

Presidential Address

Sustainable Development: ‘Still’ the Opportunity for Irish Economic Policymakers

Danny McCoy

IBEC

(read before the Society, 21st October 2021)

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 (though entropy relates to a closed system which Earth is not quite as it receives energy from outside the system from the Sun). This interpretation of the laws of thermodynamics 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 unsubsittutable, 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 various forms of 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, food production 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 1990 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 Football Club, 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.

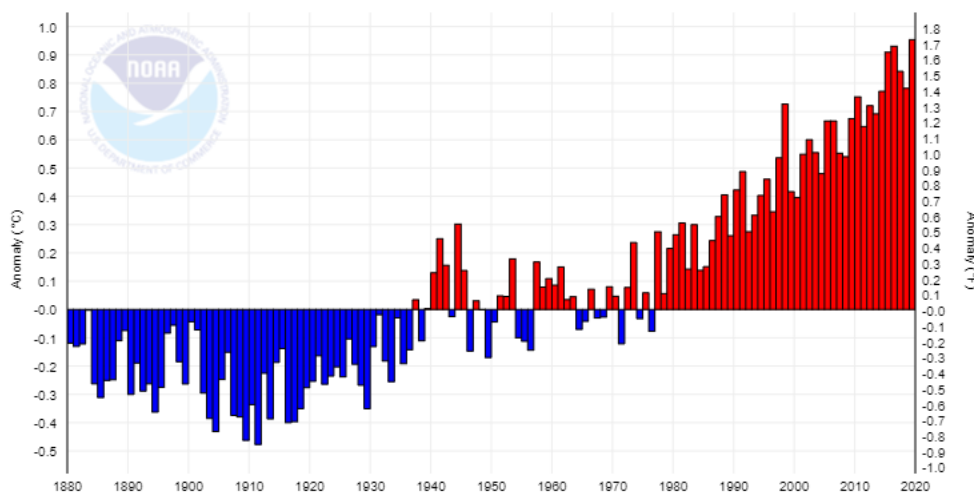
The Irish economy and society were also remarkably at different stages of relative development to other nations in the early 1990s, with conversations on "jobless growth" and rising greenhouse emissions and pollution alongside age-old emigration patterns. The remarkable economic growth turnaround story 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. Evidence that the Earth was increasingly warming since the 1970s, as seen in Figure 1 below, preceded by experiences of cooling up to the then First UN Earth Summit in Stockholm in 1972.

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.

Figure 1: The Earth experiencing warming since the 1970
Global Land and Ocean Temperature Anomalies, June



Source: EPA, (2020). *The Status of Ireland's Climate 2020*

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 2 which uses GDP, GNP and 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

