

**TITLE:**

Sustainable Living and Learning at NaDEET Centre-Namib Desert, Namibia

Mrs. Viktoria Keding

Director

Namib Desert Environmental Education Trust (NaDEET)

PO Box 3017, Pioneers Park, Windhoek, Namibia

nadeet@iway.na

**ABSTRACT:**

“Sustainable living is a way of life. It is a value and belief to guide you in making decisions about how you live.” Established in 2003, NaDEET Centre integrated this philosophy into its infrastructure and teaching practices. As a model of sustainable living, all energy for cooking, heating and electricity is from solar power. Basic techniques for water saving and waste management have been implemented. The learning programme integrates these sustainable living practices with the surrounding desert environment. Activities are done in a hands-on, learner-centred manner that complements the national school curriculum. This paper serves to explore the Centre’s successes and failures to date.

**KEYWORDS:**

Sustainable Living

Environmental Education Centre

Alternative Energy

Water-saving awareness

Desert

**PAPER:****INTRODUCTION**

“Sustainable living is a way of life. It is a value and belief to guide you in making decisions about how you live.” This is the philosophy of the Namib Desert Environmental Education Trust (NaDEET) which guides it and all aspects of NaDEET Centre’s programme including the main learning activities, infrastructure and basic living needs. This philosophy developed from first-hand experiences at other environmental education (EE) Centres that were not maximising the educational opportunities they have to offer due to environmentally

inappropriate infrastructure. NaDEET Centre has aimed to address this crucial gap between ‘preaching’ about the environment and ‘practicing’ for the environment.

NaDEET Centre is situated in a dune valley on the NamibRand Nature Reserve in the southern Namib Desert. It hosts school, youth and adult groups for 2-4 day programmes. The programme is focussed on sustainable living and uses the Namib Desert as an ideal setting to teach important skills in energy and water conservation. NaDEET is comprised of a small team of environmental educators that currently work with approximately 25 groups per year. As a non-profit organisation that provides its service to all sectors of the population regardless of means, it is financially dependent on grants and private donations.

This paper reviews the original rationale and objectives behind the development of NaDEET’s programme and structural design. It then explores if and how NaDEET Centre has managed to succeed in fulfilling these objectives within the past four years. Lastly, the paper looks towards NaDEET’s future goals and makes recommendations for EE Centres in general.

### **Development of NaDEET Centre**

As the core project of the Namib Desert Environmental Education Trust, NaDEET Centre was founded for two main reasons. Firstly, to fill a need for an environmental education centre in Namibia’s namesake, the Namib Desert, and secondly, as a response to the lack of ‘environmentally-appropriate’ education centres in Namibia.

One of NaDEET’s co-founders and director, Viktoria Keding, previously worked at the AfriCat Environmental Education Centre in central Namibia. During her time there she came to realise that there was a large gap between what she, as the environmental educator, taught the participants and what the facilities at the Centre itself inadvertently taught the participants. The AfriCat EE Centre, like most environmental education centres in Namibia, was established to teach about a particular animal or group of animals, in this case large carnivores. AfriCat’s centre design, like many others, caters towards creating an outdoor, African atmosphere. Other Centres are often the product of refurbished old, existing infrastructure.

*Single subject focussed programmes at times give participants the impression that they should “save one thing to the detriment of another” or that “the environment is*

*only wildlife and nature”. This impression that only the particular environmental issue is important does not arise because the environmental educators are teaching it, but rather because of what they are not teaching. It seems quite counter-productive to educate about ‘saving a cheetah’ and simultaneously have leaky taps in the Centre’s bathrooms (Paulick, 2003).*

These environmental education centres are not fulfilling their potential as an environmental centre, not in their infrastructure nor perhaps in the content of their programmes. Current thinking in environmental education defines environment to include not only the biophysical but also the social, political and economic factors that affect the environment (O’Donoghue,1995). Environmental education centres therefore need to also take a more holistic approach to all aspects of their operations. In developing NaDEET Centre, it was imperative to eliminate this gap between what Centres ‘preach’ and what they ‘practice’. To do this, NaDEET Centre looked at both the content and approach of its learning programme and its infrastructure.

The content and approach of an environmental education centre are closely linked and are complementary to each other. EE Centre content is what is being taught while the approach is how it is being taught. Both content and approach can be divided again into two levels: the micro- level and the macro-level. The content on a micro-level is the main subject matter being taught by the educators at the Centre while the macro-level content is what the EE Centre facilities are intentionally or unintentionally teaching. For approach the micro-level is what teaching methods are used at the Centre while the macro-level is what methods are used before and after the programme away from the Centre. In both cases the micro-level is the main environmental learning programme while the macro-level is the learning that takes place in addition to the main activities (Paulick, 2003).

