

DEMOCRACY REPORT

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CLIMATE CHANGE IN NAMIBIA: IMPACTS, DECISIONS, OPPORTUNITIES



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Namibia is by any standard extremely vulnerable to climate change and its impacts. Global warming will without a doubt have profound consequences on Namibia's national development objectives and the way in which we can achieve them.

This Briefing Paper describes the risks and opportunities that global warming poses for Namibia. Drawing on a wide variety of reports and studies from the past decade, it gives an overview of likely climate change effects and challenges in the next century.

The paper then critically assesses climate change policies or lack thereof and identifies gaps in the decision-making

process, as well as in Namibia's capacity to respond to the threat of climate change. Finally, the paper recommends a course of action towards the formulation of a climate change strategy and its successful integration in Namibia's overall development.

In doing so this briefing paper hopes to create awareness among lawmakers, policymakers and civil society about the importance of global warming and the opportunities that a pro-active adaptation to climate change could offer.

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Contents

- Introduction: a country at risk
- 1 Climate Change in Namibia: overview of research
- 2 Policy Review: institutions, committees, policies
- 3 Thinking about climate change in Namibia
- Recommendations
- Further reading



Introduction – A Country at Risk

With the 17th Conference of the Parties taking place in neighbouring South Africa later this year, the climate change spotlight is firmly on our region. At the last talks in Cancún, Mexico existing divisions resurfaced. The debate again zeroed in on who should take the first step in committing to cuts of greenhouse gas (GHG) emissions.

This schism, that became the focus of the unsuccessful Copenhagen conference, must be resolved in Durban if there is to be meaningful progress in the fight against climate change. Emerging economies point, quite rightly, to the historic responsibility of the US, Europe and Japan in causing global warming. Industrialised nations in turn argue that a regime that doesn't take the growing emissions of major developing economies into account is bound to fail. Their argument probably is also not entirely without merit, although it irks developing countries that such admonishments come from polluters who themselves have not managed to significantly clean up their act in the past two decades.

In 2007 the Norwegian Polar Institute established that the current concentration of carbon dioxide is 390 parts per million (PPM), up from 388 PPM in 2005. A level of 450 PPM is believed to be the equivalent of a 2 degrees Celsius rise in temperature which would mean that the impact of climate change caused by the emission of greenhouse gases has become unmanageable.

Many developing countries in the Global South argue that an overall global rise of 2 degrees means they will be faced with disastrous effects like floods, droughts, failed harvests, epidemics, melting of glaciers, rising sea levels and social unrest. Consequently, they argue global warming should be kept under 1.5 degrees.

Public perception of climate science was heavily damaged after reports that discredited the Intergovernmental Panel on Climate Change (IPCC) in late 2009. But reviews of the IPCC's work since then unequivocally endorse the main conclusions of the panel and their views are shared by a majority of climate scientists around the world.

In other words climate change is real and it will take emission cuts of 30-40 percent below 1990 levels to even approach the point where the world can manage the negative impacts. In Copenhagen an agreement was signed - the Copenhagen Accord - that acknowledged this target. But it was by no means the commitment to long-term action that Copenhagen should have been. While the goal of 2 degrees is enshrined in the Accord, the actual emission cuts agreed to in the Danish capital come nowhere near realising this target.

For Namibia climate change losses have been estimated to constitute 1 to 6 percent of GDP by 2030, or between N\$490 million and N\$1.4 billion per year¹. By 2080 losses from a decline in land-based economic outputs could be as much as N\$2.5 billion a year.² Climate change will not wipe Namibia off the face of the earth as is the case for some small island states. Still, as an arid country, with a long shoreline and a vulnerable population that is heavily dependent on natural resources, Namibia is considered to be a country severely at risk.

Yet the climate change discussion also offers opportunities to highlight other development issues and tie them up in a sustainable agenda for the future. Namibia also has a fair potential for clean energy, with over 300 sunny days per year and enough space for solar farms. Other possibilities can be found in energy from offshore wind parks or income from carbon offsets by forest conservation and invader bush. This might put the country in an advantageous position to lead a push for low-carbon development in the region.

A realistic assessment of the slow pace of climate talks indicates that development and mainstream adoption of alternatives to fossil fuels will be the only way to avert disastrous global warming. At this point the share of renewables in

1 Reid, H., L. Sahlén, J. Stage, J. MacGregor (2007). *The economic impact of climate change in Namibia: How climate change will affect the contribution of Namibia's natural resources to its economy*. Environmental Economics Programme Discussion Paper 07-02. International Institute for Environment and Development, London, P.7.

2 Turpie, J. (2010) *Climate change vulnerability and adaptation assessment for Namibia's biodiversity and protected area system*. Ministry of Environment and Tourism, Windhoek. P.116.



the global energy mix is still negligible. In Namibia the renewable discussion has gone on for ten years, with few tangible results.

This paper will discuss a range of possible climate change impacts on Namibia, before moving on to focus on the decision-making process. Finally the paper will review a number of funding opportunities and make recommendations for future action.