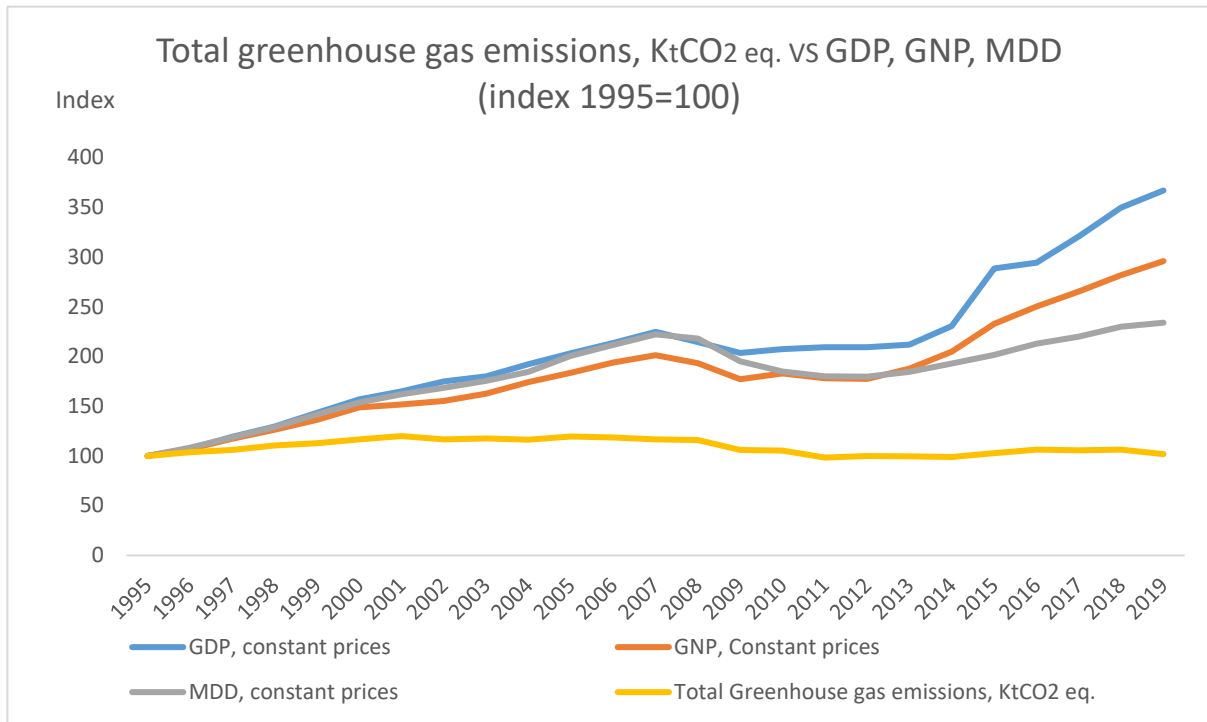
Greenhouse gas emissions, KtCO₂ eq.	Waste	Agriculture	F-Gases	Industrial Processes	Transport
1990	1552.05	19333.88	34.59	3274.57	5148.44
2009	521.65	19117.71	1151.27	1660.01	12461.38
2019	904.85	21148.5	916.47	2267.56	12199.8
% Change, 1990-2019	-41.70%	9.40%	2549.50%	-30.80%	137.00%
% Change, 2010-2019	73.50%	10.60%	-20.40%	36.60%	-2.10%

Greenhouse gas emissions, KtCO₂ eq.	Commercial Services	Public Services	Manufacturing Combustion	Residential	Energy Industries
1990	994.85	1115.26	4097.82	7521.29	11327.55
2009	752.99	842.93	4135.38	8513.49	13199.57
2019	891.48	887.34	4589.2	6527.18	9445.25
% Change, 1990-2019	-10.40%	-20.40%	12.00%	-13.20%	-16.60%
% Change, 2010-2019	18.40%	5.30%	11.00%	-23.30%	-28.40%

Total Greenhouse gas emissions, KtCO₂ eq.	1990	2009	2019	% Change, 1990-2019	% Change, 2010-2019
		54,400	62,356	59,778	9.9%

Source: EPA, (2020). The Status of Ireland's Climate 2020

Figure 2: Decoupling of GHG emissions from Economic Activity 1995-2019



Source: EPA, (2020). The Status of Ireland’s Climate 2020

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 Table 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	NMVOC, 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%

Source: EPA, (2020). The Status of Ireland’s Climate 2020

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 since 1970, 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.

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 **Environmental Kuznets' 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 insitutions). 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 the 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, instead most key statistics of progress over the lifetime of SSISI are a historic high point. 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 food 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, and the decision-makers in the business, public service, trade union, academic and research communities it uniquely brings together, continue 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.

RESPONSE TO THE PRESIDENTIAL ADDRESS BY MICHAEL D. HIGGINS, *UACHTARÁN NA hÉIREANN (PRESIDENT OF IRELAND)*

This evening we have heard from the President of the Statistical and Social Inquiry Society of Ireland, Danny McCoy his paper, entitled ‘Sustainable Development: *Still* The Challenge for Irish Policymakers’. It was a *tour de force*. It revisited a previous ground-breaking paper of his from almost 30 years ago, one for which he was awarded the Society’s prestigious Barrington Medal, and, may I add, this was at a very young age!

As I revisited that excellent paper from 1992, I was more than a little depressed to consider how little progress has been made in the last three decades on the topic of sustainable development and, in particular, climate action.

The late 1980s and early 1990s had given way to sustainable development becoming a mainstream concept thanks, among other developments, to the influential 1987 report of the World Commission on Environment and Development, or ‘Brundtland Report’ as it is commonly known, named as it is after its chairperson, the then-prime minister of Norway.

That report made what was a seminal contribution to the ecological discourse. As well as providing the modern three-pillared definition of sustainability, it also grounded the concept of sustainable development in intergenerational terms: “Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs”.

