



THINK NAMIBIA

COMMEMORATING 20 YEARS OF TACKLING CLIMATE CHANGE IN NAMIBIA 1995-2015

FOREWORD

In two weeks' time, the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC) will hold the 21st Conference of the Parties (COP 21) in Paris, France. Namibia has been a signatory to this international treaty since 1995 and is as such at an important juncture of commemorating the progress and lessons to come out of the past 20 years of responding to the challenges presented by climate change within the context of international development. Another important juncture in international development is that of the soon to be enacted inter-governmentally agreed set of targets, the Global Goals for Sustainable Development (SDGs). In less than two months (January 2016), the SDGs will take effect when UN member states are expected to enact policies and legislation to realise them and their associated targets.

In light of these important international developments, Commemorating Twenty Years of Tackling Climate Change in Namibia (1995- 2015) celebrates the country's progress to foster cross-sectoral and dynamic solutions to address the far- reaching effects of the real and urgent challenge facing international development: climate change. Analysts, practitioners and entrepreneurs provide insightful analyses and practical insights on climate change adaptation and mitigation in the context of Namibia as well as its role in the Southern African Development Community (SADC) and

the African continent. Commemorating Twenty Years of Tackling Climate Change in Namibia (1995-2015) addresses topics related to water, gender, energy, agriculture, youth, tourism, forestry, politics and economics.

We as the Hanns Seidel Foundation Namibia (HSF) would like to express our sincere appreciation to the Environmental Investment Fund of Namibia (EIF), the European Union (EU), the United Nations Development Programme (UNDP) and MTC for their financial support, which has made this publication possible. We would also like to extend a warm thanks to all of the contributing writers for their contributions to this publication. We appreciate the time they have taken and dedication to share their insights with the Namibian public.



Lesley-Anne van Wyk
Editor

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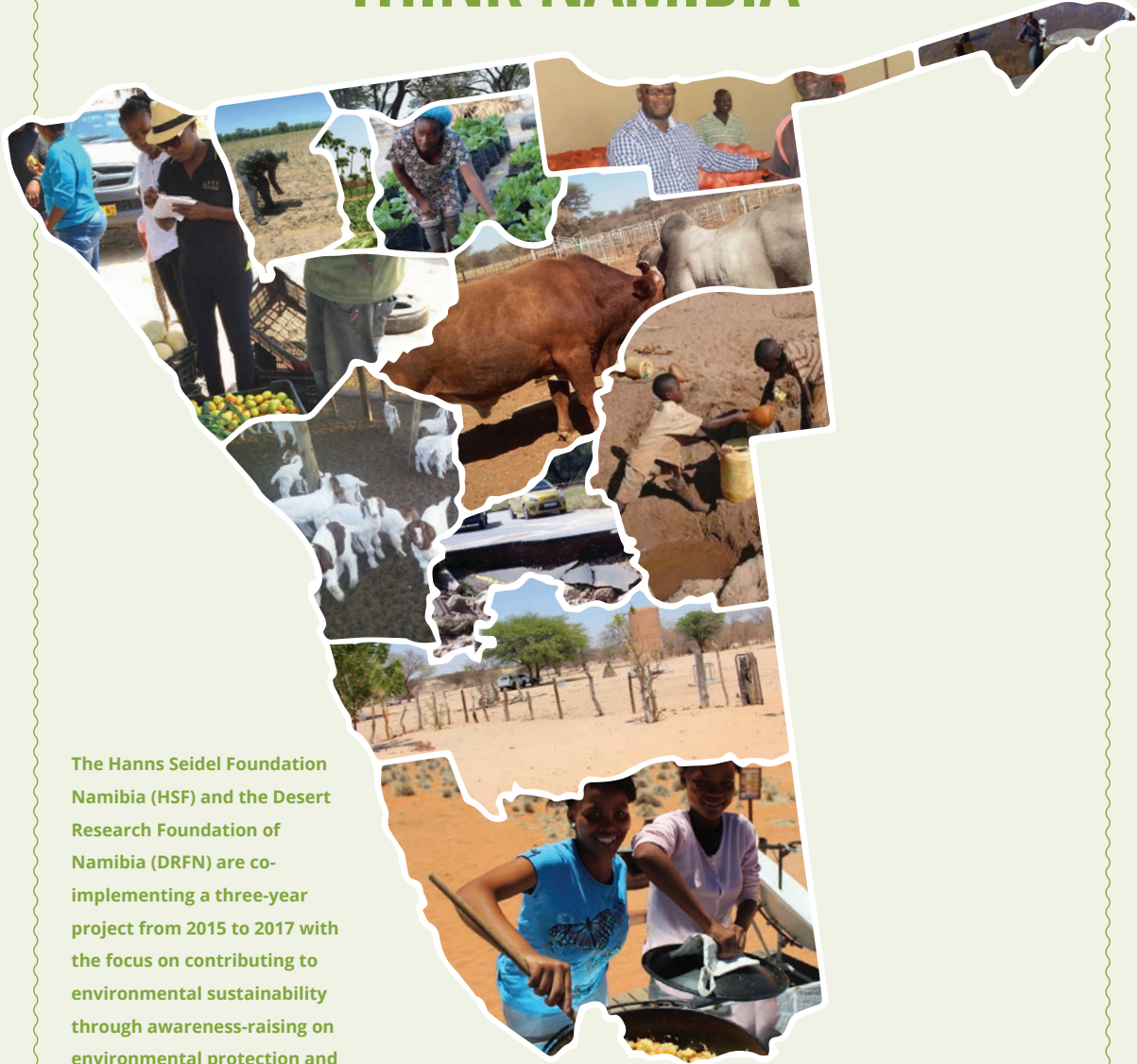
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THINK GREEN, THINK NAMIBIA



The Hanns Seidel Foundation Namibia (HSF) and the Desert Research Foundation of Namibia (DRFN) are co-implementing a three-year project from 2015 to 2017 with the focus on contributing to environmental sustainability through awareness-raising on environmental protection and climate change adaptation and mitigation.

For more information please contact:

Lesley-Anne van Wyk

Project Coordinator

Environmental Awareness and Climate Change Project

✉ enviropoint@hsf.org.na

www www.enviro-awareness.org.na

🐦 @ThinkNamibia

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THINK NAMIBIA

CLIMATE CHANGE ADAPTATION AND MITIGATION: MILESTONES IN NAMIBIA'S CLIMATE CHANGE RESPONSE

By Dr. Jonathan Mutau Kamwi

Namibia ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1995. As a Non-annex 1 party to the Convention, Namibia is not obliged to reduce its Greenhouse Gas (GHG) emissions. However the country's dependence on energy from South Africa and its favorable conditions for renewable energy, makes the transition to a low carbon economy an important long-term strategy.

Climate change has become a prominent item on the international agenda and is a growing crisis with economic, health and safety, food security and other dimensions. Increased temperature, rainfall variability and an increased frequency of flood and drought events, as predicted under climate change scenarios, will have very severe implications for the Namibian environment, population and economy.

The high reliance of the Namibian population on the natural environment for their livelihood and the existing fragility of our environment makes Namibia one of the most vulnerable countries to climatic change impacts (See Image 1). In recent years, we have encountered severe flood events, our worst drought in over 30 years in 2013, while the current concerns over water shortages are a taster for what we can expect as climate change starts to bite. We need to be prepared and able to adapt so that we can enhance our resilience to these events.

Namibia National Climate Change Committee

As national focal point to the UNFCCC, the Department of Environmental Affairs of the Ministry of Environment and Tourism (MET) is responsible to develop, implement and coordinate climate change activities at the national, regional and local levels. Given the cross-sectoral nature of climate change, the Ministry initiated the establishment of a National Climate Change Committee (NCCC) in 2001. The core functions of the NCCC are to develop national communications to the UNFCCC as well as climate change projects and programmes, develop national positions on climate change, define climate change capacity building needs and institutional requirements, advise a national strategy for adaptation to climate change and oversee the implementation of the Clean Development Mechanism (CDM).

Legislative Framework for Climate Change

Namibia has recognized the threat posed by climate change and has put an appropriate policy framework in place to deal with this threat (see Infographic 1). The National Climate Change Policy (NCCP) was approved by



the Namibian parliament in June 2011, and a National Climate Change Strategy and Action Plan (NCCSAP) for the period 2013-2020 was approved by Cabinet and launched in 2014. A Disaster Risk Management Act was also gazetted in 2012 and a Disaster Risk Management Plan is also in place to cover amongst others drought and flood events. Most recently Namibia finalized its Nationally Appropriate Mitigation Actions (NAMAs) as well as its Intended Nationally Determined Contributions (INDCs) under the UNFCCC. The INDC identifies the actions that Namibia intends to take under the future UNFCCC climate deal expected to be endorsed in Paris at the end of 2015.

IMAGE 1:
Impacts of climate
change in Namibia



Enhancing Awareness of Climate Change and its Impacts

The Ministry of Environment and Tourism has recognized the need for improved awareness of climate change and what it means, particularly among our rural communities and youth. Community climate change adaptation toolkits for Namibia were completed and distributed in all 14 regions of the country. A number of events were also held to engage the youth on climate change including national symposiums, festivals and the celebration of National Youth Week in April 2013 under the theme “Youth

Action for Climate Change Adaptation and Mitigation” in Eenhana, Ohangwena Region. Most recently a regional awareness campaign was undertaken in July and August 2015 on Namibia’s Climate Change Strategy and Action Plan and its linkages to Namibia’s strategies on biodiversity conservation and combating desertification.

Towards Climate Change Mitigation and Adaptation

With increasing international attention on climate change issues, a number of funding windows are available at the multi-lateral and bi-lateral levels for the financing of climate change adaptation. Through the Global Environment Facility (GEF), Namibia has attracted a number of projects including a Climate Change Adaptation Project under the Country Pilot Partnership Programme, which ran from 2008-2012 and supported drip irrigation techniques, conservation agriculture and rearing of indigenous livestock species in Omusati Region. Most recently a Scaling up community resilience (SCORE) Project on climate variability and climate change in northern Namibia (with special focus on women and children) was launched earlier this year. In the field of mitigation, a number of projects were supported or are ongoing including the Barrier Removal to Namibian Renewable Energy Programme (NAMREP), Namibia Energy Efficiency Programme (NEEP) in Buildings and the Concentrating Solar Power Technology Transfer for Electricity Generation. At the bi-lateral level, Namibia also participated in an African Adaptation Project (AAP), funded by the Government of Japan, and is implementing a Biodiversity Management and Climate Change Project in partnership with the GIZ.

The recent establishment of the Green Climate Fund (GCF), which is expected to be capitalized by US\$100 billion per year by 2020, offers a new transformative and large-scale approach to climate financing. Namibia is already positioning itself to access this funding mechanism and the Environmental Investment Fund of Namibia (EIF) became one of only 20 institutions globally to be accredited to the GCF in July 2015. It is expected that Namibia will submit its first proposals to this Fund in early 2016.

