

CHECK AGAINST DELIVERY

Euroscience Open Forum 2012
Equity and Climate Science
Remarks by Mary Robinson,
President Mary Robinson Foundation – Climate Justice
The Convention Centre
Dublin 12 July 2012

I am very pleased to join with President Higgins and others too to welcome you all here to Dublin and to witness such an impressive gathering of scientists from around the world in Ireland's capital city. A few years ago when Ireland was bidding to become hosts of Euroscience Open, I was asked to serve on a panel of Patrons with Seamus Heaney – we are not exactly strong on the science! – and I emphasised the importance of women in science and bringing out the gender aspects. I am glad to see that there was a session earlier, Female Researchers and Entrepreneurship: Why does gender matter?

My task today is to join my world of human rights and development with your world of science - all in pursuit of an equitable and effective solution to one of the greatest threats to humanity - climate change.

Given the company I am in – let me start with some science. For me, science is the essence of the human story. Each time we pose a question about how something works, why something is the way it is, why we are the way we are – the search for the answer translates into scientific endeavour and discovery.

Science is the systematic resolution of questions through the study of the structure and behaviour of the physical and natural world through observation, experiment and theory. Science has been, and continues to be, a key tool in human development. It brings us knowledge and understanding. It tells us about the universe and about ourselves. It explains how the world works. It divines the rules that govern the universe and the subatomic structures that we are part of and which are part of us. Last week's news from CERN on the search for the Higgs Boson is a great example of how humanity seeks answers to really profound and difficult questions. I had the privilege of visiting CERN when this search had just begun and understand the sense of excitement that surrounds their discovery.

Science is fundamental to the technologies that have become essential to our lives. From the car to the mobile phone and the microwave oven to solar panels – scientific endeavour improves the quality of our lives. Science also helps to keep us alive – it tells us how we work, biologically, psychologically and behaviourally, and it provides medicines to cure us and to enable us to live longer. But the fruits of scientific endeavour need to be used wisely – our ingenuity gives us the power to save or destroy lives, ecosystems and ultimately the

planet. Nuclear bombs, biological weapons and military drones demonstrate all too clearly the deadly capacity of scientific discovery when used to wage war and claim power.

Climate change encompasses both our capacity to understand the Earth and how it works and to set limits on its capacity to provide the natural resources we rely on for our survival. Science explains why the planet we live on is the 'Goldilocks Planet' of the solar system, it is not too hot or too cold, but just right for us, not alone to survive but to thrive and develop. And, ever since a great Irish scientist called John Tyndall set out to understand why the Earth was about 30 degrees warmer than the physics of the time would suggest back in the 1860's - and discovered the role of what we now call greenhouse gases - we have been increasing our understanding of atmosphere and its role on our climate.

The science of climate change is a great human triumph of profound understanding. It combines knowledge of the fundamental properties of atoms and molecules and their interactions with light, to vastly complex processes by which the atmosphere, oceans and vast land masses interact to produce our goldilocks planet.

Our understanding of climate science stretches from the days of Tyndall to the current work of the Intergovernmental Panel on Climate Change (IPCC). As Tyndall was acknowledged for his work during his lifetime with many scientific honours and appointment to the post of Superintendent of the Royal Institution, so the IPCC was awarded the Nobel Prize in 2009. The Nobel Prize was awarded to a body of science and scientists that have over decades contributed to our understanding of the climate system and of man's influence on it.

It is now acknowledged that we humans are having such a profound impact on the planet that we may be moving from the Holocene (the warm and stable 10,000 year period during which life on earth has flourished) to what Paul Crutzen has called the Anthropocene, a new geological epoch where we human beings constitute a major force of change at the planetary scale.

This is a cause for reflection. Through various sciences we know that the earth has gone through many eras, many changes; these are driven over hundreds of thousands of years by cycles of the precession of the earth around the great movement of tectonic plates over geological time scales. Now we are a driver of Earth's climate system and therefore changing the destiny of humanity, not over thousands of years but over a mere century or two.

