# **BOILING POINT**



#### **Leonie Joubert**

with contributions from Santu Mofokeng



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Foreword

Climate change is and has been an important issue for the Heinrich Böll Stiftung, for the past several years. With our focus on ecological sustainability we believe that we are in a unique position to contribute positively to the climate change issue. We have a network of 26 offices worldwide and are able to gather together experts from different regions and thus bring southern perspectives on climate change to northern audiences and vice versa thus facilitating dialogue and exchange of ideas.

Continentally, the HBS has used and supported different approaches to address the challenges posed by climate change. "Africa speaks up on Climate Change" for example is an appeal initiated by Nobel Peace Prize laureate Prof Wangari Maathai, supported by a growing number of African environmentalists and facilitated by the HBS.

In Southern Africa, the HBS supports civil society efforts to meaningfully participate in policy development and implementation on climate change. The programme aims to translate the abstract concepts of climate change and its long-term effects on large sections of the population into popular language, thus increasing debate on the issue. Recently, the HBS funded a round table on renewable energy and climate change which brought together civil society, academic and research institutions, business and government. Climate change is treated as a crosscutting issue within the three sub-components of water, energy and biopolitics.

But why should South Africans be concerned about climate change? Although the issue is receiving increasing coverage in the media, public debate about the issue is still low and should be encouraged. This is why we were extremely pleased that the focus of this year's Ruth First Fellowship in journalism was climate change and how it will affect South Africa.

Since 2006, the HBS has joined the Ruth First Trust in supporting the Ruth First Fellowship that is under the auspices of the Wits Investigative Journalism Workshop. In August 2007, fellow **Leonie Joubert**, a renowned science and environ-

mental journalist, presented a lecture entitled "Boiling Point: Exploring South Africa's Vulnerable Communities". Because of the overwhelming response, HBS approached Leonie to develop her lecture into a more in-depth portrait of the impacts climate change is expected to have on South Africa, especially vulnerable communities across the country. Her co-fellow, internationally acclaimed photographer Santu Mofokeng, presented a breathtaking exhibition on the impacts of climate change on South Africa's vulnerable landscapes.

Climate change is expected to have significant effects on the South African economy and society. Different sectors within South Africa are responding differently to climate change. The government of South Africa has prepared several policies and strategies on climate change; local governments have developed climate change plans, for example, the Western Cape Provincial Government and the Cities of Cape Town, Johannesburg and Durban. Civil society organisations are becoming more involved in awareness-raising and lobbying for action against climate change. Of note are the South African Energy Caucus and the South African Climate Action Network (SACAN). SACAN is a network of individuals and organisations working on or interested in climate change-related issues.

However, it is up to individual South Africans to realise that climate change is important and that it is possible to balance the need to develop with mitigation of climate change.

It is our hope that this book will contribute to a broader debate on the impacts of climate change in South Africa. We think Leonie Joubert's portraits of different vulnerable communities and ordinary South Africans provide an excellent starting point for such debate.

Dr Antonie Nord Regional Director HBS Southern Africa Sakhile Koketso Environment Programme Manager HBS Southern Africa Further information: www.africanclimateappeal.org, www.boell.org.za, www.boell.de

 $C \mid M A \mid F$ CHANGE What's it.

Written by Rehana Dada

Us concerned citizen types are quite good at going around expecting everyone else to be just as worried as we are about our planet-destroying behaviour, just as eager to go out and change the world. We expect them all to, just like us, rabidly read absolutely everything they can lay their hands on about how we can *make a difference*, how we can use less energy or contribute to saving some obscure butterfly. And we genuinely, deeply believe that once we *tell* people they're doing something wrong, *they will change their behaviour*.

So when we tell people about climate change, we talk about the destruction, the doom, the end of life as we know it. We talk about the Antarctic ice sheets melting and the penguins (or was it polar bears) losing their homes, or we talk about the 'desert encroaching' in Namibia or poor rain in Indonesia this year. And we tell them *it's all their fault*. And then we think we've done our job and people are going to charge out and burn their cars, buy solar water heaters, stop eating imported chocolate, maybe *even* switch off their air conditioners. And we think that of course they're going to do all that, of course they'll *want* to, because *how could they not care*?

But 'everyone else' already has a lot to care about, and what they might be thinking about most right now is that their little boy really wants a new skateboard for Diwali, or they'd like to apply for electricity for their house, or their mum's sick and they have to get to the hospital this after-

noon. For 'everyone else' those immediate, urgent and very personal concerns are always going to dominate.

And then there's all this *information* to deal with. About where it's going to get hotter and where it's going to get wetter, about which forests are going to expand and which are going to be decimated, about some countries drowning because of climate change and others maybe even benefiting from it... I mean, you have to have a PhD just to read some of those newspaper articles. And so what, anyway. I feel sorry for the penguins, but what's it got to do with me?

And that's the bottom line, isn't it. 'What's it got to do with me?

Unless we're talking to people who have the same passion for nature that we do, or the same sense of responsibility towards humanity, or even the same allencompassing drive to protect life, then the response to climate change information for the most part is going to be a serious ear for a few minutes and maybe some outrage at human selfishness and shortsightedness. And then *getting on with my day.* 

Let's be realistic. Climate change is not a simple subject and not a simple problem. It affects absolutely everything in our lives and demands drastic changes to our economies. It unconditionally demands that we rethink this indulgent fossil fuel-addicted lifestyle that we've come to accept as normal. And those are big concepts that we can only hope to get across by chipping away slowly at the different elements.

In South Africa, several journalists have made strong contributions to awareness-raising around climate change. Newspapers such as the *Natal Mercury* and the *Sunday Independent* have done much to bring the problem down to an accessible level and television programmes such as 50/50 on SABC2 and *Special Assignment* on SABC3 have tackled it in depth. There was even radio coverage of the last days of the Bali Roadmap negotiations. And certainly our key climate-change scientists – people like Guy

Midgely, Bob Scholes and Harald Winkler, and the many others who have done so much to improve our scientific knowledge base of climate change impacts on South Africa and potential solutions for our country – have made awareness-raising a significant component of their work.

So it's not that there haven't been efforts. Quite the contrary, there's been excellent coverage and good access to information. But climate change is a very intangible concept. It's hard enough thinking three years down the line to when your child will matriculate, but try thinking 50 years ahead to a time when you'll be living in essentially a foreign world.

Try preparing your five-year-old for a world where, by the time she's 30, she won't have enough water to bath every day and where there might not be apples on her table – just simply because not enough were grown that year. Try thinking about the beautiful green mountain slopes that you love hiking on as dusty heaps of rocks. Try thinking about the worst possible future for your world. And even that is only a fleeting image, because 50 years is too far into the future and the now involves a roast for dinner that needs to have the oven running for three hours, and tomorrow a long drive down the coast with the dogs.

And don't even start on the science. Looked at over the past four decades, climate-change science has to be the most confusing of any area of study. First, they weren't sure, then some of them were certain but most of them were saying it's not possible, and now most of them are saying it's something we have to deal with absolutely urgently. Climate-change science is complex and often contradictory, as well as politically loaded. No matter what government says about there being very little doubt that we are already experiencing climate change and that it is a result of our activities, there are still a few people out there who are saying that it's a hoax by rich countries to prevent me getting a job and electricity, so *I'm not sure what to believe*.

Something we still haven't cracked adequately in our knowledge sharing is that climate change is not 'just' an

environmental problem that affects plants and animals 'out there', but rather that it has substantial implications for all life on our planet, that it affects everything from basic service delivery and poverty to whether we can indulge in our carbon-intensive overseas holidays.

We haven't yet communicated well enough that climate change will reduce our food resources and limit our access to water, that there will be refugees and possibly wars as a result of it, that people will die because of it. We haven't yet communicated that it could affect the ability of third-world countries to sell their agricultural produce in industrialised countries, through narrow-minded application of concepts such as 'food miles'. We haven't yet communicated that this is clearly the worst problem the human race has had to face as a global community, worse even than severe disease epidemics, not least because of its cross-boundary impacts.

If we're going to get real action on the problem then we need to engage with all levels of society, and not only individuals who make it their business to care. And the start to that is emotional awareness-raising, not doom and gloom, but building a relationship between people and climate change on a very real and personal level.

It's not information-sharing that's going to work for climate change awareness, and not self-righteousness either. What we really need to be doing is talking to people's hearts, telling stories that make the concept real. Stories about people we know, people whose lives are intertwined with ours. Stories talk to a part of the brain that is more emotional than information-driven. Stories make morals tangible. And that's the great success of Leonie Joubert's writing. She doesn't lament what coal-fired power stations have done to the success of rooibos farming, but rather delves into the lives of the people directly affected by that pollution. She's drawn strong, clear links between excess carbon in the air and real people with real everyday cares and worries.

My sister might not respond to abstract information about faraway places, but she might pick up on that tale about the

farmer and his wife who've struggled all their lives just to make ends meet and who *are going to have an even tougher time because of climate change*. Or the loss of something that makes a landscape what it is, like the kokerboom *because it's becoming too hot for it to survive*. Or the woman who's lost her home *because of increased floods*. She might think about that subsistence fisher on the West Coast next time she goes shopping, and she might wonder about how much longer she'll be able to buy fresh hake in Durban, or whether she should be buying salmon flown in from Scotland.

