



Letters to the Editor

Appreciation for the Water Wheel

The team producing *the Water Wheel* magazine deserves a jolly big pat on the back. The magazine contents are interesting, well written, informative and of a very high quality. The layout and presentation is superb and very professional. I particularly enjoy the articles on the history of dams and readers' comments.

Having been involved in hydrology for some 41 years now, I find the various articles on climate change and global warming intriguing as many theories exist, resulting in our renowned scientists occasionally being at loggerheads with each other, often leaving readers amused and sometimes confused. More of this please.

You can truly be proud of an outstanding publication. Keep up the excellent work.

Felix Wulff, Pretoria

Why ORP was never expanded

In his letter in *the Water Wheel* of July/August 2010 Robert Blythe wrote: *"The scope of the project as outlined in the 1962 White Paper was far greater than has actually been implemented since. This is particularly true of the irrigated areas to the west. There has been virtually no transformation of the desert."*

The idea of "making the desert bloom" in the Karoo by means of supplying water from the Orange River was simply an illusion. To make a desert bloom by means of irrigated agriculture one needs both (a) irrigable soils and (b) water. In the planning of the Orange River scheme attention was given only to the provision of water. This consisted only of engineering planning, such as identification of dam sites, types of dam wall structures, identification of water command lines for the siting of canals for delivering water from the Vanderkloof Dam to envisaged irrigated areas, etc. All emphasis was

on irrigation development south of the Orange River, i.e. in the Karoo. North of the river provision was to be made only for a small canal to supply water to the Rama area.

No soil surveys were done before or during the planning stage of the Orange River scheme to determine how much irrigable land there was in the envisaged irrigated areas and where these irrigable soils were. Soil surveys were conducted only when the Gariep Dam was already being constructed. When soil surveys eventually started in the northern Karoo, close to where the Vanderkloof Dam was to be built, it soon became clear that there were extremely little irrigable soils in the area. There were only a few small areas near Hopetown.

The findings by the young soil scientists doing the survey led to great drama. They started contacting Prof Roelf du Toit (Roelf or "Tuffy") Burger, then Head of the Department of Soil Science at the University of the Orange Free State, informing him of their findings. They knew that he had the strength of character to take this up strongly and clearly with the authorities in Pretoria, which he did repeatedly. He invariably received nasty letters from Pretoria telling him to keep his nose out of the matter. I was a young lecturer in his department at the time and he always discussed the problem with me and showed me the letters. After one particularly nasty letter he said to me: *"Giel, moet ek nie maar liewer ophou nie. Dis nie goed vir my gesondheid nie."* He had serious heart problems. But after a while he said: *"Maar my gewete laat my nie toe nie."*

Eventually tenders were invited for the construction of the Vanderkloof Dam. One day we received instructions to meet a delegation from Pretoria in the board room of the Faculty of Agriculture to once and for all tell them what our objections and reservations were. I remember we had to meet on a Thursday in about the middle of October in I think 1969, a week before the contract for construction of the dam was to be awarded. The persons who received the instructions were Roelf

Burger, Giel Laker, Boet Human (senior lecturer in Agronomy at UOFS), Skroef van Zyl (senior lecturer in Agricultural Engineering at UOFS) and Dries van der Merwe (soil scientist in the OFS region at Glen). The Pretoria delegates included Dr SJ du Plessis, Deputy-Secretary of the Department of Agricultural Technical Services, Mr Kriel, Secretary of the Department of Water Affairs, Mr Du Plessis, Chief Planning Engineer of the Department of Water Affairs, and others. It was pointed out to the delegation that the extent of irrigable soils south of the river was extremely limited, but that there were large blocks of irrigable soils north of the river, especially in the Plooyburg area.

The day of tough discussions was followed by a site visit on the Friday. I could not join the visit because of lecturing duties. As I left the Agriculture building the afternoon Skroef arrived full of smiles. He told me that before 10:00 the morning Dr Du Plessis told his advisors that they had misled him.

The next week it was announced that it was decided to postpone the construction of the Vanderkloof Dam due to 'inflation'. The fact is that the dam, especially the outlets, had to be redesigned and barely a year later construction of the dam started. The Minister of Water

Affairs also announced that the plans regarding the areas to be irrigated from the Vanderkloof Dam had been changed drastically. Although it was very late, the authorities this time at least listened to soil scientists and adapted the planning accordingly. Unfortunately this is seldom the case, not only in South Africa. An unused canal section south from the Vanderkloof Dam which was built prematurely at a cost of about R2-million (a lot of money at the time) is still a silent 'monument' for what could have been a major disaster.

It can safely be said that Roelf Burger, through his unwaivering courage and perseverance saved the country from an economic, agricultural and ecological disaster.

To date there has been no large-scale irrigation development on the irrigable areas identified north of the Orange River. According to the PhD thesis of Dr Koos Eloff (1984) these amount to about 370 000 ha, of which about 160 000 ha are in the Plooyburg area. Only a few small areas have since been developed. In 2009, a senior Water Affairs engineer told me that there is presently no water available for development of these large irrigable areas. One wonders what would have happened if there were large areas



of irrigable soils south of the river and these were developed or if large areas north of the river were developed earlier. Ironically there is thus presently not a lack of irrigable land in the central parts of the country, just a lack of water.