Academics, such as David Pearce from University College London and Frank Convery from University College Dublin, were to the forefront of the environmental economics debate, offering suggestions as to how sustainable development might be operationalised for environmental policy, making the case that the environment was ‘under-valued’ by mainstream economics in economic evaluations, such as cost-benefit analysis, and proposing that environmental assets, or natural capital, be considered just as important as other endowments, resources, in our capital stock.

The 1992 United Nations Earth Summit in Rio de Janeiro, at which I was present as part of the team making a documentary entitled ‘Seven Days to Save the World’, was a milestone and a moment of hope, created as a response to emerging crises. The belief and hope was that UN member states could cooperate together internationally on development issues relating to sustainability, such issues being global in impact were too big for individual member states to tackle in isolation.

The conference had its contradictions. Organised by Maurice Strong for the UN, the Business Council for Sustainable Development enjoyed full participation rights alongside Member States. Its foreseeing Vice-Chair Mr Agnelli believed that if capitalism was to survive, it had best run with the unstoppable concept of sustainability!

On the other hand, I recall interviewing indigenous peoples on a Greenpeace boat while at the Earth Summit in Rio. They had no direct presence. Indigenous peoples and those in Small Island Developing States remain among the most vulnerable to the impacts of climate change. Indigenous peoples like those I met in 1992 have been shamefully excluded from direct representation at international conferences on climate change and biodiversity.

It is at the recent World Summit of Indigenous Peoples and Nature at the International Union for the Conservation of Nature’s World Conservation Congress in Marseilles that they had for the first time direct representation. “Recognition” was, I recall, the word invoked time and again by indigenous leaders during the conference, an event which ran alongside the Global Diversity Conference held in Marseilles last month.

Rio was useful in mainstreaming and capturing sustainability concepts, yet it is so disheartening that so many of the agreements made in Rio have not been realised regarding such fundamental issues as fighting poverty and cleaning up the environment. And while much has occurred since then, both in Ireland, at the EU level, and internationally, including a series of annual UN Conferences on climate change, some of which have proved more successful than others, as well as the UN 2030 Agenda and Sustainable Development Goals, we now find ourselves on the precipice of environmental disaster, ecosystems collapse and runaway biodiversity loss. Delivering on the United Nation Sustainable Development Goals is now a first-order moral issue for our very survival.

The decoupling of greenhouse gas emissions from economic growth in Ireland has been significant, as Danny McCoy has noted in his Presidential Address. It is a gain, but it can hardly be a source for much self-congratulation. Gross Domestic Product in Ireland, as we know, is a volatile statistic, prone to enormous fluctuations resulting from the significant presence of multinationals, whose profits, subsequently repatriated, are included in this measure of national income, distorting, as it does, Ireland’s true wealth.

Ireland’s trend of decoupling emissions from economic activity is less impressive when measured against Gross National Product (which nets out repatriated profits) or Gross National Income (which adjusts domestic incomes for taxes paid to the EU and for subsidies received from the EU), both of which are alternative measures of true economic activity.

A zero-carbon economy and society requires moving to an economic and indeed community model that is restorative and regenerative by design, and that aims to keep materials, components, and products in use for as long as possible. The challenge to go further by halving emissions within a decade and to achieve net zero carbon within the next 30 years is daunting, but I agree with Danny McCoy in his assertion that the technological progress of the last 30 years does, inter alia, offer us some hope.

A techno-centric perspective must form part of the response to our global climate challenge, yes, but ultimately it is as a society, all of us as responsible citizens, who must adapt our lifestyles in terms of consumption, behaviour and production, so that we live more sustainably. We must respond and change.

Danny McCoy's conclusion that, while the economic and social progress of Ireland in the last 30 years may have been inconceivable from the vantage point of the early 1990s, available evidence, however, points to a failure on the part of our society and, I would add, importantly, our policy leaders, to grasp the opportunity with sufficient and courageous urgency, from the perspective of having used the time wisely to address the climate challenge.