It's the story-telling that's going to make this book effective, and the tales Leonie weaves makes climate change very real to the average hardworking human being.

Certainly there's still an enormous fight ahead of us. Every year there is only incremental progress at the United Nations climate-change conferences that may not adequately match the rate at which the crisis is unfolding. Even now that we no longer question the need for cutting carbon emissions, and even as we increase our reductions, we still find loopholes, like carbon trading, to avoid real change to our dependence on fossil fuels. Even as South Africa faces severe electricity supply challenges, our solutions involve exorbitant nuclear power stations and filthy coal, or biofuels that threaten food and water security instead of innovative renewable energy options. And even as we lament the endless rain in Durban this summer or the droughts elsewhere, we still eye out carbon-belching trucks as our potential next vehicle.

So yes, there's work ahead of us, and maybe awareness is only the first step and not sufficient on its own to bring about the behavioural changes required to address our crisis, but that first step of attracting everyone into this world of thinking 50 years into the future is an important part of our battle.

Read on and enjoy your immersion in the worlds that Leonie reflects upon in this book.

A stark winter-scape, after the maize is cut.



# POINT

The conservationist John Muir once said

that when you tug on a single thing in nature, you find it attached to the rest of the world. Today's story is about exactly that, how tugging on the threads of life elsewhere on the planet is causing the fabric to unravel half a world away. This is about how air pollution shunted up into the skies above coal stations in a Chinese province or the Mpumalanga highveld is drying out Namaqualand's cold fronts; or how car exhaust fumes gathering over London, Milan, Beijing or Los Angeles are driving the rivers of Mozambique to burst their banks; how the underfloor heating of a Johannesburg socialite is contributing to the sunburned skin of a Cape apple; how one person's skiing holiday means another person's empty belly.

This may appear, on the surface, to be overly simple, because attributing blame in the complicated entanglement that is global climate change is not this linear, particularly since the impacts we're seeing today are the result of accumulation of emissions put out into the atmosphere before I was born, and those put out today will only manifest in altered climate trends when I'm well into my retirement. Yet each of these is something of a caricature of complicity in a crisis which George Monbiot says has brought us to the "space between ecological collapse and ecological catastrophe".

Maybe it is better to think of it in this way: take a fish tank full of water and imagine emptying the cartridge of your fountain pen into all four corners. Allow your mind's eye to follow the ribbons of fading colour about. Eventually, there will be no visible suggestion of ink, but molecularremnants of it will be found in every square millimetre of

### Extreme weather events which have carved out the natural landscapes of this country will be ampli ed by rising carbon dioxide in the air...

water. You won't be able to identify where that molecule's entry point was but it is still complicit in the pollution of the tank.

Our home, in this metaphor, is the fish tank, and the water is our atmospheric system. For 10 000 years, humans have been polluting that by adding more heat-trapping greenhouse gases to an already delicately balanced system. In the past 250 years, with the start of the industrial revolution, the rate of pollution has increased exponentially.

For South Africa, this means rising temperatures everywhere. Within the next five decades the coast will have warmed by one degree. The northern interior by over 4°C. The desert will encroach on the west while the east will experience greater seasonal flooding. Extreme weather events which have carved out the natural landscapes of this country will be amplified by rising carbon dioxide in the air – meaning that the heat waves, droughts and floods which typify our climate will come with greater frequency and severity. Our scientists and sociologists, who usually prefer a more measured language, do not reach for hyperbole when they say this crisis is far greater than the one faced by the rise of Nazi Germany in Europe. This is longer-lasting than the next term of political office and is a giant next to the terrible crisis of HIV.

This book, an expanded version of the 2007 Ruth First Memorial Lecture, is not a list of impacts we can expect to see as our climate shifts. Rather, today is an opportunity to introduce you to some of the real people who will be expected to live through these climatic shifts.

Some of these people may even be stripped of their livelihoods as a result, even though their contribution to the pollution which causes the problem is close to negligible.

## <del>The</del> TEA MAKER



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**The rains** finally came to the Suid Bokkeveld in May. Huge, ample fronts swirled in from the Atlantic with allusions to life and a bitter-sweet suggestion of hope. Back to back, they pounded their way across the drought-dry escarpment, hurtling their contents down onto the scrubby veld below.

The rains came in May to a landscape which had probably changed little since that hot, October day, in 1961, when a young man crested the hill above the Dobbelaarskop homestead, his shoes soaked through from broken blisters after a day-long walk from the nearest bus stop. After two years in the city, Hendrik Hesselman had been summoned home to the bedside of his ailing father. *"Ek het bitter swaar gekry,"* he says in neat, colloquial Afrikaans, referring to his early days on the farm.

Today, the 71-year-old "Oompie Hen" sits in the family dining room, a rondavel, and smiles in a way that suggests he has become accustomed to the frugal life of a farmer in the deep rural Northern Cape. His wife, Sanna, potters about in the kitchen nearby, a crude *kookskerm* made of thatching reed and clay.

Like many of the landless and impoverished in the Suid Bokkeveld, the Hesselmans have survived as *bywoners*, tenants on mostly white-owned farms, initially paying rent with a percentage of their crop, and later in cash. Many work as seasonal labourers, earning less than a thousand rand a month, on top of the pittance they make off their land.

This is fynbos country – the last sliver of a fire-adapted, shrubby veld before the land gives way to the near-desert succulent Karoo. It is the most arid type of fynbos and good for just about nothing in the commercial farming sense. Except for tea. In a century, rooibos has grown from



being the poor man's *cha* to one of the most sought-after health teas in Europe, North America and Japan. And the Suid Bokkeveld has it growing wild.

Oompie Hen is chairman of the Heiveld Co-operative, a group that has grown to just over 40 sharecroppers who, in 2001, broke into the swelling rooibos market. Most of their tea is cultivated but they also pick through the natural veld for rare wild rooibos. Their individual contributions remain small – some may only have three or four bags of rooibos to sell each season, amounting to less than 200kg of crop. The total 2007 harvest for the Heiveld Co-operative was 60 tons – a fraction of what a single commercial farm might produce. Many commercial operations will sell 200 tons or more of the stuff each year and even then it is usually just one of several crops grown on the farm.

Fields of rooibos after the harvest. The exposed soil is vulnerable to be swept away by the wind.

Hendrik Hesselman has lived as a share cropper, a bywoner, in the Suid Bokkeveld for over four decades.



- Heiveld Co-operative members prepare bundles of rooibos to be chopped and fermented.
  - Hendrik's wife, Sanna Hesselman, potters 💙 about in the kitchen.
  - This is fynbos country, and sprays of reeds adorn the natural veld.



#### One person had a set of dentures made; another took a family member to hospital for treatment - both healthcare "luxuries".

The Heiveld Co-operative is exporting its crop to markets where people happily spend their pin money on premium-priced organic, Fair Trade and wild tea. And the community's fortune is changing. All the co-operative members have their first bank accounts. One person had a set of dentures made; another took a family member to hospital for treatment – both healthcare "luxuries". These are quiet signals that a community, whose education often does not extend beyond grade four, is dipping its toe into a viable mainstream market.

The Hesselmans' operation now sports a second-hand tractor and trailer – paid for with cash – and a small, if slightly weathered, 2x4 *bakkie*. This means they can bring their supplies to Dobbelaarskop by vehicle from nearby Nieuwoudtville, if they have the cash to afford fuel that month, instead of hauling it in on their backs or by bicycle or donkey cart.

Desperately poor and mostly illiterate, Oompie Hen would probably never have believed that he might one day become a land owner, but rooibos may be his ticket to gaining that one thing that has evaded his family – a title deed. Except that shifting long-term weather trends might put an end to this dream.

**···** 

The Dobbelaarskop homestead is a cluster of small buildings – some reed and mud constructions, others brick. There is no electricity out here, this far from the national grid. A telephone line was only recently strung up in the late 1990s. They have no running water, since the farm's groundwater is too deep to extract using borehole and windmill, and they're too remote from anywhere to have municipal water piped in. Since his parents settled here in 1960, they have depended on a nearby spring which filters through sand and bedrock before spilling into a catchment from where they collect it in buckets for cooking, cleaning, drinking and watering their livestock.

Only now, after four years of drought, the spring has withered to little more than a muddy drink. They've had to haul water in, in tanks, by *bakkie* – and if there's no cash for fuel, it's back to the donkey cart. One neighbour refused access to a water course because he didn't want anyone other than himself on the property, he said. The Dobbelaarskop spring is something of a symbol of the tremendous irony that is the global climate crisis.

Let's return to that hypothetical fish tank, for a minute, to consider just how ancient and well-travelled its contents are. One molecule of water – that tasteless coalition of two hydrogen atoms and one oxygen – might be flung down in a snowflake over Antarctica during a storm, locked away in a glacier for millennia before being cast adrift in the Southern Ocean in an enormous chunk of bobbing ice. This will melt, freeing the molecule to swirl about in currents for decades, centuries even. A chance encounter with the right conditions might see it sucked up by the skies, gathered into clouds and swept towards the Cape peninsula during a particularly black South-Easter.

The mountains will harvest the front's mist, channel-

ling droplets of water from the frilly edges of its vegetation, down the mountainside, into a municipal reservoir, through a network of often-leaking pipes and into our hypothetical tank.