The ways in which we humans are stretching the Earth and its atmosphere to their limits has been captured in the concept of planetary boundaries. I like this way of describing the many complex issues involved, because it is easy to understand and communicate - even to a non-scientist like myself!

In 2009 the Stockholm Resilience Centre brought together leading scientists who proposed a set of 9 critical earth-system processes with tipping points, which if crossed could lead to irreversible or even abrupt environmental change. To reduce the risk of crossing these thresholds it is necessary to determine safe boundaries for each of the 9 earth-system processes. If we stay within these boundaries we are operating in a safe space for humanity.

Climate change is one of the 9 critical earth-system processes and estimates are that we have already crossed this planetary boundary, exposing the planet and its human population to significant risk. Research also indicates that we have crossed the planetary boundaries for biodiversity loss and nitrogen use – with freshwater, land and phosphorous use rapidly progressing towards their boundaries.

This presents us with a serious challenge. We are on a course, which we have set, that puts us at risk –and as yet we have not been able to take the decisive action needed to change course –despite being presented with solid scientific evidence.

Clearly we are in a dilemma – what do we need to do to convince governments, corporations, institutions and individuals to show leadership and embrace real change?

Perhaps some of the problem is the challenge of communicating science. However, since Tyndall himself, we have had scientists who were accomplished communicators and in addition we now have TV, computer graphics and animation, all of which help science to have a broad reach.

Perhaps it is the fact that solving the climate problem is not a just a question of science but of politics, ethics and economics?

While science helps us to understand the causes of the problem and indeed the scale of the response needed to avoid dangerous climate change – it alone will not create the momentum and leadership we need to act decisively and stay within the earth's safe operating space for humanity.

It is in this context that I have become an advocate for Climate Justice. Climate Justice is a human rights-based approach to combating climate change which seeks equitable outcomes to both protect the vulnerable and provide access to benefits arising from our transition to low carbon development. Climate justice has a focus on people – it looks at the causes, the impacts and the solutions to the problem from a human perspective. Climate justice is fully informed by science but it communicates and identifies solutions from the perspective of human needs and rights.

As such it seeks equity in the way in which we respond to climate change – so that we take action to avoid dangerous climate change while at the same time working to improve the lives of the poor and vulnerable who have yet to reach their development goals.

I was given a beautiful book recently called *The Human Quest: Prospering Within Planetary Boundaries* by Johan Rockström, which speaks very much to climate justice. In it, Rockström says 'humanity has a moral responsibility to maintain a habitable planet over the centuries, not to say millennia'. Given that we have entered the anthropocene and we humans are the ones in control – the moral responsibility we have to current and future generations is greater than it has ever been in the past.

The choices we make today about how we generate and use energy, or how we use our land for food will determine the future of humanity on Earth. If we decide on a pathway that

leads us to emit fossil carbon into the atmosphere as we have been, we are committing a serious injustice to future generations. Global emissions of carbon dioxide, the most important greenhouse gas, increased by 5% in 2010 – catastrophic for future generations – but equally indicative of gross inequalities amongst current generations as these emissions benefited those living in developed and emerging economies while those in the least developed countries largely failed to benefit from the wealth generated from them.

We live in a global society – a society with gross inequalities between rich and poor, powerful and powerless. In fact power now resides with different actors than in the past – particularly with large international corporations who often own more natural resources than governments yet who are outside the international negotiations on climate change. Globalisation describes not just our social and economic models but also our environment. Never before were our actions locally so significant globally and this should be driving us to reconnect our societies with our development and with our environment – as climate justice demands.

Finding a solution to the climate crisis is proving difficult. The strides we made in Durban last December, where the global community agreed to develop a new legal instrument for all countries by 2015, have been challenged. Some countries are stepping back from this commitment with concerns about the level of ambition needed to close the emissions gap and questions about who should act, by how much and when?

At the crux of the discussions are fundamental issues of equity;

How can we support the right to development of developing countries while taking meaningful actions on emissions reductions?

