



# **Telecentres: The African Experience**



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# The Need for Public Access

- Limited incomes
  - High infrastructure costs
- => Low diffusion of infrastructure and low levels of private ownership of facilities
- ==> Opportunities for public access:  
Payphones -> multi-purpose facilities
- Multipurpose Telecentres exploit convergence in ICTs, making the investment in infrastructure more attractive because the telecom facility can deliver more services than voice calls

# ICT Usage in Africa

**Of the 800 million people in Africa:**

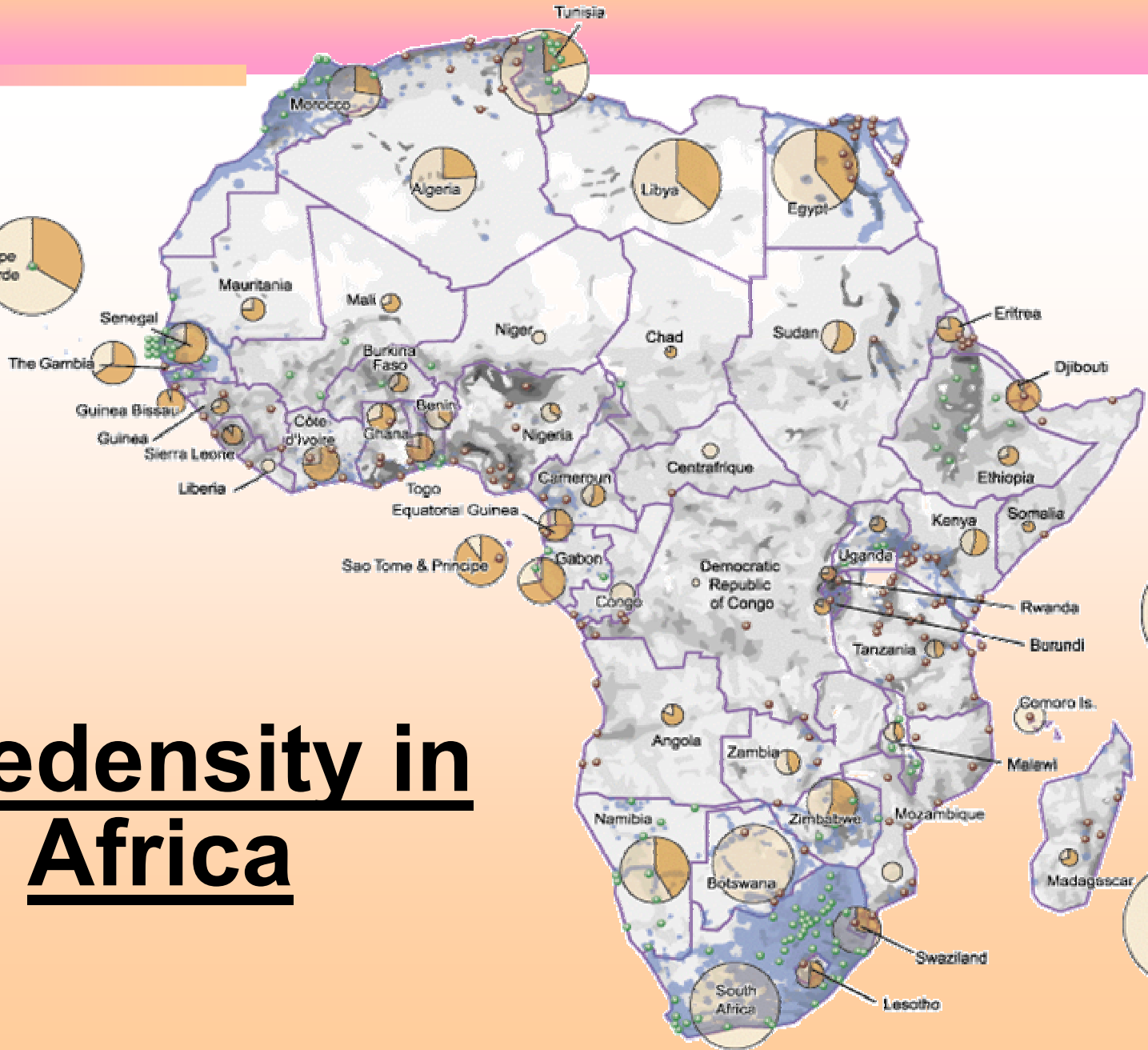
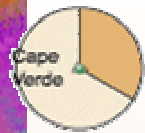
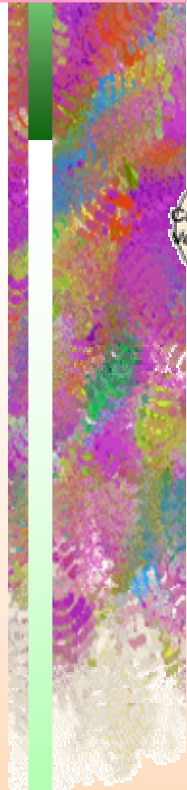
- 1 in 4 have radio (200m)
- 1 in 13 have TV (50m)
- 1 in 33 have fixed telephone line (24m)
- 1 in 24 have GSM line (33m)
- 1 in 130 have a PC (6m)
- 1 in 130 use the Internet (6m)
- 1 in 400 have pay-TV (2m)