The point of this frolic through the natural history of a water molecule is this: who, on Earth, can claim ownership







- Small profit from tea exports allowed the Hesselmans to buy a second-hand tractor.
- "Oompie Hen" warms his hands over the kitchen fire.
- **4** Far from Nieuwoudtville's shops, the family's bread is baked in an outdoor oven.

### The winter storm tracks which bring the region's rain are increasingly pushing south, missing the continent and dumping their water out at sea.

of that bit of water, which has shape-shifted between solid, liquid and gas more times than can be counted? This molecule is part of the global commons – those massive bodies of natural resources upon which we all depend for survival and which operate outside of any manufactured notion of ownership which modern humans have formalised in the form of title deeds and property rights.

No one can own the atmosphere, the oceans or the water cycle. But these can still be messed up. And for the Hesselmans, this could spell the end of their early foray into the world of tea exports. Although natural drought cycles are written into the farm's history, this one is bad, and it's a harbinger of things to come.

Already, weather records going back four decades suggest the temperature has risen in these parts by about 1°C. Inexplicably, this is double the average increase over the rest of the country and the rise is expected to continue, accompanied by increasingly frequent and intense drought and slackening rainfall. Wind speed is higher, on average, by as much at 3km per hour, which drives evaporation and dries out soils. The winter storm tracks which bring the region's rain are increasingly pushing south, missing the continent and dumping their water out at sea. These trends will continue, which many farmers are steeling themselves against, since they know the microclimates on their farms cannot support another 2°C increase in temperature which is already guaranteed to occur in the next 50 years.

Scientists theorise that species, and the climatic envelopes in which they live, will shift towards the poles as increasing atmospheric carbon dioxide pushes up temperatures globally. Then, in the late 1990s, researchers from the South African National Biodiversity Institute (SANBI) were sent out into Namibia to investigate the mysterious and widespread deaths of quiver trees. They surveyed across the full natural range of the tree from near the rooibos farms of Nieuwoudtville to the Brandberg Mountains in north-east Namibia, and discovered that the trees were dying in the north but thriving in the south. This confirms what the climate models are predicting, that the desert will press south, sweeping aside species as it goes.

Worse still, it appears to have been doing so for decades, and the rooibos plantations of the Swid Bokkeveld are directly in its pathway.

> Oompie Hen is not ignorant of the looming cloud of global warming, threatening a hotter, drier future. But for today, he is content, because the rains *finally* came in May. As if in some overzealous reach for dramatic irony, the clouds moved in over Dobbelaarskop in the same week that Hendrik Hesselman counted his 71st birthday.

> "I don't have much," says the old man, his body swaying minutely to the measured ambulations of the *bakkie* as it picks its way down the weathered farm road, "but what I have, I'm grateful for."

Hendrik and Sanna, their daughter-in-law Raagel, and the family dog, Oogies.



## A little bit of NOTHING





Thimble-sized *bakkies*, "little tubs", have taken the traditional hand-line fishers of Lambert's Bay out to sea for decades.

When the snoek run up the West Coast, no fishing boat stays behind in the Doring Bay harbour.

North-westerly winds bring the smell of rain, followed by the usual winter front, with the predictability of a metronome.

But it's the northerly that the fishers of Lambert's Bay covet most. That's the one which stirs up warmer waters. When the temperate currents run, the fish bite. Hottentot fish, snoek, stumpnose, red roman, carpenter. Ample and abundant; fish by the bucket-load.

Ernest Titus was born into a century-old fisher tradition along the Cape West Coast, one of the biologically richest and most productive of the world's fisheries. But the complexity of post-apartheid transformation within the industry, and the minefield of policy which has tried to apportion rights to different parties, has all but pinched off the access to a natural space which these fishers assumed was part of their back yard.

A West Coast fisherman lives and dies by the wind. Take the easterly – it sweeps across the Karoo, traverses the Cape mountains, creeps up behind that wispy filament of sand which divides continent from ocean and heads inexorably out across the Atlantic. It might easily take a boat out with it, losing its skipper and crew in that formidable expanse of ocean. That's the dangerous one.

Then there's Aunt Sophie – the south-easter. Billowing up across the murky waters, her skirts aflutter, she brings the coldest waters to the one nautical mile zone in which these fishermen take their thimble-sized wood and fibreglass *bakkies* (as in "little tubs"). The fish don't bite when she's at work.



Prior to 1994, mostly white-owned enterprises held the fishing quotas – less than 300 in all – giving each a fixed allowable annual catch. Traditional fishermen, some of whom owned their own boats, fished on behalf of the quota holders.

When the new long-term quotas were allocated in 2006, many traditional fishers, who had learned from their fathers and were mentoring their sons, were excluded from the only way of life they had known. Some lost out because they could not afford the R300 non-refundable fee required with each application. Others, many of whom are illiterate Afrikaans-speakers, found the complicated application forms, which are written in English, entirely impenetrable. Some resented the fact that other previously disadvantaged groups received quotas even though they have no historic connection with the fishing industry.

"It's as if our hands have been cut off," Ernest says,

The haves – Ernest Titus (seated, right) and neighbour, Hennie van Wyk, received 10-year fishing quotas.





somewhat mournfully, holding up his appendages without a hint of melodrama.

Ernest was one of the lucky ones. He got a quota for West Coast rock lobster. His neighbour, Hennie van Wyk, got one for line fish. But George Barnard, who lives nearby, didn't secure either. Now the only way George can gain access to the sea is if one of the quota holders employs him to work as a crew hand. Where neighbours and friends once worked together as peers, now one is the boss and other, the labourer.

Those that can't get to sea on the artisanal *bakkies* sign up on the commercial trawlers or long-line boats. It's either that, or get a job in construction or manning one of the lines in the potato factory which now resides in the pierside building where a thriving fish cannery once operated.

For those who refuse to give up their access, there is one more option: poaching. And because the people buy-

The have nots – George Barnard did not.

ing poached fish and lobster are usually linked to powerful Cape gangs, this has tarred a straight and formidable highway into Lambert's Bay along which the methamphetamine, "tik", travels.

Social despair and associated drug and alcohol abuse have climbed recently and while no formal count has been done to link quota limitations with poaching and drugging, the suggestion is there. One man admitted to making R3 000 in one night, with poached lobster. Ernest's quota allows him to take 750kg of lobster from the ocean each year. In the 2005/06 season, he filled that quota in eight days and made close to R70 000. That tied up his work for the year – Lambert's Bay doesn't offer much else by way of work for him. The following season he wasn't able to fill his quota before the season ended.

Born into deprivation, these fishers feel trapped on the economic fringe by unfair fishing rights allocations. Now





### Born into deprivation, these fishers feel trapped on the economic fringe by unfair fishing rights allocations. Now they face a more enduring problem.

they face a more enduring problem. Not only is this abundant fishery tangibly over-exploited, but the ocean current which brings the abundance may be altering subtly.

The Benguela Current is a cold body of water which moves up the western coastline of southern Africa. It sweeps past Cape Town, Lambert's Bay, Namibia and the Angolan coast, its frigid temperature scouring the air of moisture and seeding Namibia's desert.

Here, the prevailing southerly winds of summer blow the Atlantic's surface water, which has been warmed by the sun, away from the coastline, forcing cooler water from the ocean's depths to take its place. This upwelling brings with it the accumulated nutrients from the sea floor. The cold, nutrient-loaded water rushes to the surface where, bathed in sunlight, it provides food for massive blooms of marine algae, the ocean's pastures. Zooplankton – microscopic plant eaters – then graze the algae; fish eat the plankton, birds and mammals eat the fish. It's an entire food chain that is driven by the washing machine action of ocean current and wind and it brings food to the hooks of the fishers.

Shifting climatic trends could potentially disrupt both line fishing and lobster catches here. Thermometers have already captured a 1°C rise in sea surface temperatures around the coast since the 1940s and wind speeds are up an average of about one to three kilometres per hour.

There is considerable debate around whether or not dwindling fisheries of the West Coast are due to chronic over-extraction of fish – 18 line-fish species have collapsed due to over-harvesting, according to the State of the Environment Report, while another four are regarded as overexploited. Or rising temperatures could be pushing them south and east, much like the quiver tree is shifting; or it could simply be a natural and little-understood cycle.

For the rock lobster, though, something entirely different is at play and it manifests in mass walkouts of

### The boat flipped, trapping him beneath it in a tangle of fishing net. He clung to the vessel, sucking on a small pocket of air trapped in the boat's belly.

these spiny creatures. During summer, when the water is loaded with nutrients, if the wind should pause long enough, the algae accumulates instead of being dispersed and blown out to sea. Once the plants' food is consumed, they die, sinking to the ocean bed. As they decay, bacteria consume the oxygen in the water and without wind action to keep mixing in new, oxygen-rich water, life on the ocean floor begins to suffocate.

If these low-oxygen events move close to the shore, they force the lobsters towards the shallows and into the intertidal zone. Once the tide heads back out, the lobsters are left for dead by the retreating waters.

Lobster walkouts are on the increase, possibly due to altered wind activity. During the 1990s, five mass walkouts occurred, leaving over 2 200 tons of lobster rotting on the shore. Three of these were the worst on record.