Prof Giel Laker, Pretoria

Climate change – reader provides some answers

Professor Alexander's letter in the May/June edition of *the Water Wheel* (Climate Change – More Questions than Answers) is a defense of his argument that there is no need to take measures to mitigate against climate change. In support of his position, he makes a number of points, none of which carry serious weight:

- 1 *His research has shown no indication of significant changes to rainfall trends in South Africa.*

Professor Alexander's interpretation of his own research has been challenged by South African climatologists. But whatever the interpretation, rainfall in South Africa is but a tiny element of the global climate. It cannot on its own be used to judge whether climate models are accurate.

- 2 *Rainfall trends elsewhere in the world similarly show no evidence of climate change.*

This is simply incorrect. For example, Australian researchers have found a link between surface sea temperature changes in the Indian Ocean and off Indonesia to the significant decline in rainfall in South East Australia since 1950. NASA has found a link between drought in East Africa since 1980 and higher Indian Ocean temperatures.

- 3 *There has been no significant increase in global temperatures over the past few decades.*

Again, the scientific evidence is to the contrary. The UK Met Office recently published a report indicating that global temperatures have risen 0.75° over the last 100 years, with 2000 to 2009 being the warmest decade on

record. The NASA Goddard Institute for Space Studies has found that global surface temperatures have increased significantly since the late 1970s. These findings (and many others) vindicate the "hockey stick" graph mentioned in his letter.

- 4 *The European winter of 2009/2010 was one of the coldest on record.*
This is not a serious argument against global warming. Firstly, there is no evidence that average global temperatures were cooler than normal, and secondly, climate is a long-term phenomenon. Climate has been confused with weather.

- 5 *Scientists at East Anglia University's Climate Research Unit have been manipulating the evidence that supposedly points to anthropogenic (human induced) global warming (AGW).*

Professor Alexander's account of this episode is highly selective, focusing on the media headlines quoting a few fragments of the many thousands of e-mails released by the hackers. He omits crucial information on subsequent inquiries into the matter: In January 2009 the Science and Technology Committee of the British House of Commons announced an inquiry and called for submissions. The concerns expressed by the three scientific institutions mentioned by Dr Alexander formed part of their submissions to the inquiry. The inquiry report was released at the end of March. **It cleared the scientists of all serious allegations.** On the integrity of the scientists, the inquiry found that "the scientific reputation of Professor Jones and CRU remains intact". On the actual climate science, it found that "the controversy did not challenge the scientific consensus that 'global warming is happening and that it is induced by human activity'". A more detailed inquiry into the conduct of the researchers was set up by the University, led by an international team of scientists. The "CRU Scientific Assessment Panel"

was selected in consultation with the Royal Society. It consisted of scientists from Cambridge, Imperial College, MIT, University of Arizona and ETH (Swiss Federal Institute of Technology, Zürich). Its conclusions were even more emphatic. According to the panel's chairman, they found **"absolutely no evidence of any impropriety whatsoever"**, and concluded that the allegations had been made by people "who do not like the implications of some of the conclusions" reached by CRU.

- 6 *The International Panel on Climate Change (IPCC) has been publishing false information to support its position on AGW.*

These are errors in how the panel's findings have been communicated, and have no bearing on the underlying science. To label them as "fraudulent activities" is ridiculous. What they indicate is that the IPCC should exclude non-scientific sources for information in its reports and improve its editing procedures.

The IPCC's reports reflect the scientific consensus that anthropogenic global warming is happening now. This view is supported by the large majority of scientific institutions across the world. These include the US National Academy of Sciences, the UK Met Office, the American Association for the Advancement of Science, the American Geophysical Union, the American Institute of Physics and the American Meteorological Society. Virtually all peer reviewed climatological research on climate change also supports this consensus.

The implications of the consensus are that the risk of rapid global warming is very high, and that the consequences of this are likely to be catastrophic for human society. In attempting to refute the scientific consensus, Professor Alexander has focused on media headlines and has regrettably made unfounded attacks on the integrity of fellow scientists at the University of East Anglia.

For any readers who are concerned about the risk that global warming poses to future generations, and who

are interested in the answers to the professor's questions, there is plenty of information available. The *New Scientist* has a series "Climate change: A guide for the perplexed" and *The Scientific American* has published "Seven Answers to Climate Contrarian Nonsense". Both are easily found on the Internet.

Rob Dyer, Durban

Prof Will Alexander responds:

Climate change scientists have three fundamental obligations. First, they have to determine the natural conditions. Second, they have to determine the departure from these conditions if no action is taken to control greenhouse gas emissions. Third, they have to determine the reduction in the undesirable consequences if these emissions are controlled. These three responses have to be a numerical format in order to facilitate mitigation and adaptation procedures. The procedures in turn require the cooperation of those of us in the applied and engineering sciences.

Sadly, climate change scientists refuse to consider inputs from those of us in the other disciplines. I have yet to see this information in a climate change publication. The absence of this information supports my view that there is no need for concern regarding climate change until such time that this information has been produced, verified and distributed.