However, I am anxious to offer today a positive contribution to the debate, and I must attempt to avoid the temptation to fall into any Adornoesque sense of despondency. For example, while however late, it is heartening to see the legitimacy of neoliberal market fundamentalism – that is, near exclusive faith in the efficiency of markets, in the superiority of markets over government intervention, in the ability of markets to self-correct, and in the market's ability to deliver political freedom – now being challenged by even those international organisations in whom trust was perhaps naively or, worse still, calculatedly, placed by nations for the achievement of communal welfare. Such organisations – the OECD is at the vanguard perhaps – are now seeking a new approach.

Multilateral Bodies seem to have accepted that we need a fundamental and radical paradigm shift, not just in relation to economics, but in terms of our very way of living. New ideas are, thus, now required and, even more, their communication to citizens – ideas based on equality, universal public services, equity of access, sufficiency, sustainability. New ideas are fortunately available in the form of practicable suggestion for an alternative paradigm of social economy within ecological responsibility, but they must find their way on to the public street. They must find their way on to the curriculum in the places where economics is being taught.

Thankfully, we now have a richer discourse than perhaps we did a decade ago at the last point of crisis, owing to scholars such as Ian Gough, Mariana Mazzucato, Sylvia Walby, Kate Raworth, Peadar Kirby, and many others who advance ecologically sustainable and socially progressive alternatives to our destructive, failed paradigm.

This scholarship suggests the real, emancipatory potential for a new, recovered political economy, and I have called for some years now on third-level institutions, both in Ireland and abroad, to ensure it is taught and, thus, for it to be available to inform policy.

Even at the most basic level, I believe that failure to facilitate a pluralism of approaches in teaching economics is a deprivation of students' rights, leading, as it does, to a narrow, blinkered and distorted education in economics and the wider social sciences. Students are entitled not only to pluralism in what is taught, but to be able to find intellectual and practical fulfilment in the engagement with ideas, ideas that will in turn be an influence on the options in advocated policy and their life contribution.

As to the new paradigm, consideration of a new ecological-social paradigm, based on economic heterodoxy, recognises the importance of resiliency, the limits of the world's natural resources, as well as acknowledging the role that unrestrained greed has played in creating the climate crisis.

The suggested new paradigm emerging from the best of the new writing offers a better connection between economics, ecological sustainability and ethics. It asks us to reflect on how unrestrained, perhaps even championed, greed, and a lack of respect for the earth's natural resource limits has brought us to this state of ecosystems collapse as we continue in the Anthropocene era.

It recognises the depth of the change that is required and it goes further, envisaging a more equal and moral society, one in which the State is seen as a provider of quality universal services for its citizens, services that are seen as an investment in society rather than a burden.

It is beginning to achieve a consensus in parliaments that new policy instruments – eco-social policies – which underpin such an economic paradigm will be necessary. These new directions in policy must simultaneously pursue both equity and social justice as well as sustainability and sufficiency goals within an activist, innovative State, with substantial public investment and greater regulation and planning.

Investment functions of social policy must be enlarged, therefore, to become more closely integrated with climate action investments.

The important role that investing in nature can play in achieving a more sustainable, resilient, and healthy world must be recognised by governments. All of this also offers a much more active, participatory, fulfilling version of society that one where citizenship is defined as licence to insatiable consumption.

Just as the most effective welfare States in the world promote universalism as a core principle, an effective eco-social paradigm requires a universalist mindset. This is fundamental as a compass, as are additional, targeted measures to mitigate against any regressive impacts of decarbonisation policies on lower income groups, or cohorts who will be impacted most adversely by the shift to a low-carbon economy and society (such as, for example, those losing jobs resulting from the closure of legacy industries).

In Ireland this will mean a just transition must be achieved for those impacted by the closure of unsustainable carbon-intensive electricity production, for example, who must be offered re-skilling opportunities to enable them to find suitable jobs in other areas, such as the green economy, or upskilling opportunities that can achieve sustainable incomes in other parts of society. A model for such a just transition has been made available to us by the National Economic and Social Council, whose 2020 Report (No. 149) provides a framework within which the transition to a new political economy may be a just transition.

Participative decision-making models, such as that advocated in *The People's Transition*, TASC's recent report, views climate action as an enabler of local development, giving people and communities ownership of the transition to zero-carbon societies, and enhances public support for a just transition by tackling inequality and raising standards of living through the delivery of climate solutions. Policies that promote real regionalism can also be central to a just decarbonisation.