1 Impacts of Climate Change in Namibia- An Overview of Research

To what extent is Namibia affected by the sometimes contradictory phenomena linked to climate change? There is no straightforward answer to that question. The recent controversy around the scientific work of the IPCC shows that even when abundant baseline data is available and climatic variations are charted and analysed minutely over a period of time, legitimate questions are raised over whether changes are natural occurrences or man-made aberrations.

In Namibia, where limited scientific data is available, gauging the impact of climate change is speculative at best. Nevertheless some preliminary scientific research and data collection, as well as informal observations and anecdotal evidence, suggests a range of climatic changes that will severely impact on Namibia's medium and long-term development and require actions around mitigation, adaptation and technology transfers. This section gives an overview of these findings over the past two decades. It is important to stress that many of the predictions listed below are worst-case scenarios that are largely not conclusively backed by empirical data, nor are they corrected for foreseeable adaptation measures.

Temperature, rainfall and evaporation

Most models forecast a temperature rise of between 2 to 6 degrees Celsius by the year 2100 with a peak around 2050, a trend that is empirically proven. Temperatures in Namibia between 1950 and 2000 rose a little over 1 degree Celsius, while readings from 15 weather stations in Namibia indicate an



increase that is three times the global mean for the 20th century.³ None of the stations showed a decline in temperature.⁴ To put this in perspective temperatures since the last ice age, 20,000 years ago, have risen a mere 8 degrees Celsius. Predictions around rainfall vary from an increase of 30 mm per year to a decrease of 200 mm on a mean of 270 mm in the last century.⁵ For Southern Africa a decrease of 10-20% is assumed, while from relevant catchment areas in Angola and Zambia drainage could drop by 20-30%, or even 60% if the worst projections are followed.⁶ This will lead to reduced run-off in Namibia's perennial rivers.

Annual rainfall is dependent on the Intertropical Convergence Zone (ITCZ) and Mid Latitude High Pressure Zone (MLHPZ) which in turn are influenced by El Niño Southern Oscillation events. All these are affected by climate change, although the relationship is not entirely understood. While rainfall variability is said to increase, duration of the rainfall season will likely be shorter. Evaporation, currently between 3800 mm per year (South) to 2700 mm per year (North), or 83% of rainfall, will grow with 5% per degree of temperature rise.⁷

These factors will impact on water flow and availability. Floods might intensify in the north due to more concentrated rainfall. Surface water in dams will decrease, as will recharge in ephemeral rivers. Groundwater recharge could drop by 30-70%, lowering the depth of the groundwater level and affecting the quality of the water.⁸ Most parts of the country, especially inland, are generally expected to become drier while water demand will increase because of rising temperatures. A big gap in the existing research is how fog patterns – vital for the coastal ecosystem - will be affected by climate change.

- 3 Dirx, E., Hauger, C., Tadross, M., Bethune, S. and Curtis, B. (2008) *Climate Change Vulnerability & Adaptation Assessment Namibia*, DRFN & Climate System Analysis Group for the Ministry of Environment and Tourism. Windhoek. P7.
- 4 Midgley, G. et al (2005) *Assessment of potential climate change impacts on Namibia's floristic diversity, ecosystem structure and function*, South African National Biodiversity Institute, Cape Town. P60.
- 5 Reid 2007, P.8-9.
- 6 Dirx et al. 2008, P.xiii
- 7 Ministry of Environment and Tourism (2002) *Initial National Communication to the United Nations Framework Convention on Climate Change*. Windhoek. P. xii.
- 8 Ibidem, p.xiii.

Natural Resources and Biodiversity - Ecological Impacts

A hotter drier climate will have ecological impacts. Effects include reduced size and productivity of wetlands, such as the Walvis Bay lagoon, the Cuvelai wetlands or the north-eastern swamps. Riverine vegetation in ephemeral rivers will decrease as recharge becomes less and less frequent. Grassy savannah is likely to be replaced by desert and arid scrubland and the problem of bush encroachment, already significant in Namibia, could escalate. Arid vegetation types are estimated to increase by 20% by 2050 and 43% by 2080.⁹

Worst case-scenarios sketch a situation in which 40% of plants will become critically endangered or extinct, while optimistic



estimates indicate that at least 30% of flora will wind up in the International Union for the Conservation of Nature's (IUCN) list of endangered species. For endemic species the percentages are 19% and 12% respectively. Wildlife will migrate to the northeast areas, face shrinking habitats or simply disappear. Build-ups of salt in *oshanas* could create a major problem, while animals will compete for reduced grazing, browsing and drinking water. Studies into Aloe Dichotoma (Kokerboom) which is an early warning species suggest warming and drying trends and a loss of species range in north and central Namibia for the past 15 to 30 years.¹⁰

Sectoral impacts-Agriculture

A change in rainfall trends will lead to shorter growing seasons. Climatic changes described above are likely to impact negatively on soil organic matter and soil moisture content, reducing water and nutrient holding capability, changing microbial composition and increasing erosion. Variability in forage quality and quantity is set to worsen while expanded grazing into marginal lands will put pressure on ecosystems.