Can we find ways to share the burden of reducing greenhouse gas emissions equitably?

Are we focused enough on sharing the benefits of low carbon climate resilient development equitably?

Countries are guided in their deliberations on these questions by the Principle of Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC). This principle stems from the Rio Declaration in 1992 and is enshrined in the United Nations Framework Convention on Climate Change (UNFCCC).

The principle is central to climate justice as it recognises that developed countries are more responsible for the causes of climate change than developing countries. Their industrialisation, based on the consumption of fossil fuels, put the greenhouse gases into the atmosphere that are causing global warming. This means that developed countries should act first to reduce emissions.

Of course emerging countries like China, India and Brazil have significant emissions and capabilities – but historic responsibility for the bulk of greenhouse gases in the atmosphere rests with the major developed countries and we look to them for leadership. The principle also recognises differences in capacity to address the problem. Those countries that are richer tend to have more skills, technology and resources with which to control emissions

and are committed under the Convention to supporting those countries with less capacity to adapt to and mitigate the impacts of climate change.

The Principle of Common but Differentiated Responsibilities should facilitate the translation into practice of equity through the decisions taken by the UNFCCC and implemented by countries on the ground. However, current interpretations of the principle are diverse and divisive - leading to the question:

Is the Principle of Common But Differentiated Responsibilities and Respective Capabilities encouraging us to act or holding us back?

Difficulties associated with putting this principle into practice mean that it is used as a political pawn in negotiations, and in some cases is being used as an excuse for inaction rather than a motivator for action. Such is the level of contention that in at the Conference on Sustainable Development in Rio last month the principle almost disappeared entirely from the text. This would have been a serious setback and signals again the fundamental importance of equity in our work to define safe planetary boundaries and the policies needed to keep us within the safe operating space for humanity.

It is clearer than ever before that we will not solve the climate crisis without addressing issues of equity.

Science has a key role to play in providing the information needed to measure emissions, to determine safe limits, to raise the alarm when vulnerable people and ecosystems are at risk and to define metrics and indicators against which to measure progress. Yet science alone cannot find an equitable solution – other factors inevitably have an influence – including human rights and politics.

We have experience in translating climate science into information for policy making through the work of the IPCC. It works in a unique manner in that leading scientists work in essentially a voluntary manner to compile the reports which are subject to global peer review processes. Finally its outputs are subject to scrutiny by world governments to inform policy.

For example, it was not the IPCC that said that keeping the global temperature increase below a certain level, say 1.5 or 2.0 degrees, Celsius relative to pre-industrial temperatures, would prevent dangerous climate change. It presented the scientific evidence and world governments took the decision on what constituted a safe level of temperature increase. It is this political assessment of the science that was endorsed by all Parties to the UNFCCC in Cancún 2010.

The most effective climate policies are informed by science and respond to science – however, to be equitable climate policy also has to address issues of equity, morality and rights.

We live on a planet with finite resources and a growing population. There will be 9 billion people living on the Earth in 2050. Providing the food, water and energy to meet their needs

in a climate constrained world will require great human resourcefulness and ingenuity – it will also require fairness and a global approach to a global problem. We need to take bold decisions now so that by 2050 we are firmly on a path to inclusive, equitable, low carbon development –where the burdens and benefits of the transition to a new green development pathway are shared equitably and the poor and vulnerable are both protected and enabled to live a better life.

Theoretically it may be easier to combat climate change without considerations of equity– but only if we were in a laboratory and not on a planet that is home to billions of people. In a laboratory we could work only with the major emitters to secure a deal to reduce emissions – but this would not address the needs of those vulnerable communities that are already feeling the impacts of climate change. Any solution to climate change has to be based on the realities of the global society we live in and the limits of the planet to sustain us all.

Oxfam’s ‘doughnut paper’ presents a framework for this reality combining the concept of planetary boundaries with social boundaries to create a safe and just space for humanity. This approach hinges on equity – within and between countries – to protect human rights while managing natural resources equitably and sustainably. The framework challenges us to keep all people free from hunger and poverty, and empowered with rights and resources to live in dignity - while at the same time respecting and living within planetary boundaries.