**But huge variations between countries means often misleading to generalise**

# **Lack of Fixed Lines - The Key Access Barrier**

- In 2003 there were about 24 million lines for the 800 million people in Africa (1 in 33). In Sub Sahara outside South Africa, there were only about 4 million lines (1 in 200)
- In many countries more than 90% of these lines are in the capital city and secondary towns, while 70-80% of the people live outside these areas:

E.g. Malawi has 8 000 fixed lines for the 10 million rural population: 1 line for every 1250



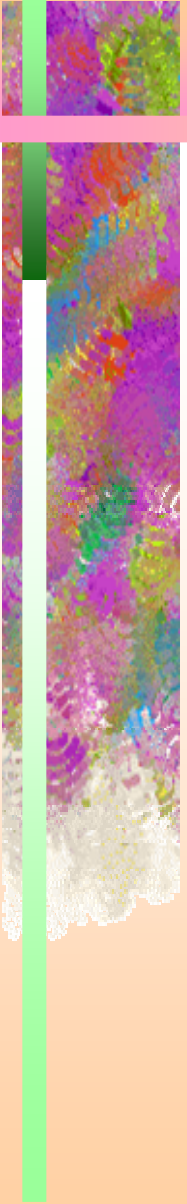
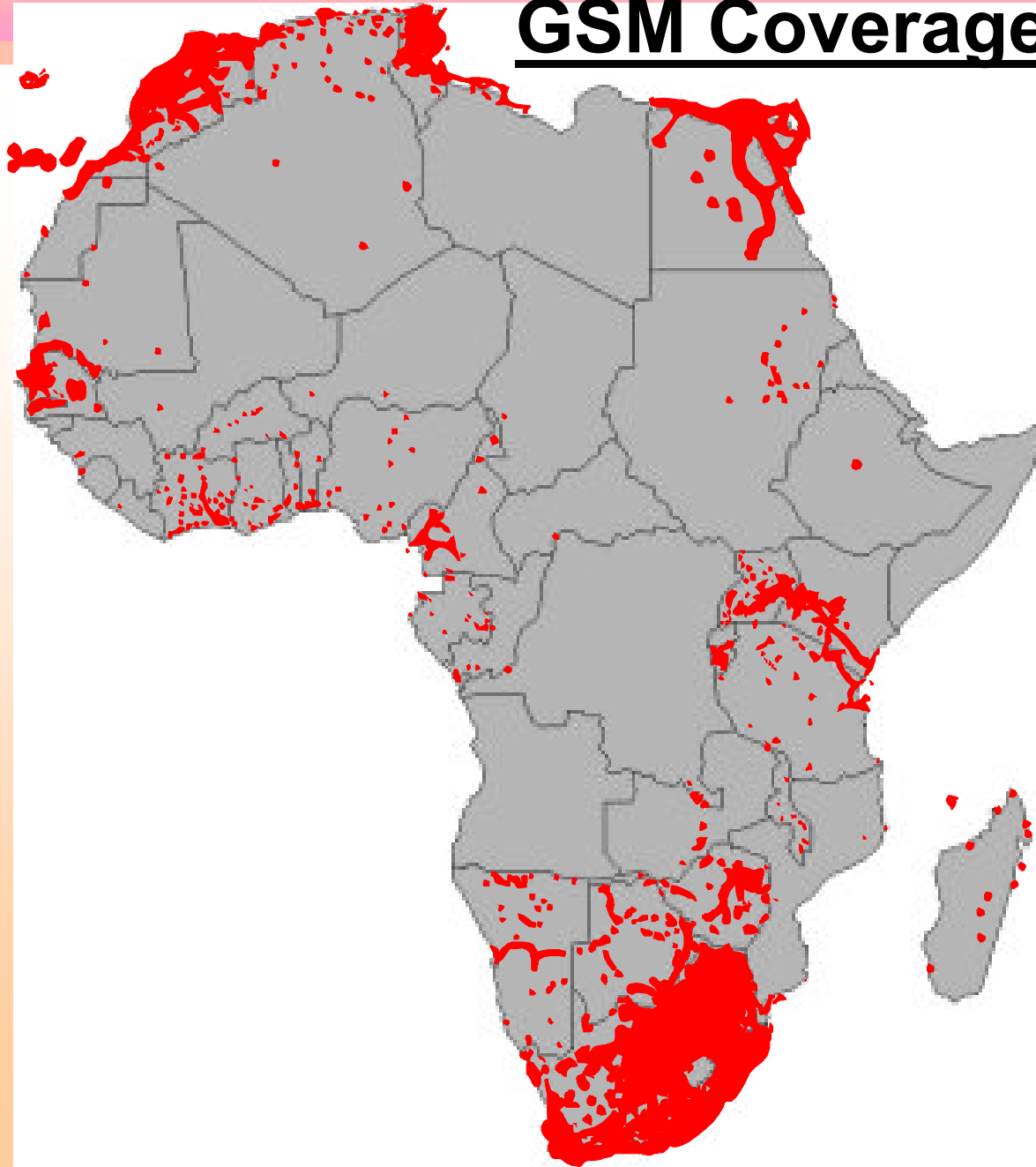
# Teledensity in Africa

