KENYA BROADCASTING CORPORATION:

BRIDGING THE DIGITAL DIVIDE IN KENYA THROUGH WIRELESS RADIO AND TELEVISION SIGNAL DISTRIBUTION:

Edith R.N. Njeru - Engineer I (Electronic)

Planning, Research & Development Department

Kenya Broadcasting Corporation

P.O. Box 30456, 00100 GPO

Tel: 254 720 353976

Nairobi.

Kenya.

njeru@Swiftkenya.Com

ICTP 2005

Kwamba Afrika ikijitahidi, pia sisi tutaweza kufunga pengo kubwa la walio na wasio na mawasiliano ya komputa

Digital divide

Some primary facets to digital divide in Kenya:

i) Financial divide

ii) Gender disparities

iii) Literacy divide

a) Financial divide

Evident in the widening gap between the highest and the lowest paid, high class living standards among a few people while the majority poor survive on less than a dollar a day. Some key CEOs earn over $50, 000 per month while a casual labourer earns about a dollar per day ($30 per month).

b) Gender divide

Gender imbalances in technical oriented careers, top level management and key decision makers' posts, positions of leadership, legal rights, property ownership etc.

Kwamba Afrika ikijitahidi, pia sisi tutaweza kufunga pengo kubwa la walio na wasio na mawasiliano ya komputa

c) Literacy divide

- Introduction of free primary education in Kenya saw the entry of an 84 year old grandfather to first grade. Enrolment of pupils into primary school rose from 5.9 million to 7.3 million.
- Many school going children hadn't had a chance to join elementary let alone career training programs.

Posted Monday, April 5, 2004

The New York Times ON THE WEB

International

The Saturday Profile

First Grader, Model Student, Great-Grandfather

By MARC LACEY

'KAPKENDUIYWA, Kenya — Kimani Nganga Maruge is living proof that an old man, even one who leans heavily on a cane and cannot see or hear too well, can learn new tricks'.

Kwamba Afrika ikijitahidi, pia sisi tutaweza kufunga pengo kubwa la walio na wasio na mawasiliano ya komputa

'Let them who want to make fun of me do it. I will continue to learn.

'KIMANI NGANGA MARUGE

"With these kinds of disparities, it is too evident that digital divide will continue to escalate in Kenya unless major recommendations on 'Universal Access to ICT' by various local and international forums are implemented".

Edith, ICTP 2005

Kwamba Afrika ikijitahidi, pia sisi tutaweza kufunga pengo kubwa la walio na wasio na mawasiliano ya komputa

Bridging the Divide through Broadcasting

- Background Of KBC
- Coverage Area
- Current Installations/Technologies
- Constraints
- Way Forward For Broadcasting In Kenya

➢This paper highlights the constraints faced by the Kenya Broadcasting Corporation (as the National operator) so far in providing Universal Access (to Broadcasting) to Kenyans spread over a diverse Geographical Environment; and how the Corporation has embarked on overcoming the obstacles through Wireless Technologies.

➢VSAT implementation has revolutionalised broadcasting in Kenya as the signal can now be uplinked directly from the Main hub (Studios) to remote stations, as opposed to the past where the signal had to be relayed via the Telco Network.

1) Background of KBC

- The Kenya Broadcasting Corporation is a state corporation established by an Act of Parliament CAP 221 of the laws of Kenya to undertake public services.
- KBC provides both public and commercial Radio/Television services.

Short History

- Radio Broadcasting was begun in Nairobi in 1928.
- In 1962, Television was introduced in Kenya. The first transmitting station was set at a farm house in Limuru (about 20 km from Nairobi City) and was transmitting at a radius of 15 miles.
- The second television station was opened in Mombasa in 1970.