Mazzucato and others, who have provided frequent, insightful contributions to publications such as *The Economist*, *Social Europe* and elsewhere during the pandemic's unfolding, have proposed that any firm-level financial assistance provided to recapitalise major companies in the wake of Covid-19 should be conditional on a 'greening' agenda for its receipt.

Such a suggestion is both a useful and reasonable contribution as we all seek to forge ahead with advocating an eco-social paradigm which now represents our best hope for a sustainable future and the most authentic demonstration of inter-generational solidarity.

Out of respect for those who have suffered greatly, in particular owing to the pandemic with which we struggle, those who have lost their lives and indeed the bereaved families, we must not drift into some notion that we seek to recover what we had previously as any sufficient resolution—that we should regard it as sufficient response to what now we face, that we merely revert to the insecurity of where we were before, through mere superficial adjustment of fiscal- and monetary-policy parameters. That would be so wholly insufficient to the task now at hand.

We have to do better. We must exit the paradigm that has failed, envision and give substance to the alternative. A brighter horizon must be put forward which offers opportunity and hope, that carries an intellectual energy informed by a shared moral purpose born out of our interlocking contemporary crises.

We also need, it has been suggested by a diversity of scholarly and spiritual thinkers and writers, a new social contract. Minouche Shafik, in her recent book, *What We Owe Each Other*, presents a compelling case that a more generous and inclusive society would also share risks more collectively.

In a nod to Amartya Sen's Capabilities Approach, such a society would broaden opportunities, and ask citizens to contribute for as long as they can so that everyone can fulfil their potential. Shafik identifies the key elements of a more generous social contract, one founded on solidity, solidarity and harmony, one that recognises our interdependencies, supports and invests more in each other, to build a more inclusive, cohesive society together.

A statistical issue of relevance to sustainable development is that of time preference. It is a notion in economics, and economic evaluation specifically, that seeks to capture the trade-off between consumption today and consumption in the future.

Many environmental economists have warned for quite some time now that the discount rate – the rate at which society is willing to trade off present for future benefits – has been set too high in economic evaluations, thereby favouring short-term projects, including in environmental policy, to perform better in cost-benefit analysis than those with a longer time horizon, which includes so many projects that deal with climate change mitigation.

Empirical evidence suggests that humans tend to value immediate or near-term resources at higher levels than those acquired in the distant future. If we have any sense of inter-generational justice, then surely it follows that we have a moral duty to protect the interests of future generations, ensuring some level of intergenerational equity

by preventing the present generations from ignoring the long-term environmental and other consequences of present-day economic activity.

Social discounting, so prevalent in influential cost-benefit analysis, can almost entirely devalue the economic and social impact of even catastrophic environmental events occurring outside a 50-year time horizon. For example, the present value of a catastrophic event occurring 50 years from today would be valued at less than 1 percent of its future value (assuming a 10 percent discount rate).

Thus, the setting of discount rates that are too high, or arbitrarily selecting discount rates to meet short-term political goals at the expense of longer term priorities, can have harmful long-term consequences, resulting in adverse selection and a form of myopic political economy that pays scant attention to the needs of future generations or objectives that go beyond a short-term political cycle, and is incompatible with an eco-social paradigm of which I have spoken.

All of this demonstrates the distinction between political economy and the limitations of raising an analytical instrument to the level of a sufficient theoretical approach in policy.

The opportunities, as Danny McCoy's paper outlines, from both economic and technical advancement, along with an educated generational behavioural response, still provides the prospect, albeit in a limited timeframe, to achieve the goal of just sustainable development. Indeed, as he so rightly points out, it is through human ingenuity and solidarity that every anthropogenic problem can be tackled.

We have no other option available to all of us as global citizens now, but to make radical shifts towards a decarbonised existence if we have any hope of avoiding the bequeathment to current and subsequent generations of a hostile, volatile and threatened planet. Unless we collectively take action to prevent catastrophic climate change, together with a real commitment and transfer of resources towards assisting communities to prepare for, and adapt to, changing climates, population flows, driven by climate shifts, will take place in a context where old and emerging conflicts that will undoubtedly be exploited by those seeking to invest diversity with fear, hate, exclusion and dehumanisation.