A recent vulnerability assessment predicts loss of 9 million

hectares of rangeland by 2050 and 18 million by 2080.¹¹ The so-called 'bankruptcy belt', as it was described by Namibia Nature Foundation scientist Chris Brown, now largely situated in the extreme south and the Namib desert, will cover an increased part of the country. Higher temperatures will affect milk yield, spread of diseases and reproductivity of livestock, as well as cause a higher water intake by animals. Conflict over water and grazing will increase and the earliest signs of this have become apparent in the settling of Northern Communal Area (NCA) herders outwards from the central north along the Kunene, in the Kavango and Caprivi Regions and south towards the Veterinary Cordon Fence (VCF).

The exact correlation between future rainfall models and crop yields remains unclear, but more arid conditions will definitely affect soil quality and competition from invader species. Higher temperatures could lead to increased water demand and heat stress in plants. Declines in crop production (10-20%), livestock farming (20-50%) and subsistence farming (40-80%) are foreseen in a sector that (partially) generates income for 70% of the population.¹² Unemployment and higher rural-urban migration, exacerbated by food insecurity are some of the expected consequences.

Fishing

The impact on fishing is unclear as scientists disagree, or simply do not know, how unpredictable climatic variations will impact on the Benguela Current, which is a nutrient-rich upwelling system and one of the world's prime fishing grounds. Some models predict an initial increase in fish stocks primarily through increased coastal upwelling of nutrient-rich water through changed wind patterns. However, long-term effects are largely deemed negative. Benguela Niños - so named because of similarities with El Niño events - brings in warm water from the tropics and causes an oxygen deficit leading to massive mortality among fish that cannot migrate. Oxygen deprivation is also the leading cause for red tides. Both incidents have increased in frequency over the past decade. Fishery scientists indicate some species such as anchovy and sardines have all but disappeared from the system, affecting the fate of top predators, most notably penguins and seals. Evidence suggests the Benguela Current Large Marine Ecosystem (BCLME) could be warming up which would critically diminish fishing stocks and spawning grounds. The fishing sector contributes 4.5% to GDP¹³ and employs 13,000 people.

Tourism

Climate change could seriously affect the tourism industry that (using a wide definition) contributes 14% of GDP and 19% of

⁹ Turpie 2010, P.62.

¹⁰ Midgley et. Al. 2005, P.5, 50.

¹¹ Turpie, J. (2010) *Climate change vulnerability and adaptation assessment for Namibia's biodiversity and protected area system*. Ministry of Environment and Tourism, Windhoek. P.100.

¹² Coetzee, M. (2009) *Climate Change and Agriculture in Namibia. Adaptation and Opportunities*. Ministry of Agriculture, Water and Forestry. Windhoek. P.6.

¹³ Sherbourne, R. (2010) *Guide to the Namibian Economy 2010*, IPPR, Windhoek. P. 107.

national employment, which makes it the largest source of income after mining.¹⁴ The sector is responsible for a third of foreign exchange earnings.¹⁵ Climate change could alter the appeal of destinations, as well as impact on the operating costs of getting people there. Indirect impacts include loss of habitat, change in vegetation, spread of diseases like malaria (although there is conflicting evidence here), heightened occurrence of natural disasters, water problems, loss of biodiversity and a drop in wildlife numbers. All of which affect the livelihood of communities.

Carbon taxes on transportation might raise the cost of air and other modes of travel, adding to growing consumer awareness about engaging in long-haul travel and its accompanying carbon footprint. A decline in tourism would arguably help combat climate change through reduced emissions from air travel (total air travel is responsible for 8% of overall GHG emissions). This negative impact on the sector might be negated by marketing Namibia as a net-carbon sink and sustainable tourism destination.

Socio-Economic Impacts

The above factors might lead to a cumulative impact on the population's health and livelihoods and the government's capacity to respond. Already the HIV/Aids pandemic is cited as a factor that will seriously undermine an effective climate change response. An increase in diseases and the subsequent burden on the health system are likely. Income drops are foreseeable for the 70% of Namibians that make use of the land in one way or another, but especially for the 23% that is dependent on agriculture as their main source of income. Increased poverty combined with lower state revenues from productivity and income taxes will make attainment of the Millennium Development Goals (MDGs) unlikely. Population growth of 1.7% per year, while not spectacular, will increase pressure on shrinking resources most notably land and water over the next 30 years. Rural-urban migration is set to intensify, putting strain on the urban centres of especially Kavango, Khomas and Erongo. Rural populations in the Caprivi Region where formal employment is scarce and HIV rates high, will sink deeper into poverty, despite seemingly limited 'natural' impacts. A failing education system prohibits the conversion to a knowledge-based economy that is less affected by changes in weather patterns and better equipped to adapt to climate change. Social unrest might result as a scramble for resources and survival ensues.



2 Policy Review: Institutions, Committees, Policies, Protocols, Negotiations

Many of the threats are real and will occur, but climate change doesn't happen overnight and Namibia - while very vulnerable - is in a moderately good position to respond.

Although efforts have sometimes lacked co-ordination in the past, a lot is being done. This section gives a short overview of the state of play in the climate change negotiations and the efforts afoot at home.

From Kyoto to Cancún and Beyond

Climate change talks date at least as far back as the June 1992 Rio de Janeiro Earth Summit where the United Framework Convention on Climate Change (UNFCCC) was established as the first environmental treaty dealing with greenhouse gases. The treaty did not spell out any legally binding agreement on emission reductions, but rather provided a framework for ongoing negotiations between 194 parties (193 States and the EU).