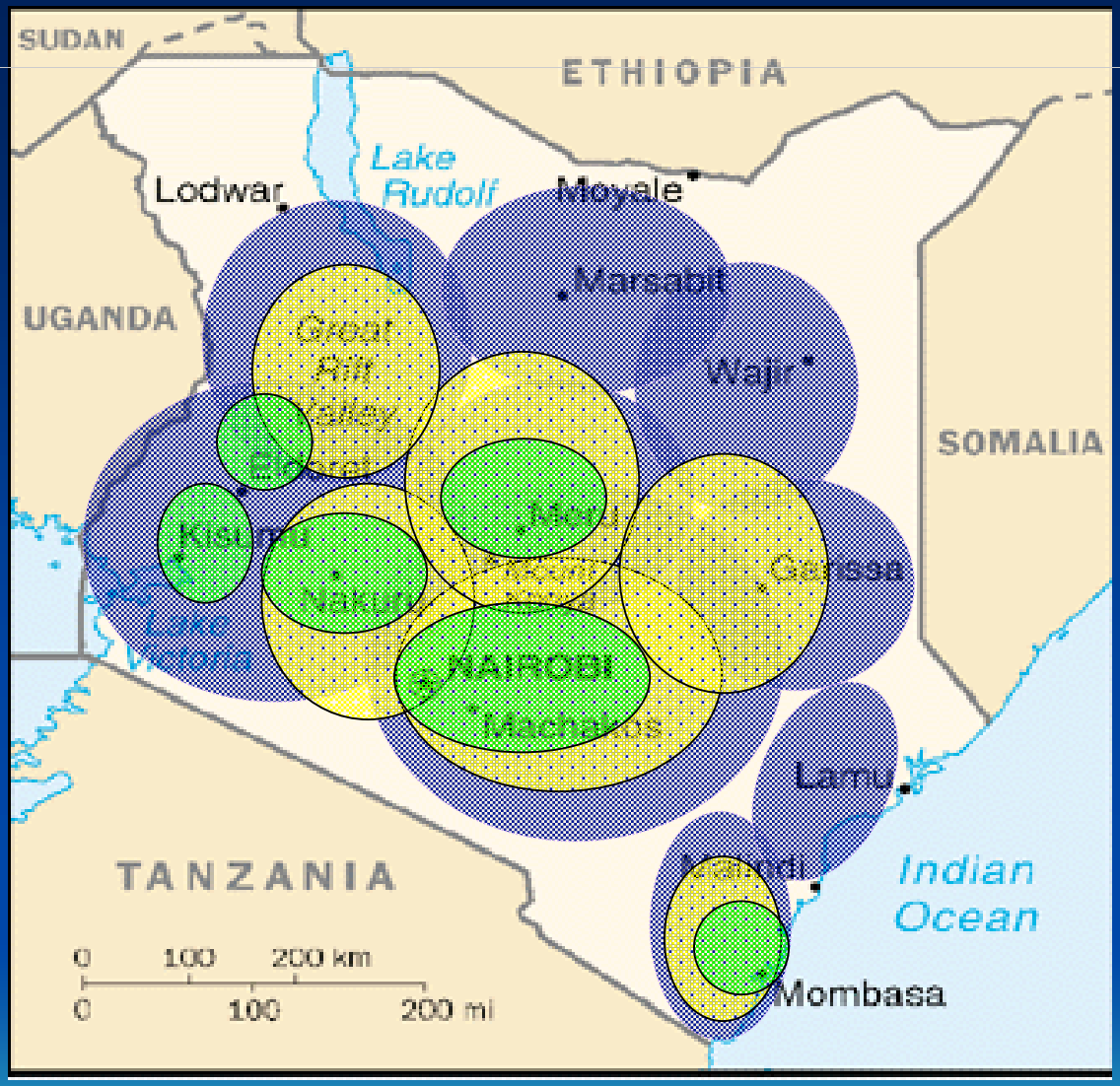
- In 1993, a modernization project involving setting up of 10 medium wave stations and upgrading of 2 other existing stations (based on Marconi and Marubeni transmitters) was undertaken.
- KBC remained a monopoly till 1990 when a private TV station (KTN) was started.
- In 1996, KBC commissioned Metro FM (first commercial FM channel to be started in the country). This was followed closely by Capital FM (a private station). A new era in broadcasting had dawned in Kenya following liberalization of the telecommunications sector. People applied for radio and TV licenses enmass and hastily began new broadcasting stations. By 2000 the FM spectrum had been completely filled. At the same time GSM operators, ISPs and other ICT providers came into the market.
- In 2000, KBC began a second TV channel operating as a commercial sports and entertainment channel. Also two other commercial FM stations were launched.
- All in all KBC has 1 public TV channel, 2 public National radio channels, 3 public regional vernacular channels, 3 commercial FM channels and 1 commercial TV channel.