Based on this concept, NaDEET Centre’s design objectives were to:

- Link the micro content of its programme (the Namib Desert) with the macro content (basic living activities).
- Link the micro-level approach (the learning at the Centre) with the macro-level approach (the learning before and after the Centre programme).

- Closely unite all four of these levels together to make environmental learning opportunities for participants that are truly meaningful and will create lasting environmental change in Namibia.

### **NaDEET Centre Design Implementation and Evaluation**

To achieve the first objective of linking the micro- and macro-level content, NaDEET Centre has from the start integrated the two. The foundation of NaDEET Centre's programme is our three basic living needs: food, water and shelter. The programme explores these basic needs in context of us humans and our communities; and our local natural environment- the Namib Desert- and its inhabitants. On a micro-level the weeklong programme includes the following themes 'Our Resources: Food, Water and Shelter', 'Our Surrounding Environment', and 'Taking Action, Improving Our Environment'. The activities done include solar energy experiments, solar cooking, monitoring energy use, "Making our own water" (water cycles), 24 hour water counts, dune walk, catch and release of nocturnal wildlife species, identification and adaptation, making recycled fire bricks and sustainable living dramas. These activities aim to engage learners to think about what their current living practices are, what they can learn from uniquely adapted desert species and how they can apply this knowledge and skill in their own lives. Ultimately, how can we live with the environment instead of against it? The success in implementing this micro-level content is largely due to the Centre itself. NaDEET Centre is a model in sustainable living. Firstly almost all food is prepared using direct solar energy on parabolic solar cookers or in solar ovens. Hot water for breakfast is prepared using homemade fuel-efficient stoves that are fuelled with recycled firebricks made from old newspapers. Electricity at the Centre is solar powered and is used for lights, a fridge and freezer. Water is pumped from a borehole using solar energy. At the Centre there are only taps in the kitchen for cooking and washing dishes to prevent water wasting. The bathroom facilities have no taps but rather bucket showers and cups for brushing teeth that can be filled from a pre-filled water tank. Instead of using flush toilets long-drop composting toilets are provided. Hot water for showering is provided by solar heaters where water must also be fetched with a bucket. The participants conduct daily water counts to monitor all water use. The Centre also has a recycling area where glass and tin are separated and brought to a recycling depot in Windhoek and compost is made on site. In building NaDEET recycled and 'waste' materials were used as much as possible and as permitted by the NamibRand Nature Reserve building guidelines. Accommodation houses and bathrooms are constructed from second-hand wood and screws from a local lodge. Flooring for

bathrooms are made from discarded fish net obtained from a fishing company. The bathrooms are equipped with water tanks made from broken electrical water geysers and discarded washbasins and shower trays. The pipe to deliver water from the borehole to the Centre was salvaged from an old, dormant pipeline. The facilities at NaDEET Centre therefore truly are environmentally friendly. Participants are constantly learning positive environmental concepts not only in the classroom, but also during their free time.

*A major part of a young person's experience at an EE Centre is the facility itself. For most youth, it is their first time not only at an EE Centre but also on a school trip away from their home region. The EE Centre including where they sleep, bathe, cook and eat makes a considerable impression on them... For many Namibian children, the Centre's main subject (i.e. cheetahs, rhinos, etc) is not something that is part of their everyday 'normal' life. Cooking, bathing and living however are (Paulick, 2003).*

NaDEET Centre has successfully achieved its first design objective by not only linking learning in the classroom to learning from the Centre itself, but by truly integrating the two.

The second design objective aimed to extend the Centre's programme by linking it to environmental learning away from the Centre before and after the participants' visit. The learning and teaching methods implemented at NaDEET Centre (micro-level approach) is hands-on and learner-centred. All activities mentioned in the previous section are developed that learners are guided by a sustainable living journal, worksheets and relevant materials. The activities throughout the programme are connected and built upon each other. For example, on the first day learners conduct five different solar energy experiments to learn about the principles of absorption, reflection, bundling, greenhouse effect, conduction and insulation. These principles are applied not only to explain how solar cookers and ovens work, but also on the dune walk and in other activities. For example, a Namaqua chameleon changes colour and thereby uses reflection and absorption to regulate its body temperature. Learners make these types of discoveries and connections through their own first-hand experiences as the programme progresses. At the end of the programme, learners are asked to take the awareness, attitudes, knowledge and skills they have gained and apply them in developing a short skit in the Sustainable Living Dramas activity. Each group of learners presents a 5-10 minute skit about several environmental problems from their home community together with newly learned viable solutions. This activity initiates the link between the hands-on,

experiential learning at NaDEET Centre (micro-level) with continued environmental learning and living back in the home and school community (macro-level).