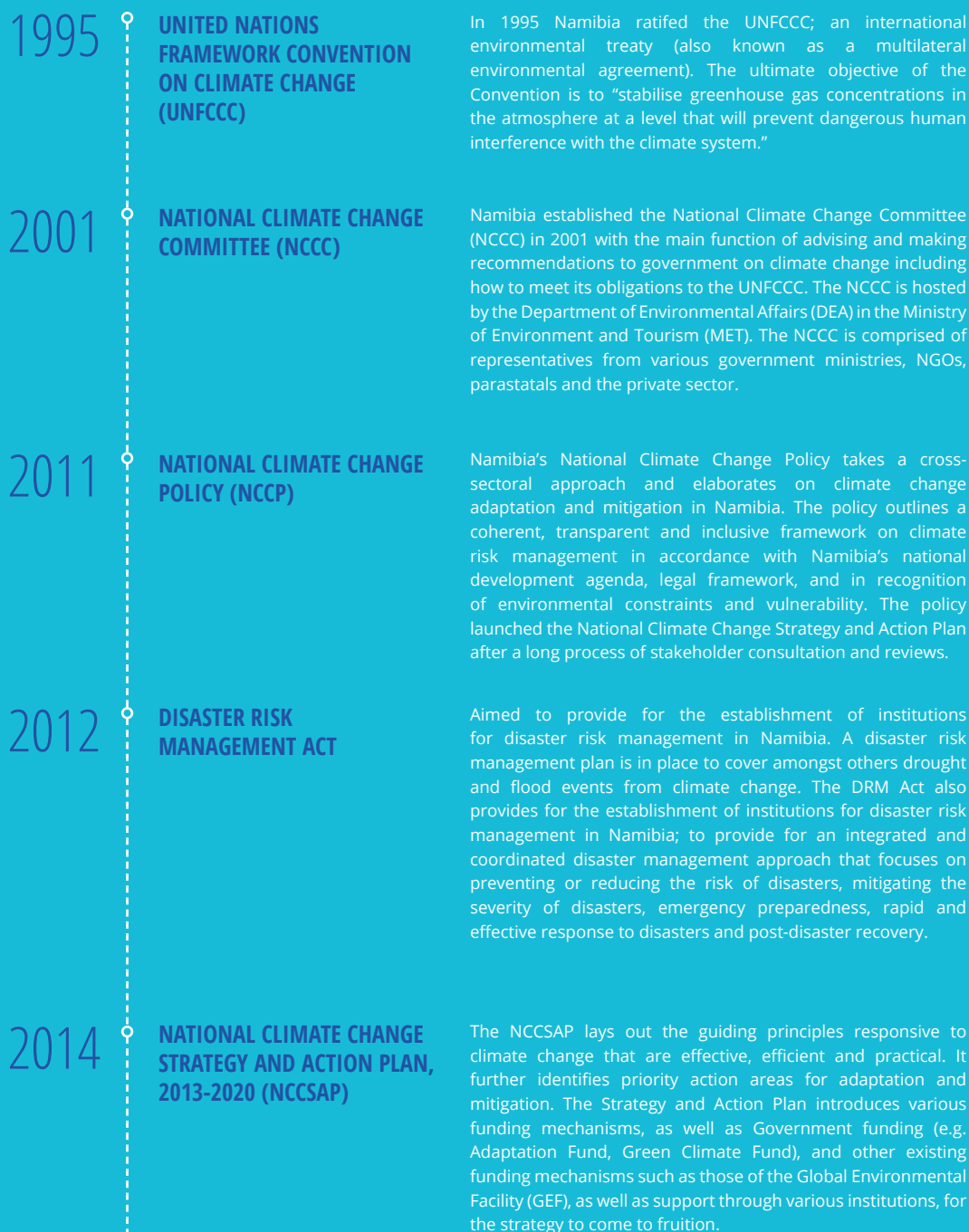
It is envisaged that this Fund will play a major supportive role for Namibia to lay the foundations for a low-emission and climate-resilient future, which is inclusive and sustainable for all.



Dr. Jonathan Mutau Kamwi is a Chief Conservation Scientist in the Department of Environmental Affairs under the Ministry of Environment and Tourism. Dr. Kamwi is responsible for coordinating Climate Change issues and is also a Climate Change negotiator for Namibia.

KEY MILESTONES

IN NAMIBIA'S RESPONSE TO CLIMATE CHANGE



GENDER AND CLIMATE CHANGE VULNERABILITY IN NAMIBIA

By Margaret Angula

In this article I intend to communicate why gender matters in climate change vulnerability assessments. I would like also to demonstrate with findings from my research work on gender and climate change in Namibia why it is vital to recognise gender differentiated vulnerabilities to impacts of climate change for effective and equitable adaptation.

Existing literature and on-going research indicates that climate change causes significant gender differentiated vulnerability because impacts are gendered. The combination of socially ascribed roles and social inequalities can be linked to men and women's vulnerability to climate risks. Women and men in Namibia are affected differently by climate change. Men and women's coping and adaptive capacities to respond to impacts of climate-related risks are also different owing to the fact that the vulnerability and capacity of an individual to adapt to a changing climate is related to the access to and control of natural, social, physical, political and financial resources. The marginalised, unemployed women and children from rural Namibia have the lowest access to these resources. As a result, social vulnerability posed by climate change hinders progress in addressing gender inequalities and women empowerment in Namibia.

It is vital to know that when the rain-fed crop and animal production that sustain the majority of the rural population (57%) in Namibia is affected by climate risks it has negative implications on food security and livelihood stability for both men and women. Socio-political, economic, governance and cultural factors influence the level of exposure to these risks. This causes vulnerability to climate change to be socially differentiated. Furthermore, the social differentiations are also gendered. Therefore, Climate Change Vulnerability is not gender-neutral.

My on-going research on gender and climate change had identified issues that cause the factors (described below) to differentiate climate change vulnerability by gender, ethnicity, age and class in rural Namibia. This implies that although women carry the heavier burden of climate change risk, women in Namibia are not homogenous due to class, ethnicity, kinship and age.

Decision-Making

Traditionally, the majority of men play leadership roles in societies and hold decision-making positions both at national and local levels. Women in Namibia are ascribed with lower positions in any given setting in Namibia. Moreover, women have unequal opportunities to participate in all capacities regarding climate change decisions. Discussions held in communities usually targets De jure heads of households, the majority of which are men. Women from Herero, Himba, Wambo, Kavango

and Caprivi tribes are not encouraged to participate in discussions at community level. This is particularly unfortunate, given women's close relationship with natural resources and awareness of conservation and potential adaptation measures. Although women are ascribed lower positions in the Namibian society, opportunity for women empowerment exists because women are increasingly serving in community-based natural resources management committees.

Differential access to information, assets, financial resources and technical skills

Lack of income and employment opportunities increases the vulnerability of households and limits the opportunities to explore off-farming livelihood strategies. Women in rural Namibia, compared to their male counterparts, are reported to have limited technical skills required to acquire employment or generate income. Additionally, they have limited access to capital, productive land, knowledge and services. These factors decrease resilience and adaptive capacities of men and women in different ways.

To sum up, women generally lack the technical skills to participate in formal employment and are therefore engaging in informal economic activities. Income generating capacities between men and women also differ. In general men are better prepared for climatic events than women due to their improved socio-economic situations. Access to information and ownership of technical skills increase the capacity of men than women, thereby making it easier for male members of households to migrate in search of employment. Women from rural Namibia have also noted that culturally it is easier for a man to leave the family behind compared to a women, especially among the youth. Therefore, mobility and migration is another non-climatic driver of climate change vulnerability among women in rural Namibia.

I conclude this article with a key message for climate change adaptation planning in Namibia. Efforts aimed at building resilience of rural communities ought to take cognisance of social differentiation and diversity of rural population. Equitable and effective adaptation pathways can only be achieved if community needs are differentiated by gender, age and other social grouping. We should all move away from the notion of defining local communities as homogenous entities.



Margaret Angula is an Environmental Studies Lecturer at the University of Namibia. She is also a social differentiation research lead for the Namibian Case study on Adaptation at Scale in Semi-Arid Region (ASSAR) Project.

PLANNING AND FINANCING CLIMATE-SMART CROP CULTIVATION

By Lazarus Nafidi

Paulus Hamutenya takes a close look at the tomato plant in his field. With his hands he feels the texture of the stems and leaves on the plant – nodding with distinct approval at the combination of quality, colour and thickness. “The organic fertilizer we have tried out for the last 2 months is definitely working”, he remarks with inevitable pride.

Paulus is one of close to 65 farmers at the Olushandja Horticulture Producer's Association (OHPA). Horticulture producers located along the banks of the Etaka Dam in the Onesi constituency, Omusati Region. The main aim of the association is to contribute to the agricultural sector in Namibia by cultivating crops for individual income, creating employment opportunities in the area and enhancing horticultural skills among the individual members.

While the area has long been earmarked as an agricultural hotbed with the potential of meeting Namibia's overall food demand, the negative impacts of a gradually changing climate cannot be overlooked. As a local that relies on the land for his livelihood, Paulus is quickly accepting a change in practice. “Firstly, with the increasing number of farmers we would obviously need a whole lot more water; so there was added pressure on the dam to provide water for all 65 farmers. The level of the dam has also been decreasing year on year due to poor rainfall”, he reveals.

Secondly, unsustainable cropping methods such as the use of chemical fertilizer have long been documented as a catalyst to the degradation and loss in soil structure. Furthermore lack of rainfall coupled with increasing temperatures has increased general evaporation rates and drought incidences in the country. This has increased the vulnerabilities of farmers and driven a genuine need to adopt climate resilience.

The OHPA applied for grant financing through the Environmental Investment Fund (EIF) of Namibia to enable them to implement a conservation agriculture project. This project encompasses the broad areas of effective use of water through the use of drip irrigation methods and organic fertilizer to maintain soil fertility, retain soil quality and improve the water-holding capacity of the soil. This grant financing has enabled the association to build capacity among members on the use of relevant climate-smart technology, improve the association's storage facility to prepare fresh produce for the market and reverse the impacts of land degradation caused by unsustainable cropping methods.

As a result of these interventions, the farmers have experienced improved fertility and water-holding capacity of the soil leading to improved yields.



Mr. Epafra Hailenge displaying his produce during the Namibian drought



Harvests amid climate calamity - Johanna Kweedhi of EIF shows off watermelons grown at Olushandja

Drip irrigation methods as applied by Paulus Hamutenya conserve water through minimal evaporation



The Olushandja Project demonstrates best practice conservation agriculture which shows climate resilience



EIF Director of Operations handing over the Olushandja project to Paulus Hamutenya



Owner of Second Chance farm, Mr. Epafra Hailenge is optimistic about his impending harvest, which he largely puts down to the improved conditions of his soil having used organic fertilizer for the very first time. "Agriculture is a risky business," he remarks. "It is even more risky when the climate changes from year to year; so as farmers we need to be able to adapt to long periods of droughts or even flooding incidences", says Epafra.

Funding for national adaptation planning has always been a challenge in Namibia. The EIF, in existence for 4 years now, has embarked on a process of educating the general public on the environmental impacts of climate change. In its quest to increase the level of financing to implement the National Climate Change Strategy and Action Plan and the broader development Strategies of the country, the Fund designed financing products such as grants and concessional loans earmarked for environmental projects. To date the Fund has financed more than 60 projects across the areas of natural resource management, green technology promotion, eco-tourism development and research and training.

The Fund is also in the process of leveraging increased support for transformative projects in the areas of green technology when the proposed Environmental Levies come into legislation. While the proposed levies on unsustainable products in the Namibian economy are meant to change consumer behaviour towards products that harm the environment, they also hold the potential to create new, sustainable and climate-resilient markets and increase employment.

The Fund has also recently gained accreditation to the Green Climate Fund (GCF), headquartered in Songdo, South Korea. Accreditation means that the Board of the GCF has approved EIF to act as a channel through which resources are deployed to Namibia. The Fund, currently able to access funding of up to N\$ 588 million for bankable climate adaptation projects on behalf of Namibia, is in the process of submitting concept notes for programmes to the GCF focusing on the areas of livestock adaptation, water harvesting and renewable energy.

The GCF funding, and the envisaged Environmental Levies present an opportunity for Namibia to build a climate-resilient economy that is transformative. In hindsight, this is music to the ears of Paulus Hamutenya and Epafra Hailenge.



