

***Critique of the draft Scottish Climate Change Bill submitted
as part of the Consultation process by Dr Morris Bradley (details appended).***

These main points are supported by evidence on page 2.

- I. The draft Bill is based on out-of-date scientific information - the crisis is now known to be far worse than was understood only two years ago. All the indications are that over the next few years more evidence will emerge that the impact of greenhouse emissions is far greater than predicted. When the scale of the damage and the inadequacy of the responses of governments are known, terrorism and violence are likely to escalate.
- II. Hence, the impression given by the draft Bill, that the lifestyles we have now will continue largely unchanged by climate change is dangerously wrong. The intentions in the Bill to support and encourage the application of science and technology to reducing emissions are important but the emphasis on these sends the wrong message by obscuring the need for major changes in our current lifestyles and expectations.
- III. If this reality is understood, the only rational conclusion will be that emissions must be reduced much more drastically than suggested in the draft Bill, without prevarication, and without delay. It is of crucial significance that emissions caused by our profligate lifestyles are cut substantially and without delay in order to send the right message to the public. Cuts in all kinds of emissions can be achieved without waiting for infrastructure developments and implementation. This will give the right message to the public because these cuts are essential if we want a sustainable lifestyle for future generations.
- IV. To gain sufficient public support for the actions needed requires leadership and determination of an exceptionally high order. This is a very demanding task but a unique opportunity. The planning must be crystal clear and based on a thorough understanding of how public support can be mobilized. The costs of mismanagement or failing to make the attempt are extreme.
- V. The public must be fully informed as soon as possible. It is essential that people thoroughly understand why their lifestyles and expectations will have to change, how much and how fast they will have to change, how the process will be carried out, and how the worst affected will be helped. The draft Bill contains a lot of detail on how greenhouse gases cause climate change so there needs to be at least as much material and much more emphasis on the damage that climate change has caused, is causing, and will cause increasingly in the future, so that the consequences of doing nothing are clearly understood to be much worse than accepting major lifestyle changes.

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- VI. To gain widespread public support, implementation of these changes must be securely based on the principle of equitable impact. Nobody can be allowed to cause more emissions than others if the cooperation of the public is to be achieved, apart from a very few special cases of hardship which raise no objections. Emissions per person in Scotland must be reduced to those of people everywhere in the world (equable impact) so obviously changes in our lifestyles have to be very substantial indeed.
- VII. Recognising that changes to infrastructure take time, the immediate scope for emission cuts is the ubiquitous waste of energy and resources in every aspect of our lives. An immediate programme is required, using existing powers to encourage, reward and enforce behaviour which sharply reduces wasteful emissions. With public cooperation, immediate and substantial reductions are possible, followed progressively by further cuts on a planned basis that allows the public some time to adapt. This needs to start now, without waiting for the Bill, but the Bill is also important to set up processes and procedures and should include any additional powers that may be required, including emergency provisions.
- VIII. Something akin to the public's struggles and endurance in the 1939-45 War is needed, and it is well-known that those experiences brought out the best in most people. Leadership means understanding the future, its dangers and its opportunities - then explaining the plan of action, gaining support through transparency and example and carrying it out impartially to the benefit of everyone.

Supportive evidence for the above points.

The need to update the science in the Bill and REALISM in coming to terms with the magnitude and urgency of the task we face.

It is vital that the Bill is updated to take account of the most recent developments in the scientific research. The crisis is much more severe than once thought and the urgency more acute (5/2/2008 Guardian *Experts assess point at which it is too late to act- Disastrous repercussions of warming are spelled out*).

It is now widely accepted by climate scientists that the predictions in the Reports by the IPCC and others are wrong (This conclusion is amply demonstrated in the comprehensive analyses by climate change scientists at the RealClimate website - www.realclimate.org).

Sir Nicholas Stern has warned that he underestimated the risks in his Report - "Emissions are growing much faster than we'd thought, the absorptive capacity of the planet is less than we'd thought, the risks of greenhouse gases are potentially bigger than more cautious estimates and the speed of climate change seems to be faster." (18/4/2008 Guardian *Nicholas Stern warns his report underestimated the risks*).