2) Coverage Area

Kenya Description	
Official Name	Jamhuri ya Kenya (Republic of Kenya)
Capital	Nairobi
Population	30.8 million (2001 census) **Age structure:** 0-14 years: 43% (male 6,566,424; female 6,419,034) 15-64 years: 54% (male 8,284,719; female 8,238,121) 65 years and over: 3% (male 366,200; female 465,272)
Area	582,646 sq km
Currency	Shilling ($ = 80.03)
Religion	Christianity, Islam and Tribal religious beliefs.
Literacy	78%
Languages	English (official), Kiswahili or Swahili
Major Cities	Nairobi, Mombasa, Kisumu
Climate	Equatorial and Tropical

Kwamba Afrika ikijitahidi, pia sisi tutaweza kufunga pengo kubwa la walio na wasio na mawasiliano ya komputa

Signal Coverage map



Radio MW Television FM Radio

Kwamba Afrika ikijitahidi, pia sisi tutaweza kufunga pengo kubwa la walio na wasio na mawasiliano ya komputa

- As at 1996 after the modernization project KBC radio coverage in the country was 80 %. Television coverage was 60 %. A great percentage of the population has never tuned to Kenya Radio or Television, especially to the North, South, East and some Coast regions. They have for a long time been forced to tune to stations from neighbouring countries. Which means current information on national growth is not disseminated to them as fast as the rest of the population.