Four years ago, as part of the NaDEET Centre design, NaDEET developed the At-School-Programme. This programme is comprised of a pre- and post-visit activity. Ideally, NaDEET EE practitioners want to visit every group in their home or school community before their visit to introduce the learners to sustainable living practices by conducting an environmental audit. This audit is to include the learners' energy and water consumption and their household or school waste production. During the group's programme at NaDEET, they are to develop an environmental action project to be implemented 2-4 months later. The action project is to respond to relevant environmental problems that can be addressed by the learner's themselves. Although NaDEET believes this is a vital component to successful environmental learning and participation, the At-School-Programme has unfortunately only been implemented on a pilot basis with three different schools. This is primarily due to a lack of funds, staff and resources. Two of the schools that have participated in this programme chose to address litter in their community and one chose to address the lack of awareness of solar energy, water conservation and recycling in their local community. For these three schools, the At-School-Programme has been a success on a short-term and medium-term basis. Two of the schools continue to come to NaDEET Centre every year with a new group of learners. One of these schools actively continues to create awareness and implement several new skills learned at NaDEET Centre. Currently almost all participating groups do complete a pre-visit worksheet that introduces energy, water and waste auditing at an introductory level. Ultimately it is the goal of the At-School-Programme to provide momentum and guidance for continued environmental learning and living through active participation on an individual, group and community level. It also offers an opportunity to identify gaps in teaching, and possibly to assess the effect of the programme NaDEET Centre has therefore only partially succeeded in implementing its second design objective.

The third design objective aimed to unite all aspects of content and approach together to create a truly meaningful environmental education programme. Again it is NaDEET Centre as a practicing model of sustainable living that ties everything together. The classroom activities are directly connected to the Centre facilities through sustainable living activities such as solar cooking and water monitoring. In addition these activities are based on the outcomes of the Namibian national school curriculum thus broadening the macro level approach to include the

learner's school environment. Here the hands-on interaction with environmentally appropriate technology to provide our basic needs makes the link between the classroom learning, the facilities, the hands-on, learner-centred approach and the Namibian national school curriculum. All participants are learning by doing at all times during their programme at NaDEET Centre. It is the awareness, knowledge, attitude and skills gained through these multi-faceted experiences that lead the way to continued environmental participation away from NaDEET Centre.

### **NaDEET Centre improvements and future goals**

Throughout the past four years NaDEET Centre has continuously grown and improved itself, however, the original rationale and objectives have proven effective and appropriate. There are a few areas that NaDEET Centre would like to address in order to further its environmental learning opportunities. NaDEET Centre aims to actively include climate change education into the classroom (micro-level content). This new environmental 'buzz word' is already actively addressed through the environmentally friendly facilities at NaDEET Centre (macro-level content). Almost no fossil fuels are used before, during or after the NaDEET Centre programme except for our vehicle. However as Namibia continues to develop, its contribution to global warming and climate change also increases, which is often overlooked in light of temporary decreased poverty. Secondly, NaDEET Centre currently does not actively recycle its wastewater as grey water from the kitchen and showers goes into the sand. This water does benefit the local vegetation however it is being underutilised as an effective learning opportunity. After thorough research of different options, NaDEET Centre plans to build a small-scale solar distillation facility to recycle primarily wastewater from the kitchen. On average this is about 400 litres per group or 10 000 litres per annum. This water will be tested for its purity however current plans are to use it for a small-scale herb and vegetable garden. Lastly to improve upon NaDEET Centre's impact in the learners' homes and communities the design of the At-School-Programme needs to be re-evaluated. As funding remains difficult to secure, a more cost-efficient yet effective programme must be designed. This is currently in the beginning stages.

### **Conclusion**

After four years and approximately 2000 learners, NaDEET Centre has proven to be an appropriate and effective environmental education centre. As a product of a programme evaluation conducted in 2002 of the AfriCat EE Centre, NaDEET has capitalised on the

lessons-learned and first-hand experiences. The response of participants to the sustainable living activities and Centre facilities has been tremendously positive. Learners continuously remark in their evaluations that their favourite activity is solar cooking and that they found the water monitoring valuable. At a time when funding for non-profit work, especially environmental education, is increasingly scarce, it is vital that all environmental education centres monitor themselves and look to maximise the learning opportunities they provide participants. NaDEET Centre is therefore also a model for how other environmental education centres in Namibia could be improved to maximise their impact. Most importantly an EE Centre facilities and 'free time' learning must support the 'planned' learning programme, for the centre to achieve its main educational objectives. NaDEET believes that this design philosophy will improve attitudes and promote change in participants' daily lives.

## **References**

- O'Donoghue, R.1995. Environment and Methods. Share-Net, Howick.
- Paulick, V. 2003. Programme Evaluation informing Environmental Education. Proceedings of the 21<sup>st</sup> International Conference of the Environmental Education Association of Southern Africa (EEASA). EEASA, Windhoek.