

## Leveraging Africa's mobile infrastructure

Ken Banks, IDG News Service

For most of us, not knowing what the weather is going to do might at worst result in a spoilt barbeque or a washed-out cricket or football match. For a farmer in the developing world it could result in the loss of an entire harvest which, at best makes life that little bit harder or, at worst, brings on financial ruin or considerable human suffering. If enough farmers over a wide geographical area are affected, widespread famine becomes a very real possibility.

Africa is home to around 700 million people who depend on the land for their living - that's a staggering 70% - and three-fifths of those are subsistence farmers who generally produce just enough food to support their families. Despite its dominance, subsistence farming comes with its fair share of challenges, which include anything from a lack of access to appropriate tools and domesticated work animals to poor quality soil and lack of irrigation. If that wasn't enough, climate change is set to join the list.

A recent Global Humanitarian Forum report estimated that climate change is responsible for some 300,000 deaths each year and over 100 billion US dollars worth of economic losses, mainly because of shocks to health and agricultural productivity. Sub-Saharan Africa accounts for close to a quarter of these losses, and is the region at the most immediate risk of droughts and floods. Agricultural yields in some areas are expected to fall by 50% as early as 2020.

In this troubled environment farmers are grateful for anything that makes their lives that little bit easier, and in recent years mobile technology has joined the hoe and plough as a valuable new tool in their armour. Mobile phones are allowing farmers to connect to markets and connect with each other, opening up new opportunities to increase yields, efficiencies and incomes. Numerous initiatives have emerged as a result, more recently [Grameen's launch of a suite of services](#) in Uganda which includes one aimed specifically at empowering farmers with targeted, actionable information.

Farmers aside, the spread of mobile infrastructure across the continent presents new opportunities for the development community. For the first time, organisations can communicate across vast distances without the need to deploy HF radio or costly satellite communication systems, and communities are slowly becoming more connected with each other and the outside world through an increasingly cheaper array of mobile devices. Today, vital data such as the health of communities, crop yields and disease outbreaks can now be collected, transmitted and disseminated in almost real time, replacing previously inefficient pen-and-paper-based systems. Communities can themselves now contribute to this data collection effort – often through simple text messaging (SMS) – in an increasing trend known as “crowdsourcing”.

Until now most of the focus on mobile technology in the developing world has centred on the delivery of data services to underserved communities, but this doesn't fully exploit the benefits the technology brings. True, exciting new initiatives which allow mobile consumers to contribute news,

election monitoring observations or experiences of political unrest have emerged, but the vast communications infrastructure which has been gradually knitted together over the past few years across the African continent has further potential still.

A new initiative is set to take all this to a new level and exploit Africa's mobile infrastructure in an entirely new way. Despite its size, the African continent suffers from an acute shortage of weather monitoring stations, boasting just a couple of hundred active stations today, a figure which represents a network eight times below the World Meteorological Society's minimum recommended standard. Compare this to Europe, North America and Asia which has several thousand each, and you can see the problem. Last month's announcement sees the Global Humanitarian Forum, Ericsson, the World Meteorological Organization and mobile operator Zain plan the deployment of up to 5,000 automatic weather stations at existing cellular base stations across Africa. The first nineteen stations alone more than double Lake Victoria region weather monitoring, where 5,000 people die every year as a result of storms and accidents.

The "Weather Info for All" initiative hopes to radically improve Africa's weather monitoring network not just today, but also in the face of the growing impact of climate change. More to the point, according to organisers it intends to "provide a massive increase in crucial information to predict and manage climate shocks". This is good news for Africa's 700 million farmers if someone can figure out how to get this information directly to them at little or no cost.

One of the more interesting aspects of this initiative is how it could pave the way for an entirely new genre of ICT-based humanitarian projects. All manner of sensing devices could be placed across the mobile network, detecting everything from a rise in water levels to monitor flood, to an excess of smoke particles in the air which could indicate extensive bush fires. Other sensors could detect movement of distribution of wildlife or the density or health of vegetation, or areas of deforestation or desertification. We could leverage the two key advantages that mobile base stations give us – their ubiquity across many settled areas and the fact they're wirelessly connected to each other.

Imagine if this data was collected and then geo-tagged, and then made freely available to anyone who may want to make use of it? Of course, advances in technology bring their fair share of new challenges. Poachers, for example, would love to be able to monitor and track elephant movements. But for the NGO community at large, access to real-time environmental data – a trend which we're perhaps seeing the birth of with Africa's mobile-powered weather monitoring stations – could take us into entirely new and exciting territory.

*Ken Banks, founder of [kiwanja.net](http://kiwanja.net), devotes himself to the application of mobile technology for positive social and environmental change in the developing world, and has spent the last 15 years working on projects in Africa. Recently, his research resulted in the development of FrontlineSMS, a field communication system designed to empower grassroots non-profit organisations. Ken graduated from Sussex University with honours in Social Anthropology with Development Studies and is currently working on a number of mobile projects funded by the Hewlett Foundation. Ken was awarded a Reuters Digital Vision Fellowship in 2006, and named a Pop!Tech Social Innovation Fellow in 2008. Further details of Ken's wider work are available on his website at [www.kiwanja.net](http://www.kiwanja.net)*