3) Current Installations/Technologies

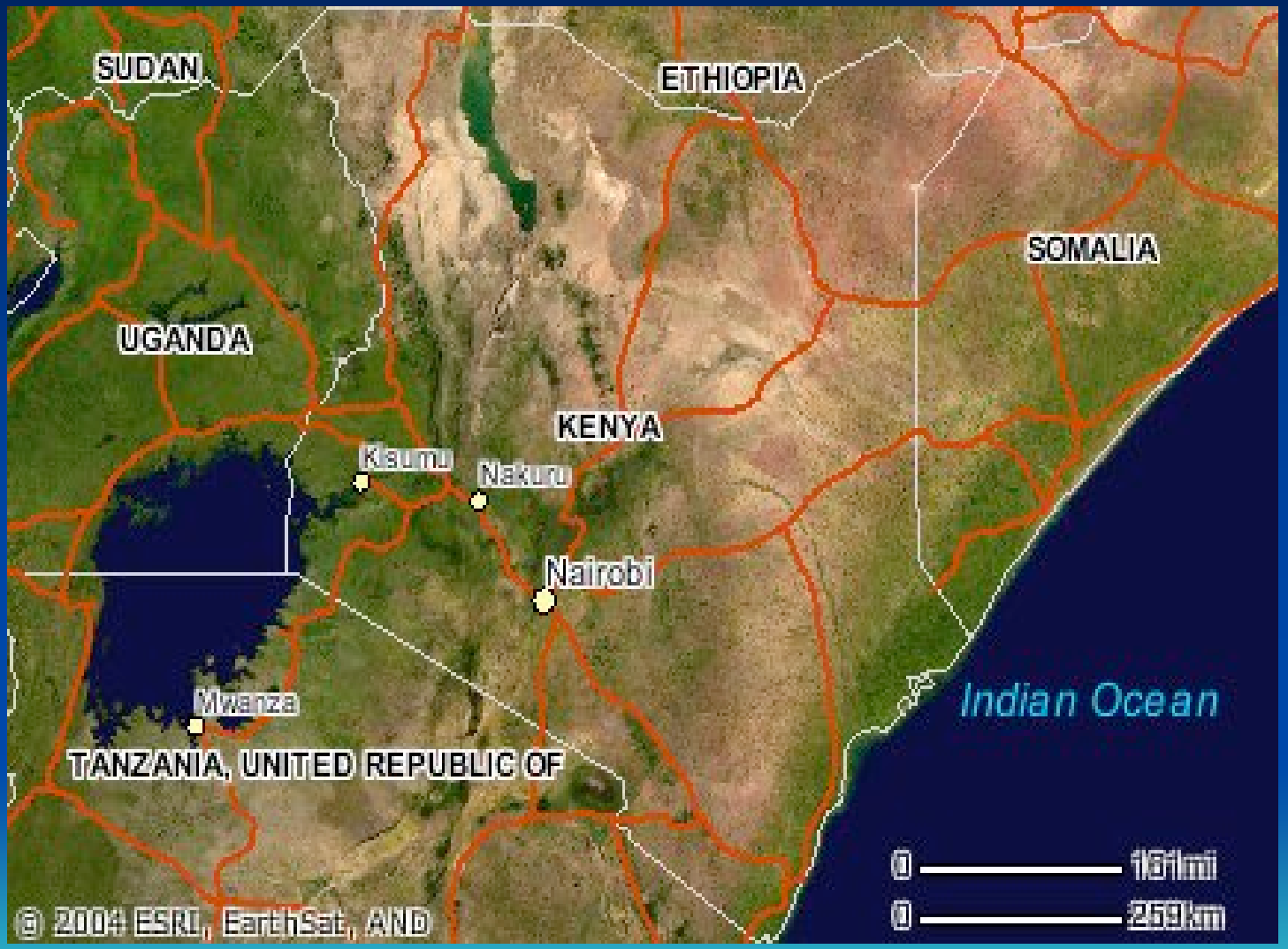
– Radio

- The KBC radio signal is transmitted via Medium wave, Short wave and FM transmitters

– Television

- TV transmission is via UHF and VHF transmitters. There is no cable TV/radio broadcast in Kenya.
- KBC has 10 MW stations, 7 FM stations, 1 SW station and 8 TV stations. 3 of these stations act as hub stations for the others. Signal linking to the hubs has been through Telkom Kenya links and KBC off air system for back up.

4) Constraints



Kwamba Afrika ikijitahidi, pia sisi tutaweza kufunga pengo kubwa la walio na wasio na mawasiliano ya komputa