<http://www.idrc.ca/acacia>



**Local loop in Kenya and Nigeria**

# GSM Coverage





# Two Telecentre Types

- Type-A: Demand-driven expansion of services at existing public telephone-shops and small businesses
- Type-B: Government programmes to support public access, esp in rural areas



# Type-A - Demand Driven Telecentre examples

## Senegal

- The PTO (Sonatel) does not provide public phones
  - 10 000+ public telephone shops run by local entrepreneurs licensed by the PTO
  - Many have added fax & word processing & Internet services, VOIP a significant driver
  - Sonatel gives 40% discount on tariffs and assists telecentres with new services by providing advice (no financing).



## Phone Booths and Pre-paid Phone Cards, Lilongwe

# Malawi

## 850 Public Call Operators (PCOs)



S & K TELEPHONE BUREAU  
WITHIN ZOMBA K5/MINUTE  
SOUTHERN REGION K10/MINUTE  
CENTRAL REGION K15/MINUTE  
NORTHERN REGION K20/MINUTE  
REVERSE CALL HALF  
DOWN THE CHARGES  
CREDIT IS NOT ALLOWED APART  
FROM <sup>THE</sup> WHO ARE WELL KNOWN.  
CELLPHONE # 25/MINUTE



**PAY-IN PHONE**

OPENING HOURS

Mon - Sat  
7:00 Am - 6:00 Pm  
Sunday

2:00 Pm - 6:00 Pm

EMERGENCY CALLS ARE ALSO ASSISTED

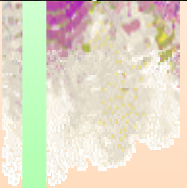
**Home-based PCO, Zomba**

# Phone Kiosks,

# South Africa



Private Multipurpose  
Telecentre,  
Mbeya, Tanzania





# Hybrid Telecentre and Hair Salon

South  
Africa

# E-Touch C-Café Franchise, Nairobi Kenya







# Type-B Telecentres: Government Programmes

- Payphone & Telecentre Roll-out Programmes as part of Government policies to address Universal Access objectives and the digital divide
- To improve access for students and teachers
- Job creation and computer literacy training programmes

# PTO Sponsored Fixed Wireless Phone Services in Rural South Africa



# Phone Shops with Subsidised Calls by GSM Mobile Operators, South Africa



# Government Supported Multipurpose Telecentres

## South Africa

- Universal Service Agency established with the '96 Telecommunications Act
- Startup costs for the telecentres comes from the telecom operators who contribute 0.2% of their profits to a Universal Service Fund
- Also supported by partnerships with development agencies, NGOs, private sector and government who 'adopted' individual telecentres
- Initially aimed to roll out 2000+ telecentres by now, only about 90 operational, 50% of these sustainable
- Government Communication Services (GCIS) launched its own container-based computer literacy/Internet access programme

# Universal Service Agency Telecentre, South Africa




# Government Telecentres

## Tunisia

- Agence Tunisienne d'Internet (ATI) - the government authority for maintaining the Internet backbone in Tunisia, tenders for 100s of telecentres, called PubliNets





