1990-2019	-41.7%	9.4%	2549.5%	-30.8%	137.0%	-10.4%
%Change, 2010-2019	73.5%	10.6%	-20.4%	36.6%	-2.1%	18.4%

Figure 1: Decoupling of emissions from Modified Domestic Demand



In terms of air quality, the 1990 to 2019 demonstrates further improvement in sulphur dioxide (SO₂) emission reduction by 67%, nitrogen oxides (NO_x) with 21% reductions, particle matter (PM_{2.5}) down 30%. Other gases like Ammonia (NH₃) and Non-Methane Volatile Organic Compounds (NMVOC) are still rising, see Figure 2. After years of steady improvement, water quality in Ireland is in decline, primarily due to nutrient pollution. These air, water and reduced biodiversity trends are putting Ireland’s image as a clean and green land at risk.

Table 2: Air pollutant emissions 1990-2019

Air pollutant emissions	SO ₂ , Kt	NO _X , Kt	NM _{VOC} , Kt	NH ₃ , kt	PM _{2.5} , Kt
1990	183.642	176.632	147.045	109.612	32.314
2009	32.655	124.038	113.836	116.748	16.94
2019	10.874	98.031	113.743	125.404	11.79
% Change, 1990-2019	-94.1%	-44.5%	-22.6%	14.4%	-63.5%
% Change, 2010-2019	-66.7%	-21.0%	-0.1%	7.4%	-30.4%

3. THE PRESENT IS AN OPPORTUNITY

The United Nations Intergovernmental Panel on Climate Change (IPCC) 2021 Report has found that human activity is changing the climate in unprecedented and irreversible ways with warnings of increasingly extreme heat waves, droughts and flooding and that goals of keeping global temperature rises beneath 2°C being missed if massive Greenhouse Gas (GHGs) emissions cuts do not take place in the coming years. The IPCC report was described by the United Nations Secretary General as a “Code Red” for humanity under all the greenhouse emission scenarios considered by the scientists involved. The target of keeping temperature rises below 1.5 °C and 2.0°C will both be broken this century unless substantial GHGs cuts take place.

Among other key points in the IPCC report are that global surface temperatures have risen by over 1°C in the decade between 2011 and 2020, with the past five years having been the hottest on record since 1850. The recent rate of sea level rise has nearly tripled compared with the period 1900-1970 and that there is a 90% likelihood that human behaviour is the main driver of the global retreat of glaciers and decrease in Arctic sea ice since the 1990s. It is “virtually certain” that extreme weather events such as heat waves have become more frequent and more intense since the 1950s with cold events becoming less frequent and less severe.

In Ireland, the Climate Action and Low Carbon Development Act 2021 that was signed into law by President Michael D Higgins in July means that Ireland is legally obliged to achieve net zero emissions by 2050 but also to achieve over 50% reduction in GHG emissions by the end of the current decade. The Act provides a framework to meet Ireland’s international and EU climate commitments. The immediate target of reducing emissions by 2030 is challenging at 7% per year (Dean, 2020) but it is also an opportunity to transform the economy to create new jobs, protect the natural environment and build a greener, fairer future.

The policy environment has been significantly improved over the last 30 years by the establishment of both the Environmental Protection Agency (EPA) and the Climate Change Advisory Council (CCAC). The EPA is responsible for protecting and improving the environment as a valuable asset for the people of Ireland, plays a key role in environmental regulation provision of knowledge and advocacy for the environment. The CCAC is an independent body tasked with assessing and advising how Ireland is making the transition to a low carbon, climate resilient an environmentally sustainable economy by 2050. Both entities help focus climate action as a primary objective for Irish society. The hearings by the parliamentary Joint Oireachtas Committee on Climate Change and the Citizens’ Assembly have been notable additions to public discourse in the last decade. Media coverage in Ireland, like in other societies, remains modulated in highlighting dramatic weather events to drive awareness whilst having to compete with unregulated social media commentary of dubious integrity. Robbins (2020) provides some interesting insights on the media and climate change interactions in Ireland specifically.

The Irish economy has been dramatically transformed over the timespan, but in the last decade in particular has witnessed spectacular economic growth. Since 1990, the Irish economy has benefited from the peace process on the island, by the establishment of the common euro currency, the integration and enlargement of the EU member states and the Celtic Tiger population and economic growth spurt. Despite the fallout from the global financial crisis from 2007 to 2011,

Ireland has experienced the most remarkable growth predicated on corporate intangible asset migration into Ireland which has more than doubled economic activity whilst substantially increasing disposable incomes and wealth positions. Ireland has been catapulted to the top of global wealth tables, an inconvenient truth for many both domestically and internationally. Against this backdrop, there is accumulating evidence that indicates climate change awareness and concerns has increased globally. This would be consistent with the **Kuznets' Environmental Hypothesis** that as societies become increasingly affluent, environmental awareness increases.

