

## *Spreading the news: The use of ICT to raise rural living standards*

Twenty-first century technologies are rapidly spreading into rural Africa, Asia and Latin America. What prospects for broad-based socioeconomic and human development do these innovations open up in rural communities with poor socioeconomic prospects? **Kgabo Ramoroka** and **Peter Jacobs** look at how local communities benefit from the spread of state-of-the-art information and communication technologies (ICT).

Local municipalities in South Africa are helping many rural communities to access broadband wireless networks for social communication, learning and business activities. For example, the Peebles Valley community in Mpumalanga close to the Kruger National Park now enjoys the benefits of a community internet link.

The local clinic, which is also a major HIV/AIDS care training and support clinic, forms the hub of this internet user network. The clinic uses 60% of the available wireless bandwidth per month, but it also serves as the link through which surrounding schools, homes, farms and other clinics have internet connectivity free of charge. In this case, reliable access to a broadband wireless network translates into many benefits for local communities, serving as a catalyst to deliver better rural healthcare services with positive spillovers cascading across the delivery of other social services.

However, cost, adequate infrastructure and local skills are crucial determinants of what social gains this venture could yield for rural communities in the long run. These barriers could undermine the sustainability and developmental impacts of innovation.

The Canadian International Development Research Centre (IDRC) funded the start-up installation and operational costs of the network, but there is a need for additional sources for future investments. Adequate infrastructure is vital for its continued existence and effective operation. Moreover, from the outset this initiative exclusively relied on bringing in highly-skilled personnel from outside this rural local-

ity. Yet technological innovations are capital, and skills intensive, and to maximise long-term benefits requires transferring technological capabilities and building adequate local skills.



**Reliable access to broadband wireless networks can be a catalyst for better rural healthcare services with positive spillovers cascading across the delivery of other social services.**

### **How do innovations spread in rural areas?**

Technological innovations might be made available in a rural area, but their spread among the intended local users is not automatic. Understanding the dynamics of innovation diffusion and adoption might be a helpful first step to exploiting technological innovations for sustainable rural development.

The ways in which role-players in an innovation system communicate, share and disseminate new knowledge is known as diffusion. This process depends on, among other determinants, appropriate communication channels and social systems. Mass media (TV, radio, newspapers etc.) and interpersonal communication are examples of communication channels. Without a channel for the flow of scientific and technological information between actors in the innovation system, diffusion is blocked. The social structure incorporates the relationships, networks and institutions that govern the behaviour of individuals or groups in a community. The contextual environment influences both the types of knowledge transfers (including indigenous knowledge) as well as the informal ways of distributing innovation.

Adoption takes place when actors decide to make full use of an innovation because they see it as a solution to a problem. However, the speed at which users adopt innovations varies greatly, and adoption is neither a linear nor a smooth process. The experiences of 'early adopters', for instance, often affect how potential users react to an innovation and their adoption decision. An innovation that is perceived to be difficult stands a high chance

of rejection. The easier it is for would-be users to see the benefits of an innovation, the more likely they are to adopt and apply it.

### Transfer of innovation to underdeveloped areas

Real-life examples from elsewhere in Africa compellingly illustrate how multiple factors help or hinder the diffusion and adoption of innovation among rural communities in underdeveloped localities.

In Macha, a rural area in Zambia's Southern Province, there is a community broadband wireless network similar to the service operating in rural Mpumalanga. This village, located 75km from the nearest town of Choma, was never seen as a viable business area by telecommunication operators. Today this community, dependent on subsistence farming and migrant labour, has access to computers and a functional wireless internet network.

Farmers use the internet to research information on production, and job seekers use it to search for employment opportunities. A young sunflower farmer credits this network with his discovery of new ideas about farming. Locally

trained ICT experts support recording patient information, maintain ICT hardware and software on a daily basis, and train other community members in effective ICT usage.

### How do households in SA access ICT?

The 2011 General Household Survey (GHS) of Statistics South Africa included a module on household-level access to functional landline telephones, cellular phones and internet connections. This information provided a sense of household-level access to the basic ICT devices across rural South Africa.

Table 1 summarises self-reported access to functioning cellphones, landline telephones and internet connections within rural households across South Africa's nine provinces. The findings showed that, on average, more than 90% of rural households in South Africa had access to working cellphones – almost totally eclipsing landline telephone access even in remote and underdeveloped villages in the former homelands.

By contrast, landline phone access was relatively higher in the formal rural locations of all provinces, concentrated below 15% of

households per province except the formal rural areas of Eastern Cape, where 27% of households reported access to a working landline telephone. Connection to the internet was virtually non-existent within rural households across ex-homeland localities, but internet connectedness is beginning to diffuse into the formal rural areas.

### Conclusion

Through cellphones, rural households are linked into the modern information and communications revolution. Solar panels and wind turbines give rural households access to more environmentally friendly energy sources. Sustainable use of these technological innovations opens new possibilities to lift people trapped at the bottom of the rural social pyramid out of poverty and underdevelopment.

*Also read the article, Terms of endearment.*

*Authors: Kgabo Ramoroka, master's intern, and Dr Peter Jacobs, chief research specialist, Economic Performance and Development research programme, HSRC.*

*This article summarises a concept paper of a new DST-funded project designed to develop and pilot-test a Rural Innovation Assessment Tool (RIAT).*

## More than 90% of rural households in South Africa had access to working cellphones in 2011.

**Table 1: Self-reported access to functional ICT services within rural households by province (GHS 2011)**

Province	Households (N)	Cellphone		Landline telephone		Internet access	
		Rural Locality Type					
	Share of all households (%)	Ex-homeland	Formal	Ex-homeland	Formal	Ex-homeland	Formal
Eastern Cape	(N)	3,038,070	103,491	26,654	36,264	17,346	29,382
	(%)	87.78	77.02	0.77	27.13	0.5	21.75
KwaZulu-Natal	(N)	4,444,576	458,880	68,608	31,414	34,213	26,328
	(%)	93.1	96.64	1.44	6.71	0.72	5.66
North West	(N)	1,501,156	291,495	15,163	10,571	21,180	27,382
	(%)	92.75	90.22	0.94	3.3	1.31	8.47
Mpumalanga	(N)	1,772,365	336,871	15,915	9,636	32,279	19,108
	(%)	96.28	91.93	0.86	2.61	1.73	5.19
Limpopo	(N)	4,030,373	133,379	43,618	18,184	30,550	12,594
	(%)	94.48	89.93	1.02	12.33	0.72	8.39
Northern Cape	(N)	162,918	98,271	3,740	16,408	0	7,285
	(%)	91.39	63.79	2.1	10.64	0	4.73
Free State	(N)	265,453	192,781	1,568	31,302	4,805	23,720
	(%)	92.17	84.94	0.54	13.6	1.64	10.45
Gauteng	(N)	156,908	266,696	1,028	43,473	0	35,888
	(%)	95.49	93.24	0.61	14.96	0	12.55
Western Cape	(N)	n/a	231,596	n/a	38,534	n/a	18,777
	(%)	n/a	72.08	n/a	12.15	n/a	5.84

Source: Statistics South Africa, 2012. General Household Survey 2011