From 1995 onwards these countries annually met at the Conference of the Parties (COP). One of these, COP3, resulted in the 1997 Kyoto Protocol. This legally binding climate regime was signed and ratified by 187 parties, while a few countries remained undecided and the United States backed out of the agreement.

Kyoto prescribes legally binding emission cuts for industrialised (Annex I) countries of 5.2 percent from 1990 levels. An optimistic look at the protocol, using the widest possible definition of emission cuts shows that the target has roughly been met. However, cuts vary significantly across the board. While the European Union (EU) over-achieved its target, signatories like Japan and Canada saw their emissions go up. More importantly, Kyoto excludes commitments by large

¹⁴ DRFN (2009) *Review and Update of National Circumstances*, Ministry of Environment and Tourism. Windhoek, P.99.

¹⁵ *Ibidem*.

emitters like the United States and the bigger emerging economies such as China and India.¹⁶

Meanwhile it has become apparent that more ambitious cuts (in the range of 30-40% from 1990 levels by 2030) are needed to curb climate change. In Bali in 2007 a plan was adopted to work towards a new agreement when the first Kyoto commitment period expires in 2012. The Bali Action Plan (BAP) foresaw such a climate deal in Copenhagen at the end of 2009.

But in the run-up to this historic gathering, the climate change debate intensified. Industrialised countries argued for a break with Kyoto and a regime that put restrictions on emissions in emerging economies. The demand reflected a changed economic reality in which China and India are moving towards positions of economic dominance. It was also inspired by the realisation that agreeing to far-reaching unilateral cuts would be politically impossible, especially in the United States.

Emerging economies accused the developed world of shifting the goal-posts mid-play and emphasised the historic responsibility of industrialised countries for climate change through their 150 years of industrialisation. They advocated a continuation of the spirit of Kyoto with its 'common, but differentiated responsibilities', meaning far-reaching legally binding cuts for developed countries and voluntary commitments for the rest.

Both positions are not entirely without merit and a large part of the failure of Copenhagen lies in the refusal of both the US and major emerging emitters to compromise. A complicating factor is that the UNFCCC negotiating tracks AWG-KP and AWG-LCA put countries like China and Namibia almost on the same level, a situation that is both unrealistic and open to exploitation.¹⁷

The result of COP15 was the Copenhagen Accord which was 'noted', but not adopted by the Convention. Since its inception at least 138 countries, representing almost 87% of emissions, have signed up to it. But some major weaknesses of the Accord are that it is not legally binding, doesn't address the underlying schism between rich and poor countries that became so apparent in Copenhagen, and fails to prescribe emission cuts that are high enough to avoid disastrous climate change impacts.¹⁸

Although the Copenhagen Accord is not formally part of the UNFCCC process, the post-Copenhagen talks have partly focused on how to reconcile some of its provisions with the

ongoing negotiations on a climate deal.

Expectations around such an agreement have been tempered however. Most negotiators present in Bonn (June 2010) and China (October 2010) did not foresee a comprehensive legally binding agreement at COP16 in Cancún in Mexico (November 2010). And indeed such an agreement did not happen.



The best that can be said of Cancún is that Kyoto wasn't abandoned. Given the significant changes in the political landscape of the US and the fact that the conference took place in their backyard in Mexico this is more significant than it might seem at face-value. As Environment Minister Netumbo Nandi-Ndaitwah said before departing for Cancún the aim of COP 16 was to restore confidence among the Parties after the horrendous Copenhagen Conference. This has been achieved to a certain point and some moderate progress was made on less important issues, although it would be misleading to call Cancún a success. The next possible moment to get a second commitment period is COP17, late 2011, in Durban, just before Kyoto expires. It is also important to note that an increasing weariness has pervaded the talks translating in diminishing funds for climate change activists. This trend has not been turned around by COP16.

It is significant that COP17 will take place in South Africa which is firmly aligned with emerging powers such as China and India. On the other hand it is becoming clear that South Africa's interests are not necessarily those of Africa as a whole. Divergence on a host of issues within the African group of countries that have been simmering for a while now, such as trade, economic integration and climate change, might finally come to the fore in the run-up to Durban, making it more difficult to speak with a united voice.

Among top negotiators there it is generally accepted that the negotiations will tackle one contentious issue at a time and could stretch over a decade or more until meaningful emission cuts are realised.

¹⁶ For more information see www.unfccc.int

¹⁷ Under the UNFCCC negotiations broadly take place on two tracks. The Ad-Hoc Working Group on the Kyoto Protocol (AWG-KP) discusses future commitments of industrialised (Annex I) countries under Kyoto. The Ad-Hoc Working Group on Long-term Cooperative Action (AWG-LCA) focuses more generally on the long-term implementation of the Framework Convention, including action by developing countries.

