

# GLOBAL INFORMATION SOCIETY WATCH 2010

*Focus on ICTs and environmental sustainability*



ASSOCIATION FOR PROGRESSIVE COMMUNICATIONS (APC)  
AND HUMANIST INSTITUTE FOR COOPERATION WITH DEVELOPING COUNTRIES (HIVOS)

# Global Information Society Watch

## 2010



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# Green grassroots technologies

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## Welcome to Nguruman, the heart of Maasailand

Springs of fresh water flowing freely, fresh air, thousands of different bird species, lovely picnic and camping sites, breathtaking sceneries... These are the many unique features that greet you as you enter Nguruman, Entasopia. Nguruman is located in the heart of the Maasailand in Kenya, approximately 158 kilometres from Kenya's capital city Nairobi. The first 120 kilometres from Nairobi to Magadi is a tar road, while the remaining 38 kilometres to Nguruman is un-tarred. The drive to Nguruman is marvellous, with a view of the Ngong hills, the Rift Valley, Lake Magadi, and the beautiful Nguruman and Loita escarpments.

With about 4,000 inhabitants, Nguruman is at the end of a rough road, and beyond the reach of power lines and modern facilities associated with urban life. It has no bank, no post office, few cars and little infrastructure. Daily newspapers get to the area after 1:00 p.m. due to transport logistics. Public transport is provided by one bus, which leaves for the capital early in the morning, returning at 10:00 p.m. At night, most people light kerosene lamps and candles in their houses or fires in their huts and go to bed early, except for the agropastoralists guarding crops against elephants and buffalos.

Nguruman is the last place on earth one would expect to find an internet connection, yet it is here where you find a community-based access centre referred to as a Maarifa (Knowledge) Centre, courtesy of an international NGO, the Arid Lands Information Network (ALIN).<sup>1</sup> ALIN – an organisation I work for – is an information network that works with rural communities in the East Africa region to improve the delivery and utilisation of useful information through the application of modern technologies.

A typical Maarifa Centre is located in a remote setting, and includes five or more computers with internet connectivity (as well as print publications). All of ALIN's Maarifa Centres are linked via internet to a central server and run a content management system (eNRICH) which enables content to be created and classified under different themes in English and local languages. Each of the Maarifa Centres can exchange content through downloading and uploading, and is used by people to find quality information, and to document and share their own good information.

## Nguruman Maarifa Centre

The Nguruman Maarifa Centre is housed by World Corps Kenya, an international non-profit organisation working on poverty issues, particularly the lack of access to energy, information and economic opportunities in rural areas of developing countries. Since most of the communities living here are agropastoralists, there is a need for information on markets, agricultural practices and livestock management, among other things. The youth, who form the bulk of the population, search for information on educational institutions, job opportunities, HIV/AIDS, reproductive health and entertainment.

The centre is located in a front shop for easy access by the residents who throng the market for other services. The centre is opened daily from 8:00 a.m. to 6:00 p.m. with shorter working hours during weekends. On a market day, this is the only place one can go to charge a mobile phone. In addition, this is the only place where you can get computer lessons and internet services. It is equipped with three desktop computers, one laptop, a printer and two satellite radios, which are used by listening groups. In addition the centre has VSAT<sup>2</sup> and two solar panels with a capacity of 315 watts and four batteries with a combined 48 volts.

## Using the sun to get access

### Mobile phone services

In Kenya, mobile phone industry growth continues to be one of the best in the world with a combined subscription base of 19.4 million by December 2009, representing a penetration rate of nearly 50%. According to ICT sector statistics from the regulator, the Communications Commission of Kenya,<sup>3</sup> the mobile signal covers 85% of the population and 34% of the land mass. This trend can be explained by, among other factors, the reduction in the cost of mobile handsets as well as the low cost of prepaid calling cards which go for as low as KES 20 (USD 0.25).

With such growth and uptake of technology, power remains one of the major factors determining the continuous operation of the centre – yet the Nguruman Maarifa Centre has none except solar. The centre offers phone-charging service for the residents using the two solar panels that are also used to power the computers. "We charge between 15-25 mobile phones on a weekday and between 20-30 mobile phones on a weekend," says Steve Mwangi, the ALIN field officer based at the centre.

2 VSAT (very small aperture terminal) is a two-way satellite ground station that uses a small dish antenna. en.wikipedia.org/wiki/Very\_small\_aperture\_terminal

3 cck.go.ke/resc/statistics/Sector\_Statistics\_Report\_Q2\_2009-2010.pdf

1 www.alin.net

### *Internet and computer lessons*

Nguruman Maarifa internet connectivity was initially made possible in November 2007, when three young engineers from the University of Michigan's IMAGINE Africa project helped ALIN install the VSAT, powered by a solar panel, to hook up the three computers in the Maarifa Centre and connect this rural community to the rest of the world.<sup>4</sup> Prior to this the centre was using a GSM modem to connect only one computer at a time. Due to the rapid data evolution in the Kenya ICT sector, this VSAT connectivity has been replaced with a more cost-effective GSM router that has higher speeds and costs much less.

Through the solar energy, the Maarifa Centre offers free access to information and knowledge in line with ALIN's mission of promoting information exchange among communities. Community members come for skills. On average the centre trains approximately twenty people per month on basic computer operations and basic packages.

### *Empowering through green information*

Among the innovations being powered by solar are iPods.<sup>5</sup> ALIN uses iPods as a podcasting platform to distribute tailor-made information on best adaptation practices to communities. iPods come in handy due to the low literacy levels: community members can visit the centre to view a short video clip, as opposed to reading a book. In the past year, ALIN has compiled many video clips on best practices in climate change adaptation. They include a voice-over in local languages and are used to educate the people. iPods can be borrowed and returned to the Maarifa Centres by regular users, catering for those with time constraints, such as women.

