

ICT Sector Performance Review: South African case study

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Sector Performance Workshop

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SA ICT Sector Performance Review 2003

- Research on ICTs is dominated by private entities with agenda determined by profit motive and outputs proprietary.
- mobilisation of public and private funds to conduct public interest research in the public domain.
- Inform and stimulate debate on policy and regulation.
- SPR seeks to assess the policy and regulatory framework in order to determine the degree to which outcomes match objectives and identify policy success and failures in terms



National objectives

Primary policy objective to increase access to affordable communications and expansion of sector to meet needs of modern economy through liberalisation of the market

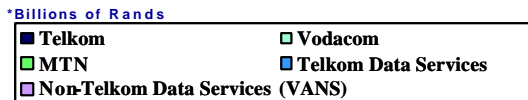
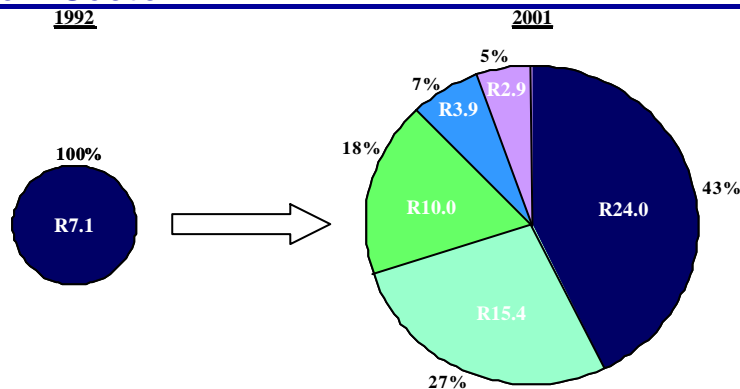
- capitalising the expansion of the fixed network through the partial privatisation of the incumbent fixed line operator accompanied by the granting of a five year exclusivity to the operator in exchange for an obligation to double the fixed network;
- and introducing further competition by licensing a third cellular operator and allowing unrestricted service based competition in the VANS market.

Independent regulator responsible for developing a competitive framework, transparent and certain regulatory environment for investors and building a stable and well-functioning market.

USF administered by USA to subsidise rollout to underserved areas and support needy people.

Other social objectives: empowerment, consumer protection

Size of SA Telecom Sector*



Source: ITU World Telecommunications Indicators Database (2002), Telkom IPO Prospectus, 2002 MTN Annual Report, 2002 BMI-Techknowledge Communications Handbook

Telecom service revenue* per capita (US\$ 000)

Country	1996	1997	1998	1999	2000	2001
South Africa	\$119.27	\$144.32	\$135.97	\$149.31	\$155.38	—
Angola	\$9.73	\$9.97	\$10.70	\$12.83	\$8.66	—
Botswana	\$46.97	\$54.08	\$58.34	\$74.82	—	—
Korea (Rep. of)	\$308.84	\$295.14	\$217.44	\$307.55	\$373.67	\$376.43
Lesotho	\$7.15	\$6.86	\$5.72	\$5.37	\$4.93	\$4.33
Malawi	\$3.35	\$3.73	\$3.30	—	—	—
Mauritius	\$100.88	\$100.13	\$103.59	\$103.47	\$121.29	\$120.15
Mexico	\$84.43	\$92.45	\$96.12	\$108.22	\$123.74	\$144.71
Morocco	\$25.60	\$24.83	\$27.92	\$31.14	\$39.82	\$46.53
Mozambique	\$3.21	\$3.52	\$3.87	\$4.89	\$5.56	\$5.84
Namibia	\$48.82	\$50.24	\$49.52	\$56.79	\$53.52	\$49.64
Poland	\$65.67	\$89.43	\$135.93	\$151.93	\$182.92	—
Seychelles	\$434.65	\$455.45	\$465.17	—	—	—
Swaziland	\$27.47	\$27.70	\$25.43	\$29.50	\$27.45	\$25.93
Tanzania	\$2.37	\$3.13	\$3.42	\$3.83	\$3.98	\$3.85
Turkey	\$52.65	\$68.00	\$79.62	\$74.66	\$82.03	\$78.40
Zambia	\$13.07	\$16.71	\$11.91	\$9.19	\$6.25	\$4.93
Zimbabwe	\$12.51	\$12.11	—	\$10.05	\$13.13	—

Source: ITU World Telecommunications Indicators Database (2002)

* - Total revenue (turnover received from providing telecommunications services in each country).