¹⁸ For the complete text of the Copenhagen Accord visit: http://unfccc.int/documentation/documents/advanced_search/items/3594.php?rec=j&preref=600005735#beg

3 Thinking about Climate Change in Namibia

At home climate change has featured on the political agenda since just after the turn of the century. The First National Communication to the UNFCCC, outlining Namibia's situation was finalised in 2002, and placed the country on the map as one of the more vulnerable in sub-Saharan Africa, with little capacity for both mitigation and adaptation. Namibia signed the Kyoto Protocol on 4 September 2003. A National Climate Change Committee (NCCC) was established, but remained largely inactive. After the Copenhagen conference a cabinet decision was taken to strengthen this commission. The effects of this still have to be felt and solid understanding about climate change is generally lacking among communities and some policymakers. This situation is being addressed by rolling out training and awareness programmes, for instance in villages or among politicians.

However, at this point there are few climate change policies and no specific legislation. Recently, Namibia began to prepare for a national climate change policy. The draft policy seems to advocate for vulnerability-based priorities. The paper in its current form has received critical feedback.

At a late September 2010 consultative meeting on the draft policy, experts pointed out that numbers were lacking or outdated, with some statistics stemming from 2001 or before. The document would also make too many unsupported statements and not make a link between climate change and global phenomena such as population growth and resource depletion. The economic implications of climate change would be insufficiently explained. And finally, experts asserted the paper lacked a clear vision and failed to formulate specific policies or detailed scenario development.

Most efforts in Namibia are co-ordinated through the Directorate of Environmental Affairs of the Ministry of Environment and Tourism, which comprises the Designated National Authority (DNA) for the Clean Development Mechanism (CDM) and several projects that deal with climate change, such as the Country Pilot Project (CPP) and the African Adaptation Project (AAP). Much of the funding for climate change initiatives and research comes from the Global Environmental Facility (GEF) with the UNDP acting as implementing agent.

Generally, Namibia attends the negotiations, focusing its limited manpower to improve understanding on international negotiation processes and on securing funding for adaptation and capacity building, as well as participating in discussions around renewable energies, Reduction of Emissions from Deforestation and Degradation (REDD) and clean technology transfers.

Although the Second National Communication to the UNFCCC, outlining its climate change vulnerabilities and strategies was to

be presented at COP16 in Cancún, the document was held back because it was still found lacking. The revised National Climate Change Policy as of April 2011 was with Cabinet and the Second National Communication to the UNFCCC was awaiting the signature of the Minister and will be tabled at COP 17 in Durban.

An analysis of the strategic recommendations in a discussion document around a Namibian climate change policy gives an indication of what government thinks needs to be done.¹⁹ With regard to adaptation there are four areas that will need strengthening to withstand the impact of climate change.

Firstly, there is food security and the development of a sustainable resource base. This includes the scaling-up of flood and drought resistant crops, introduction of climate resilient cropping systems, cultivars and livestock, as well as diversification in land uses and protection of biodiversity. The second broad item for adaptation is sustainable water management, which should focus on water conservation, integrated water resource management (IWRM) and trans-boundary co-operation to manage shared water resources.

A third main area of concern is human health, which is largely uncharted territory. A strengthening of the rural healthcare network, already a problem, would be a logical consequence, as well as improving capacity and efficiency in the health sector. Better access to sanitation and water will be required as well as more information on climate change and health. One obvious cross-cutting issue is HIV/Aids. At a current estimated prevalence rate of 18.8 percent and with Aids becoming more and more a chronic disease the pandemic will affect the capacity to respond to climate change to an uncertain extent.

Finally, there is the practical issue of infrastructural adaptation. Some examples of this are improved drainage and sanitation facilities, better town planning and climate-proof construction and adaptation to floods and future sea level rise. Namibia is still regarded as a net carbon sink ranking number 132 out of 212 in the list of carbon emitters between Madagascar and Uganda. Still, policymakers have committed to a low-carbon development path, mitigating Greenhouse Gas (GHG) emissions. Apart from reducing emissions from industry and agriculture, this would specifically entail a clean energy sector using renewable energy sources. A 2007 Cabinet directive for compulsory use of solar water heaters in all new public buildings articulates this commitment.

Opportunities

It might be obvious that addressing climate change in most cases would complement or strengthen existing national development strategies. Similarly, using the optimal conditions

¹⁹ Mfune, J. et. al. (2009) *Proposed Climate Strategy and Action Plan*, Ministry of Environment and Tourism. Windhoek.

in the country to develop a clean energy sector based on wind, solar, or invader bush technology, not only mitigates GHG emissions but would improve Namibia's position as an energy producer in a region that is starved of it. If managed rightly, climate change funding could help contribute to realise NDP3 targets and position Namibia to attain Vision 2030 goals, rather than just financing short-term projects. Demonstrating this kind of synergy, based on verifiable impacts, arguably also makes it easier to secure funding because it presupposes long-term commitment and co-financing by government.

Global Environmental Facility

Namibia continues to receive funds to address climate change issues from the Global Environmental Facility (GEF). Between 2000 and 2010 about US\$ 6 million was disbursed by the United Nations Development Programme (UNDP) as the GEF implementing agency. An additional N\$ 300 million co-financing from government also supports climate change matters. The GEF sponsored seven projects so far, varying from strengthening capacity around reporting, several pilots that reduce vulnerability of farmers to climate change, and renewable energy and energy-saving projects. The latest project looks at ways concentrated solar power (CSP) can be fed into the electricity grid. Apart from that, Namibia is one of only ten pilot countries for a worldwide project on community-based adaptation. This looks at measures that can be taken at community level to build resilience against climate change. Popular examples are solar cooking stoves, rainwater harvesting or conservation agriculture.