A recent ten-year panel data study (Milfont *et al.*, 2021) confirms that the generation gap about climate beliefs shows that younger people care more about climate change than older people. The study over the period 2009-2018 using panel data of 56,000 New Zealanders tests whether the belief that “climate change is real” and “climate change is caused by humans” differs between age cohorts. There are twelve five-year birth cohorts, spanning those born between 1936-1995. Results confirms a generation gap in average (mean, intercept) climate change beliefs but not over time increase (slope). The generation gap occurs because older cohorts started from lower initial belief levels around 2009, but all age cohorts increased their belief levels at similar rates over the last decade and these results were not qualified by respondents gender. The findings offer hope for collective action that bridges efforts across generations and indeed might be a prelude to a **collective consciousness** about climate change given the high educational attainments levels in Ireland.

The Irish Government is expected to propose a series of Carbon Budgets covering the two five-year periods 2021-2025 and 2026-2030. The world leading Science Foundation Ireland Research Centre on Energy-Climate-Marine, MaREI notes that both Carbon Budgets aim to reduce GHG emissions by 51% by 2030 relative to 2018. MaREI considers the options in trajectories towards the target and the big choice is between Early or Delayed Action scenarios (Ó Gallachoir, 2021).

The initial starting level will be substantially determined by role of Land Use, Land Use Change and Forestry (LULUCF). This sets a binding commitment for each EU Member State to ensure it is accounting for emissions from land use that are entirely compensated by an equivalent removal of carbon dioxide from action in the sector. It is an offset or “no debit” rule in accounting. The national peatlands and forests are sources of carbon capture, but as they are exhausted by harvesting, new replenishment stocks are required. In the case of peatlands, or bogs, they are exhaustible fossil fuel resources, so they need to be preserved, whilst forestry assets are renewable resources that require careful husbandry to ensure net carbon neutrality.

My paper in 1993, specifically used peatlands and bogs as a case-study on how valuation techniques could help operationalise sustainable development. The evolution of the peatland management and the transformation of Bord na Mona in the last thirty years is a real example of the necessary refocus towards conservation. The process involves real hard trade-offs to ensure “just transitions” for the stakeholders whose livelihoods are displaced but these are an inevitable consequence of adopting the targets of emission reductions required to mitigate global warming.

4. REFLECTION ON THE FUTURE

After thirty years, the global economic model is fundamentally transformed. More people live on Earth and they do so in better economic conditions and in more peaceful, stable political environments than at probably any point in history, is a remarkable achievement (see trusted source site like *Our World in Data* relied upon by the UN, World Bank and major publishing and broadcasting institutions). Pinker (2018) argues that life has been getting better for most people by using 15 different measures of human wellbeing to support this argument, with the most obvious being the uncontroversial fact that, statistically, people live longer and healthier lives on average than ever before. But against this Panglossian interpretation, the world has never appeared more vulnerable to risks facilitated by technological advances in terms of pandemics, cyber security attack or climatic change induced disasters.

The threat from global warming remains contested in some quarters but nothing like the scepticism that which existed in the early 1990s. The scientific and statistical evidence amassed in the last thirty years is far from incontrovertible but appears compelling. The IPCC results appear credible from empirical evidence and the one experience I have personally come to appreciate is that truth is not the most important characteristic in environmental politics: credibility is. It is what is believed that is important and we might expect people to act upon their beliefs. The last decade has rocked our collective faith in sources of truth from the explosion in the internet and social media.

Credibility in the global warming hypothesis has grown dramatically in the last thirty years. Believing there is a problem to be tackled is but the beginning. The multitude of pathways and scenarios in addressing the problem makes for a complex problem to solve. As Irish climatologist John Sweeney, a discussant on my 1993 lecture, has recently commented that research capacity and capability, aided by greater statistical computing power, has enabled greater clarity on what future climate scenarios are available to us. The research work of MaREI, in particular, is noteworthy in its excellence in this domain.

As Sweeney (2020) points out, Ireland is not identified internationally as showing leadership in pushing for increased mitigation ambition within the EU, but he sees social consensus on climate change shifting led by the youth and NGOs to “move beyond science and economics to a higher plane”. I don’t share that assessment, whilst I share the optimism. Whilst the younger generational awareness is substantial, I don’t believe we have moved “beyond” either the science or the economics if by moving beyond infers we accord either sufficient focus and understanding to both. By not fully appreciating the interplay of science and economics in our society we limit our capacities to address the trade-offs between the generations and socio-economic groupings that are necessary for operationalising sustainable development objectives.