Since the 51-year-old got his 10-year quota, Ernest has bought a small boat, a *bakkie*, whose name is a deliberate dig at the quota system – *Stukkie Ding* – reflecting the little bit of nothing that has been given to the Lambert's Bay fishers. He understands the need for managed access to the sea, for "sustainable" use of its bounty, but for traditional fishers to have such limited access seems unfair to him.

Ernest Titus had another close encounter with the dangers of the sea, one which nearly ended it all. Many years ago, he and a friend were working their net, just behind the waves at dusk, when the tide began to retreat.

"I tried to turn the boat, to head back to harbour, but the waves..."

The boat flipped, trapping him beneath it in a tangle of fishing net. He clung to the vessel, sucking on a small pocket of air trapped in the boat's belly.

"I don't know how much time passed. I struggled to get the net off me."

His head began to pound as the oxygen dwindled.

"I didn't panic... if you do, that's when you swallow water. That's something I learned from my father, you



- Ernest Titus, living the only life he has ever known.
- Keeping the sea at bay, a tumble of dolosse along the harbour wall.

must always stay calm in an emergency. That saved me."

Eventually he dived free and began to swim towards the shore, where a crowd had gathered. Someone helped him from the water. He found his friend sitting on the beach where he had been for an hour, believing Ernest to be drowned.

"It was tragic... I cried, he cried... I didn't tell my wife about it when I got home."

Ernest was just 17 years old.





One of Amy Whitfield Hoar's diary entries for January 1932 was a eulogy to a typical South African summer:

"Dry," she wrote, "mealies dying, no rain to speak of. The last good rains fell in November. Things look bad."

A month later, conditions hadn't improved:

"No rain, hot and dry. Lionel chopping out some of his mealies. We had a little rain two weeks ago, but nothing to speak of. Clouds come up every day, then the West wind takes them away. Things look bad."

Two years later, in October 1934, she wrote: "Terrible hailstorm this afternoon. Nearly two inches of rain. Poor sheep just shorn. 108 sheep dead from wet and cold."

This is the plight of the South African farmer because




with a climate that is naturally predisposed towards fits of pique, it is feast or famine for anyone living directly off this land. Seven decades later and it is Albert Whitfield, grandson of Amy, who is working the same Free State farm. Sidling towards his 80th birthday, and with a lifetime of farming under his belt, Albert understands that this is what it's about – flood or drought, drought or flood, with the odd good year in between. His wife, Pat, understands this too, and her poetry resonates with a gritty understanding of their connection with the earth.

Driving through the flat, furrowed land with ox-blood red Hutton soils showing through and the bleached stubble of maize stalks where last season's mealies once stood, he nods towards the fields.

"One year I planted potatoes here and we had very heavy

In the second second

Third-generation farmer Albert Whitfield coaxes maize from these rich Hutton soils every year.

rain. It washed the potatoes right out of the ground and the soil was completely levelled. Smooth, like this," Albert's hand makes a sweeping motion. "It was a lot of damage."

Albert got contractors in and with a subsidy from the Department of Agriculture, dug out two wide, shallow gullies which are now anchored in place with a layer of cropped grass.

#### "We can have very heavy rains here, 80mm in half an hour. Then these (gullies) look like two Orange Rivers flowing down through the lands."

This is one of the many farms in the country's most productive maize province. Most of South Africa's maize, 92 percent of the 2.3-million hectare maize footprint, is farmed without irrigation, and nearly a million of those hectares fall inside the Free State. What happens here has implications for the nourishment of families across the country.

In 2007, the worst drought in 50 years hit the headlines





and the Whitfield farm was not spared. "Just after planting, the maize was growing prolifically. It was beautiful!" exclaims the farmer from behind the wheel of his *bakkie*. "And then the rains cut off. The rain just stopped. January and February were very, very dry."

When he made his early season crop estimate, Albert was expecting an ample five or six tons of maize per hectare, comfortably above the three- to four-ton average for the farm. But after the failed rains, the final harvest amounted to two tons per hectare.

- Waiting for the harvesters, each tassel carried a grain of pollen to the gravid cob earlier in the season, allowing a single kernel of maize to grow.
- Job done, the sundried maize flowers bleach as the winter dryness desiccates the plant in the field.
- Maize, a Mexican import, provides South Africans with their staple food: sadza, umphokogo, iphuthu, krummelpap, boiled mealie or braaied sweetcorn.





The maize shortage which results from this kind of drought ripples out through the entire country. By the close of 2006, food price increases were already outpacing inflation. Looking at the cost of a basic food basket, the National Agricultural Marketing Council calculated a 7.8 percent increase in the cost of food in 2006. But for many basic food items, the increase was two or even three times that. Maize meal was up by nearly 30 percent, cooking oil by nearly 20 percent, red meat and chicken by 11.8 percent. A complex interaction of market forces drives the maize price (including the amount of stock in the country, the Chicago Board of Trade and the rand/dollar exchange rate) – all of which cannot be discussed in detail here – but the heat waves and drought experienced across South Africa's maize-growing regions this year are expected to drive the price of this staple grain even higher.

White maize, for human consumption, fluctuated between about R600 and R850 per ton in 2004 on the South African Futures Exchange. In 2005, it fluctuated between



R800 and about R1 300 per ton. The National Agricultural Marketing Council anticipates white maize will reach as high as R2 000 per ton as a result of the recent difficult growing season.

When this permeates the food chain, pushing up the price of poultry and red meat, dairy and eggs, it is not you and I who suffer most. Yes, it's annoying to pay a few hundred rand more each month for our groceries, but we can still get by if we spend a bit less on cellphones or forego a magazine or two.

- Pat Whitfield, Albert's wife, overseeing the family herd.
- Bulk storage is what allows the Free State to feed so much of the subcontinent.

It is the economically marginal who really feel the pinch when crops are down, not because there's no food available, but because a food shortage pushes up the price, making them unaffordable to a country's poor. And it's these communities who are probably also grabbling with the longer-term stresses such as access to healthcare, poor education, HIV.

A maize trader pointed out an obvious but understated fact: that farmers are not in the business of food production out of altruism. They're in it so that they can maintain a livelihood, and that means they must keep their business afloat. They plant what the market demands and sell where the prices are high. The inherent contradiction of poverty and food security is that the place where the food is most needed is not always the place where people can afford the highest prices.

### Never go into debt for something like that, he maintains. Rather save your cash reserves for the years when drought knocks you sideways and your farm's inputs exceed its outputs.

But how a farmer *runs* his business – and whether he keeps it afloat – is critical to a country's ability to feed itself. Albert Whitfield admits that he is a cautious farmer. He doesn't blow the farm's capital on frivolous expenses, such as upgrading to the latest model Toyota or scrapping the workable old combine harvester just because a new-fangled one is on the market.

Never go into debt for something like that, he maintains. Rather save your cash reserves for the years when drought knocks you sideways and your farm's inputs exceed its outputs. Following his own advice may be why the Whitfield concern has remained healthy after three generations.

Either way, the Whitfields know there are some decisions to be made in the face of shifts in climate which are expected to make many parts of South Africa more marginal for maize production. Climate change modelling anticipates that the kinds of natural weather events, which Amy Whitfield wrote about 70 years ago, will be amplified by rising CO<sub>2</sub>: increased frequency and intensity of heat waves and droughts; greater inundations of rain; increased evaporation; drying out of soils – all written into the future of South Africa's bread basket.

And this in a country where the growing need for water and staple food will outstrip the country's ability to supply them. According to the State of the Environment Report, our demand for water will exceed available resources by 2025, if not sooner. The population of South Africa, Swaziland and Lesotho will climb from 47 million today, to about 70 to 90 million by 2035. In order to meet the region's growing food requirements, an annual three percent increase in production is needed, but climate models predict annual yields will decline by between 10 and 20 percent by 2050.

> Albert and Pat Whitfield regard themselves as caretakers of this land.



# The MUTI QUEEN



**This is a story** about a borehole. Well, it's about more than that, but it starts with a borehole and a power line and a message from the ancestors. And the message isn't good. But it's also a story about survival in a world where the rains bring plenty today but retreat tomorrow, leaving the sorghum and *morogo* for dead. It's about a place where the "drastic" disease slinks quietly through villages; where jobs are as precious as the platinum seams which lure miners from far-off places; where the child of a chief talks about a Ferrari but probably knows he may never even own a jalopy.

Unfolding amidst the chunky koppies in the nouveau mining frontier near Burgersfort in the Limpopo bushveld

is a subtext that is as delicate as it is complex. For it takes place in that indefinable place where old meets new; where traditional African culture melts into Western ways; it is where the ancestors and the Christians circle one another uncertainly. That place – that space where such different realms meet – is a restless filament, one which never quite comes into focus. One can never be sure if they meet awkwardly like oil and water or blend seamlessly and invisibly into comfortable solution.

Set against the Cubist-like tumbles of blood-brown igneous boulders, where the flaking white-green roots of muscular young fig trees try to strangle their rocky foundation, is the home of this story's protagonist. A sangoma.

Selina Thotse was a dressmaker and knitter until a prophet in her Zionist church told her that her path was with the ancestors. Her obedience to the calling got her

A furious wind draws itself across the sky.