Africa Adaptation Programme / Cool Earth Partnership

Namibia is also one of twenty countries to take part in the African Adaptation Programme (AAP), a joint venture between the government of Japan and the UNDP under the Cool Earth Partnership. Under the programme several community-based adaptation projects have kicked off in the North of the country. Similar pilots have been successfully embarked on by the Country Pilot Project (CPP) in the past three years.

MDG Achievement Fund

Another potential source of funding is the MDG Achievement Fund, which currently supports Namibia on tourism and culture and gender without paying too much attention to climate change matters.

Adaptation Fund

Namibia does not yet benefit from the Adaptation Fund, which still needs to be operationalised and restructured under the UNFCCC. According to Namibian lead negotiators the country's track record on co-financing and its demonstrated ability to absorb funding have made it an attractive partner for donors, despite its relative disadvantageous position as a middle-income country.

Clean Development Mechanism

Kyoto's Clean Development Mechanism (CDM) is one of the potential sources of income. CDM in a nutshell allows companies or governments to offset their carbon emissions in developing countries. They do this by financing projects in developing countries that replace fossil fuel emissions. The reasoning is that this would both be cheaper and easier to realise as well as beneficial for the host country.

CDM would be a way to finance clean energy projects in Namibia, or earn money from carbon credits (CERs). However, CDM has many faults and suffers from a lack of enforcing legislation about cutting carbon emissions, low value of carbon credits and economy of scale problems which generally make it unsuitable for countries like Namibia.

The Ministry of Environment says there are four to five CDM projects in a feasibility phase, but not one is operational. This picture is generally valid for most of Sub-Saharan Africa outside South Africa, Tanzania and Kenya. Many other African countries simply do not possess the economy of scale that makes it interesting for investors. Or, as is the case with Namibia, sizeable electricity imports make it difficult to establish a national baseline from which cuts can be calculated. CDM-reform is one of the issues the climate talks will have to resolve to develop carbon markets and boost clean technology diffusion and use. However, if Kyoto collapses, so will all the mechanisms that currently lend credence to carbon markets.

A share of 2 percent of CERs flows to the UNFCCC Adaptation Fund, which is currently under review. Only in July the first four projects for the Adaptation Fund were approved. The fund currently has estimated total reserves of between US\$400-500 million and a working capital of US\$145 million, which is not an awful lot given the global cost estimates of climate change impacts that range roughly between US\$100-300 billion a year by 2020. Furthermore, as indicated, the chance to get a project approved through the bureaucratic mill is not very high.

REDD

An important part of climate negotiations is Reduction of Emissions from Deforestation and Degradation (REDD). In its most pure form – preserving forests – REDD is probably not as interesting for Namibia as it is for instance for the countries of the Congo Basin. However, combined with other land uses (AFOLU or LULUCF) sometimes known as REDD-plus, income from carbon sequestration (the amount of CO₂ that is absorbed by vegetation) could be relevant. In Namibia reforestation of deforested areas in the north of the country, most notably the Kavango and Caprivi and carbon offsets from bush encroached areas could be sources of income under an expanded REDD regime, although this might be at odds with the current agricultural agenda.



However, the devil is in the detail with REDD. After initial progress, negotiators find themselves bogged down on technical issues such as how to measure the amount of carbon stored in different types of vegetation, baseline, permanence and leakage issues and the rights of forest communities. The Forest Carbon Partnership Facility is one of the major funds in this respect. One of the biggest donors in this field is Norway that already has pledged several US billions for REDD. Despite REDD being billed as one area that Cancún could decide on this predictably proved impossible.

Fast-track Funding

One of the face-saving decisions of Copenhagen was the establishment of a fast start-up fund of US\$30 billion before 2012 and the undertaking to have US\$100 billion per year available by 2020. There is still little clarity on the latter, but during the intersessional talks in Bonn in June 2010, research from the European Climate Foundation (ECF) showed that US \$28 billion of the fast-track funding has already been gathered. There are a few drawbacks though. A sizeable part of the funds are actually loans and it is unclear to what extent the funding is indeed 'new and additional' as the researchers found evidence countries simply rebrand existing development projects and now count them towards fast-track funding.

Perhaps more significant is that countries are seen to grant funding on a bilateral basis, giving preference to existing partners in the developing world, often lowest income countries (LDCs). Developing countries would have preferred funding to be disbursed by an independent organisation, which distributes funds on the basis of vulnerability. There is a proposal to establish such an institution by COP17 in Durban, but it remains to be seen if individual countries want to shed their say over the money.

As far as US lead negotiator in Bonn, John Pershing, was concerned countries that did not sign up to the Obama-brokered Copenhagen Accord should not expect any of the funding mentioned in it. In Cancún there was much talk about various 'green funds' but little concrete agreement.