There are many instances of climate change happening much faster than predicted two years ago. (16/3/2008 Observer *Glaciers melt 'at fastest rate in past 5,000 years'*) (13/4/2008 Metro. *Oceans across the globe are warming up to four times faster than previously thought, according to the UN*). continued . . .

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The most compelling re-assessment is by James Hansen, a widely respected and eminent climate scientist. His latest research, endorsed by eight other climate scientists and widely accepted by the experts in this field shows that the so-called safe CO_{2e} limit of 550ppm, which typically has been used as a basis for understanding climate change “grossly underestimated the scale of the problem”. He estimates that 350ppm CO_{2e} is the maximum if “humanity wishes to preserve a planet similar to that on which civilization developed”. We are perilously close to this limit and the full effects of past emissions have not yet made their impact. (7/4/2008 Guardian Front page lead, *Climate change target is guaranteed disaster: James Hansen, Head of the Nasa Goddard Institute for Space Studies in New York, co-authored with eight other climate scientists*). Hansen’s work has been endorsed by most climate scientists.

Hansen’s 350ppm CO_{2e} maximum is such a demanding target that the only appropriate response to his warning is to act decisively, get the public engaged, apply stringent measures, and allow no delays or excuses. So Section 2.1 of the Bill and all later references must be updated and greatly expanded to give the public a full, transparent and realistic understanding of the severity of the global crisis we face.

Understanding how our lifestyles and expectations will inevitably change - either voluntarily now or under the impact of climate change when it is too late.

It is hard for people in Scotland to imagine that their lifestyles and expectations are going to be drastically affected by climate change though this has happened already in many countries where reality could no longer be ignored. . The power of the media in the U.K. with its constant emphasis on consumerism, trivia, and placating public prejudices, has to be challenged until it starts to provide a responsible rationale to help people to adapt to the realities of climate change.

Previous predictions such as those in the IPPC Reports were modelled using traditional methods of weather forecasting which were designed to predict gradual changes on the basis of the relative stability of the past. That stability can no longer be relied upon because climate scientists now acknowledge that climate changes often take place in relatively sudden leaps when a ‘tipping point’ is reached and many such processes have now been identified. (Pearce, F. *The Last Generation*, 2006 ISBN1903919878) (Lynas, M. *Six degrees- Our Future on a Hotter planet*, 2007 ISBN13-978-0-00-720904-0) (4/2/2008 BBC *Many of Earth’s climate systems will undergo a series of sudden shifts this century as a result of human-induced climate change*).

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When a tipping point is reached, emergency action is too late, and the consequences are usually irreversible and profound. The warming of the Pacific Ocean has already risen through two tipping points in 1976 and 1998 (Flannery, T., *We are the Weather Makers*, 2006 ISBN 978-0-141-03407-2). We have experienced the effect on the weather in Scotland of changes in the Jet Stream which are related to this. The failure of the Gulf Stream through similar tipping points is not thought to be imminent but cannot be ruled out in the future, which could leave Scotland as cold as Moscow. Scientists warn of more complex but devastating tipping points that can arise from even slight increases in global temperatures - the eco-systems on which all agriculture are based can be devastated by changes in the delicate balance of micro-organisms, insects, birds etc. (11/2/2008 Guardian *Beekeepers seek £8m to fight hive plagues - food production threatened*).

So, the impression given in section 2.1 of the draft Bill is dangerously misleading: climate change will not mean Scotland having increases in temperature and rainfall that seem quite tolerable, even beneficial. If climate change is unchecked, certain tipping points will make Scotland's climate become increasingly hostile and certainly making anything like our current lifestyles unviable. (5/2/2008 Guardian *Experts assess point at which it is too late to act. Disastrous repercussions of warming are spelled out*) (26/2/2008 Guardian *An increase in extreme weather will lead to poor harvests - a trend that has already started - and demand for biofuel will take land away from food production*).

Moreover, it must be pointed out to the people of Scotland that they should not hope to survive if the rest of the planet is seriously affected by climate change. It is now well-understood that as well as degradation of the resources of the planet, an increasing proportion of the global population will suffer severe lack of water and famines. The failure of food crops inevitably result in mass migrations of refugees and wars fought by those desperate for the means of survival. If Scotland becomes one of the last refuges on the planet, it will soon be overwhelmed. (10/3/2008 BBC *An EU report says climate change will have a growing impact on global security multiplying existing threats such as shortages of food and water*).