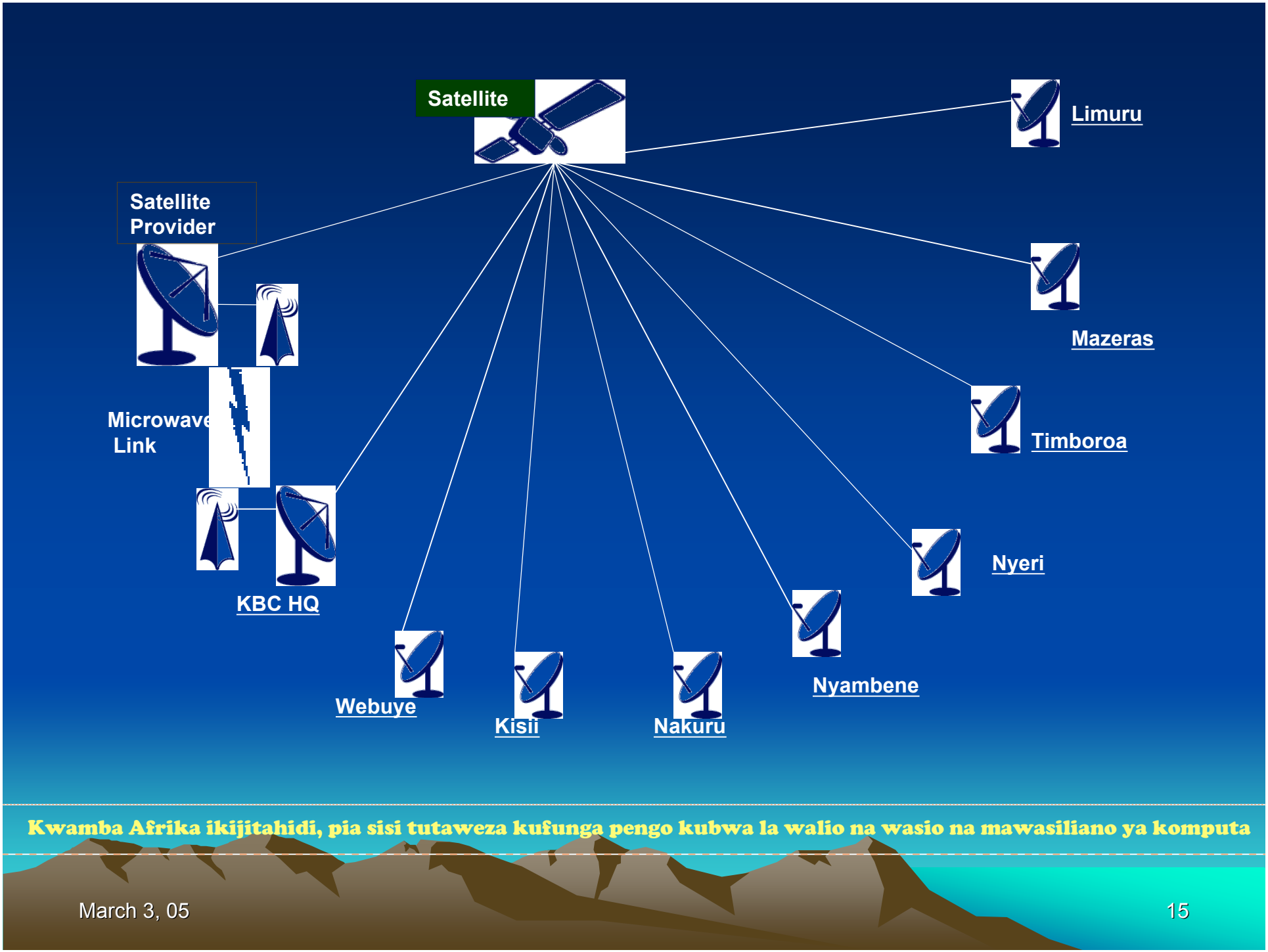
- Like any other Telecommunications installations in Kenya, KBC faces uneven terrain obstacles in setting up remote Radio and TV stations. Line-of-site is hard to achieve 360 ˚ around any transmitter site. Even with abundance of high altitude areas spread out in various locations (that are ideal for transmitter sites), some low altitude areas still remain with very poor signal reception. This would require multiple booster stations every other few kilometers for gap filling.
- Number two constraint faced by the Corporation is old and degrading technology. Following high levels of inflation in the 1990s the government could not fund most of its parastatals, KBC included. This meant that there was no money to buy modern equipment as fast as the existing ones were aging thus resulting in a backlog of rehabilitation projects.
- Entry of private broadcasters in an unregulated environment aggrevated the problem. Shrinking market share for the national broadcaster resulting from stiff competition continued to drastically reduce revenue generated through advertisements. The government had not yet formulated sound policies to protect National operators thus unfair competition. The ICT policy for Kenya is just being implemented. KBC is highly regulated by the government in its programming which means most of the programmes are free to air with no adverts allowed within the duration of transmission. This constitutes 45 % for radio and 65 % for TV which is not the case for private broadcasters.