Renewable Energy Solutions

It is quite possible that developments in the real world will overtake the debate on emission cuts that is being waged at the negotiating tables. China is investing large amounts in renewable energy while, even before the BP oil spill in the Gulf of Mexico, draft legislation in the United States focused more on promoting clean technology than on imposing restrictive carbon quotas on its industry. Even so the drive for clean energy in the US should not be overstated. A White House official revealed that while the Blackwater Horizon disaster was happening in the Gulf of Mexico, for every call in support of a moratorium on drilling in the Gulf there were nine urging the president to lift it. It shows that the fossil fuel lobby in the US is still immensely powerful.

Kyoto and Copenhagen have shown that any climate deal seems highly unlikely without the support of the American people, who in turn will only be convinced if such a deal doesn't cost them. In the meantime emerging economies will wait for the US to take a stance before committing themselves. Increased flow of funds from North to South could end the stand-off and lead to compromises, but the actual benefit of such transfers could be very disappointing and should not be over-estimated.

In the end the climate debate is in essence an energy question. How can economic blocs develop along a low-carbon path in a way that doesn't upset their constituencies, ruin their industries and weaken their competition positions? A brief look at the history of the climate talks shows unequivocally that the economic imperative is a leading factor.

The real shift in curbing climate change might only come when renewables start competing with fossil fuels. This point is not as close as is often propagated. One problem for Africa is that it does not own such renewable or 'green' technology and is only marginally involved in its development. Already intellectual property rights (IPRs) are a huge stumbling block in the negotiations around green technology. As the value of the technology increases, this is set to become more of an issue rather than less. Unlike China and India, Africa - including Namibia - does not actively invest in creating renewable energy solutions. Africa's position in the climate talks is passive with a strong focus on reparation instead of innovation. By exploiting its favourable conditions, Namibia could become an architect of such technology and get involved with its development now, when there still is interest in, and funds for, the establishment of pilot schemes. This investment might give it an advantage in the region at a time when the energy switch will take effect. This cannot happen as a fad or without serious consideration of impacts on the wider economy. In Namibia renewables have featured high on the rhetorical agenda for ten years. In that time the government spent N\$50 million on promoting renewable energy. In 2004 the Namibia Renewable Energy Programme

(NAMREP) was started, followed in 2006 by the inauguration of the Renewable Energy and Energy Efficiency Institute (REEEI) at the Polytechnic. A solar revolving fund was initiated as early as 1996 and recently, after its apparent failure, private micro-lenders moved into this territory. Early in October 2010 an energy efficiency programme in buildings saw the light. But all in all one can hardly say the renewable revolution has been realised. Similarly it would not make sense to embark on an unfeasible renewable energy drive on macro-level, even if there was anyone to fund it.

Recommendations

Scientists have pointed out that Namibia is at the edge of the table when it comes to climate change. If the country falls off that table, so to speak, it will be very hard to climb up again. Looking at how closely land use, the natural environment, and its resources are intertwined with Namibia's economy and the well-being of its people, this is not an unrealistic scenario. However, Namibia has options. Available funding and support can help Namibia manage the associated climate risks; develop measures to strengthen the country's resilience; and adapt to the impacts of climate change which are in any case closely aligned to its national development objectives. Furthermore a close focus on becoming a leader in green technology, specifically renewable energy could enhance Namibia's competition position in years to come. For this to happen both the technical supporting requirements as well as a progressive policy framework need to be in place.

Specific recommendations are:

- The National Climate Change Policy should formulate a clear vision on how climate change challenges fit into the wider development agenda.
- The existing gap in data collection and interpretation needs to be filled. A think tank, along the lines of the Regional Science Service Centre (RSSC), needs to be established soon for this purpose and to advise government on climate change actions, indicate priorities, suggest strategies and to build capacity among officials.
- Similarly, a social-economic council, consisting of experts, private sector, unions and civil society, should advise government on the benefits or pitfalls of climate change strategies for future development.
- A new energy white paper needs to be developed that includes workable policies for renewable energy and realigns and clarifies the different roles and responsibilities of players in the energy sector, such as the Ministry of Mines and Energy, Nampower and the Electricity Control Board.
- These processes need to result in clear strategies and responsibilities, a budget, and where necessary speedy legislative reform.
- Notwithstanding solidarity with regional blocs such as SADC, the African Union and the G77, Namibia needs to

build strategic alliances with countries that have common interests, i.e. a long shoreline; a semi-desert ecosystem; a small and rural-based population etc.

- Delegations to the climate negotiations should be strengthened to secure Namibia-specific interests.
- Media outreach should be strengthened to create awareness.
- Pilot projects around renewables should be encouraged and facilitated in any possible way to stimulate the development of an energy sector that is conducive to low-carbon technology, especially for off-grid areas.
- Namibia should promote a regional low-carbon energy policy, climate-proof the energy sector and look at ways to become an exporter of clean energy, where realistic.
- An environment should be created that is conducive to research and investment in and transfer of innovative green technologies.
- Namibia should more aggressively promote energy efficiency from the household to the infrastructural level. This should include innovative ways of taxing polluters and subsidising clean alternatives.