The koppies above Ga-Selala are a veritable medicine chest for local sangomas.



expelled from that very church, but she has prospered from it, nevertheless, albeit marginally. Her first cow was in payment for a protection spell over someone's home, a "preservation of premises" she calls it. Now she has three cattle. Her first goat was bartered for a jersey and a breeding pair of pigs was for healing someone down on the plains.

She now resides as matriarch over a gaggle of children, since her aging husband no longer works: five of her own children (another two have already left home), along with several nieces and nephews, and a few orphaned children from the community. While the bustling Thotse homestead is far from wealthy, things are a bit better off these days, what with her income as a healer, her pension and the orphans' grants from the state.

This is the age of the modern sangoma, who dons surgical gloves before administering coal-coloured ash into the fine cuts she has made in the skin of a screaming infant.

Selina Thotse, healer and matriarch. 🕨



#### This is the age of the modern sangoma, who dons surgical gloves before administering coal-coloured ash into the fine cuts she has made in the skin of a screaming infant.

A cellphone call sets the next appointment to throw the bones for someone. Plastic beads occasionally replace glass in the healer's garb. The elaborate reburial of the remains of a great-great-grandfather – with the ceremonial spitting of frothing sorghum beer and snorting of tobacco snuff – all captured on home video. Rows and rows of mysterious dried *muti* sealed in recycled Purity bottles or discarded Ricoffy tins.

But let us return to that troublesome borehole. In April 2007, Selina Thotse had a borehole sunk into her back yard, an extraordinary achievement for so poor a community. At first it struck water but then the borehole stopped delivering. Selina blames the electricity. It's not powerful enough to drive the pump that sucks water up from the belly of the Earth, she says, a sign that the ancestors are unhappy with the presence of this modern thing, electricity, in their enclave. So her children settle for the tedium of carrying water in daily from the nearest water point 1.5km away, and Selina ensures that nothing, not even a light

bulb, draws current into any rooms where she communes with the ancestors.

Water is the pivot around which the survival of a rural village like Ga-Selala turns. Most houses are bricks and mortar. Many have electricity, but water and sanitation have yet to reach into these homes. In the past, the sole water points were a few wells in the village. Today, these are gloomy and dirt-slicked pools encircled by the strangely urban signature of graffiti'ed concrete. Now water is piped down from a small dam to stand pipes dotted about the village. As long as there's money to buy fuel to run the pump which pushes groundwater to the dam, gravity does the rest.

But there's only *just* enough water to get by, just enough for basic domestic needs: drinking, cooking, cleaning. Most of the district's rain falls between November and March and, compared with the national average of 450mm per year, the Ga-Selala area receives between about 500mm and 600mm of rain annually. The problem is that the rain

#### If the food garden is unattended, or if there's no water to keep it thriving, the family's nutrition drops, along with individuals' resistance to disease.

arrives inconsistently – one year will bring plenty, another will not. Summertime temperatures reach as much as 38°C with the accompanying heat stress and evaporation.

Many villagers have tried to grow their own vegetables in the past, but if the cumulus clouds withhold their summer rains just when the crops need them most in the growing season, the crops fail. The groundwater isn't assessable enough to feed to crops. One year, during a particularly dry spell, the village committee banned the irrigation of any vegetable gardens. What little water they had, explains tribal authority secretary Herbert Mahlahla during a stroll through the village, had to be reserved for domestic use. Besides, the hours of toiling between a garden and the nearest communal tap would probably exhaust many, particularly those with failing health.

For a rural community such as this, good, clean water is essential to staying fit, healthy and even well fed. Dirty or stale water can harbour bacteria, viruses or parasites that cause diarrhoea. The cholera-causing bacterium is associated with poor sanitation (the best homes have pit latrines in the yard). The more water-stressed an area, the more likely water-borne illnesses are to occur, which undermines a family's health and its ability to earn an income or tend a food garden. If the food garden is unattended, or if there's no water to keep it thriving, the family's nutrition drops, along with individuals' resistance to disease. Add in HIV/Aids, what Selina calls "the drastic disease", and susceptibility to illness increases.

## Now, add to these interwoven stresses a wildly variable and changing climate.

Dr Gina Ziervogel, research fellow with the Oxford wing of the Stockholm Environment Institute (SEI) and the University of Cape Town's Climate Systems Analysis Group (CSAG), and SEI colleague Dr Takeshi Takama, have spent the past two years gathering stories from within the Ga-Selala community in order to better understand



how these multiple levels of stress feed back into each other, undermining the health and prosperity of this marginal, rural village. The idea, Ziervogel explains, is to understand how water and health stresses might be impacted by changing climatic trends.

If temperature increases, it will have implications for water supply. Climate change has a direct effect on the water table and how much it recharges. A hotter world, where conditions are drier, will put more pressure on existing water supplies.  The Thotse homestead bustles continuously with family and visitors. Although rainfall may increase during summertime in this part of the country, according to the climate models, it is not expected to result in even distribution of more rain. Increasing temperatures are expected to amplify natural rainfall trends, meaning summertime storms may bring larger inundations of rain, over shorter periods of time. This might limit how water percolates down through the soils to the bedrock, recharging the groundwater which feeds the wells or is pumped up to the dam above Ga-Selala. More ferocious summer storms could lead to heavier rains, with more water rushing off the surface. Traffic – both human and hoofed – has worn away most of the ground cover here, exposing the orange earth to the scouring hand of wind and rain. Where the ground is not scrubbed smooth, it is seamed with occasional erosion dongas.

> Before cutting out a piece of root, the sangoma informs the ancestors of her intentions.

A storm moves in over the mineral-rich rocks of south Limpopo Province.





## She dashed into the downpour to cast a crushed root into the four winds to "prevent the enemy".

Heavy storms will only strip away more of this exposed soil.

Now the double-edged sword: mining. Ga-Selala at least benefits from being close to a main road, which allows some villagers to slip quietly into the fringe of the mainstream economy: mining, and the many industries that are growing up around the mines, such as domestic work, catering, construction and accommodation. The rocks and soils throughout the Sekhukhune municipal area in which Ga-Selala occurs are rich in heavy metals. Some mines have been open since the 1920s, but now the need for platinum, chrome, titanium, vanadium, andalusite, silica and magnetite is fuelling a mining boom. Burgersfort, according to the regional municipality, is one of the fastest-growing towns in the country. Ironically, though, the prosperity which the municipality claims is coming to the region is not reaching every village equally.

Mining means jobs and income for otherwise impoverished communities... but it also means extracting vast quantities of an already over-stretched water supply. More mines are expected to begin sinking their claims into the bedrock here. In an increasingly water-stressed environment, water managers will have to weigh up the benefits of mining jobs versus basic water demands of the people who most need the jobs which the mines will provide.

One November afternoon in 2007, while a cohort of SEI researchers picked their way up through Ga-Selala to seek an audience with the sangoma, the elements revealed themselves with all the typical drama of the highveld. A furious wind tore down across the plain, whipping the exposed ground up into a translucent orange cloud that nearly obscured the nearby villages and mountains from view. Then it paused, as if for thought, to allow the thunder to roll through.

Lightning began slicing its way across the sky, moving in closer until javelins of brilliant electricity hurtled down onto the koppies above Ga-Selala, accompanied by magnificent booms of thunderous fanfare. Then came the rain: huge, loud, drenching, relentless torrents of water, sloshing

out of a saturated sky. Selina Thotse, sangoma and matriarch, read this as a sign that the ancestors were happy with the arrival of her guests. Nevertheless, she dashed into the downpour to cast a crushed root into the four winds to "prevent the enemy".

The lightning seemed to retreat again, leaving the heavens to disgorge their contents on the ground below, and hammer doggedly on the tin roof above Selina's lounge. Most of this rain flooded off into the valley and the nearest river bed. But some of it would surely percolate down into the groundwater, to where the nozzle of the Thotse borehole lies dormant. This water will not be brought to the surface again until Selina can mediate some kind of settlement between the ancestors and the power line.

Ten-year-old Dipolelo, Selina Thotse's last born, in training to be a sangoma.



Forces of NATURE





**Bongive Mkize** is a forgotten refugee. She was driven from her home by a band of thugs, her house torched because the political colours she flew were different to theirs. Like so many in her community of Henley, outside Pietermaritzburg, she fled. Bongiwe's escape washed her up 10 kilometres away to the verge of a muddy little *spruit* which trundles down through an industrial hub outside Pietermaritzburg. This water is fouled with soapy and greasy factory effluent and the trickling filth from broken sewage pipes upstream.

A handful of people have erected their wattle-and-daub homes on the northern bank of the Baynespruit River, and most of them, like Bongiwe, are the casualties of war. She may not fit the United Nations' definition of refugee, because she was not been forced across any national boundary and hasn't been given official asylum by any foreign state, but in the end it's just about semantics. She fled from one municipal ward to another in the hope of finding sanctuary and the forces driving her there were just the same as if she'd fled a national conflict.

Natal, in the 1980s, was a war zone, and 1987 was the bloody climax. What sinister interplay of underlying tensions was able to foment into the kind of conflict where communities turned on each other with such bewildering viciousness, has filled reams of history books. But, writes Black Sash commentator Anne Truluck of the 3 200 deaths and the 100 000 people leveraged from their homes by the violence between January 1987 and mid-1992: "Statistics on deaths, incidents, homes destroyed and persons displaced serve to hide the

There is no escaping when the rains begin to fall.