- Inability to purchase new equipment and implement new technology fast enough led to constant degradation of the KBC signal therefore reducing viewership and listernership.
- The medium wave transmitters installed in 1993 could not continue to provide quality signal radio broadcasts in the face of mushrooming FM transmitters that provided very high quality stereo. Another drawback of these transmitters was the high power consumption required to run them. A typical 100 kW transmitter would require $ 12, 500 in electricity bills every month. This totaled to $125, 000 for 10 stations excluding telephone and other utilities. To minimize these losses the transmitter power was constantly reduced to 75 kW, 50 kW, 25 kW and even 15 kW for some stations. The coverage area shown in the signal coverage map earlier hence reduced from 80 % to about 50 %. Also most people no longer tuned to AM radio.

5) <u>Way forward for Broadcasting in Kenya</u>

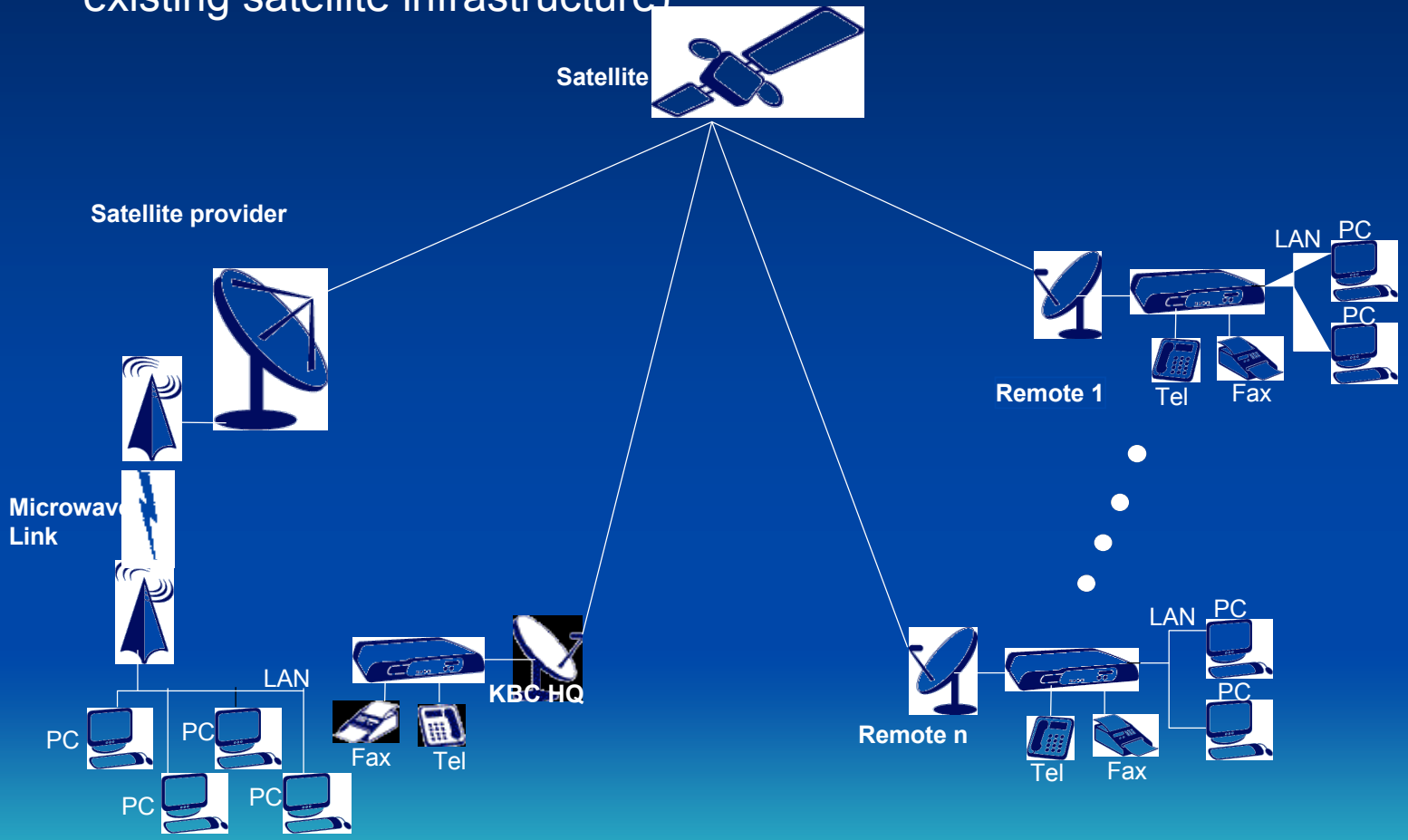
- Faced with the above problems KBC engineers embarked on a revival project. Wireless technologies came in handy to provide cheaper solutions.

