

**Environment, Climate Change and Land Reform Committee**

**Climate Change (Emissions Reduction Targets) (Scotland) Bill**

**SUBMISSION FROM ADAM PRICE**

I write in a personal capacity. I am a Professor of Plant Science at the University of Aberdeen. My research work aims at making crop production, and especially that of rice, more environmentally sustainable and of greater financial benefit to the world's poorest and most vulnerable farmers.

To put climate change in perspective, pre industrial CO<sub>2</sub> levels were 250 ppm, when I was born in 1964 they were 319 ppm, when I started research on plants in 1985 they were 345 and now they are 412 ppm. That is a 29% increase in my lifetime, and the trajectory has not reduced.

Amongst other things I have a professional understanding of the absorption of energy by the carbon-oxygen bond in CO<sub>2</sub>, the link between CO<sub>2</sub> and plant growth, the impact of heat and drought stress on crop plants, and on current scientific predictions of climate change on food production and food security. In a semi-professional sense I am also aware of the socially disruptive nature of perturbations in food production which have caused civil unrest throughout human history which at their extreme include the end of several civilisations and reach into the present to include links to the Arab Spring and the civil war in Syria- I saw the Chief Scientific Advisor to the UK Government stress this link between food production and the Arab Spring in 2011.

I also have strong collaborative links to individuals and research institutions in developing countries likely to be severely impacted by climate change through higher temperatures, more erratic weather and sea level rise, most particularly Bangladesh. Because of these circumstances I believe it is my professional and moral duty, as an informed scientist, to put effort in raising awareness about climate change and the likely harm it will do to crop production, food security, social stability and world peace.

As such I organise a University of Aberdeen Climate Concern group that arranges talks on research on climate change on the campus, and I am an active member of Aberdeen Climate Action. In the capacity of acting on both those fronts, I organised a public event on Monday the 19<sup>th</sup> of March where Kirsty Lewin, formerly Head of the Climate Change Delivery Hub talked to an audience 120 people on the Climate Change Bill.

While I am impressed with the overall approach in Bill I have to say, knowing what I know about the predicted impacts of greenhouse gases, it is not ambitious enough. The target has to be net zero emissions by 2050 not 90% reduction, and decreases have to be achieved very rapidly with more ambitious interim targets than the 56, 66 and 78% targets for 2020, 30 and 40. This submission urges the Bill to adopt stronger targets.

It is already suggested by many scientists that we are almost at the point when a 2°C rise in temperature (the Paris target) cannot be avoided, and we witness daily in print, broadcast and social media suggestions that we are close to, or already beyond the tipping point when catastrophic consequences will be inevitable. Indeed, last week we were told sea level rises of 50 meters were entirely plausible by 200 years and this week we can read that new research that shows the Earth's global circulation has already altered such that weather systems are now moving more slowly causing more prolonged and damaging heat waves and floods. It is easy to see possible evidence of climate change on the news every day (like the EU heatwave and Kerala floods) and we can dismiss it as chance, but when the scientist says it fits their predictions exactly we should take it very seriously and act.

There is a very real problem of public perception in the UK. As eloquently highlighted by Al Gore, people prefer not to believe advice when it is not convenient. That is natural human behaviour, is seen globally and it has to be tackled when it creates inertia for climate action. But in UK we have a real danger of being fooled into a parochial view that it does not matter because it will not affect us; the thought that "the UK could do with being a bit warmer". For some I am sure it is almost amusing to reflect on how much warmer the UK or Scotland might get. We have to make people aware, in a way that the Syrian conflict just hinted at, that what happens to people in other countries will affect us.

The World Health Organisation have predicted that a 1 m rise in sea level for the year 2090 (very much in the middle of predictions which are, as we consider this Bill, being pushed higher), will cause a 33% reduction in land area for Bangladesh alone, meaning something like 40 million people will become refugees in the most densely populated country on earth. Those refugees will know why they are homeless and who to blame. Even more worryingly, that will be just the tip of the iceberg in what is likely to also include by far the most serious perturbation in food production in human history.

We have to make people in Scotland realise that it will affect them, and when they see it they will realise we have to stop it happening by having the most ambitious targets for reducing greenhouse gases that can be achieved. And that means more ambitious than the current targets. We have to do this, for the young and unborn Scots and all the young and unborn people of the world. Because in this impending crisis we are all in it together. We will not be able to face the young people in 20 years if we do not try as hard as we can. If we can harness the motivation of the Scottish people, we can do it and show the world the way.