Editorial

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Biographical notes: Carolyn Currie has a total of five qualifications in politics, economics, finance, regulation, and forensic accounting. Her experience represents almost four decades in the public and private sectors. She is currently the Head of her own consulting company, specialising in PPPs and promotion of renewable energy and sustainable land and water management. She has also specialised in regulation of financial systems involving corporate financial analysis, public finance (monetary and fiscal policy), accounting and auditing issues, economic growth issues. She uses these skills to advise banks on topical issues such as Basel II, and to counsel governments on the design of financial systems in order to prevent regulatory failure and promote economic growth.

A history of the evolution of carbon trading schemes and current practice in Europe helps put in perspective the current hesitancy of political parties in advanced nations to decide upon carbon reduction targets, pricing mechanisms, permit allocation techniques and public investment. Within the debate, there has been no in-depth discussion of viable alternatives, neither has there been a focus on whether 'climate change' and all its effects is due to factors other than carbon emissions. Such factors include deliberate deforestation, inappropriate farming methods, and adverse river, water, catchment and land management.

This special issue is devoted to questions such as:

- Has population growth exaggerated the effects of climate change through deforestation, poor urban planning and adverse resource management resulting in a viscous poverty cycle?
- Can we model the effects of climate change on food and water resources as well as simulate several alternative economic schemes to mitigate carbon emissions?
- Why are schemes for carbon emissions trading being advocated as the ultimate solution and what is their experience to date?
- Do we need to scientifically prove climate change in order to adopt a new approach of lifestyle change, new processes and knowledge base, without instituting or imposing emissions schemes and taxes?
- Can the private sector play a role in reducing carbon emissions by inducing investment in forestry schemes as an alternative to carbon emissions trading schemes (CET)?

- What has been the role of modern agricultural and water management schemes in causing environmental degradation which has greatly exaggerated the normal effects of climate change?
- How could we reverse the effects of such practices?
- What other alternatives to CET are there and how do these more effectively achieve the goals of reversing environmental damage while reducing carbon dioxide emissions?

The debate needs the skills of many disciplines to solve and this special issue opens up the debate to practitioners from many areas such as geography, engineering, geology, forestry, hydrology, and finance and economics.

The first article on 'Population, poverty, environment, and climate dynamics in the developing world' by the geographers Bremner, López-Carr, Suter and Davis, explores the link between population and environmental degradation which has exaggerated the effects of climate change and increased poverty in a vicious cycle. They state that human modification of land cover accounts for approximately 35% of the anthropogenic contribution to carbon dioxide emissions, even going so far as to attribute deforestation, resulting in a warmer and drier climate, to population growth and poverty. They conclude that better research of how, where and when population growth and poverty interact with climate induced environmental change would aid efforts to plan and executive mitigation tactics.

The second article, 'ANEMI: a new model for integrated assessment of global change' by two environmental engineers, Davies and Simonovic, is a very innovative approach to modelling in an integrated manner the effects global change in terms of eight factors – climate, carbon cycle, land use, population, surface water flow, water use, water quality and the economy, exploring interactions and feedbacks. The model allows alternative carbon mitigation schemes and changes in the factors to be explored, putting the debate into a rational assessment paradigm.

The third article, 'Carbon emission trading in India and Sri Lanka' by an expert in mechanical engineering and an industrial economist, Sardana and Dasanayaka, details the problems and progress to date in CET using the clean development mechanisms in developing countries. They conclude that the demand and supply mechanisms are flawed, with risk of certification, the scattered nature of the markets, lack of trading efficiency and liquidity, and the dramatic effects on the carbon market of recessions.

The fourth article, 'A new approach to climate change: ideas beyond carbon emissions' by an expert in organisational analysis, Conke, describes some of the reasons why the current approach chosen by many groups in society to deal with the causes and consequences of climate change may not be the most accurate, as well as not sufficient to solve the problem. A new approach, with a set of activities that could help direct action to cope with climate change focussing on changing structures, processes and knowledge is superior to on which centres only on a narrow approach of greenhouse gases emissions reduction, even though they are not proofed as the main causes of climate change. Also, the problems related to the GHG emission reduction options are not usually published and discussed. Focussing only on emissions cutting may not lead to the advancement of technology and to better efficiency. The author believes that the ideas presented in this paper lead to a better comprehension of alternatives to cope with climate change, and largely rely on organisational change.

The fifth article, 'Forestry as a sustainable asset class for turbulent times?' by economists, by Röckemann and Schiereck, promote forestry to absorb carbon dioxide, cool the atmosphere, and cause increased precipitation. Their scheme relies on market mechanisms to encourage investment in forestry as an asset class for an appropriate risk return. It does not rely solely on the existence of carbon credits as returns from harvesting can yield up to 15% while assuring replanting maintain carbon capture. Investment volume alone in the USA is 1%–3% of total portfolio volume.

The sixth article, 'Land and pastoralism: New South Wales Riverina' by geologist and geographer, Ives, describes the impact of agricultural practices which have induced local climate change – droughts and floods with consequent environmental degradation – incised streams and salinisation, exaggerating the global effects. Ives suggests how to restore the landscape to its original efficiency. The relevance of this article is that the degradation has been induced by modern practices to farming and river and water management. The global lessons are that many other countries are making the same mistakes as the Australian pastoralist which has resulted in the destruction of a vital river system – the Murray-Darling.

The seventh article, 'A case study in land and water regeneration to reduce the impact of climate change by soil bio-sequestration of atmospheric carbon' by a farmer, McKay, is an example of how to restore a landscape destroyed by adverse land and water management, in order to increase carbon capture, fertility, and precipitation. This case study has application to countries which have suffered similar environmental degradation, resulting in higher local temperatures, lower rainfalls, and depletion of the soils. Such schemes can be cooperative with some public incentives, but largely relying on private market mechanisms of higher productivity of the agricultural sector

The eighth article 'A solution to climate change economics – a carbon swap bank' by an economist/regulation expert, Currie, is a fitting conclusion to this special edition as it analyses common arguments advanced in the discussion on proposed solutions to climate change, proposing a new alternative. This is a carbon swap bank where direct deposits of sequestered carbon and withdrawals of emissions rights can be made, facilitated by direct swap arrangements, between a supplier of carbon sequestering technologies and methods on the one hand, and a carbon polluter on the other side. This has been described as a completely new approach to the problem of climate change, being constructive in achieving the goals of reduced emissions, changed technologies and better agricultural and environmental practices.