Bongiwe Mkize, a refugee of the violence that tore the Natal Midlands apart in the 1980s.





- Mrs Nxumalo (red top), who lives in a onebedroom house with her adult son in the same informal settlement, with her neighbour Jean Wood (red hat).
- Younger generations grow up in the shadow of their displaced parents.
- Across the Baynespruit River is the bricks-andmortar township of Sobantu where life potters by.
- One of the many Sobantu residents whose home was completely lost under the flood waters in 1987.



#### The loss of traditional home structures, of churches and extended families, the moral nurseries into which healthy individuals could grow, were torn apart.

human face of the war – the random killings, sudden midnight attacks, large-scale massacres; the dead children and mutilated women; the long night marches of the late 1980s by men and youths trying to protect their communities and their families; the refugees forced to move on from place to place, abandoning everything they possessed."

Most historians agree that a culmination of factors had corroded the social networks which would normally have held these communities in healthy stasis. Decades of social engineering by an apartheid state, within an industrialising economy, produced a migrant labour system which deposited so many black South Africans unceremoniously on many cities' fringes, often in urban squalor or unisex hostels. The loss of traditional home structures, of churches and extended families, the moral nurseries into which healthy individuals could grow, were torn apart. Traditional law enforcement within the emerging townships, locations and squatter settlements were ignored by a policing system that wasted its time on enforcing petty apartheid rules instead of dealing with real crime within communities. Massive unemployment prevailed (some 40 percent in these parts, according to Truluck, quoting the International Commission of Jurists of 1992) and a hopelessly inadequate Bantu education system. A struggling proletariat found itself with inadequate housing and expensive public transport to ship them the considerable distances between their homes and their jobs.

Then, into this mire, the first death throws of a state that was losing its hold on the country. Historian, professor John Aitchison, explains that the formation of the United Democratic Front (UDF) in 1983, in response to the National Party's latest move to formally exclude black South Africans from government in the form of a new tricameral parliament, arrived at a time when there was already considerable and growing conflict between Inkatha (today the Inkatha Freedom Party or IFP) and other liberation parties.

Since its inception in 1975, Inkatha had a "low key (but) stabilising presence" in the Natal Midlands, writes Aitchison, and had been on good terms with the banned and exiled

African National Congress (ANC). But history recalls a schism developing between the parties in 1979, one which caused the more radical youth – one which identified with "the exiled liberation movement and the leaders on Robben Island" – to feel a sense of alienation from Inkatha. The growing divide between the UDF and Inkatha, and a radical and out-of-control youth, manifested aggressively in tit-fortat killings and mutilations, and turf struggles. A lack of tolerance for any opposition in the Natal Midlands culminated in a vicious implosion of escalating bloodshed.

In September 1987, all hell broke loose. A series of events conspired to bring an upwelling of violence that marked this month as a particularly bloody chapter in the ongoing conflict. Between March and August 1987, murders had already climbed to "an average of 14 a month", but in September, 59 people died as lines were drawn more clearly between UDF and Inkatha strongholds.

This was a war that raged in the streets where children played and in the homes where families slept. There was no separation between combatant and civilian. Local political leaders were often warlords and ordinary people became vigilantes. Running battles continued where communities should have been kept safe by the state and its police – instead the state conspired to let this violence run loose.

Then the heavens opened. John Wright, retired KwaZulu-Natal history professor, recalls that dreadful month. "At the time they (the floods) seemed completely incidental. The violence in the Pietermaritzburg area flared up precisely in mid-September 1987. Two weeks later came those unprecedented rains, three and half days of them. Funerals were postponed, bodies were washed out of graves and down the (Msunduzi) river. Then the rains stopped and people – and the police – went back to fighting and killing one another, for another three or four years."

It is unclear when on this timeline Bongiwe Mkize and her family were pried from their Henley home or when they finally settled on the edge of the Baynespruit River, but just across from where their house is now, is one of the oldest



- These houses along Sikhosana Road in Sobantu are in the one-in-50-year flood line. These residents refuse to move.
- Sihle Sokhela, local tour guide, surveys the early morning bustle. 🔶
- Sobantu Township should never have been built on a flood plain but now it is an established community with thriving businesses. Unlike where Bongiwe Mkize lives, Sobantu cannot be moved away from the constant threat of flooding.



A local vendor who serves breakfast at the Sobantu taxi rank.

and most established of Pietermaritzburg's townships: Sobantu. It is set snugly in the fork where the mighty Msunduzi River (meaning "the pushing force of the water") meets the Baynespruit.

Days of steady rain saturated the catchments, spilling downhill into the streams which feed into these two rivers. Rivulets began to swell, as their banks were forced to accommodate more and more water, slowly becoming torrents. When the rushing waters met at the confluence of the two rivers, the bottleneck forced the muddy waters to push back across the flood plain on which part of Sobantu is built. Before long, the expansive girth of rising waters was lapping up against row upon row of houses. Finally, even the steeple above the three-storey high, red-brick church at the entrance to the Sikhosana Road cul-de-sac was lost under the water.

Fortunately for the residents of Sobantu, the waters rose while most were away at work or school, backing up slowly and steadily to engulf well over a hundred houses. Had the flood been different – had the waters torn through in a rapid



#### Before long, the expansive girth of rising waters was lapping up against row upon row of houses.

surge, as sometimes is the case with floods – the result would have been quite different and bricks-and-mortar houses would have been ripped apart by the force of the water.

The rest of the then Natal Midlands and Durban area were similarly broadsided by the flooding and the 1987 event has gone down in history as a bad one. State organisations struggled to count the number of people displaced or dead. Newspaper headlines in the *Natal Witness* and the *Echo* ran almost daily tolls but often qualified their figures as underestimates.

While it may be contentious, there is also some indication that the floods helped fuel the violence. Inkatha, at the time, was attempting to recruit aggressively in many townships and villages. Aitchison says one theory put forward argues that "people in the Umsinduzi Valley were so fed up after the damage and inconvenience of the floods that the Inkatha recruiting drive was the last straw and they fought back against coercion".

Alternatively, he says, "corruption in the distribution of flood relief aid led to anger at Inkatha and KwaZulu structures and in turn led to resistance to recruitment". Either way, whether the floods were responsible in some way or not, the viciousness continued. Another 83 people living in and around Pietermaritzburg lost their lives to the bloody conflict.

What, if anything, does this have to do with climate change? The answer, in short, is this: everything and nothing. No single weather event constitutes evidence of climate change. Besides, the people affected by the floods were living well within the known flood lines so it was hardly surprising that they would eventually be hit, and whoever remains in these areas will continually be vulnerable to the naturally capricious rivers that break their banks every so many years in these parts. What is evident, though, is that the nature and ferocity of this kind of flood in the KwaZulu-Natal Midlands is likely to get worse, according to climate change predictions.

A hotter world, due to rising greenhouse gases trapping more of the sun's energy, will mean greater evaporation.

#### Summer rainfall is cutting away at the makeshift foundations of their houses like sugar corroding a tooth along the gum line.

A warmer atmosphere is also physiologically able to hold more water vapour. Together, these factors mean that the rainmaking mechanisms of our climate system will be magnified. The typical storms which this region experiences will come with greater strength and the clouds will hold more water. Floods with the severity of the 1987 event are expected to happen more frequently – and many of the people who were living within the flood line back then are still living there today.

The notion of environmental refugees is one that is being used increasingly in the media – people fleeing regional natural disasters such as floods, droughts or famines. And increasingly, there is the possibility of these being linked with climate change. And where resources such as arable land and water are spread too thin, conflict is inevitable.

"Is Darfur the first climate-change conflict?" asked the Christian Science Monitor (CSM) after a United Nations gathering in Kenya in November 2006 postulated that the hostilities being witnessed in Sudan, Ethiopia, Somalia and Kenya were being sparked by desertification. "The conflict between herders and farmers in Sudan's Darfur region, where farm and grazing lands are being lost to desert, may be a harbinger of the future conflicts," wrote CSM journalist Scott Baldauf.

Indeed, the Intergovernmental Panel on Climate Change (IPCC) foresees rising conflicts and environmental refugees fleeing the regional consequences of this very global form of pollution. And while these conflicts are seldom sparked by a single event, a natural disaster can easily be the final spark to ignite existing political or social tensions.

Meanwhile the ragamuffin community on the north bank of the Baynespruit River ekes out a living. Few have jobs, their water must be carried in on foot from a solitary tap more than an hour's round trip away and they have no land to grow their own vegetables. Summer rainfall is cutting away at the makeshift foundations of their houses like sugar corroding a tooth along the gum line. When the next bad flood comes, they will lose everything. Again.

"But luckily it isn't too expensive to rebuild," said one

Baynespruit man laconically, in a deep, rumbling Zulu.

Life on this side of the river, the *yin* to Sobantu's relatively smart and built-up *yang*, is a day-to-day affair. No water, no jobs, no electricity, no chance of escaping what nature inevitably holds in store. This is a huddle of political and economic refugees, pushed onto the margins by bad luck and circumstance. Above all, they are mostly forgotten, the jetsam of forces far greater than themselves.