Mr. Nafidi is a Communications and Public Relations Practitioner with more than 10 years practical experience in the environmental, tourism and services fields. As Head of Corporate Services and Communication at the Environmental Investment Fund, he is responsible for driving stakeholder engagements with the aim of mobilizing resources for the financing of environmental programmes.

INTRODUCING THE THINKNAMIBIA CAMPAIGN: CONSOLIDATING ENVIRONMENTAL AWARENESS EFFORTS IN NAMIBIA

By Lesley-Anne van Wyk

Namibia has an excellent legislative and policy backdrop for environmental protection and sustainable resource management. However, its economy is highly dependent on natural resources including diverse rangelands, arable land, mineral deposits, ecosystems and biodiversity. Economic and social development will be negatively affected with the challenges posed by climate change; especially with regard to water availability, food and livelihood security.

There has been progress towards public awareness on climate change in Namibia, which empowers stakeholders to participate and make informed decisions for the sustainable use of limited natural resources. However, key stakeholders identified the need to further stimulate public awareness in Namibia on the risks, impacts and responses to climate change. As such, the Environmental Awareness and Climate Change Project was conceived in 2014 by the Hanns Seidel Foundation Namibia (HSF) and its main Project implementing partner the Desert Research Foundation of Namibia (DRFN).

The Environmental Awareness and Climate Change Project complements the public awareness efforts of the Namibian Government and civil society to promote environmental awareness and empowers stakeholders to participate in climate change responses. Its main objective is to contribute to environmental sustainability in Namibia through awareness-raising on environmental protection and climate change adaptation and mitigation.

This three-year project, to run from 2015 to 2017, is in support of the guiding principles of the National Climate Change Policy (NCCP) particularly in terms of awareness generation, education, training and capacity building as key building-blocks for the national response to climate change.

The Project was officially launched in April 2015 and has the objectives to:

- Increase knowledge and skills on environmental issues;
- Promote knowledge transfer in the environmental sector;
- Promote social entrepreneurship in the environmental sector;
- Support journalistic work in the environmental sector.

The Environmental Awareness and Climate Change Project implements these objectives through a dynamic approach including information and educational material development, a national information campaign, public dialogue platforms and training of multipliers.



Participants engage the speakers at the Inception meeting of the Environmental Awareness and Climate Change Project which was held on 30 April, 2015. From left: Rennie Munyayi (DRFN), Monika Shikongo (MET) and Lesley-Anne van Wyk (HSF).



The Environmental Awareness Project supported the Namibian Youth Conference on Climate Change which took place from 30-31 October, 2015. The Conference brought together young people from all across Namibia to discuss the most pressing concerns of the youth related to climate change which would form a Position Paper for the Government and youth delegates to take forward to the COP 21 negotiations in Paris.

THINKNAMIBIA CAMPAIGN FACT SHEETS



The ThinkNamibia information campaign will kick-off it's suite of information materials with a series of Fact Sheets (first set pictured above). Other materials will include short educational videos, radio podcasts and posters. Sign up on the campaign website to keep updated: www.enviro-awareness.org.na

Through its national information campaign, the Project further aims to create the supportive platform for other stakeholders to showcase research, achievements and knowledge products related to environmental sustainability in Namibia. The Project is geared to take pioneering steps toward cultivating systems-thinking approaches, with a more holistic view on the dynamic relationships of the environment, economy and society in Namibia. With great strides ahead, the ThinkNamibia Campaign is a timely initiative at this juncture of the Namibian national response to climate change to consolidate and complement the various efforts of the diversity of stakeholders actively engaged in climate change adaptation and mitigation.

Topics addressed by the ThinkNamibia Campaign



- The Science of Climate Change: definitions, causes, impacts and responses
- Climate Smart Agriculture
- Forests, rangelands and climate change in Namibia
- Land degradation: Implications for food security in Namibia
- The Green Economy in Namibia
- Innovative approaches to addressing Namibia's water insecurity
- Practical options for conserving water at home
- Water pollution in the Upper Swakop Basin: Implications in the face of climate change
- Renewable energy: Shifting energy systems in Namibia towards a more sustainable path
- Practical options for conserving energy at home

Get involved:

For more information, please get in contact and follow ThinkNamibia Campaign updates using the following information:



Email: enviropoject@hsf.org.na
Telephone: +264 61 237 373

www.enviro-awareness.org.na

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Lesley-Anne van Wyk is the Project Coordinator of the Environmental Awareness and Climate Change Project at the Hanns Seidel Foundation Namibia. She holds a Masters in Globalisation and Development Studies and has worked in communications, programme support and policy research roles in international development organisations based in Africa and Europe.

THE EUROPEAN UNION CLIMATE CHANGE ACTION

Text contributed by the EU delegation in Namibia.

The EU is committed to become a highly energy-efficient, low-carbon economy, and is therefore at the forefront of international efforts to tackle Climate Change. Building a European Energy Union with a forward-looking climate policy is a top priority for the European Commission. As such, the EU has chosen the headship mode of leading by example, being the first region to have passed binding legislation to ensure that ambitious climate and energy targets are met in 2020. These targets are as follows:

1. 20% Reduction of the Greenhouse Gas (GHG) EU emissions below 1990 levels.
2. 20% of the EU's energy comes from renewable sources like wind and solar.
3. 20% improvement of EU's energy efficiency.

The above-mentioned actions aim to strengthen EU's energy security by reducing reliance on coal, oil and gas imports, as well as spurring innovation in clean technologies, creating sustainable sources of economic growth and employment. In addition, the EU and its Member States have agreed that at least 20% of the EU budget for 2014-2020 (as much as EUR 180 billion) should be spent in climate-related action. They remain dedicated to scaling-up climate funding in order to contribute their share of the developed countries' goal to jointly mobilise USD 100 billion per year by 2020 from a wide variety of public and private sources. Furthermore, the EU aims to commit up to EUR 14 billion in grants from the EU budget and European Development Fund over the years 2014-2020 to support climate action in partner countries outside the EU.

Measures taken by the EU to reduce GHG include:

- The EU Emissions Trading System (ETS)-in order to help to reduce emissions most cost-effectively, the EU has developed the world's largest company-level system for trading in allowances to emit GHG's for the EU industrial large emitters. The EU ETS today covers around 45% of total EU GHG emissions.
- Targets for member countries to limit or reduce their domestic greenhouse gas emissions from sectors not covered by the EU ETS, such as agriculture, transport (except aviation), buildings and waste.
- National targets for renewable energy to ensure the EU gets at least 20% of its energy from renewable sources by 2020.
- Action to control emissions of fluorinated industrial gases, which are greenhouse gases.
- Standards, labelling and legislation to improve energy efficiency, including of buildings.
- Emissions reduction, renewable energy and energy efficiency targets for 2030 set as part of the 2030 climate and energy policy framework.

Conference of Parties (COP) 21. European Union's leading role towards Paris 2015

Two major international agreements have been adopted to address climate change: the 1992 United Nations Framework Convention on Climate Change (UNFCCC) and its 1997 Kyoto Protocol. The UNFCCC, ratified by 196 countries and the EU, establishes a framework for international cooperation with the ultimate objective of preventing dangerous man-made interference with the global climate system. The Kyoto Protocol was a first step towards reversing the global trend of rising emissions, setting legally binding targets for industrialized countries to reduce their GHG emissions. Nevertheless, this Protocol was not ambitious enough to stop global warming from reaching dangerous levels, and it needed to be succeeded by a stronger United Nations agreement involving climate action by all countries.

The UNFCCC Conference in Paris taking place in December 2015 will be a critical moment for the world to address global warming. A global agreement needs to be reached and will be a defining step on the journey to limit global warming and tackle the effects of climate change. The European Union is calling for ambitious GHG emissions reductions commitments by all countries in order to keep temperature raises within 2 degrees Celsius compared to temperatures during the pre-industrial times. The EU is looking forward to have a global pledge in a protocol that is ambitious, comprehensive and legally binding involving all.

Since 2011, UN's Climate Conferences have agreed upon rules, institutions and commitments which have opened the way for concrete actions on the ground in the short term. Some of these decisions taken include the EU and some Member States announcing a voluntary climate finance contribution to developing countries amounting to EUR 5.5 billion. It also comprised the establishment of a Green Climate Fund and the provision of support to developing countries' efforts to adapt to climate change and to strengthen their resilience.

EU Climate Change Action in Namibia

Since 2002 the EU has become a strong supporter of climate actions in developing countries, through the EU's Global Climate Change Alliance, and the different climate-change "windows" in EU regional investment facilities.

Namibia, as a semi-arid country with a climate with variable and unpredictable rainfall patterns, is predicted to be severely affected as a result of Climate Change. The European Union is dedicated to contribute to the national efforts already put in place to the fight against Climate Change. In this regard, the EU is supporting initiatives in the areas of conservation agriculture, rangeland management and renewable energy in view of adaptation to climate change. This assistance has been provided through a variety of organisations ranging from the private sector, UN, parastatals, farmers unions and NGO's. The overall aim of the different interventions is to enhance Namibia's climate change adaptation and mitigation in rural areas, through developing, testing and disseminating solutions

and practices, implement innovative technologies and energy efficiency solutions.

The budget assigned for the European Union Climate Change adaptation and mitigation projects in Namibia sum a total value of EUR 7.1 million over the next five years. The majority of the EU supported projects include actions to counter land degradation and adapt to climate change variability through the improvement of rangeland management practices and the utilisation of conservation agriculture as a basis for sustainable crop production and improved food security. The EU is also rendering support to strategic national platforms such as the Namibian rangeland management forum, and in the energy sector is funding the production of carbonized encroaching bush briquettes to be used as a form of alternative energy.

The following table lists the projects currently supported by the EU addressing climate change adaptation and mitigation in rural communities of Namibia:

TABLE 1:
Current EU Climate Change Projects in Namibia

IMPLEMENTING AGENCY	TITLE
<i>Agriconsult Namibia</i>	Adapting to climate change in arid north-western Namibia by combating desertification
<i>Cheetah Conservation Fund Namibia</i>	Carbonized Encroaching Bush Briquettes
<i>Namibian Agricultural Union</i>	Creation of a coordination unit for the speedy implementation pf the National Rangeland Managament Policy and Strategy
<i>U-landshjalp Fran Folk til Folk i Finland (UFF Finland) in partnership with NNF and DAPP</i>	Facilitating Climate Change Adaptation and agricultural development of small-scale farming communities in the Kavango Region.
<i>Nyae Nyae Development Foundation Namibia</i>	Adapting land use to reduce the vulnerability of indigenous san people in Nyae Nyae and <i>N=a Jaqna</i> Conservancies to the impacts of Climate change
<i>Food and Agriculture Organisation of the United Nations (FAO)</i>	Strengthening the capacity of farmers to manage climate related risks in Northern Namibia
<i>Meatco Foundation</i>	Rangeland Marketing development support project
<i>Agra Limited</i>	Developing and testing a rangeland production early warning system with livestock farmers in Namibia



Community Conservation Fisheries in the Kavango-Zambesi (KAZA). Project funded by the EU in 2012 and implemented by Namibia Nature Foundation (NNF) Fisheries in the Upper Zambezi region fluctuate greatly in relation to the volume of the annual flood. Many fishes, including numerous very small species are highly adapted to the flood regime, taking advantage of high floods to migrate in great numbers out into floodplain pools via the numerous channels, in order to breed and populate all available water bodies. During high floods such as those in the three years from 2009, these small fish species provide a hugely valuable nutritious food resource for the floodplain communities, who use small-meshed netting to catch the fish as they migrate. Road culverts provide excellent fishing spots. Because of their high productivity and high natural mortality, an adaptation to the extreme fluctuations in environment that they encounter from year to year, there is no risk of overexploitation of the resources.