Our basic morality as humans suggests that it is unforgivable that another 100 million people be destined for extreme poverty by 2030 should we fail to honour the commitment to tackle climate change effectively. The need for collective action addressing the climate crisis becomes more evident every month. The defence of previous generations that 'we did not know' is no longer available to any of us.

A sense of justice, not only for now, but for the future, requires that the capacity and power of our residual sense of a shared humanity be invoked to give us the energy to reconnect our lives through a balanced relationship between ecology, ethics, economy, culture and a lived experience of fulfilment.

The time to act is now. The longer we wait, the more we intensify and perpetuate the injustice of climate change, and we run the risk of correctly being regarded by future survivors of our planet as having been in collusion with what led to the destruction of the lives and environments of some of the most vulnerable peoples of our human family and the biodiversity on which our planetary life depends.

May I conclude by congratulating again the SSISI for its contribution to Irish society over the past 175 years, and may I once more congratulate Danny McCoy who was so foretelling, prophetic even, all those years ago, and today, for his excellent Presidential Address which, being consistent in his case, represents a clarion call for us all to do so much more, and with greater urgency, to ensure that we achieve a just and sustainable future for all our global citizens on this shared, vulnerable planet.

Ár mbuíochas leat, Danny. Beir beannacht.

RESPONSE TO THE PRESIDENTIAL ADDRESS BY MARIE DONNELLY, CHAIR OF THE CLIMATE CHANGE ADVISORY COUNCIL

A Uachtarán Higgins, Danny - President of the Statistical and Social Inquiry Society of Ireland, distinguished members and guests. It is an honour to be here today - in such beautiful surroundings in Aras an Uachtaráin – thank you President Higgins for hosting us today.

It is a privilege to respond to Danny McCoy's address – but also a challenge to match his comprehensive grasp of the subject, fluency of expression and mastery of delivery. Danny has eloquently charted the progression of the scientific detection, analysis, quantification and correlation of climate change over the past 30 years, leading us

to the position we find ourselves in today – confronted by a “CODE RED” alert arising from the 2021 IPCC Report.

Whilst climate change is a global struggle, let me commence with a review of Ireland’s place in that struggle before focusing on the wider international context. The commitment in Ireland’s Climate Action and Low Carbon Development (Amendment) Act 2021 to reduce emissions by 51% by 2030 relative to 2018 and to transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy by 2050, represents a serious ratchetting up of the level of national ambition in the fight against climate change. Notwithstanding Danny’s illustration of a decoupling of economic output with GHG emissions, actions taken to-date have failed to put Ireland on a transition towards the national climate objective. At best we have managed to stabilise the overall levels of emissions but Ireland stands out as missing the EU 2020 target completely and we are already paying the price.

A recent Eurobarometer Survey showed that 81% of Irish people (compared to 78% of EU citizens) considered climate change to be a very serious problem – and for 31% of Irish people it is the single most serious problem facing the world. As Danny pointed out Professor John Sweeney sees the social consensus on climate change - shifting led by the youth – and Ireland has one of the highest shares of youth in its population. The youth of Ireland are correct to be concerned as per capita emissions in Ireland are more than 12 tonnes CO₂eq compared to the EU average of 8 tonnes (Eurostat, 2021). If this level were applied to the rest of the world, it would already be 3 degrees warmer!

Concern however over climate change does not seem to translate into enthusiasm to combat it. The recent Irish Times/Ipsos MRBI poll showed a high degree of public resistance to many potential climate action measures. Clearly the task for the Government will be to win over the public’s scepticism and convince voters that the changes are worthwhile to reduce emissions and avoid the worst predictions of global warming.

The Climate Act presents a vision of how our decarbonisation efforts can enhance the wellbeing of people through improved health (clean air, water, biodiverse environment), boost their prosperity and resilience, and contribute to intergenerational and international solidarity. This narrative now needs to be reinforced across all levels of Government. At the same time, it is important to be transparent about the possible adverse impacts of climate action and the need to strengthen solutions to address these.

Danny addressed the options of pursuing environmental objectives through regulations or by market based economic instruments Whilst market based solutions may offer the possibility of achieving environmental improvements at lower costs than through regulatory mechanisms, he did concede that it was not likely that only market based instruments would be applicable to all circumstances. An “either – or” option is perhaps insufficient given the era-defining change that climate action will require.

