

Making a Living out of Air

A stream of evidence collected over the past five decades proves that the temperature of the Earth is rising. For example, the eastern side of the Antarctic continent is nearly 30C warmer today than it was half a century ago. There is confirmation enough that the presence of greenhouse gases in the atmosphere, including carbon dioxide, methane, and HFC-23, has an effect on temperature: the higher the concentration of greenhouse gases, the higher the global temperature. There is also plenty of scientific proof that greenhouse gases have risen from 280 to 385 parts per million (ppm), an increase of 37.5% since the beginning of the Industrial Revolution around 250 years ago.

Toll

The effects of global warming are also well known. The most hazardous are a rise in sea level, frequent, heavy rainfall, and an increase in the incidence of hurricanes. Sea-level rise would transform Notting Hill in the UK and Amersfoort in the Netherlands into seaside resorts and submerge coastal megacities, including New York and London. The change in weather pattern also causes more heavy storms to sweep inland from the oceans over coastal zones. Such typhoons most affect lowland countries with poor infrastructure. In early 2008 Cyclone Nargis took the lives of over 130,000 human beings in Burma and left the same number homeless. The World Health Organisation estimates that since the turn of the millennium climate change has taken an annual toll of 150,000 casualties. The majority of citizens and governments now accept that climate change is real and that something must be done. 'We have the resources, the knowledge and the technology to fight climate change, and we will do it!' declared European Commission Vice-President Margot Wallström in August 2007, presenting a novel solar-powered car in Brussels.

Trade

How to combat climate change? On the input side of the system are greenhouse gases, carbon dioxide being the most emitted. How to reduce emission? This is attempted by arriving at international political agreement. The Kyoto Protocol, ratified in 2004, institutionalised the assumption of global warming and committed participants to reducing carbon emissions by 5% from 1990 levels; the deadline is 2012. What measures do countries need to take to accomplish such an ambitious goal? The European Union (EU) installed an Emissions Trading Scheme (ETS). Each member state is given a specified carbon-dioxide emission level that it may not exceed: the Assigned Amount Unit (AAU). Each country subdivides this unit and allocates the bits and pieces to its companies and counties, whose emissions are now statutorily limited to precisely the number of tonnes allowed. Any surplus may be sold as 'carbon credits': one credit equals one tonne of carbon dioxide. According to EU Science and Research Commissioner Janez Potocnik, the resulting business opportunities represent a divisive effect.

Profit

There are no limits set on carbon emissions for developing countries. To stimulate frugal use of fossil-energy sources, they can earn credits, Certified Emission Reductions (CER), provided by the Clean Development Mechanism operating under the umbrella of the United Nations. By adapting production methods to make them less polluting, developing countries can earn CERs and sell them on to developing countries. The assignment of AAUs to countries, companies and organisations in developed countries, together with the possibility of selling a surplus of AAUs and tradable CERs assigned to developing countries, all creates an immensely profitable market for those with a keen eye for monetary gain. As a result, we are seeing the advent of huge global trade in carbon-emission rights, by whatever name, and the business guys are foreseeing vast revenues. The input side of the global-warming problem has thus become a matter of bureaucrats creating regulations, especially at EU and UN level, and investment opportunities for businessmen.

Proof

What about the output side? The main output of climate change is flood, caused either by sea-level rise, heavy rainfall on land, or hurricane. The most densely populated areas of the world lie near coastal zones, on river deltas and in river valleys. The majority of the population of the Earth lives permanently at risk of flooding, threatening life and goods. Geo-information plays a crucial role in fighting the threats posed by disaster, not only at the relief stage immediately following the event, but also in the preparation stage and the later three stages of disaster management. That is why geo-information for disaster management is a rapidly growing area of interest for the geomatics community.

Regulation

However, there are no huge profits to be earned on the output side of the climate-change system. That privilege belongs, as described above, on the input side, and more particularly through the trade in carbon-emissions rights. In the meantime, there is little proof (the UN and EU began their work on regulating carbon reduction only in January 2005) that regulation will reduce global carbon emissions at all.

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