For More information on the EU and its contribution to the fight against Climate Change you can visit:

 http://www.eeas.europa.eu/delegations/namibia/index_en.htm

 facebook.com/Delegation-of-the-European-Union-to-Namibia

Other sites of interest under DG Clima:

 ec.europa.eu/clima

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 youtube.com/EUClimateAction

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SUPPORTING THE GOVERNMENT AND THE PEOPLE OF NAMIBIA TO PREPARE FOR CLIMATE CHANGE AND ITS IMPACTS

By Nico Willemse

The United Nations Development Programme (UNDP) in Namibia has been supporting the Government and People of Namibia with the implementation of development programmes and projects since 1990. Such programmes and projects generally aim to improve the protection and conservation of natural resources, particularly renewable ones that people depend on for daily survival, i.e. use for food and to secure incomes and other benefits – a conservation for development approach. To date, with generous support from the Global Environment Facility (GEF) the total investment is some N\$705 million with a further N\$180 million scheduled for 2016-2020.

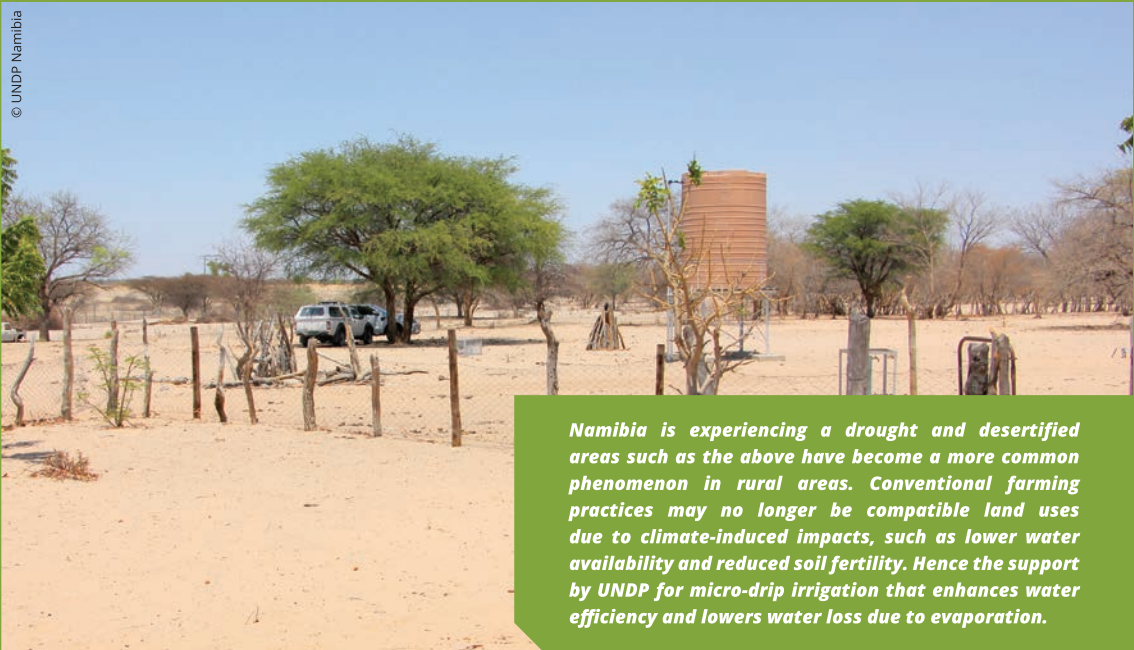
The well-being and the ability of people living outside urban centres and/or formal towns are at the centre of development activities as these are the people who generally fall among the poorest of the poor and are most affected by impacts of climate change. More than 80% of the total investment reaches the local level to support vulnerable, marginalised and poor communities. This population comprises more than 55% of the national population.

As the world celebrated the “UN at 70” [years] on 25 October 2015, in Namibia we also celebrate the “UN at 25”. This has been a period during which the UNDP supported capacity development of individuals, communities and government to adapt to a changing climate and environment. Namibians in urban and rural areas now better understand the causes, predicted and observed impacts of climate change on the environment and, more importantly on their lives and ability to secure livelihoods. Through providing seed-funding to devise and test innovative development solutions, more than 50,000 individuals (including some 2,000 rural households) have benefitted to date while some have gone on to mainstream successful practices in both subsistence crop and livestock farming and to some extent commercial farming – referred to as community-based adaptation to climate change, and/or climate-smart agriculture.

Our development agenda remains aligned with national priorities while ensuring incremental contribution to global targets, such as the recently adopted Sustainable Development Goals (SDGs). At regional and global scale, the UNDP takes a proactive approach to support poverty eradication and to halt the effects of climate change by engaging with governments to relate SDGs to national circumstances and to support implementation to meet their targets. UNDP appreciate the urgency to address these critical development challenges particularly as Africa may face its hottest year on record with climate-induced impacts such as higher temperatures than normal and lower rainfall than normal already being observed. Lower food production than normal is also reported across most part of the continent and this is alarming given the already high numbers of under- and malnourished.



Mr. Shivute Nangula, the NAFOLA Liaison Officer for the Otshikutshiithilonde Community Forest in the Oshana Region. The flip chart reflects some of the points discussed by the community members to enhance livelihood security during a NAFOLA Project consultation.



Namibia is experiencing a drought and desertified areas such as the above have become a more common phenomenon in rural areas. Conventional farming practices may no longer be compatible land uses due to climate-induced impacts, such as lower water availability and reduced soil fertility. Hence the support by UNDP for micro-drip irrigation that enhances water efficiency and lowers water loss due to evaporation.



UNDP-supported Community-Based [climate] Adaptation ("CBA") project that has become sustainable over time due to strong community commitment. The lush green spinach is testimony to the successful implementation of micro-drip irrigation and has enabled this community member to enhance her income and livelihood security.

Over the coming five years, UNDP Namibia will support thousands of households and small-scale farmers in rural areas – and, to a lesser extent urban areas – to:

- mainstream successful small-scale farming practices to other parts of Namibia where they will work;
- establish sustainable local level enterprises that move pressure away from scarce resources and enable more people to benefit;
- ensure that people have appropriate skills and knowledge – particularly governance and enterprise development – to sustain success and enable peer-to-peer learning.

Through such practical interventions with people who are worst affected by climate change, UNDP believes we can make lasting impact to save the "smile of Africa"; Namibia.



Nico Willemse joined the United Nations Development Programme (UNDP) Namibia office in August 2014 as the Team Leader for the Energy and Environment portfolio of projects. He holds a MSc in International Fisheries Management with more than 15 years of work experience in project development, monitoring and evaluation, environmental impact assessment, policy and institutional development and, community mobilisation and empowerment.

NADEET CENTRE: WE PRACTICE WHAT WE TEACH

By Viktoria Keding

Addressing climate change calls for multiple approaches. Nowadays there are so many messages that tell us what we should or should not do that it is often difficult to know what is right and what is wrong. The Namib Desert Environmental Education Trust (NaDEET) tackles climate change education through a “we practice what we teach” approach. Within this context, the complexity of climate change which can seem difficult to grasp becomes tangible through hands-on solutions.

Education for Sustainable Development (ESD) plays a key role by laying a foundation to better understand the natural environment, how it functions and how it supports life on Earth. But the biggest challenge for ESD is to invoke a sense of responsibility towards the environment. NaDEET calls on Namibians to become environmental citizens by reflecting on their own daily lifestyle choices and to consider alternatives that are in line with sustainability by being a working model of sustainable living.

“NaDEET makes sustainable living so easy.”

- School child, grade 6

Since 2003 over 10,000 Namibian schoolchildren, educators and community members have participated in a NaDEET Centre programme. The week-long, residential programme's core themes of energy, water, waste and biodiversity are explored hands-on in the Namib Desert. Participants are divided into six sustainable living teams to encourage teamwork as they engage with learning new lifestyle habits.

During the daily “family-style solar cooking” schoolchildren prepare their own food on parabolic solar cookers and in solar ovens. Since opening, this adds up to over 75,000 solar cooked plates of food! Practical light reflection and absorption experiments link daily needs such as cooking and eating with curriculum-based lessons. All of NaDEET Centre's facilities follow this approach as they enable participants to live sustainably while the programme teaches the related concepts.

“NaDEET and our visits here definitely influence the performance of our children in school.”

- School principal



NaDEET Centre.



Making stew on a solar cooker.



Making recycled paper fire balls.

NaDEET Centre's Solar Park provides electricity for all facilities and gives solutions to the challenges of sustainable energy for Namibia. All water for bathing is heated by the sun in direct solar hot water heaters to provide warm, comfortable showering. A daily water audit ensures that all participants are aware of their water use and limit consumption to what is needed. Therefore average water use at the Centre per person is only 15 litres per day! Recycling activities focus on making recycled paper fire balls from all kinds of waste paper such as egg cartons, office paper, newspapers and food packaging materials. This activity always includes lots of laughter and enjoyment by all, but it also produces a valuable source of energy. In the morning before sunrise, participants boil water for tea by using these recycled paper fire balls in home-made fuel-efficient stoves. Although this does produce a minimal amount of CO₂ pollution, it is a locally appropriate solution



Reflection and absorption light experiments.



Solar baked pizza!



Boiling water with a fuel-efficient stove and recycled fire balls.

that tackles litter, deforestation and the lack of access to sustainable energy all at the same time and that are all directly related to climate change. Through the weekly energy audit, participants calculate and compare the Centre's Carbon Dioxide (CO₂) emissions with other similar institutions. Thanks to NaDEET's dedicated approach to climate-friendly cooking the Centre produces only 1/10th of the CO₂ compared to if it would use traditional methods of cooking. It is not the actual quantity of CO₂ reduction, but the percentage of change that sends a powerful message that significant change can be achieved through small, local actions.

Effective climate change education must however go beyond the calculation of CO₂ and talking about lifestyles by teaching about the Earth's biodiversity and its dependence on a stable climate. Even in Namibia,

where wide-open spaces are rampant, a disconnect has formed between humans and the natural environment. The location of NaDEET Centre, the education core of the NamibRand Nature Reserve, Africa's first International Dark Sky Reserve, is the ideal setting for participants to absorb the beauty and magic of the country's namesake. Participants go on dune walks and investigate nocturnal desert creatures through trap-and-release activities that highlight the unique adaptations of desert biodiversity in an already harsh climate. At nighttime they share culture stories about the night sky and contemplate the day's teachings.

Through the combination of sustainable infrastructure and equipment and the design of the programme, NaDEET Centre offers a variety of solutions to both mitigate and adapt to climate change in a country that is already faced with a harsh, fragile environment.

As Namibians focus on gaining equal access to the benefits of development, not enough thought is given to the potential detrimental impact on the climate through unsustainable development. Education for Sustainable Development using the NaDEET philosophy has a leading role to play to change attitudes, habits and to learn how to adopt new technologies and luxuries, but through maintaining the wisdom of Namibia's heritage.

***"You did a really great job.
It would be nice if you could
build more camps around the
globe to get every child to live
a more sustainable life."***

- School child, grade 6

NaDEET is designed to conceptually and physically maximise educational opportunities in a way few other centres do, and through rigorous self-evaluation has closed the gap between 'teaching' about the environment and 'practicing' for the environment. The success of the programme lies in participants taking this message home. As one adult community member commented, NaDEET's lesson on living a low-carbon lifestyle has made it clear to her that sustainable living is like having her house "in order".