For example, during the 1960's there was a sudden decline in the already sparse rainfall across the Sahel region of Africa, affecting many countries from the Atlantic coast to East Africa. Over forty years this decline has not reversed to the previous rainfall levels. It is now known that a tipping point caused by the warming of the Indian Ocean resulted in this persistently drier climate, devastating these areas of Africa (Flannery *op. cit.*). We also know the historic effects of this climate change with famines, genocides, mass movements of refugees and constant warfare which have had their effects on the rest of the world.

If climate changes in this comparatively small proportion of the world can have such devastating and widespread effects, how serious will be the global consequences when climate change starts to impact more and more strongly across whole continents?

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It is time to be honest with the public because only a very clear and inescapable grasp of the reality we face will convince them that their present lifestyles and expectations are unsustainable. If we are not honest with the public now, they will find out when it is too late, through a much harsher experience of reality and they will understandably blame those in power who did nothing. (17/12/2007 BBC *It is estimated that if all six billion people on Earth lived a European lifestyle, we would need more than two-and-a-half planets' worth of resources to support us*).

People may say that they will never change so it has to be made obvious to them that this is just not possible (12/3/2008 Guardian David Suzuki, a leading ecologist, *humans have lost the vital skill of foresight*). The only choice we have is whether we accept major changes in our lifestyles now which may seem like hardships (but in fact may have surprising benefits in health etc.) **OR** we will be forced to change under the stressful impact of climate change, and probably much sooner than we expect.

Choosing to adapt voluntarily can be done intelligently on the basis of equitable impacts in a supportive, well-managed community but doing nothing until climate change hits us will inevitably create chaotic conditions with endemic violence and the break-down of society as we know it. The choice is therefore very obvious once the reality is grasped. (This summary is based on the psychological research on choice behaviour and conflict resolution - references available).

Examples of what government can do now without waiting for the Bill.

Some obvious examples of fecklessly wasted energy that can be cut immediately by large and increasing percentages, if appropriate actions are taken by government with successful ways of gaining public support. There are many other examples to tackle.

1. Emissions of road vehicles from excessive speeds, hard acceleration, unnecessary journeys. (Adaptation required: responsible driving, car-sharing, better use of alternatives). Costs: bruised egos. Benefits - fewer accidents, better efficiency, better environment, more productivity, happier communities.

2. Overheating and lighting of private housing, public buildings, industry, shops etc. (Adaptation required: intelligent use of reduced lighting, reduce thermostat settings progressively, adopt warmer clothing on the expectation that no buildings will be overheated. Costs: nothing. Benefits - comfortable, warm bodies, cool heads, improved health and efficiency.)

3. Other examples need more planning eg. street-lighting can be substantially reduced if traffic behaviour is modified at the same time.

The key to success - government must set the example by immediate and huge cuts in all buildings under its control together with a thorough review to carry this process to a proper conclusion.

Note: It is not an example to the public to have seminar rooms with 70 spot lights.
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Scotland's leadership role.

Because we started the industrial revolution, the UK has emitted more greenhouse gases than any other country in the world. Germany comes second and the USA comes third (Information from Prof. Stuart Haszeldine's lecture on Climate Change at the National Museum of Scotland Discussions, April 2008 with the University of Edinburgh and the Royal Society of Edinburgh).

Therefore Scotland should lead the UK, in acknowledging this responsibility, setting the example, and exerting a leadership role in persuading the other countries of the world to cooperate on the basis of equitable impacts.

Conclusion.

If you wish this Bill to be an effective instrument for change, it obviously requires a major revision to take account of the points in this submission. If this is done with confidence and determination, a favourable public response can be obtained.

The knowledge and understanding of the issues is available, including the crucial issue of how to gain consensus support from the public.

This is the most important issue of our generation, and indeed of future generations.

So what we do now - or what we fail to do now - will be remembered by our children as they face the consequences of the decisions that we make at this time.

There is not a moment to lose: so let's set about it.

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More than 500 of my references for the statements made above can be found on the website: www.SCCSvolunteers.org.uk

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