Left to right: Erstwhile Sobantu mayor, Caine Champion Benjamin Bhense; retiree Anthony Xaba was sentenced to life imprisonment on Robben Island by the apartheid state; and other community members from Sobantu, the oldest township in Pietermaritzburg.

### One person's excess is another's EMPTY BELLY

During the Live Earth concert held in Johannesburg in May, as part of a planet-wide effort to increase awareness around climate change, Conservation International installed a carbon footprint calculator in the VIP lounge. Performing artists and guests were asked to calculate how much carbon they produce from their domestic electricity consumption, food, waste and travel. One particularly glamorous socialite admitted to spending R4 000 a month on electricity. That's about 40 times what I use each month, and even mine could be reduced. The socialite admitted that part of her expense was keeping underfloor heating running through her home, including in the garage because she didn't like getting into a cold car in the mornings.

Now consider Hendrik Hesselman. He doesn't have a single appliance drawing electricity from the national grid. His family's only emissions come from the few hundred litres of fuel they can afford each year, some from ploughing a few fields for livestock fodder or planting rooibos, some from their food and domestic waste.

For me, two stories emerged from the rooibos tea community, two stories which typify precisely the moral dilemma facing the planet at this time of unequivocal crisis.

The sharecroppers of the Suid Bokkeveld, at one end of the social spectrum, are poor, barely literate and are likely to lose their livelihood to the encroaching desert. The second story is



of the well-heeled consumer of that very rooibos product who enjoys the comfort of affluence and the security of wealth.

While wealth and excess of the planet's rich drive the pollution responsible for global warming, it is the economically marginal that will be hardest hit by the environmental shocks that are the inevitable fallout of that pollution.

The obvious target for criticism is the United States, whose first-world affluence produces 20 percent of global emissions from only five percent of the world's population. China is fast closing the gap between itself and the US, but still weighs in at 15 percent of global emissions. According to the World Resources Institute, the US produces 24 tons of  $CO_2$  per capita, China only four tons per person every year.

Compared with the rest of the world, South Africa only emits 1.23 percent of the global total. But according to UCT's Energy Research Centre, the average South African produces

 Lambert's Bay fishermen struggle for access to an overexploited sea. Now they must contend with climatic shifts, too. 7.5 times more  $CO_2$  than the average African and our per capita output – nearly 10 tons per person – is three and a half times the average for the developing world. With our country's ambitious target of a six percent growth rate, on the back of cheap and dirty coal, we are likely to quadruple our emissions within the next 50 years if we continue business as usual.

According to the State of the Environment Report, South Africa's poor are getting poorer. In 1995, 16 percent of South Africans lived on less than a dollar a day. By 2002, that had doubled to a third of the country's population. Wits sociologist Dr Jacklyn Cock states that the same patterns of deprivation and over-consumption seen elsewhere on the globe are manifest in post-apartheid South Africa – the most unequal society in the world.

Almost half of all households, she says, live below the estimated poverty line. Today this is measured as being about

> The church choir gathers to sing at the house of the chief, in Ga-Selala.



#### The same patterns of deprivation and over-consumption seen elsewhere on the globe are manifest in post-apartheid South Africa – the most unequal society in the world.

R431 per person per month, according to 2006 prices. That's less than I spend on groceries for two each week.

"The CEOs of our 50 largest and most influential companies each earn, on average, more than R15 million a year – more than 700 times the minimum wage," writes Cock.

Who would have thought, when that first steam engine was unveiled at the start of the Industrial Revolution, that a community's actions on one side of the planet would uncouple systems upon which people are dependent half a world away. As far as the emerging rooibos farmers of the Suid Bokkeveld are concerned, the developed world is tugging on a thread, mostly in the north, and producing atmospheric pollution that is causing the cloth to unravel so far away in the south.

The cycle which brings the Dobbelaarskop farm its water is beyond the ownership rights of any body, whether national or private. Similarly the fish of the Benguela current or the rain storms of the Free State. They are part of the greater system, those global commons are supposed to be held in trust for us, by us. It is a problem we have inherited from our parents, and have already passed on to our unborn children. While policy-makers and individuals scrabble about looking for ways to change the lifestyles and fuels which are at the root of the problem, we must never forget the people out there who have no way of stepping out of the path of the approaching onslaught.

To reiterate George Monbiot's point, we find ourselves "standing at the interstices between ecological collapse and ecological catastrophe".

# South Africa's role in CLIMATE CHANGE

Written by Sakhile Koketso<sup>1</sup>

This section provides a brief explanation of climate change and South Africa's role in climate change.

#### WHAT IS CLIMATE CHANGE?

Our planet is surrounded by a blanket of gases which keeps the surface of the earth warm and able to sustain life. This blanket is getting thicker, trapping in heat as we release greenhouse gases by burning fossil fuels for energy and as we cut down forests and replace them with agricultural land. As a result, our climate is starting to change.

Scientific research indicates that, because of climate change, we may experience more intense and more frequent extreme weather events. A gradual increase in temperature also has major implications for ecosystems, growing seasons, animals and their habitats.

Some changes to the climate are inevitable – even if we stop emitting gases now, the gases we have already released will have an effect. However, we must do everything we can to avoid further changes and to adapt to the new situation we find ourselves in.

Taken from Climate Change Communication Initiative, 2007<sup>2</sup>

#### South Africa as an agent of climate change

Greenhouse gas emissions have been identified globally as one of the major drivers of climate change. There are five categories of greenhouse gas emissions in South Africa classified according to the Intergovernmental Panel on Climate Change (IPCC). These categories are energy, industrial processes, agriculture, land use changes and forestry, and waste<sup>3</sup>. Carbon dioxide is the most significant greenhouse gas for South Africa, contributing more than 80 percent of the total of greenhouse gas emissions<sup>4</sup>. Methane contributed to 11.4 percent of greenhouse gas emissions while nitrous oxide is the third greenhouse gas produced in South Africa, contributing to 5.5 percent of the total greenhouse gas emissions<sup>5</sup>.
### **CARBON DIOXIDE**

There are two major sectors that contribute to carbon dioxide emissions, namely energy and industrial processes sectors. The energy sector contributes 91.1 percent of total carbon dioxide emissions while industrial processes contribute 8.9 percent.

#### METHANE

The main sources of methane are agriculture, fugitive emissions and waste. Livestock is the biggest contributor to methane emissions with 40 percent of national methane emissions. Landfill sites and wastewater treatment facilities contribute approximately 33 percent of national methane emissions with the figures expected to grow as waste collection services are extended to the previously unserved populations.

#### NITROUS OXIDE

Nitrous oxide emissions from agricultural soils and the use of manure and synthetic fertilizers account for about 82 percent of all nitrous oxide emissions. Emissions from the chemical industry during the production of nitric acid contribute a little above 10 percent to total nitrous oxide emissions.

## Who is doing what in South Africa

The government of South Africa has prepared several policies and strategies on climate change. These include the National Climate Response Strategy of 2004, the South African Country Study on Climate Change of 2000 and the Long Term Mitigation Scenarios Planning which is to be completed in the first half of 2008.

Although it is the policy of the South African government to reduce greenhouse gases and to adapt to climate change, some policies and programmes within the government actually contradict this. For example, although on the one hand the Department of Environmental Affairs and Tourism has developed policies and programmes to combat climate change, the Department of Minerals and Energy (DME), through its subsidiary public corporations Eskom and PetroSA, has announced major infrastructural developments that are likely to have a deleterious effect on the climate. Examples are a new coal-fired power station in Limpopo and a new petroleum refinery in the Eastern Cape, both of which will result in increased greenhouse gas emissions.

Furthermore, low-priced energy is at the core of the country's growth and development policy. It is one of the competitive advantages that South Africa uses to encourage foreign direct investment but will hamper efforts to mitigate climate change.

Although renewable energy is a sustainable alternative to fossil fuels in mitigating climate change, the government has not invested significantly in research and development in renewable energy as much as in coal, hydro and nuclear power stations. Furthermore, energy efficiency is not being implemented quickly enough to mitigate climate change.

The role of business in mitigating climate change has thus far been limited to the voluntary agreements made in the Energy Efficiency Accord. Industry and government are promoting crop-based biofuels which could add to the problem of climate change as most biofuel crops are quite energy intensive, so by the time the crops are converted into fuel they have contributed to greenhouse gas emissions themselves. It is worthy to note though that some efforts have been made by some businesses to be more energy efficient and contribute less to greenhouse gas emissions.

Local government has become more involved in climate change issues. For example, in August 2006 the City of Cape Town adopted an Energy and Climate Change Strategy. This strategy includes meeting the city's energy needs through renewable energy, promoting energy efficiency, provision of reliable public transport and improved city planning. Other local governments that are developing climate change strategies are the Western Cape Provincial Government and the Cities of Johannesburg and Durban.

Non-governmental organisations and other social groups such as faith-based groups and labour organisations have realised the urgency of action to mitigate and adapt to climate change. These groups have created networks for advocacy and lobbying for action against climate change. Of note are the South African Energy Caucus and the South African Climate Action Network (SACAN).

