



ENERGY

# Global warming – a reality

Although it is believed the earth can handle an increase in overall temperature, humans, it is said, will not. Controlling climate change through environment-friendly energy generation is a necessity and not a luxury.

**BUSINESS SOLUTION**

Using green technologies to generate energy is no longer just a means of boosting the profile of a company or country as "responsible". It is of utmost importance to prioritise technologies that provide energy without harming the environment.

As is evident in the atmosphere, global warming is a reality. The Earth will survive this relatively mild change in atmospheric temperature but there is strong evidence the human species may not. Some atmospheric heating is caused by ancient cycles in the solar system – far bigger and more complicated than any human could perceive. However, most people do understand and agree global warming is largely due to human error. Since the mid-20<sup>th</sup> century, we have become addicted to fossil fuels, which emit greenhouse gases. The Intergovernmental Panel on Climate Change (IPCC) was formed in the early '90s to investigate the impact of climate change on the planet and it postulates human invention is mostly responsible for rising temperatures. Strong human intervention is, therefore, needed to prevent the extinction of the human race.

**TIME TO ACT**

Dr Bob Scholes from the CSIR's department of natural resources and environment, believes the time for debating the validity and possibility of global warming has passed; it should be accepted as fact.

"The IPCC is definitely the most credible scientific body in the world on climate change as it comprises, literally, thousands of scientists, climatologists and other academics operating in related fields," he says. "The IPCC believes global warming is accelerating and most of the blame is accredited to human industry for releasing CO<sub>2</sub> into the atmosphere. The main culprit in this is the global energy sector, which is estimated to be responsible for as much as 40% of all CO<sub>2</sub> emissions. However the energy sector has shouldered its responsibility, like many other industries, and has exerted a real effort in promoting more sustainable operating practices.

The climate-change debate has evolved over the years from whether or not global warming is real to being mainly concerned with determining an appropriate response to global warming." Scholes is part of the CSIR that investigates the most appropriate action for industry in response to climate change.

"We have to look at different scenarios and determine our response to global warming as a society, an industry and on an individual basis," he adds. "We should decide whether or not we

1



- 1 As global warming continues, government and industry will have to make changes to limit their impacts on the environment.
- 2 South Africa does not have hydro resources. The country will have to rely more on regional power-generation projects to reduce its impact on the environment.

are going to put our money and energy into adaptation and mitigation practices, or carry on as usual and suffer the dire consequences. At the moment, the oceans and atmosphere absorb about 60% of the CO<sub>2</sub> released into the atmosphere but ocean and land sinks will saturate; possibly as soon as the end of the century."

Scholes argues it is time to act now as we are already in much more trouble than we realise. "The global average temperature is already 0,8°C warmer than it should have been but we are, in actual fact, already committed to a 1,5°C increase in average atmospheric temperature even if we cap all our emissions at current levels immediately."

Research has shown South Africa will be, on average, 4°C warmer by around 2080 or 2099 taking a modest scenario.

Scholes advocates governments, people and business should start assessing their situations and determine a suitable response. "We should first determine the impact of global warming on our country or businesses and then establish associated risks and our own coping capacity to ascertain our vulnerability to climate change. Once we know this, we will have to act to reduce vulnerability." Scholes believes investment in mechanisms, such as the Kyoto Protocol, clean development mechanisms (CDMs) and renewable technologies need to be intensified in order to make a difference. "Kyoto wants to reduce emissions by 5% but reductions of 95% are actually needed. Whereas the CDM is good in principle, it is impractical to implement and a bureaucratic nightmare. More should be done faster to make a real mitigating impact."

**GLOBAL CULTURE CHANGE**

Prof Patrick Bond, director of the Centre for Civil Society at the University of KwaZulu-Natal

and outspoken critic of the CDM, is appalled by the idea of a solution within the framework of capitalist markets. He refers to the carbon-trading business as the practice of "buying the right to pollute".

He says: "The CDM and other forms of carbon trading result in the commercialisation of air whereby a First World polluter can fund CDM projects so they get credits to pollute further. South Africa is involved, quite simply, in "pimping" our atmosphere in order to raise a little bit of foreign direct investment. The projects themselves – like the Bhasar Road dump in Durban – are not appropriate because the landfill should be closed and not kept open to benefit the World Bank and northern investors."

Other state policies also draw his fire. "The proposed Alcan smelter at Coega means, even at a time of serious stress on the national grid, government is selling extremely cheap electricity to a multinational company, which will further increase South Africa's huge carbon footprint, and create less than 1 000 new jobs for the largest industrial-subsidies in the history of South Africa."

The answer, according to Bond, lies in a cultural and political revolution through which, especially in civil society, organised people pressurise those in power to radically change public policy. "We should redefine the way we look at things like GDP, growth and development. We should channel money and effort into areas where we can make a sustainable difference instead of looking for easy projects and investment as the answer to everything. New electricity-pricing tariffs that penalise over-consumption and sound investment policies – not those based on artificially-cheap power – require changing the economic cronyism of the South African government. It appears ready



and willing to make corporations richer while neglecting its promise to deliver free electricity to the country's poor."

#### DELIVERING DEMAND

Eskom is not unaware of its contribution to climate change and has, in fact, spent millions of rand in the past and will continue to do so in implementing more environment-friendly practices and technology. Wendy Poulton, general manager of corporate sustainability at Eskom, discloses, to meet the challenges of climate change, Eskom has a strong mitigation and adaptation programme planned. It is looking to diversify its energy mix and become less reliant on coal in the medium term. It has various projects in the pipeline to develop lower greenhouse gas-emitting sources of energy, such as gas, renewable energy and nuclear as part of the energy mix. Although people like Bond suggest Eskom cannot continue using coal to generate energy, Poulton believes the answer is not so simple. "Eskom will continue to develop 'clean-coal technologies' as an alternative to conventional power stations. The renewable technologies show much future promise and investment is being made right now. However, the ever-growing demand for base-load electricity will need to be met and nuclear is a realistic alternative. Unfortunately, South Africa does not have any significant hydro capacity so we are mostly reliant on coal for power generation at present but, by boosting the region's inter-connectivity and promoting energy trading in the region, we can further lower our ecological footprint."

More than just generation capacity, Poulton feels Eskom is doing its best in implementing demand-side management, which aims at saving 3 000 MW over the next six years and 8 000 MW by 2025. Eskom has identified about 40 different CDM projects and is involved in developing six of them. "The CDM is not perfect but it does promote more environment-friendly practices and technologies for power generation. We, as a utility, have to make a trade-off between what the public and the economy need, and the viability and economics in supplying those needs in the most sustainable manner," she emphasises.

#### A NUCLEAR FUTURE

"The most realistic solution to mitigating CO<sub>2</sub> emissions from the atmosphere lies with greater use of nuclear power," says Rob Adam, CEO of the Nuclear Energy Corporation of South Africa. "Nuclear energy accounts for 16% of the world's generation capacity, which results in a 10% 'saving' on potential CO<sub>2</sub> that would have been released into the atmosphere if coal was used for generating that power." Adams suggests renewable technologies should receive much more funding for development and sees tax incentives playing an important role in promoting the development of renewable energies. Clean-coal technologies can play a larger role in future but the most sustainable way to add base-load generation capacity seems to be nuclear. ■