Other training through the centre includes working with Web 2.0 tools, like blogs. This has enabled the youth to create blogs. One such blog aims at improving ecotourism and attracting tourists to Nguruman.<sup>6</sup>

### *Limitations of power*

For technical sustainability, the Maarifa Centre turns to the local community. It is responsible for assisting community members in repairing their electrical gadgets such as radios, torches and mobile phones. It has also incorporated a few skilled technicians from the community who have

experience in electronics to offer services to the community at a low price using the centre's solar power.

One of the main challenges at the centre is, however, the insufficient power provided by the two solar panels, given the many demands from the community. Because of this, the centre can only operate for a given number of hours, limiting the equipment it can support. This means that people have shorter working hours on the computers, and limited access to the use of their mobile phones. Despite the demand for training and internet usage from the community, only part of it can be met due to the use of solar power.

#### Pros of solar power

- It is a renewable source.
- It is easy and cheap to install.
- It has a low maintenance cost once installed.

#### Handicaps of solar power

- Most equipment has not been configured for solar and needs extra gadgets.
- It cannot support heavy equipment, and when it does, the cost is prohibitive.
- The power output is affected by climatic factors such as rain and clouds.

### **E-waste management: A downturn in refurbishment**

In the last few years, the government of Kenya introduced a policy to manage electronic waste (e-waste) due to the large number of computers that were being imported. This implies a 25% tax on the refurbished computers coming into the country. This has limited the number of imported computers and, in effect, the dumping of low-cost computers. At the same time, the new measure has reduced the number of people who can access technology.

The Maarifa Centre started by using refurbished computers from ALIN's computer refurbishment programme, but newer computers have been added to meet the demands of multimedia outputs that the centre produces. The refurbished computers have been in service for over two years and they are useful for training.

To manage e-waste related to computers, another computer refurbishment programme, and one of the leading refurbishers, Computers for Schools Kenya, set up an e-Waste Management Centre in 2008, with a view to providing e-waste management services for decommissioned

4 [www.nytimes.com/2009/02/02/technology/internet/02kenya.html?pagewanted=1&\\_r=3&ref=technology;crave.cnet.co.uk/gadgets/0.39029552.49303909.00.htm](http://www.nytimes.com/2009/02/02/technology/internet/02kenya.html?pagewanted=1&_r=3&ref=technology;crave.cnet.co.uk/gadgets/0.39029552.49303909.00.htm)

5 [www.alin.net/?news/alin\\_pilots\\_use\\_of\\_ipods\\_for\\_communities](http://www.alin.net/?news/alin_pilots_use_of_ipods_for_communities)

6 [www.loitasafaritrekkis.blogspot.com](http://www.loitasafaritrekkis.blogspot.com)

electrical and electronic equipment in Kenya and the neighbouring states. Decommissioned computers are disassembled by competent technical personnel, with due attention to best practice for such work. Metal parts such as the chassis and the casings are then sold to local metal recyclers for conversion into other products or for export. Soft plastic parts that are recyclable locally are also similarly sold to local manufacturers for conversion.

Reusable components from printed circuit boards (capacitors, transistors, etc.) are extracted and stored for the initiative's own maintenance work and occasional sale to micro-enterprises that repair and maintain consumer electronics. The rest of the printed circuit boards are safely stored in secured premises for re-export to recyclers overseas who have the technical capacity to safely extract the valuable materials from them. The centre has a capacity to receive 2,000 units per month, but has only been rolling about 300 units per month.

### The challenge of cost

One of the key prohibiting factors in the acquisition of green energy is cost. The solar panels that can run for a reasonable period of time, say six hours, cost way above what most of the community members can afford. In addition, the solar technology has not penetrated much in the rural areas, making it a "foreign" technology. However, with the increased cost of energy in Kenya, most people will have to turn to green energy to support their ever-increasing energy requirements.

Green technology is a reality but more needs to be done, such as sensitisation to the issues, and tax incentives to increase its acquisition and penetration in the rural areas. The opportunity that refurbished computers offer (both in terms of cost and e-waste management) is also not helped by the government's attempts to prevent the import of second-hand PCs into the country. Engagement with all stakeholders, at every level – including those at the grass-roots – is necessary to secure a sustainable green future. ■

**GLOBAL INFORMATION SOCIETY WATCH 2010** investigates the impact that information and communications technologies (ICTs) have on the environment – both good and bad.

Written from a civil society perspective, **GISWatch 2010** covers some 50 countries and six regions, with the key issues of ICTs and environmental sustainability, including climate change response and electronic waste (e-waste), explored in seven expert thematic reports. It also contains an institutional overview and a consideration of green indicators, as well as a mapping section offering a comparative analysis of “green” media spheres on the web.

While supporting the positive role that technology can play in sustaining the environment, many of these reports challenge the perception that ICTs will automatically be a panacea for critical issues such as climate change – and argue that for technology to really benefit everyone, consumption and production patterns have to change. In order to build a sustainable future, it cannot be “business as usual”.

**GISWatch 2010** is a rallying cry to electronics producers and consumers, policy makers and development organisations to pay urgent attention to the sustainability of the environment. It spells out the impact that the production, consumption and disposal of computers, mobile phones and other technology are having on the earth’s natural resources, on political conflict and social rights, and the massive global carbon footprint produced.

**GISWatch 2010** is the fourth in a series of yearly reports critically covering the state of the information society from the perspectives of civil society organisations across the world.

**GISWatch** is a joint initiative of the Association for Progressive Communications (APC) and the Humanist Institute for Cooperation with Developing Countries (Hivos).

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2010 Report  
[www.GISWatch.org](http://www.GISWatch.org)