Viktoria Keding is the director and co-founder of NaDEET. She has spearheaded all aspects of NaDEET including management, teaching, and the development of programmes and educational materials. Ms. Keding is the 2014 Windhoek Lager Conservation Ambassador and is one of Namibia's Climate Change Ambassadors.

YOUTH PROFILE: HOW THE YOUTH CAN TRANSFORM OUR SOCIETY FOR A CLIMATE-RESILIENT FUTURE

My Name is Ester, I am 27 years old; I live in Tsumeb, Namibia.

I have so much love for plants and spend most of my time in the garden.

My dream is to plant 1 million trees in 10 years.

I am a member of the Young Achievers Youth Empowerment Project in Tsumeb.

The idea started when I read a book by Wangari Maathai from Kenya who won a Noble Peace Prize for planting trees in Kenya. She lived her whole life planting trees and educating people on climate change and environmental issues. I then decided to come up with this initiative in Namibia to plant 1 million trees in ten years across the entire country. Although Namibia is one of driest countries in Africa, there is a need for our country to be transformed into a green land. I believe that we can use our underground water to water those trees.

The other main reason to start this project is to educate and motivate people to conserve and sustain our environment through urban gardening. Being a part of the Tsumeb Young Achievers group has extremely uplifted and motivated me to pursue my interest in climate change. I want to encourage young people out there to contemplate sometime in their lives about starting a small garden at home, whereby they plant in containers. Hence, they will be able to save water and adapt more easily in harsh climate conditions across Africa. This method is very effective in areas of dry atmospheric conditions; whereas in areas of infertile soil, it's very much advisable to simply just plant in containers filled with sand and fertilizer.

Our campaign for climate change has started already, but as an individual, I want to work hard to make sure that people have food to eat, and that we have enough oxygen in the atmosphere for breathing. As a young person, I solely believe that the time is now to start conserving our environment, thus to limit further damage to our environment. Human activities, such as the use of fossil fuels, deforestation and unsustainable agriculture contribute to climate change, which decreases the availability of nutritious food and clean water, and destroys ecosystems and secure living environments. This leads to malnutrition, ill-health and migration, rendering youth particularly vulnerable. At the same time, youth constitute the majority of the population in many countries and have an increasingly strong social and environmental awareness, which has the power to transform our societies towards a low-carbon and climate-resilient future.



Ester Mauta



WATER AS A HUMAN RIGHT

By Piet Heyns

The establishment of long term sustainable water supply schemes and the provision of adequate sanitation services require huge capital investments. These services are therefore very expensive and are not something that can be funded or done by individuals. The intervention of an elected Government is essential to facilitate water resources development, the provision of sanitation services and the recovery of the cost.

The extent to which any Government facilitates the requirements for equitable access to water and sanitation by its citizens has been under discussion for a long time by the international community. On 28 July 2010, after years of campaigning to capture the right to water and sanitation services, the United Nations General Assembly eventually passed Resolution 64/292 in which the right to safe and clean drinking water and sanitation was recognised as a human right. The Resolution gives guidance to the standards of service delivery that States must seek to achieve for their citizens, or must ensure their private sector providers achieve this. It also calls upon States and international organisations to provide financial resources to support capacity-building and to transfer technology to assist countries, in particular developing countries, to provide safe, clean, accessible and affordable drinking water and sanitation for all.

When considering the understanding that access to water and sanitation services is regarded as a human right, it would be interesting to evaluate the performance of the Namibian Government in this regard.

Since independence in 1990, the Namibian Government embarked upon a rigorous programme to improve water supply and sanitation services. This programme was strengthened and guided by the water supply and sanitation policy adopted in 1993, long before the 2010 declaration of water and sanitation services as a human right. It also predated guidance provided to governments by the UN resolution to meet their obligations to give their citizens access to adequate water and sanitation services. The water and sanitation coverage achieved by Namibia over the past 22 years is reflected in the following table:

Water supply and Sanitation Coverage in Namibia

SERVICE	COVERAGE (Percentage)
Urban water supply	99
Urban sanitation	75
Rural water supply	90
Rural Sanitation	20

Namibia also managed to achieve the standards of service delivery referred to in the UN resolution and the water supplied conforms to a large extent to the following criteria:

- 1. Sufficient.** The water supply for each person is sufficient for personal and domestic uses. These uses ordinarily include drinking, personal sanitation, washing of clothes, food preparation, personal and household hygiene. This requirement is between 50 and 100 litres of water per person per day and today most Namibians have access to this quantity of water.
- 2. Safe.** The water required for personal or domestic use is safe, therefore free from micro-organisms, chemical substances and radiological hazards that constitute a threat to health. In this regard the Namibian Government adopted the Namibian Water Quality Guidelines.
- 3. Acceptable.** Water should be aesthetically acceptable as far as colour (turbidity), odour and taste for each personal or domestic use is concerned. The water supplied by all formal water schemes in Namibia, is treated and conforms to this requirement.
- 4. Physically accessible.** Everyone has the right to a water and sanitation service that is physically accessible within, or in the immediate vicinity of the household, educational institution, workplace or health institution. Namibia has a huge surface area and a small population, but most water schemes are within relatively easy reach of the people.
- 5. Affordable.** Water supply, and access to water facilities and services, should be affordable for all. The United Nations Development Programme (UNDP) suggests that water supply costs should not exceed 3 per cent of household income. However, the unit cost of water delivery in Namibia is very high due to the high capital investments required to supply the water and the relatively low consumption due to the small population. This requires special measures to make the water more affordable and is covered in the Namibian water policies of 1993, 2000 and 2008.

The present coverage of 90% for rural water supply services is an astounding achievement, but it can also be seen in the table below that the coverage of rural sanitation services is still very poor. However, the Government is attending to the issue after the adoption of the updated Water Supply and Sanitation Policy in 2008 and the subsequent preparation of the National Sanitation Strategy.

The bottom line is that the declaration of water and sanitation services as a human right is no guarantee that a Government will meet its obligations, but one can safely say that Namibians are already reaping the benefits of adequate water and sanitation services facilitated by a committed Government.



Mr Piet Heyns is a well known professional in the water sector in Namibia, Southern Africa (the SADC Region), Africa and elsewhere in the world. He has more than 42 years experience in the water sector and serves as an Associate of the Desert Research Foundation of Namibia (DRFN).

FARMER PROFILE: HOW I BUILT RESILIENCY INTO MY FARMING BUSINESS

Kenneth Neumbo has been farming ever since he can remember. He grew up on a farm in the communal areas of Khorixas and even in later life, he still goes to the farm every end of the month and holidays. His pain is seeing people going hungry simply because of a lack of knowledge on how to work the land. He is driven to contribute his skills and know-how to help and educate people on sustainable agricultural practices.

I farm in the great Kunene region and this year of all years we feel the impacts of climate change the most. The farming business has become very fragile as we depend on Mother Nature for watering our crops and the veld in which our livestock graze. As such, the highly unpredictable rainfall in Namibia negatively impacts our farming activities.

It all started three years ago when we did not get proper rain and we had a drought. We lost animals and whatever animals were left, it did not make sense to sell at that point because it was simply not worth it. I am a livestock farmer through-and-through, I never used to plant. There was no need for camp rotation, I would graze as long as I could in a particular area. I had diesel pumps that cost a lot of money to maintain and also came with problems of noise and air pollution. It was not only me that was going through this, neighbouring farmers were going through the same challenges.

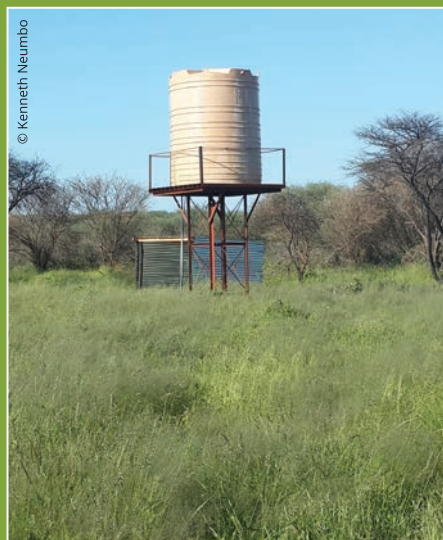
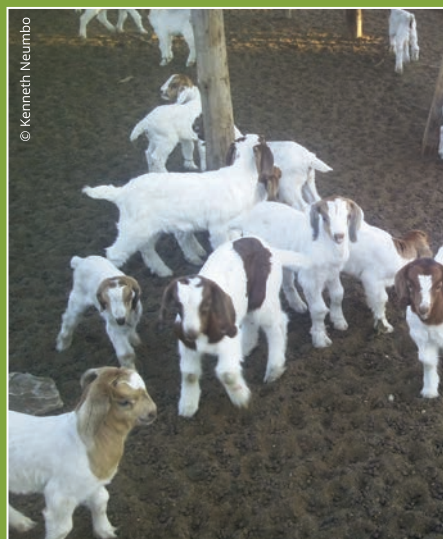
I was fortunate that I had a job to sustain me and my family. The neighbouring farmers lived purely off their farming activities. It became so severe that some of them decided to stop farming all together and opted to go look for jobs in the city. I recognised that climate change is real, if I was to survive, I had to rethink and re-strategise about how I conduct my farming activities and these needed to become sustainable.

Firstly, I realised if I was going to be a livestock farmer, I had to plant first because if there was no food to eat for the animals, there would be no animals. I had to work with the environment and not against it. I had to become a better steward of the land. Secondly, I needed to invest more into people, I had to make sure that my staff at the farm are well looked after and had a sense of value from their work. Thirdly, I had to have sound financial practices.

Today, my focus is on building resiliency into my farming business. I started planting my own feed for the animals and food for my family and the staff. I now pump water using a



Kenneth Neumbo





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solar pump. I got rid of all the diesel pumps as they are very noisy, costly to maintain and there would always be smoke hanging in the air. I use drip irrigation to water individual plants which also means that I have very efficient water use. I also apply conservation farming techniques to minimise run-off and erosion and improve the conditions for plant establishment and growth.

I rely on crop rotations as well as clover, manures and composts to build fertility, in the place of fossil fuel dependent artificial fertilisers. I also compost the manure from my animals so I never run out of fertilisers. All leftovers from the garden go back into the compost heap or are used as mulch. Nothing goes to waste! I have also recently started planting Ana trees as means to stabilise the soil, provide shade and as a food source for the animals.

I am also looking into automating a large part on the operation, for example, the drip irrigation systems can be set to water automatically at certain times, one can also get soil information via a sensor to put in the soil so that you receive information on what is required in the soil at a particular time. I believe that these processes will give me good returns in the long run, not only for me but generations to come as well.

My long-term plan is to share the knowledge that I have gained and to stimulate the local economy by providing practical training on the farm so farmers can produce enough food for themselves and then sell the excess for profit. I have identified an 83 hectare area at the farm that is suitable for crop production.

Furthermore, I am in an area where there are San communities and I would like to make a difference in their lives by equipping them with skills that can help them produce and secure food for their families.

My dream is to build a model area where I can plant various crops suited to the environment that will bring the most yield and educate other farmers or local communities on how to farm sustainably.

So the next step in this journey, is to secure the funding to conduct an Environmental Impact Assessment (EIA) to formally identify if the environment that I have chosen is feasible for such a project and to map likely effects of these activities on the environment, human health and welfare as well as the means and measures to mitigate and monitor these impacts.

I believe we have to farm with nature and not against it if we want to be sustainable and I'm committed to share what I have learned along this journey to become a climate change resilient farmer.