Whilst laws, policies, finance, technology and innovation all have a role to play - in the end of the day success can only be achieved when the hearts and minds of the population are engaged. This calls for both the climate science and policy community to be more open to inputs from the social sciences - collaborating on methods to access the social, cultural and political processes that shape climate debates and ultimately action.

How citizens perceive the benefits arising from the Carbon package

Policies and actions need to convince citizens that climate action benefits them in order to rally their support for changes on the ground. This includes the projection of a positive vision for a better society and natural environment alongside clarity on how the distributional impacts of climate policies will be managed from the outset and how climate action can strengthen social cohesion. For example, accelerating renovation of the worst performing housing stock occupied by low-income households can help address their greater vulnerability that stem from poor housing conditions.

Managing the transition

Climate action needs to extend Just Transition measures to all economic sectors to anticipate and manage social change. This involves the development of transition strategies in all regions, sectors, and for workers from old to new technologies and production processes. It is essential to build confidence that the distributional effects of climate policy will be equitably managed. In addition to the necessary compensatory mechanisms, this requires a fair distribution of costs and investment between governments, industries and consumers globally to ensure that the burden of the cost is shared in a progressive manner.

Enable more inclusion and participation

On this climate journey, everyone must be empowered to have a say. We must create pathways for all stakeholders to be involved in shaping climate actions and their delivery. The inclusion of local and regional actors in shaping Social Climate Plans will help to achieve a better representation of public interests. Transition strategies for a broad set of industrial activities should develop perspectives for affected workers through upskilling, reskilling

and lifelong learning programmes as well as retirement schemes. Beyond a focus on employment, they need to create future-proof regions with diversified, resilient economies and high quality of life. The Climate Change Advisory Council has been working diligently to respond to the mandate of the Act with a view to recommending a Carbon Budget programme for 2021 to 2025, 2026 to 2030, and a provisional budget for 2031 to 2035.

Here I would like to join Danny in noting the excellent research being conducted in Ireland and express great appreciation for the research capacity and capability, aided by greater statistical computing power, that has enabled greater clarity on what future climate scenarios are available to us. To the excellent modelling done by MaREI at University College Cork (Times Ireland Model), I would add that expertise of the Teagasc (FAPRI model) and the University of Limerick (Goblin model) which have informed the calculations of the CCAC. This modelling illustrated the quantity of greenhouse gases that would be emitted on a range of different pathways leading to the overall 51% target by 2030. The analysis indicates that, while different sectors will transition at different rates, the overall range of pathways to achieving the target is narrow.

However, full and successful delivery of the ambitions in the Climate Act would position Ireland as a leader and enhance our existing reputation as a small nation ‘punching above its weight in contributing positively to global peace and sustainable development’.

Global Climate Action

Climate change is increasingly perceived by world leaders as a top-tier geopolitical issue, with far-reaching implications for the future of the global economy, international cooperation and foreign security. As COP26 President Alok Sharma has stated, the “golden thread” of climate action weaves through every international gathering in 2021.

As we approach COP26 in Scotland in November, an understanding of the wider geopolitical picture is useful in assessing the likelihood of successful climate diplomacy there.

Despite some recent signs of progress, insufficient cooperation on COVID-19 and global recovery has sustained tense geopolitical relations and an uneven global economic context. Throughout 2021, developing countries have continued to signal frustration with slow progress by wealthier nations to take sufficient action on vaccine equity and global recovery. Commitments to reallocate UN Special Drawing Rights (SDRs) and the joint US-EU commitment to vaccinate 70% of the globe by September 2022 have signalled emerging progress. However, the delivery of these initiatives will fall largely into the latter part of 2022. The consequence for climate action is that insufficient financial firepower and fiscal space to support developing countries in their climate transition will be available. These unfortunately limit countries’ confidence to raise their climate ambitions ahead of COP26.