This is very much in keeping with climate justice - informed as it is by science and human rights. I believe the time has come for a climate justice narrative – a narrative that places people at its centre, that is informed by human rights, that strives for equity and that protects the most vulnerable. We need a new set of arguments and moral and ethical imperatives to motivate people and decision makers to act – and to bring the urgency and ambition required to agree a new climate agreement that will avoid dangerous climate change.

Until there is greater demand from people in all walks of life for meaningful action on climate change – political leaders will continue to be able to return home from unsuccessful climate conferences with little fear of retribution.

We need to take on board the urgency I sense when I talk to those already affected by climate change – (women farming in Uganda, fishermen in Bangladesh, those leaving their homes on the Cateret Islands) and bring it directly to those in positions of power – to motivate them to act. In this way – a climate justice narrative, informed by the voices of the most vulnerable – can create strong constituencies of demand and the political will needed to solve the climate crisis.

In the coming 3 years we have a window of opportunity to develop a strong climate justice narrative to complement the latest climate science that will be presented in the 5th Assessment Report. It is only by responding to science and protecting people’s human rights that an effective and equitable deal can be done to avoid dangerous climate change.

At times it seems that we have gone so far down this destructive path that change on the scale we need is almost impossible. But we also know what we are capable of achieving as human beings when we want to and when we are convinced of the need to act.

For some reason – despite all the scientific evidence – some people still need to be convinced. And the role of the climate justice dialogue is to facilitate discussions around the world that bring people together, allow them to talk and to be listened to and to create new constituencies - demanding action of their leaders.

At the same time – we can use the principles of climate justice to inform discussions on equity in the climate change negotiations so that the agreement reached in 2015 is effective and equitable. And how will we know it is equitable? The ultimate indicator of success will be a climate regime that prevents dangerous climate change, protects the most vulnerable and allows equitable access to the benefits of a new low carbon society.

Scientists must be key actors in this Climate Justice Dialogue – informing, challenging and finding solutions. As scientists you are the world's barometer, early warning system and emergency response. But to translate this knowledge into action requires policy, and to do so equitably requires global cooperation and a commitment to human rights.

Some things you might consider as scientists, research funders and policy makers are firstly, Creating platforms to enable climate scientists to work with social scientists and development and human rights practitioners to design equitable solutions to climate change. We have good working examples of this approach in the International Human Dimensions Programme on Global Environmental Change (IHDP) founded by the International Council for Science (ICSU) and the International Social Science Council (ISSC) in 1996 and the more recent Coalition on Human Rights and Science established by the American Association for the Advancement of Science (AAAS) launched in 2009. It is important that research funding is designed to correspond to and catalyse these multi and interdisciplinary approaches. There are real opportunities for this to inform EU research funding, in particular Horizon 2020;

and secondly

Returning to the idea of a High-level Representative or Ombudsman for Future Generations, as discussed in the context of Rio+20, who would act independently to provide assessments of the adequacy of policy in responding to science and safeguarding the rights of future generations.

John Tyndall allows us to claim the origins of climate science for Ireland. A century and a half later we understand a great deal more about the atmosphere, the role of greenhouse gases and the impacts human activity is having on the global climate. However, we need to take a leaf from John Tyndall's book and continue to debate, to question and to challenge beliefs and vested interests in our efforts to combat climate change. We also need to communicate, to motivate and to create demand for change, for a safe planet and for an equitable global society.

All of these elements are interlinked – we cannot do one without the other – hence we can't work separately. Climate justice acts as a bridge between rights and science and between people and planet. It is not one or the other – it must be both and the path we take must be safe for both. We missed an opportunity in Rio last month to embrace a new development paradigm, directed and lead by governments. Instead we look to civil society, business, philanthropy and the scientific community – coalition of the committed - for vision, leadership and hope. Don't be afraid to lead, to hold governments to account or to defend the vulnerable. This is what we need you for.

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