WHAT WILL STOP GLOBAL WARMING? – NOT COP21 OR ANY OTHER AGREEMENT BY WORLD LEADERS

By Prof. Roman Grynberg

It would be wrong and foolish to assume that the world's leaders are incapable of the wisdom and foresight needed to come to an agreement this December in Paris on setting global limits to Greenhouse Gas Emissions (GGE). It would be equally wrong to believe that these politicians are incapable of the guile to agree on nothing more than what they planned to do at home in any case. It is entirely conceivable that the agreement in Paris will simply reflect the extent to which the world's great Greenhouse Gas emitters have implemented domestic policies to limit GGEs and not due to any act of international statesmanship, wise political foresight or concern for humanity. It is as ever, the cold hard economic facts of the price of electricity generated by renewable as opposed to by fossil fuels that will ultimately determine the pace at which humanity ends the '300 year Reich' of coal and other fossil fuels. Whether our species survives the impact of global warming that is already inevitable by virtue of past decisions, is quite another matter.

While it has been the international negotiations that have been the natural focus of attention of the technocratic 'global community' experts, it has actually been pressure at a much lower level at national and even provincial level to implement global warming targets and the ensuing shift in the application of technology that has and will continue to determine the upper bound of national commitments at global negotiations in Paris.

Some countries and regions either have already or are in the process of implementing carbon taxes or carbon trading schemes which raise the cost of the status quo to GHG emitters and it is this (along with pressure from some US states such as California to limit motor vehicle emissions) that has put pressure on car manufacturers to try to lower emissions. It is these national, state and provincial regulatory efforts, far more than international grandstanding, that has contributed to the acceleration of the replacement of fossil fuels.

There are real positive signs that over the last few years the scales are tipping against fossil fuels as a source of electricity generation and the most powerful factor driving this change is price competition and technological change. While geothermal power has long been the cheapest source of power in the US, for the very first time energy sources such as on-shore wind power have become cheaper than coal to generate electricity in the US. Chinese policy has also been crucial in tipping the scales. China, from virtually zero a few years ago, has become the world's largest producer of solar power by virtue of a government policy

Estimated levelized cost of electricity (LCOE) June 2015 for new generation resources, 2020								
US average levelized costs (2013 \$/MWh) for plants entering service in 2020 ¹								
Plant type	Capacity factor (%)	Levelized capital cost	Fixed O&M	Variable O&M (including fuel)	Transmission investment	Total system LCOE	Subsidy ²	Total LCOE including Subsidy
DISPATCHABLE TECHNOLOGIES								
Conventional Coal	85	60.4	4.2	29.4	1.2	95.1		
Natural Gas-fired								
Conventional Combined Cycle	87	14.4	1.7	57.8	1.2	75.2		
Advanced Nuclear	90	70.1	11.8	12.2	1.1	95.2		
Geothermal	92	34.1	12.3	0.0	1.4	47.8	-3.4	44.4
Biomass	83	47.1	14.5	37.6	1.2	100.5		
NON-DISPATCHABLE TECHNOLOGIES								
Wind	36	57.7	12.8	0.0	3.1	73.6		
Wind – Offshore	38	168.6	22.5	0.0	5.8	196.9		
Solar PV	25	109.8	11.4	0.0	4.1	125.3	-11.0	114.3
Solar Thermal	20	191.6	42.1	0.0	6.0	239.7	-19.2	220.6
Hydroelectric	54	70.7	3.9	7.0	2.0	83.5		

Source: US Energy Information Agency, 'Levelized Cost and Levelized Avoided Cost of New Generation Resources in the Annual Energy Outlook June 2015' http://www.eia.gov/forecasts/aeo/electricity_generation.cfm

and an aggressive private sector that has developed, sold domestically and then exported solar PV systems that have seen prices dropping precipitously over time.

The Chinese, in almost every sector that the government deems to be a priority, from base metals to solar, appear to be completely immune from the commercial threat of structural over-capacity. The Chinese continue to export solar panels at prices that make it extremely difficult for US and EU producers to compete. It is one of those areas where China's policy at a purely commercial level has contributed massively to the fight against global warming.

There can be no doubt that Chinese over-capacity and dumping of PV systems is one of the important factors accelerating the decline of fossil fuels. Ironically, it has been US policy in the gas industry that has precipitated declining world gas and subsequently coal prices that has sustained continued capacity in fossil fuel production. Thus the irony is that it is China's distorted economic policies that are the principle factor accelerating the replacement of fossil fuels while it is US policy to permit and continue fracking and the sustained over-capacity of gas production that has allowed the continuation.

US policy has long been predicated on solar power reaching 'grid parity' with fossil fuels by 2020. Given what can be seen in terms of prices of PV units, this now seems a realistic point. At that point, it will be the private decisions of millions of the world's citizens to switch to solar power rather than stay linked to the electricity grid that will finally end the

fossil fuel century. In exactly the same way as the mobile telephone undermined the economics of the century-old land line grid.

The problem is that even though PV may soon be cheaper than coal it does not mean that thermal power plants are about to go the way of the dodo any time soon. The cost of the coal is only about a third of the levelized cost of coal fired thermal plants and neither India nor China will scrap their new plants any time soon just because coal is no longer competitive.

Unfortunately the thermal coal powered plants will continue to demand coal to generate power for a 20-30 year period after 2020. Equally, those countries like India and China which have invested heavily in aging thermal technology find themselves at a competitive disadvantage to those who adopt solar technology in the coming years.



Roman Grynberg is Professor of Economics at the University of Namibia and was previously Head of International Trade at the Commonwealth Secretariat and Director of Economic Governance at the Pacific Islands Forum Secretariat.



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WOLWEDANS SUSTAINABILITY: ACTING TODAY FOR A BETTER TOMORROW

By Stephan R. Brückner

Wolwedans – a household name in the Namibian tourism circuit - is more than a collection of camps. Its ethos lies in setting an example in sustainable business practices.

During 2015 the entire Wolwedans Collection was audited by Eco-Awards Namibia and scored a five-flower rating at the very first go. This remarkable achievement affirms the leading role Wolwedans has adopted in running a sustainable tourism operation. How did this come about?

Since the early days, Wolwedans has been guided by an approach where people, nature and business were all equally important. The aim right from the start – apart from making money – has been to ensure the NamibRand Nature Reserve's financial viability, ensuring the conservation of the Pro-Namib for future generations. This approach was captured in Wolwedans' earliest mission statement: "We are committed to sustainable growth by carefully balancing quality leadership, economic progress, social responsibility and care for our environment" (December, 1998).

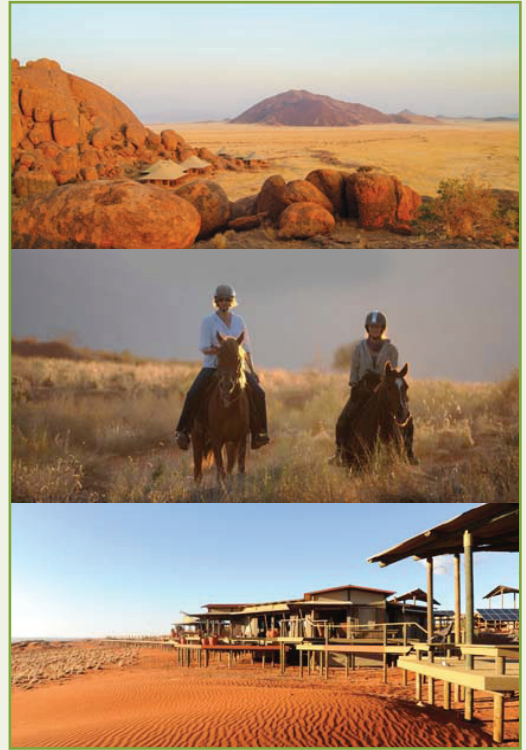
In 2011, as a result of Wolwedans' efforts over the last decade, it was chosen as a founding member of the Global Ecosphere Retreats (GER), an international sustainability initiative inspired by a vision of the Ecosphere (our planet and all of its life-sustaining regions) maintained in the healthiest possible state. GER's promote an inclusive, holistic paradigm of conservation and tourism that enhances livelihoods and fosters intercultural dialogue. In short, a new way of going about doing business.

Committed to be "in it for the long run", Wolwedans has adopted the 4C- model, which balances Commerce, Conservation, Community and Culture. This 4C strategy provides Wolwedans with a pertinent framework allowing it to effectively manage and monitor progress towards sustainability goals. What does this mean in terms of walking the talk?

Commerce

Trading and the accumulation of wealth have been central to the development of civilizations over thousands of years and are likely to remain so. Uncontrolled, this commerce has had negative impacts, but conducted in a more holistic and sustainable way, it can be a positive contributor to a sustainable world. The commerce dimension addresses aspects that affect the financial sustainability of the business and its capacity to provide a source of income for those people that depend on it. Profits generated also enable Wolwedans to reinvest back into initiatives in the other 3Cs (Conservation, Community and Culture).

Wolwedans operates a number of tented safari camps and lodges within the NamibRand Nature Reserve, as well as the NICE restaurant and bar in Windhoek. The group employs some 150 Namibians, pays taxes and keeps on investing in infrastructure - hence contributing significantly to the development of Namibia and the wellbeing of its people.



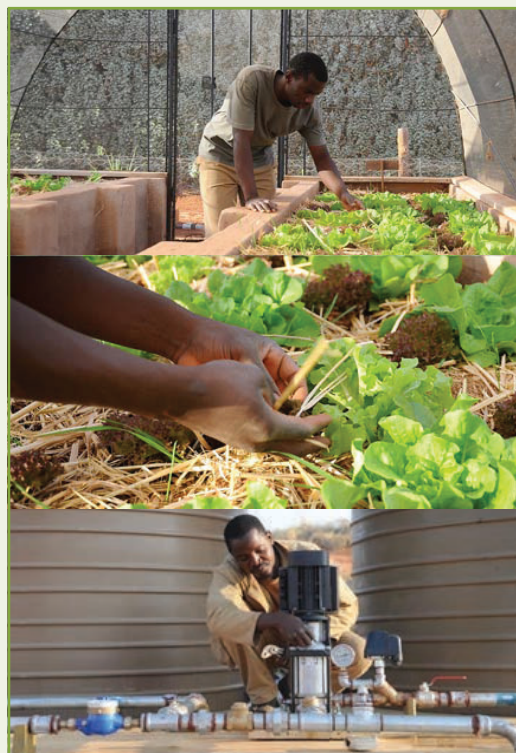
Conservation

Biodiversity is life. Conservation is safeguarding this biodiversity and the integrity of the ecosystem services it provides which support global needs. Conservation and the sustainable use of natural resources is a core component at Wolwedans. Activities in this dimension address issues related to biodiversity and ecosystem services as well as management of energy, water and waste, land management and carbon impact reduction.

Apart from being able to collect park fees on behalf of NamibRand Nature Reserve through the commercial activities, conservation initiatives include:

- Substantial investments into renewable energy (all camps by now run 100% on solar, both power and hot water);
- Professional water management (every litre of water is measured and accounted for);
- Low impact building style (all camps can be removed if need be without leaving any trace of human occupation);
- Complete recycling (no waste whatsoever remains at Wolwedans);

- Organic gardens (50% of all greens consumed by guest and staff alike are grown at Wolwedans, hence significantly reducing the operations' carbon footprint); and,
- Environmental education.



Community

People matter; it is the right of every person to have their basic needs met and enhancing the well-being of communities is a fundamental obligation of all. Wolwedans addresses fair working conditions, fosters local and regional relations, engages in capacity building and support for small and medium enterprises (SMEs).