## South Africa at the climate change negotiations

South Africa signed the United Nations Framework Convention on Climate Change on 15 June 1993 and ratified it on 29 August 1997. The country acceded to the Kyoto Protocol on 31 July 2002. As a developing country, South Africa is a non-Annex 1 country and so does not have caps on its greenhouse gas emissions.

National government is responsible for ensuring that the provisions of the UNFCCC are implemented and the responsi-

bility for coordination and implementation has been delegated to the Department of Environmental Affairs and Tourism<sup>6</sup>. The National Climate Change Committee made up of representatives from various stakeholder groups was established to advise the Minister of Environmental Affairs and Tourism on various matters including positions to be taken in international meetings, legislation required to give effect to the convention and implementation of the convention.

South Africa believes that it should contribute to the reduction of greenhouse gases but to a lesser degree than developed countries. In a speech at a recent environmental awards ceremony, the Minister of Environmental Affairs and Tourism, Marthinus van Schalkwyk, harshly criticised the US for stalling climate negotiations and for refusing to take action – what he calls "the road to nowhere". He stressed the government's policy on common but differentiated responsibilities, stating that "developing countries such as ourselves will be expected, and should be expected, to take our fair share of responsibility and demonstrate our plans to contribute to the global response, albeit in a differentiated way that recognises our growth imperative and our small contribution thus far to the current crisis<sup>7</sup>".

### In conclusion

While it is true to say that South Africa contributes to climate change, its historical contributions are minimal compared to those of developed countries. It is also true to say that the country seems to be committed to carrying out business as usual with limited investment in renewable energy. One can then assume that the country will continue to contribute to climate change for the foreseeable future.

The most pressing question is whether South Africa will keep pushing low energy prices to woo foreign investment and therefore continue on a carbon-intensive road or will it try other means to increase its competitiveness?

On the other hand, given its long history of oppression and the state of poverty that most of its citizens live in, South Africa needs to provide hospitals, schools, roads and other infrastructure and social developments to its previously disadvantaged communities. To achieve this, the country needs a stable, growing economy which might be threatened by greenhouse emission caps. It would be grossly unfair to expect South Africa to abandon its current economic drive while other countries have benefited from decades of development based on fossil fuels.

The question for South Africa and most developing countries is, therefore, how to achieve development without jeopardising the environment that this development is based on?

#### Acknowledgments

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#### End notes

- Sakhile Koketso is Environment Programme Manager for HBS Southern Africa Regional Office.
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## LEONIE JOUBERT

Leonie Joubert is a freelance science journalist, author and columnist. Her foray into the world of climate change began with a trip to Marion Island, in the sub-Antarctic, many moons ago. Now she specialises mostly in narrative writing,

exploring issues of climate change, biodiversity, natural history, agriculture and energy. She has been published in the Sunday Independent, the Mail & Guardian, Sunday Argus, Sunday Tribune, African Decisions, Africa Geographic, Getaway, Progress, EarthYear, Farmers Weekly, Engineering News, Cape Times, SA4x4, Xplore and Wild, among others. She is a regular columnist for, among others, Getaway magazine.

Joubert's first book, *Scorched, South Africa's changing climate*, won an Honorary 2007 Sunday Times Alan Paton Non-Fiction Award.

## REHANA DADA

Rehana Dada is a South African broadcast journalist focusing on science and environment. Communication around climate change and earth sciences is an important driving force for her. She makes regular short film contributions to *50/50* on



SABC2 and a weekly environment and earth science radio slot on SAfm. In addition, she makes monthly contributions to the Working for Wetlands newsletter and has developed a website for *50/50* to further the information life of the programme's inserts and provide additional relevant information. Dada coedited *Climate Change, Carbon Trading and Civil Society* (with Patrick Bond and Graham Erion, 2007) and *Trouble in the Air: Global Warming and the Privatised Atmosphere* (CCS and www. tni.org). In 2003, she received a Knight Science Journalism Fellowship at the prestigious Massachusetts Institute of Technology in the USA and is currently pursuing a research Masters degree in climate change adaptation with the School of Development Studies at the University of KwaZulu-Natal in Durban.



## SANTU MOFOKENG

Santu Mofokeng was the first recipient of the Mother Jones Award for Africa in 1992. He lives and works in Johannesburg where he was born 51 years ago. He started his photographic career informally as a street photographer in Soweto, and was

awarded the Ernest Cole scholarship to study photography at the International Centre of Photography in New York in 1991. He was a documentary photographer at the Institute for Advanced Social Research at the University of the Witwatersrand from 1988 to 1998. Mofokeng now works as a freelance photographer/artist and researcher. His work concerns itself with issues of representation. Lately, and because of his travels, his work has focused on landscape and memory, or what he calls the ideology of the landscape. Mofokeng's perspective exhibition titled "Invoice" opened at Iziko SA National Gallery in Cape Town in December 2006 and at the Standard Bank Gallery in Johannesburg in March 2007, to critical acclaim. It is scheduled to open in Europe in 2008/09.

## HEINRICH BÖLL STIFTUNG

The Heinrich Böll Stiftung, based in Berlin, is a legally independent foundation associated to the party Bundnis 90/ Die Grunen (German Green Party), working in the spirit of intellectual openness.

The Heinrich Böll Stiftung is part of the Green political movement that has developed worldwide. Our main tenets are ecology and sustainability, democracy and human rights, self-determination and justice. We place particular emphasis on gender democracy, meaning social emancipation and equal rights for women and men. We are also committed to equal rights for cultural and ethnic minorities and to the societal and political participation of immigrants. Finally, we promote non-violence and proactive peace policies.

The Stiftung's primary objective is to support political education both within Germany and abroad, thus promoting democratic involvement, socio-political activism, and cross-cultural understanding. The Stiftung also pro-

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vides support for art and culture, science and research, and developmental co-operation. Its activities are guided by the fundamental political values of ecology, democracy, solidarity, and non-violence.

To realise our objectives, the Stiftung provides encouragement and support to groups and individuals living up to the responsibility of shaping a more peaceful world, of protecting the environment, and of promoting respect for human rights throughout the world. We seek strategic partnerships with others who share our values. We are an independent organisation, that is, we determine our own priorities and policies.

Our namesake, the writer and Nobel Prize laureate Heinrich Böll, personifies the values we stand for: defence of freedom, civic courage, tolerance, open debate, and the valuation of art and culture as independent spheres of thought and action.

## RUTH FIRST FELLOWSHIP

Ruth First was at the heart of the liberation movement in the region of Southern Africa. She participated in some of the key moments of the anti-apartheid struggle. In 1956, she and her husband, Joe Slovo, were among the 156 people arrested on charges of high treason and of contravening the Suppression of Communism Act and were among those subsequently tried.

Ruth First was arrested in 1963 at Wits University, while taking a course in librarianship, under the 90 Day Detention Act. After 89 days she was released but immediately re-arrested. Fearing that she would betray her comrades, she tried to kill herself by swallowing all her sleeping pills. She survived and interrogation continued until she was released after 177 days in solitary confinement.

Her writing as a scholar and investigative journalist was always marked by a critical independence. She was incredibly productive, sometimes producing up to 15 stories a week, engaging with crucial issues of the day. The apartheid regime always tried to silence her.

In order to promote journalism in keeping with the Ruth First tradition that is socially engaged, progressive, in-depth and original, the Ruth First Trust and the Journalism Programme at Wits University launched a fellowship in 2004 to address what the director of the Wits Journalism Programme, Professor Anton Harber, described as "a serious need in current South African journalism. The financial and other pressures on the media are such that newsrooms are shrinking, with fewer specialist or senior writers. This means that there is less and less in-depth, well-researched journalism and individual reporters almost never have the opportunity to spend significant time on major investigations, research or story development." It was hoped "to counter that with the Ruth First Fellowship by giving young journalists the time and resources to do carefully researched and substantial work", Harber said.

The Ruth First Fellowships are organised under the auspices of the Investigative Journalism Workshop of the University of the Witwatersrand's Journalism Programme.

#### BOILING POINT by Leonie Joubert

#### A publication of the Heinrich Böll Stiftung Regional Office for Southern Africa

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# **BOILING POINT** Leonie Joubert with contributions from Santu Mofokeng

"When one tugs at a single thing in nature," the conservationist and writer John Muir once wrote, "[one] finds it attached to the rest of the world."

Nowhere is this more apparent than in the climate crisis. Tugging on a thread of our shared atmosphere in China or the US, by shunting pollution into the skies there, is causing the fabric of local weather patterns to unravel half a world away.

This book, an extension of the 2007 Ruth First Memorial Lecture, explores the lives of a few ordinary South Africans as climate change sets in: a rooibos tea farmer, a traditional fisherman, a maize farmer, a political refugee and a sangoma. Most live on a knife-edge because of poverty and their dependence on an already capricious natural environment. This story considers what might happen as normal weather trends are amplified in a hotter world.

Santu Mofokeng is an internationally acclaimed freelance photographer/ artist and researcher. His work has focused on landscape and memory, or what he prefers to call the ideology of the landscape. A Ruth First fellow, Santu has compiled a breathtaking portfolio on the impacts of climate change on South Africa's vulnerable landscapes for this publication.





**RUTHFIRST** 

# Leonie Joubert

with contributions from Santu Mofokeng

"When you tug on a single thing in nature, you find it attached to the rest of the world." John Muir