The following are the responses to Rob Dyer's comments.

- 1 Rainfall is the dominant concern globally as well as in South Africa. Without it there would be no life on this planet. If the model outputs predict a drier climate when the opposite is the case, then they are obviously inaccurate.
- 2 There is no evidence of a decrease in South African rainfall during the past 100 years despite increasing global temperatures and emissions. This demonstrates that there is a fundamental error in the basic theory.
- 3 The hockey stick growth has been totally discredited. It is based on studies of tree

rings and ice cores. It suppresses the well-documented historical warm and cold periods during the past 1 000 years.

4 Climate change scientists are fond of claiming that unusual events are the consequence of climate change, except when they are contrary to model predictions when they become weather, not climate.

5 The climate gate affair and the need to appoint three committees to investigate it precipitated a flood of responses worldwide. These, in turn, resulted in both the Royal Society and the chairman of the IPC see having to acknowledge that there were still uncertainties in climate change theory. Both were previously adamant that the signs were settled. This was also the consensus view. Obviously the consensus view is in error.

6 The claims in the IPC reports that the Himalayan glaciers would melt within 25 years and that the Amazon forests were being damaged by climate change, were both acknowledged to be false and misleading. They were by no means simple editorial errors. They were deliberate erroneous statements.

7 The statement that there is a scientific consensus that anthropogenic global warming is happening now is also false. Dr Jones and others have acknowledged that there has been no sustained increase in global temperatures since 1998. The authorities that are quoted by the writer have been challenged. They are fears that the world could be entering a mini ice age.

8 The conclusion that the consequences of increases in global temperatures could be catastrophic for human society is unbelievably naive. Variations in global climate are driven by variations in the receipt and redistribution of solar energy, not variations in global temperatures. Temperature does not feature in the analysis of floods, droughts and water resource development.

9 Finally, why does the writer not quote the Royal Society's decision to rewrite its document on the basics of climate change theory? There are also several published books that are critical of climate change science.

Editor: The debate on this matter is now closed. No further correspondence will be published in this regard.

Who is protecting imported peat?

Great magazine, although I have some comments regarding the saving of local peatlands from exploitation ('For Peat Sakes', *the Water Wheel* July/August 2010). The article was very informative and covered the wide ranging effects of the destruction of our peatlands, but what was jarring at cross purposes was the way that the use of imported peat was condoned.

It makes little sense that South African peat should not be exploited or removed commercially by opening up the land for agriculture and development, but the imported peat from Europe is obtained at the expense of their marshes! Surely what is bad here is bad there too!

I would not be comfortable protecting our peatlands and feeling smug about it when we well know that the imported peat we use is a product of the very actions we want to stop here!

Riyaz Nakhwa, Cape Town



Water by numbers

20-million hectares – The land area of South Africa infested with invasive alien plants, according to a new report by the Agricultural Research Council. This is twice as large as previously estimated. The largest infestation of invasive alien plants occur in the Eastern Cape (600 000 ha affected), followed by KwaZulu-Natal (300 000 ha).

R800 000 – The money set aside by government for the Luvuvhu Adopt-a-River project in Limpopo, according to Deputy Minister of Water & Environmental Affairs Rejoice Mabudafhasi. Through this initiative around 100 women from villages around Vhembe have been identified to clean the river for the next year at a stipend.

1 600 – The estimated number of people who lost their lives in devastating floods triggered by monsoon rains in Pakistan. According to the UN, more than 300 000 homes were destroyed or damaged, 14 000 cattle perished and 2,6 million acres of crop land was inundated, leaving 17 million people affected.

50% – The percentage of industrial drainage that is returned for reuse in urban and industrial areas such as Johannesburg and Pretoria.

24 hours – The notice given to Coal of Africa to cease all operations at its Vele Colliery in the area of Mapungubwe, in Limpopo. The mine incurred the wrath of environmental groups when it allegedly started illegal mining operations in this historic area.

15 – The number of transboundary rivers in southern Africa, whose combined drainage area cover 78% of the region's continental land area. Major international rivers in the region include the Congo, Zambezi, Okavango, Limpopo, Orange, and the Cunene.

New research chair to look at food security and water quality

Rising concern over the effect of deteriorating water quality on the country's food security has prompted the CSIR to establish a Research Chair in Food Security and Water Quality.

According to Dr Paul Oberholster, limnologist at the CSIR, the need to establish such a chair became apparent after the consideration of the results of recent preliminary studies conducted on behalf of the Loskop Irrigation Board. Among others, the chair will scientifically investigate the extent and severity of water pollution and its effect on the availability and quality of food in South Africa. Funding will be sought from private-sector partners to achieve its goals.

The Transvaal Agriculture Union (TAU) has expressed its whole-hearted support of the chair. "The elements that go into produce the nation's food are like the links in a chain. All of these elements – be it fertilisers, good soil or good water – need to be in place to ensure optimal crop production," explained TAU Deputy President Louis Meintjies. "We have been concerned over the deteriorating quality of South Africa's water for some time, and we need to understand the overall impact this is having on crop production and the nation's food security. We hope the new chair will be able to achieve this."