- KBC implemented VSATs at 8 stations between August and November 2004. This was the fastest implemented project. Assembling the dish on site, configuring the audio/video and commissioning took only 3 days per site. Within a short time, viewership and listenership of KBC was restored as Kenyans found TV much clearer and radio reaching greater distances than before. So far they are happy with the results. Anybody with a satellite dish can receive the KBC signal even where we do not yet have transmitter stations.
- Expansion to the remaining sites is ongoing.



Kwamba Afrika ikijitahidi, pia sisi tutaweza kufunga pengo kubwa la walio na wasio na mawasiliano ya komputa

- At the moment KBC is working on a Wide Area Network implementation connecting all its branches countrywide. One of the services to be offered along with this is VOIP/IPT for easier telephony between HQ and remote sites. Various wireless technologies will be used to achieve this but the basic network is as below (based on the existing satellite infrastructure)



Kwamba Afrika ikijitahidi, pia sisi tutaweza kufunga pengo kubwa la walio na wasio na mawasiliano ya komputa

Common Carrier

- In the year 2001 the two GSM operators and some private broadcasters sought to rent KBC premises and broadcast tower space for their transmitters and antenna installations. Since then KBC has been providing co-sharing services to several broadcasters and both mobile companies.
- This was further reinforced by the regulator, CCK (Communication Commission of Kenya)'s directive of 2004, that all broadcast operators relocate their installations to common sites for the following reasons:
- ***Minimization of RF effects on the population***
- ***Easier monitoring***
- ***Saving of installation costs by sharing resources***
- Private broadcasters are therefore shifting their transmitter installations from the City Centre where most of them have been based. This is not easy as they would be required to construct over 60 m masts while before they had masts of only a few metres installed at the top of some tall buildings.

- With its massive masts already in place throughout the country, KBC has come in handy as a common carrier provider. Many broadcasters share the broadcast infrastructure at minimal costs. Combined antennas are used. Some broadcasters have even expressed interest to share the KBC satellite dishes for their signal reception in some stations.
- Mobile providers also co-host with KBC. This has ensured fast and uniform expansion of broadcast/GSM services to most areas of the country within a span of 3 years.

Summary:

- Collaboration with other organizations for updates on new technologies, funding and training is necessary for developing countries.
- Sharing of resources by operators saves scarce National resources.
- Research on simple and cost effective broadcast technologies such as wireless and digital applications should be intensified. Convergence of telecommunications and IT in developing countries enables use of common infrastructure to provide a wide range of radio services.
- Use of public domain software such as Radio mobile planning tool for optimization of link budget, Linux etc should be explored further for cost effective operations.

Kwamba Afrika ikijitahidi, pia sisi tutaweza kufunga pengo kubwa la walio na wasio na mawasiliano ya komputa