# What Model/Which Partners are Successful?

- Local small scale entrepreneur
- Franchise by large company/govt department
- Post Office
- School
- Community group
- Church group
- Co-operative (Agriculture)
- Library service
- Municipality
- Radio station

# Technical Design - Depends on the scale of the telecentre

- Medium/Large telecentre – At least 10 phone lines, call management system, cell phones for rental, fax, scanner, 5 PCs including Internet access, printer, photocopier, digital camera, overhead projector, TV, VCR, cassette tape, catering.
- Mini telecenter - Cabinet with 1 PC, fax, 3-in-1 scanner/printer/copier, call meter.
- Micro telecenter - pay phone with built-in web browser/smart card reader, receipt printer.
- Micro-mobile telecentre - wireless terminal or cell phone



# Which Services?

- Starting small:
  - Phones – Voice is still the killer application
  - Fax
  - Office apps & Internet access
  - Typing & small copy runs
  - IT & Internet Training
- Expansion:
  - More lines, more PCs
  - Local email/printing/delivery
  - Additional office services - DTP/Scanning
  - Printing/reprographics
  - Photography (digital camera/CDROM)
  - Financial Services/E-Procurement
  - Meeting/training venue
  - Materials and ICT equipment sales
  - Connectivity to surrounding institutions

# What connectivity?


- Telecom Link
  - Normal phone lines - POTS/PSTN
  - Cellular phones
  - Wireless Local loop
  - Leased Line & DSL
  - VSAT
  - WiFi – Point-to-Point
- Access Network
  - 1 PC/Modem/shared email address
  - LAN/shared dialup modem/PPP link with multiple remote email/websites
  - Local mail server/video/audio on demand server
  - Voice mail, Internet telephony/fax server

# Emerging Infrastructure Trends

- Wireless Data - WiFi/broadband, narrowband HF/UHF
- User financed Infrastructure & Mesh Networks
- Digital powerline
- Low-cost equipment – Open Source Software, recycled PCs, thin clients, handhelds/PDAs
- Mixed technologies/Hybrid systems – Internet supported Radio, TV, & Print, PSTN+ simplex satellite, GSM/SMS <-> Email/Web
- Mobile/Roving Telecentres

# **Other Infrastructure Issues**

- **Voice Call revenue is key to financing infrastructure and services**
- **All options need effective bandwidth management strategies – spam / virus cops, proxy/cache, firewalls and b/w monitoring**
- **Regulatory restrictions limit use of independent connectivity**
- **Access to skills for maintenance and installation difficult in rural areas**

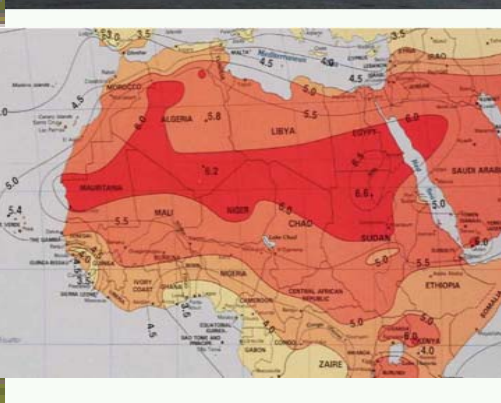


# External systemic factors:

Electricity  
Import duties  
Education

# Alternate Power Sources

## Photovoltaic/Solar cells



# Tanzania Biogas

Manure from 12 cows generates methane, mixed with diesel in a 70:30 ratio, used to drive generator produces 10 Kilowatts. Runs 15-16 computers for eight hours daily



# Reducing Power Consumption

In next five years a high capacity desktop requiring low power should be available:

- The central processor - 0.8 W
- Full sized OLED screen - 4 W
- Solid-state secondary storage - 0.2 W
- RAM memory, graphics cards, and other on-board devices - 0.4W
- Wireless internet connection - 0.1 W

Total system power consumption will be on the order of 5 Watts - perhaps the equivalent of two cell phones today - and this will mostly be a function of screen size and display parameters

Note that a comparable system today might require nearly 400 watts to power



# Key Barriers

- **Limited liberalisation**
- **Policy not keeping up with technology developments - few African countries allow VoIP, private VSAT and wireless data/WiFi, high license fees for satellite terminals, where available**
  - **High import duties on comms equipment**
  - **Limited finance for small public access businesses and for consumers to obtain equipment**
  - **Limited skills and knowledge of options**
  - **Limited perfusion /unreliable electricity grid**



**Thank You**

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