When it comes to community support, vocational training in the hospitality sector is Wolwedans' primary way of "giving back". Since inception of NICE (the Namibian Institute of Culinary Education) and the Wolwedans Desert Academy back in 2007, some 200 young Namibians have received NQA-accredited training, got certified and successfully entered the job market. With institutional co-funding secured, the programme will be expanded to cater for 80 trainees by 2018, making vocational training one of the Wolwedans groups core focus areas.

Culture

The world is culturally diverse. Respecting differences is crucial to humanity's future. Wolwedans - where ten Namibian languages are spoken - strives to strengthen

intercultural relationships and understanding, to safeguard Namibia's cultural heritage and peace. A variety of platforms are created (i.e. the annual Wolwedans Winter games) which support, advance and celebrate cultural diversity, and enrich lives by awakening people's creative spirit.

In conclusion, sustainability entails more than solar panels (reduction of fossil fuel and carbon footprint reduction). Whilst the latter seem to be the core focus of climate change adaptation and mitigation interventions, the Wolwedans 4C model shows a new way of going about business.



Stephan Brückner is a third generation Namibian and holds a Masters in Business Communication. Stephan started what today is known as the Wolwedans Collection. Sustainability has been at the heart of Wolwedans since its inception some 20 years ago.

VULNERABILITY ASSESSMENTS OF NATURAL RESOURCE DEPENDENT COMMUNITIES IN NAMIBIA AND ECOSYSTEM-BASED ADAPTATION STRATEGIES TO CLIMATE CHANGE

By Dr. Konrad Uebelhoer, Dr. Nadine Faschina, Carolin Tischtau

Climate Change Adaptation is a buzzing topic on the international agenda. But is it clear what adaptation to climate change in relation to ecosystems and their services means? Choosing the right approach and designing effective ecosystem-based adaptation measures is of utmost importance in order to successfully shield from the impacts of climate change.

The Ministry of Environment and Tourism (MET), in partnership with GIZ, commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) is currently implementing the Biodiversity and Climate Change (BMCC) Project, with its overall objective of coherent implementation of biodiversity and climate change-related policies, strategies and practices to increasingly contribute to diversifying and securing livelihoods of local natural resource dependent communities in Namibia, aims to face these challenges.

The project believes that an adaptation from within is needed. Once community members actively participate in the process of developing adaptation strategies, chances are much higher they will implement those. Hence BMCC chose a participatory, bottom-up approach to integrate risks and vulnerability into management of Conservancies (C) and Community Forests (CF) in Namibia in order to enable communities to sustainably adapt to climate change. The livelihoods of 70% of Namibia's population depend directly or indirectly on natural resources and are very vulnerable to any climate changes.

The community-based natural resource management (CBNRM) approach is unique to Namibia and is internationally renowned, for its objective to promote activities of sustainable managed natural resources leading to social development and economic growth, and a suitable partnership between local communities and government. In 2006 another community-based approach within CBNRM was established: the CF programme. Although there is a strong understanding of integrated resource management as the only approach ensuring sustainability, the inclusion of knowledge about risks and consequences of climate change and the loss of natural resources into management is not on top of the agenda of CBNRM yet. Hence, BMCC's conducted vulnerability assessments (VAs) - based on the MARISCO method - in four CFs and three Cs as pilots, with the goal to develop a holistic participatory assessment approach for Namibia's rural areas under CBNRM management focusing on capacity building at local

and regional level to increase adaptive capacity to climate change.

Most VAs in rural areas focus on agricultural adaptation measures. The consideration of the interaction between the socio-economic system and the surrounding natural ecosystem with its services and biodiversity is so often neglected. But this consideration is especially important in areas where the livelihoods of people depend directly on natural resources and the sustainable management thereof, as it is typically the case in Natural Resource Dependent Communities in Namibia. Consequently the VAs considered exposure (stresses due to climate change), sensitivity (biological and socio-economic system) and adaptive capacity. The MARISCO method is a participative process designed to evaluate the vulnerability of communities as well as ecosystems and design strategies for future sustainable development. The final goal is to design management measures that also embrace adaptation to climate change based on natural systems, appropriately addressing the identified risks and opportunities.

The two main challenges identified by the communities in the project areas are: fires as well as unmanaged grazing/browsing of domestic animals. The ecosystems have entered a state of ongoing negative feedback loops where vulnerability to (especially climate change-related) disturbance and degradation is constantly increased. Any attempt to try and reduce vulnerability to climate change in both natural and cultural systems can only be achieved by working according to the principles of ecosystem-functioning and enhanced biodiversity.



Participants discussing impact of veld fire on the ecosystem.

Hence Ecosystem-based Adaptation (EbA) in the areas must focus on fostering ecosystem functions that reduce the sensitivity against climate change-related extremes and disturbances, through:

- Preventing the loss of biomass and the mineralization of organic matter in and on top of the soils
- Uncontrolled fire practices should be avoided
- The improved sustainable and fair use of biological resources (biotrade) should be enhanced and developed
- Forest restoration, through a process of reforestation and silvicultural management, should be considered as a serious contribution to an integrated, long-term ecosystem management
- Conservation agriculture has to be promoted more intensively
- Soil conservation and 'building' has to be made understandable and 'touchable'

- Production and application of manure, mulch and compost should be explored to a larger extent.
- Strategies of ecological farming, from rotation with nitrogen-fixing plants, agroforestry etc. should be developed as part of a polycultural farming system
- Intensive sustainable management of livestock farms would encourage better site practice and use of land as well as drastically reduce if not eradicate livestock ranging

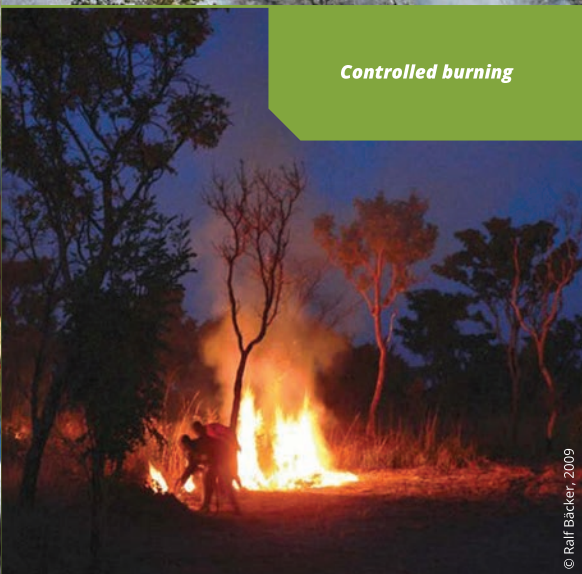
With this, the VA approach in CBNRM of BMCC aims to further improve the comprehensiveness in adaptation measures in rural areas in Namibia.

Climate change impacts ecosystems and its services, and a great potential lies in EbA measures in order to decrease communities as well as ecosystems vulnerabilities to extreme events.



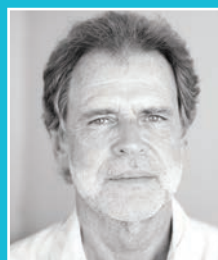
Community Forest

© Ralf Backer, 2009



Controlled burning

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Dr. Konrad Uebelhör is working with GIZ for the last 30 years. A trained forest scientist he first specialized in tropical forest management. With assignments in Philippines, Pakistan, Malaysia, Indonesia, Honduras and Namibia his experience covers natural resource management, environmental policy, biodiversity management and climate change.



As a professional agricultural scientist, Dr. Nadine Faschina is specialized in natural resources management including community-based land and biodiversity management, environmental policy development, good governance concepts and adaptation to climate change. For the past years, she has worked for GIZ with the Namibian government and NGOs.



Carolin Tischnau holds a Master in biodiversity management and research. Currently she is working in the fields of biodiversity and community-based natural resource management, biotrade, ecosystem-based adaptation measures as well as climate change.

THE COST OF WATER

By Piet Heyns

Water in Namibia is free, but it also has a cost. This cost is the cost to supply water from its source to the tap of the user and does not include any cost for the water itself. The cost to supply water under the prevailing arid conditions in Namibia is very high and the therefore water is expensive. The trick is to understand why water is considered to be a free commodity, why water has a cost, why this cost is high and how this unavoidably high cost can be adjusted to make water more affordable for the consumer. The bottom line is that water has a cost and someone must pay for the supply of water otherwise a water service provider will go bankrupt and the service will have to be terminated, unless a “bailout” is provided.

Why do people think that water is and should be free? All sources of water originate from rainfall and therefore many people believe that water is not only a gift from God, but that it is free and should be free. This belief is of special significance in Namibia where the mean annual rainfall is less than 260 millimetres per annum, unreliable, unpredictable, limited to a relatively short rainy season and exacerbated by climate change. Often the rainfall is very low or stays away completely due to a period of drought conditions and it is especially at such times that God is approached to bring relief to the parched landscape, dying animals and thirsty people by sending rains.

The longer term access to water after a rainy season has ended, forced the early indigenous settlers in the interior of the country to settle at places where perennial open water, such as springs or fountains or seeps or pools of water in the ephemeral rivers was available or where they managed to find water by digging shallow wells in or next to watercourses or at other places with shallow underground water. This water never cost anything to collect and use, but when these sources became unreliable or dried up due to a lack of rainfall, the communities had to move elsewhere. Another complication was that this free water was often contaminated and not safe for human consumption. Access to those scarce water sources also gave rise to conflict in times of drought.

One can therefore argue that when people have access to naturally occurring water sources which are inherently unreliable and unsafe for use, the water can be regarded as free, but this argument does not hold when it comes to formal or permanent water supply schemes required for an industrialized society.

Over the years the formal supply of water became a necessity in Namibia due to an increase in the demand for water as a result of an increase in the population, economic development and an improvement in the quality of life. Namibia has a huge surface area (about 825 000 square kilometres), a very small population (about 2,1 million people) and a very low average population density (less than 2,6 persons per square kilometre). Communities are

small, isolated and remotely located from water sources, but there are also areas where the population density is much higher, such as in the central area, the coastal towns and in the north. This means that the local water sources are inadequate and long-term sustainable water supply schemes must be established. Huge capital investments in infrastructure are therefore required to store water in reservoirs during the rainy season and to convey water over long distances by pipeline from source to consumer. Due to the high capital cost and the relatively low quantity of water used, the unit cost of the water is high. This makes the water supply even more expensive. The intervention of an elected Government is therefore necessary to facilitate investment in water resources development and the recovery of the cost.

The main actors responsible for water supply in Namibia are the Namibia Water Corporation (NamWater) for bulk water supply; Government institutions such as the Department of Water Affairs and Forestry (in the Ministry of Agriculture, Water and Forestry - MAWF) for rural water supply; local and regional authorities for water supply, water reticulation and effluent treatment and the private sector, or self-suppliers, such as the mining sector and commercial farmers.

In order to explain how the financial cost of supplied water is calculated, the basic elements of a water supply scheme must be understood (see infographic on page 29). These are normally:

- A water source (which may be a perennial river, a dam in an ephemeral river or a borehole) that yields water which has an acceptable chemical quality and an adequate long term sustainable safe yield;
- A facility to treat the water to make it aesthetically acceptable and bacteriologically safe for potable use;
- A water transfer system, comprising one or more pump stations and pipelines to convey the water from the source to a treatment plant and from there to a water distribution point such as a terminal reservoir and;
- A water reticulation system to convey the water from the terminal reservoir to the water consumer.

The construction of these facilities requires capital investment and one component of the total water cost is the cost to repay the capital and interest. The money must be borrowed from a financial institution and must be repaid with interest. This payment or redemption of the capital and interest over time, is normally calculated over the economic lifetime of the water scheme and is a fixed annual cost that will remain the same during the lifetime of the water scheme. This cost must be recovered from the water consumer and is normally calculated as a unit cost in terms of the supply capacity of the water scheme or

the number of cubic metres of water that will be supplied by the water scheme over its lifetime. This capital cost is called the fixed component of the total water cost and is expressed as Namibian Dollar per cubic metre (also referred to as “per kilolitre”).