About the IPPR

The Institute for Public Policy Research (IPPR) is a not-for-profit organisation with a mission to deliver independent, analytical, critical yet constructive on social, political and economic issues that affect development in Namibia.

About the Democracy Report

Democracy Report is a project of the IPPR. The project will produce regular briefing papers aimed at enhancing wider understanding of issues on the legislative agenda and a newsletter offering analysis and commentary on parliament from a civil society perspective.

About the Author

Servaas van den Bosch is a freelance journalist and researcher with extensive experience in the reporting of climate change and the environment. His coverage includes reporting from COP15 in Copenhagen and COP16 in Cancún. He holds an MA degree from Groningen University in the Netherlands and was twice awarded the prestigious Climate Change Media Partnership fellowship. He is an active member of Media for Environment and Agriculture and Sustainable Development (MEAD), which is Namibia's network of environmental journalists.

Glossary of Abbreviations

AFOLU – Agriculture, Forestry and Land Use
AIDS – Acquired Immune Deficiency Syndrome
BAP – Bali Action Plan
BCLME – Benguela Current Large Marine Ecosystem
CDM – Clean Development Mechanism
CERs – Certified Emission Reductions
CSP – Concentrated Solar Power
COP – Conference of Parties
DNA – Designated National Authority
ECF – European Climate Foundation
EU – European Union
HIV – Human Immunodeficiency Virus
GEF – Global Environment Facility
GHG – Greenhouse Gases
IPPC – Inter-governmental Panel on Climate Change
IPRs – Intellectual Property Rights
ITCZ – Intertropical Convergence Zone
IUCN – International Union for the Conservation of Nature
LULUCF – Land Use, Land Use Change and Forestry
MDG – Millennium Development Goal
NDP – National Development Programme
MLPHZ – Mid-Latitude High Pressure Zone
NCA – Northern Communal Areas
UNDP – United Nation Development Programme
UNFCCC – United Nations Framework Convention on Climate Change

Glossary of Terms – Widely used Climate Terms explained

Climate Change: Is the gradual rise of temperature and its impacts, such as drought, sea level rise and changing weather. Anthropogenic climate change is that part of climate change that is caused by human activity. This is thought to have caused global warming since the start of the industrial revolution, 150 years ago.

Greenhouse Gas: Gases that absorb the earth's infrared radiation into the atmosphere in a natural process. The four most important greenhouse gases are water vapour, CO₂, methane and ozone. Of these water vapour is by far the most important.

Greenhouse Effect: Is a natural effect where greenhouse gases in the atmosphere form a blanket that traps heat from the earth's surface, creating warmer temperatures. If this blanket was absent and the earth would solely depend on the Sun's radiation, temperatures would be -15 degrees Celsius on average. With man-made emissions (mostly CO₂ and Methane) there are more greenhouse gases in the atmosphere. This increases the warming effect, or global warming.

COP: The Conference of the Parties to the UNFCCC. The COP

is the most important annual meeting with regard to climate change. At this meeting 194 countries gather to talk about global warming and try to find a solution to the problem. An important COP was Kyoto where countries agreed to cut CO₂ emissions. At COP15 in Copenhagen in 2009 the Kyoto Protocol was supposed to be replaced by an ambitious globally binding agreement that would curb climate change once and for all. This objective failed. At COP 16 in Cancún, Mexico in late 2010 the countries sought to pick up the pieces and resume negotiations. While at the moment expectations are subdued and the economic consequences of taking action are enormous, in the past two decades awareness around climate change has grown exponentially.

Mitigation: Is a collective term for reducing greenhouse gases and slowing down global warming. There are two ways to mitigate. The first is to cut emissions of CO₂ and methane, for instance by replacing use of fossil fuel by renewables. The second is to increase the uptake of these gases on the earth's surface in 'carbon sinks'

Carbon sink: These absorb greenhouse gases and as such reduce the Greenhouse Gas Effect. An excellent example are plants and trees. Theoretically increasing carbon sinks such as forests would help reduce global warming. The largest existing carbon sink are the world's oceans absorbing 25% of CO₂. However, the rising levels of CO₂ in the ocean are thought to have adverse effects.

Carbon Credits: Mitigation projects such as the Clean Development Mechanism (CDM) generate carbon credits. In theory any effort that mitigates greenhouse gas emissions could qualify for carbon credits based on the tonnage of CO₂ that is being cut. The credits represent a value because they replace a source of pollution. Carbon credits can be exchanged on the market, usually on a carbon exchange. The fundamental problem with setting a price for carbon credits – apart from establishing how authentic they are - is that emission reductions around the world largely take place on a voluntary basis. Alternative/Renewable Energy: Is energy that is harvested from other sources than burning of fossil fuels. Examples are solar, wind and water.

Adaptation: Refers to all the measures that are needed to 'adapt' to the adverse effects of climate change. In many developing countries adaptation efforts overlap with existing development goals.

Reduction of Emissions from Deforestation and Degradation (REDD): Looks at how protection of forests, and other vegetation (REDD +) can help create additional carbon sinks.

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Mike Shanahan of the International Institute of Environment and Development (IIED) compiled a comprehensive list of sources for journalists and other interested parties. Check the list on: <http://www.iied.org/pubs/display.php?o=G0251>