Reflecting on the last thirty years in Ireland on the progress towards a sustainable development focused society, I offer the following observations. The lack of binding and enforceable targets with a full societal appreciation of the enormity and hard trade-offs involved has meant that progress has been uneven at best. It has not been a spectacular failure, as some more ecocentric commentators would suggest given the enormous social and economic progress achieved in reversing population decline from emigration, to creating world class living standards and quality of career opportunities, supportive social protection nets and enlightened global mindsets within the population. The decoupling of GHG emissions from economic growth has been significant but the challenge to go further by halving emissions within a decade and to being net zero carbon within the next 30 years is daunting but the technological progress of the last 30 years must offer us some confidence.

The challenge is not so much the technical know-how but rather the societal know-what. Slogans and trite virtue signalling from all sectors of society reveal an ignorance of the task at hand to achieve sustainable development. The strong form of sustainable development which collapses quickly to stating mitigation not adaption is always and everywhere the only outcome, that offsets in other jurisdictions are somehow morally repugnant when emission reductions is best done where the economic costs are least and by facilitating investment and technology transfer into developing nations to achieve other societal objectives, that natural capital is always superior to human, social and technology capital; each in turn compounds the problem rather alleviates it and pushes off the path of solution.

If prediction must be made, best not do so about the future. However, if we must, I do have one prediction. If a technocentric perspective does not form part of the response to our global climate challenge, a pure ecocentric one will certainly deliver a dystopic outcome dividing not just nations but socioeconomic and intra-generational groups within nations. As Ireland embarks on a post-Covid pandemic, post-Brexit decade, the challenge of sustainable development is still the challenge for policymakers, be they economic or not.

Lest I end on a negative note for posterity, I remain optimistic that the sustainable development challenge can be met, perhaps not in the initial short-term timescale the IPCC recommends, but by human ingenuity and solidarity every anthropogenic problem can be tackled. Every epoch through time teaches us that with sufficient statistical and social inquiry most challenges can be overcome. The Irish famines of the 1840s - precursors to the establishment of SSISI in 1847 - should remind succeeding generations that security of supply of essentials for existence should not be taken for granted: be that food, energy or shelter. Contemporary concerns on energy and housing should not blind us to how important our modern food supply chains are and security of supply needs to be focused upon in our decarbonisation transition.

To finish on a quote from *Ulysses*, by Tennyson (not Joyce), published fairly contemporaneously in 1842 when our Society was being created:

“Tho’ much is taken, much abides; and tho’
We are not now that strength which in old days
Moved earth and heaven, that which we are, we are;
One equal temper of heroic hearts,
Made weak by time and fate, but strong in will
To strive, to seek, to find, and not to yield.”

It is my hope that our Society continues to not yield in its social inquiry, informed by statistics, on topics of interest for our future generations over the next 175 years and beyond.

References

- Daly, M.E. (1998), *The Spirit of Earnest Inquiry: Statistical and Social Inquiry Society of Ireland 1847-1997*, Waterstones.
- Dean, P. (2020). *Government formation: Can 7% annual reduction in emissions be achieved*, MaREI.
- EPA, (2020). *The Status of Ireland’s Climate 2020*. Editors W.C.A. Cámaro Garcia and N. Dwyer, Research Report 386, Environmental Protection Agency.
- FitzGerald, J. and D. McCoy (1992), *Economic Effects of Carbon Taxes*, Policy Research Series 14, Economic and Social Research Institute, Dublin.
- Friedman, M. (1970), “The Social Responsibility of Business is to Increase Its Profits”, *New York Times Magazine*.
- McCoy, D. (1992), “The Earth Summit: What’s At Stake For Developing Countries”, *North-South Issues*, Trocaire, Dublin.
- McCoy, D. (1993), “Sustainable Development: The Challenge for Irish Economic Policy-Makers”, *Journal of the Statistical and Social Inquiry Society of Ireland*, Vol. XXVI, Part V, pp 55-91.
- Milfont, T., E. Zubielevitch, P. Milojev, C. Sisley, (2021), “Ten-year panel data confirm generation gap but climate beliefs increase at similar rates across ages”, *Nature Communications*.
- Ó Gallachoir, B. (2021), *Carbon Budgets 2021-2030: A bridge from climate ambition to climate action*. MaREI.
- Pearce, D.W. A. Markandya, E.B. Barbier (1989), *Blueprint for a Green Economy*, London: Earthscan.
- Pinker, S. (2018), *Enlightenment Now: The Case for Reason, Science, Humanism, and Progress*. Penguin.
- Robbins, D. (2020), “Climate Change and the Media”, *Ireland and the Climate Crisis*, Editors D. Robbins, D.Torney, P. Breeton, pp 169-183, Palgrave.
- Stern, N. (2006), *The Economics of Climate Change: The Stern Review*, Cambridge University Press.
- Sweeney, J. (2020), “Climate Change in Ireland: Science, Impacts and Adaption”, *Ireland and the Climate Crisis*, Editors. Robbins, D.Torney, P. Breeton, pp 15-36, Palgrave.