The other component of the total water cost is the variable cost component because it depends on the quantity of water that will actually be supplied to the consumers. The water demand that must be satisfied by a water scheme usually increases over time and therefore each year more water than the previous year must be pumped and treated. This means that the cost of the energy will increase to pump the additional water and the chemicals required to treat the water. On top of this increase, there will also be an additional cost due to the effect of the annual inflation in the cost of energy and chemicals. These costs must be accounted for and recovered from the consumer. The unit cost of the variable cost component is therefore the sum of all the variable costs or “expenses” divided by the actual quantity of water supplied during the year. The full economic unit cost of the water is therefore the sum of the annual fixed unit capital cost and the annual variable unit cost. Based on this full economic cost, a water supply entity normally levies a water tariff.

When the water is distributed from the terminal reservoir to the consumers, it is usually done by another entity, such as a local authority. This authority must also make a capital investment to construct a water reticulation network and must recover that fixed cost, as well as the variable cost to employ staff to operate and maintain the reticulation system. This means that the local authority will take the water tariff of the water supply entity and add the reticulation cost. This cost is the so-called “price” of the water that the consumer must pay. This price per kilolitre must be multiplied with the number of kilolitres used by the consumer to get the cost of the water consumed.

So far we have explained the reality of cost recovery measures, but the national water policy of Namibia makes provision to make water more affordable to the poor by introducing subsidies. According to the policy, water is an economic good and it is essential to recover the full financial cost to supply water in order to enable the water supply and sanitation sector to become self sufficient and sustainable over time. It is therefore clearly recognized that without the necessary revenue, service providers will be unable to continue providing the expected level of water supply and sanitation services, especially if Namibia wants to achieve Vision 2030.

However, there is also a social responsibility to make water available to the poor and, in the case of low-income rural and urban areas, at least the operational and maintenance cost must be recovered with support from government subsidies or cross-subsidies amongst consumers. There are various ways to achieve the latter, for example to introduce a “block tariff system” where the low water consuming “poor” is charged less than the high water consuming “rich”.

In the case of NamWater, which is a Government owned enterprise, the water tariffs are subject to approval by the

Minister and it may happen that the tariffs are adjusted. However, if the tariffs are reduced to make the water less expensive, it means that the water supply entity will be forced to make a financial loss because it cannot recover the actual costs as calculated when the water tariff was determined. This is therefore not the way to go if a water supply entity is expected to remain solvent.

As stated above, the water policy provides for the recovery of at least the operating and maintenance cost when water is supplied to the poor, but recovery of capital is not addressed. Namwater must therefore be innovative to find money to invest in the creation of new infrastructure, or to increase the capacity of existing infrastructure (called “upgrading”) or to replace old infrastructure and these costs can, for example, be added to the water tariff, which means that the company may theoretically make a “profit”. This will not be a profit in the true sense of a profit, because the money will not be used to enrich anybody, but to develop water supply infrastructure. These concepts are often not well understood by the public or politicians.

The cost of water in Namibia

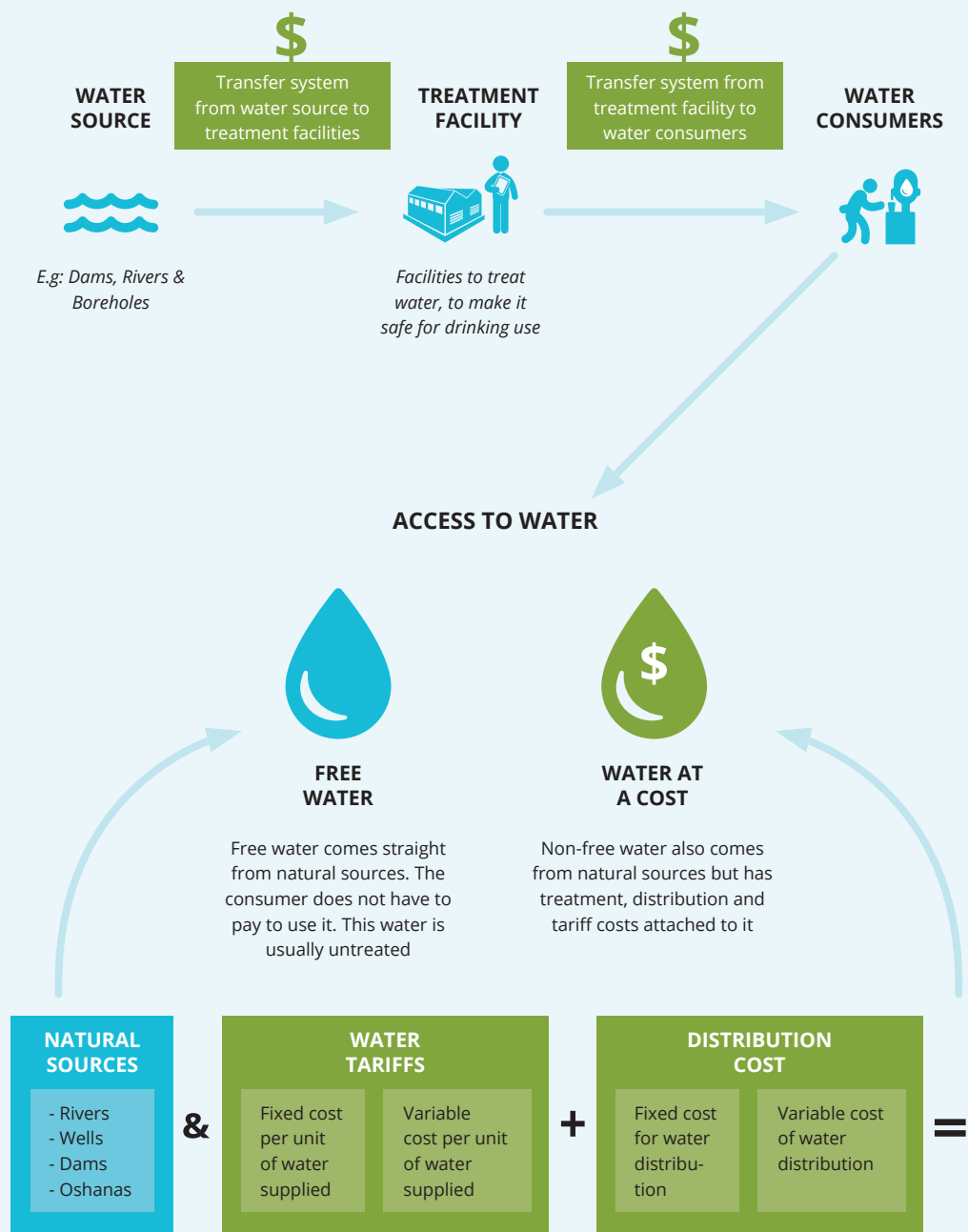
- Water that is supplied to a water user by means of a water scheme is not free and has a cost;
- The water cost comprises a fixed cost component to recover the capital and interest required to develop the water scheme and a variable cost component to recover the cost to operate the water scheme;
- The water tariff is the sum of the fixed and variable cost per unit of water supplied;
- The fixed and variable cost to reticulate or distribute the water to the consumers is added to the tariff
- The sum of the water tariff and the reticulation cost is the price of the water.
- When the water price is made more affordable, the price is subsidized.



Mr Piet Heyns is a well known professional in the water sector in Namibia, Southern Africa (the SADC Region), Africa and elsewhere in the world. He has more than 42 years experience in the water sector and serves as an Associate of the Desert Research Foundation of Namibia (DRFN).

THE COST OF WATER:

The cost of water: Factors affecting the calculation of the cost of water



STAKEHOLDER INFLUENCE MAPPING IN THE CLIMATE CHANGE ADAPTATION AGENDA: LESSONS FROM NAMIBIA

By Dr. Salma Hegga and Nguza Siyambango

Climate change projections for Namibia project temperature increases of 1 to 4°C and increased variability in rainfall patterns. The climate risks associated with temperature increase and unpredictable rainfall will impact subsistence farmers and consequently the rural Namibian population that rely mainly on rain-fed agriculture. The Adaptation at Scale in Semi-Arid Areas (ASSAR) is conducting research to deepen understanding of the drivers of vulnerability to climate change and explore ways to promote effective adaptation across scales in semi-arid regions. The multi-institution research project is funded by the United Kingdom's DFID (Department for International Development) and Canada's IDRC (International Development and Research Center) and is being led by the African Climate Change and Development Initiative (ACDI) at the University of Cape Town. The research is taking place until October 2018 in four regions i.e. Southern Africa, East Africa, West Africa and South Asia.

The primary focus of the ASSAR project is to better prepare the communities and governments of the semi-arid regions of Africa and Asia for the potential impacts of climate change. To achieve this, ASSAR is conducting high-quality, regionally relevant, and stakeholder-driven research, which will identify the factors that prevent and enable widespread and long-term adaptation.

In July 2015 ASSAR researchers held a half-day Stakeholder Influence Mapping workshop with 11 national level stakeholders (including government, NGO's and researchers) in Windhoek to map stakeholder influence in the implementation of the Climate Change Adaptation (CCA) agenda in North Central Namibia. The workshop followed the approach of Eva Schiffer's Net-Map Toolbox and was facilitated by Oxfam and the ASSAR southern African team (Universities of Cape Town, Namibia and Botswana).

The workshop aimed to: i) identify stakeholders who are critical in the CCA agenda; and ii) identify how influential different stakeholders are in the CCA agenda, in both enabling and preventing the implementation of CCA.

From the national government stakeholder's perspective national ministries are seen as the most influential actors because of their direct involvement in planning and decision-making processes. Whereas the local community was being perceived by national government as having the least influence in CCA and were viewed simply as being the passive receivers of decisions taken at higher levels.

Multi-lateral organisations (e.g. Global Environmental Facility, United Nations Development Programme, GIZ) were seen as the second most influential stakeholder type in the eyes of government because of the funding they provide – once again showing a top-down trend.

On the other hand, researchers felt that local government were slightly more influential than both national government and traditional authorities because they administer budgets and are responsible for implementing actions on the ground.

The group of NGOs on the other hand, perceived that NGOs and research institutions (including consultancies which often assist government to prioritize issues and undertake targeted research) are as influential as national government, because of their access to funding and their close relationship with communities and vulnerable groups. Although we had three different groups of stakeholders (i.e. government, researchers and NGOs), the overall findings from this exercise suggest a top-down approach with respect to the CCA agenda with all groups agreeing that national government particularly the ministries are amongst the most influential actors. Although the community is important, the current structure from the mapping exercise place the local communities at the periphery of the network implementing adaptation activities as per direction from the national government.

In conclusion, strategies or planning aimed at supporting climate change adaptation can be improved with increased understanding of the influence of state and non-state actors across governance scales in enabling and preventing the implementation of adaptation measures.

Also see: http://www.assar.uct.ac.za/news/Namibia_RIU_workshop



Dr. Salma Hegga is a post-doctoral fellow at UCT/ACDI on the Adaptation at Scale in Semi-Arid Regions (ASSAR). Her research work on ASSAR focuses on governance and climate change vulnerability & adaptation in Southern Africa.



Ms Nguza Siyambango is a climate change and disaster risk management researcher at the University of Namibia under the Life Science Division (LSD)/ Multi-Disciplinary Research Centre (MRC). Her research work at LSD/MRC focuses on Community based adaptation strategies and Vulnerability and risk assessments.



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