Whilst multilateral spaces remain open as prominent platforms for major global powers – as evidenced by both the US and China using the UN General Assembly (UNGA) as a venue for climate announcements – fragmented bilateral or plurilateral approaches are dominating multilateral activity, creating new diplomatic challenges. As Danny suggested a global trend towards precariousness is evident, with the financial crisis acting as a catalyst for revising some of the more extreme aspects of individualism. However, at the national level the trend is arguably more opportunist. From the recent Australia-UK-USA (AUKUS) on Indo-Pacific alliances to withdrawal from Afghanistan, the western powers have shown a hesitancy towards reasserting geopolitical power in multilateral contexts. The US has also consistently prioritised bilateral approaches over multilateral avenues in its climate diplomacy. Announcements on development cooperation at the UNGA hinted at further fragmentation: US President Biden reiterated his commitment to the Build Back Better World initiative, whilst Chinese President Xi announced a ‘Global Development Initiative’ days after the EU revealed its own plans for the Global Gateway Initiative. Without multilateral coordination these pluralistic initiatives miss the opportunity to build confidence for higher global climate ambition.

Despite this context, climate change has continued to serve as a ‘golden thread’ of cooperation, standing out as a remarkably distinct area of sustained high-level international diplomatic engagement. Throughout 2021, global leaders have taken more decisive action to put climate at the heart of key multilateral and plurilateral processes including the G7, G20 and at UNGA. This has supported delivery of tangible (if limited) climate outcomes that have helped build some momentum towards COP26. Climate remains a core area of open dialogue between the US, EU and China.

As a result, there is potential political space for a high ambition outcome at COP26 that sets an acceleration pathway to close the gaps to the Paris Agreement goals in the early 2020s, as vocally called for from climate vulnerable country groupings. Such an outcome would cement the role of climate cooperation in sustaining faith in multilateralism, establish confidence in climate cooperation as a key lever in easing geopolitical rivalry, and help restore trust in relations between developing and developed countries.

At the same time, the current global energy crisis which has seen sharp spikes in energy prices worldwide represents a potential wildcard for COP26 that could either make long-term decisions on climate action more domestically unpalatable and see an uptick in fossil fuel use this winter or reinforce the narrative around the benefits of a diversified energy portfolio for building economic resilience.

Opportunity for Ireland

For Ireland, failure to reduce our emissions in a planned and managed fashion will cost us dearly, both in terms of reactionary expenditure to mitigate flooding, violent storms, droughts, sea level rises; as well as damaging our international reputation negatively impacting foreign direct investment, exports, particularly in food, and in tourism. On the other hand, as the EU, and indeed the world, moves to decarbonise, the market opportunity for renewable energy (electricity, liquid fuel and gas) is boundless representing a real opportunity for Ireland. Just as the Industrial Revolution of the 19th century was powered by coal, supporting the steel industry, the Sustainable Revolution will be powered by renewable energy – and Ireland has an abundance of the natural resources to generate this renewable opportunity.

The economic potential is clear, but perhaps more importantly for society, the opportunities are decentralised, sharing development and economic activity with our coastal and rural communities.

The potential financial advantages to all of us as consumers have been brought into sharp relief recently with the spike in global energy prices. A perfect storm of disrupted supply chains, increasing demand from China (ironically as part of their efforts to reduce emissions), reduced volumes in the trans Ukrainian pipeline, combined with a periodic surge in energy geo-politics around the Nord Stream 2 pipeline have led to unprecedented increases in gas prices. Ireland is currently dependant on these imported fossil fuels and is suffering uncontrolled price increases, placing many households in a difficult position as winter approaches. But with our own natural resources, we have the possibility of being energy independent, thus allowing us to determine our own destiny in profound ways.

Longer term, unlocking the potential of our seas through floating offshore wind and marine energy, potentially pushes Ireland into the big league. Our European neighbours who do not have access to such resources are already in contact. We can play our part in aiding others to decarbonise.

However, this will require a strategic approach to be developed. A planned and organised garnering of this potential is essential. Are we producing electrons (electricity) or molecules (hydrogen), can we move up the value chain to really push to decarbonise fuels such as sustainable aviation fuel? How do we ensure that Ireland, and particularly its citizens also reap rewards from this natural resource bounty? These and many other questions will need to be addressed as we go forward. Can I suggest to the Society's President that this presents an exciting possibility, and even a requirement, for a holistic ecocentric/technocentric perspective?

The people of Ireland have demonstrated an extraordinary capacity to take on daunting challenges and win through in the last decade – the financial crisis, Brexit, Covid. This Sustainable Development challenge will not be easy, it will require an unrelenting effort across Government, industry, communities and individual households. It will not be 'done in a day', but it can be done and will deliver a better 'greener' Ireland.