Annual telecommunications investment* per capita (US\$000)

Country	1996	1997	1998	1999	2000	2001
South Africa	\$21.10	\$37.01	\$48.90	\$31.83	\$28.37	—
Botswana	\$13.82	\$24.08	\$26.25	\$29.60	—	—
Korea (Rep. of)	\$128.23	\$176.04	\$96.47	\$150.20	\$164.19	—
Mauritius	\$67.65	\$33.98	\$37.17	\$42.22	\$45.65	\$55.27
Mexico	\$18.72	\$19.98	\$33.01	\$40.73	\$51.40	—
Morocco	\$7.28	\$5.20	\$4.75	\$8.52	—	—
Namibia	\$26.28	\$30.05	\$29.55	\$12.35	\$20.51	—
Poland	\$30.25	\$33.54	\$30.26	\$37.16	\$35.41	—
Seychelles	\$112.38	\$61.42	\$80.02	\$88.50	—	—
Tanzania	\$6.52	\$6.12	\$7.94	\$5.75	—	—
Turkey	\$6.91	\$8.74	\$9.51	\$8.93	\$9.62	—

Source: ITU World Telecommunications Indicators Database (2002)

* - Annual expenditure associated with acquiring ownership of property and plant used for telecommunications services and includes land and buildings.



S A Telephone Subscribers per 100 inhabitants

Indicator	For Year Ending March						CAGR 1997- 2002	CAGR 2000- 2002
	1997	1998	1999	2000	2001	2002		
Main telephone lines per 100 inhabitants	10.1	10.8	11.8	12.8	11.5	11.4	2.5%	-5.6%
Cellular mobile telephone subscribers per 100 inhabitants	2.3	4.0	7.1	12.1	19.3	24.9	61.0%	43.5%
Total telephone subscribers per 100 inhabitants	12.4	14.8	18.9	24.9	30.8	36.3	24.0%	20.7%

Source: 2002 Telkom Annual Report.

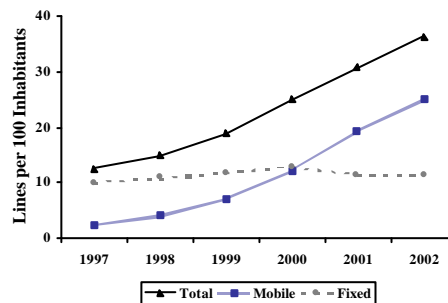


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7

Telephone subscribers per 100 lines

	CAGR 1997- 2002	CAGR 2000- 2002
Main telephone lines per 100 inhabitants	2.5%	-5.6%
Cellular mobile telephone subscribers per 100 inhabitants	61.0%	43.5%
Total telephone subscribers per 100 inhabitants	24.0%	20.7%



Source: 2002 Telkom Annual Report.

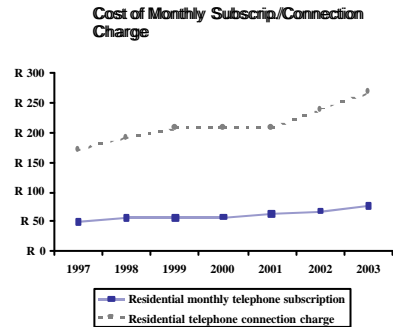
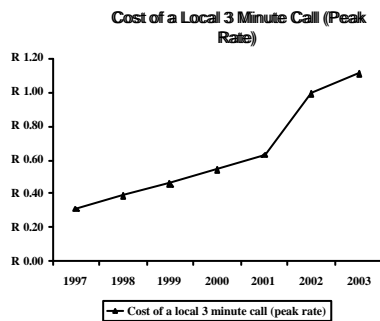


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8

Consumer pricing: Telkom Tariffs 1997 - 2003

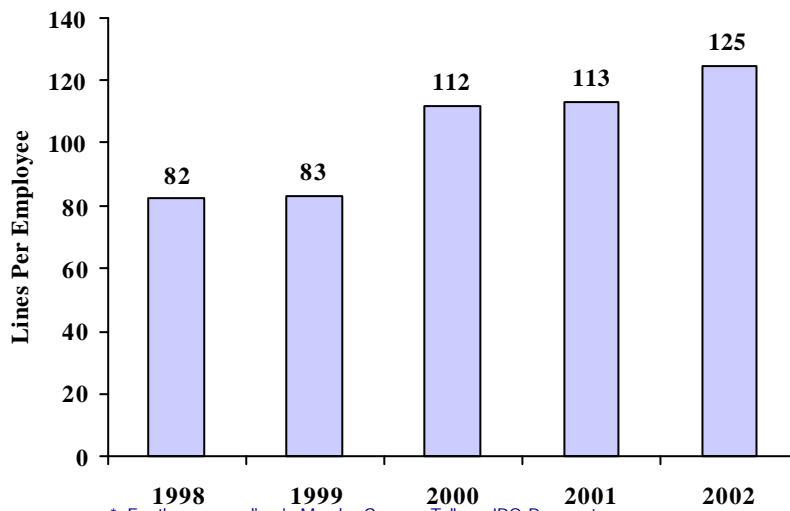
Tariff Category	CAGR	% Change '96 - '03
Cost of a local 3 minute call (peak rate)	24.46%	362.5%
Residential monthly telephone subscription	7.61%	67.1%
Residential telephone connection charge	-1.19%	-8.0%



Source: 1997 - 2000 from ITU World Telecommunications Indicators Database (2002), 1998 - 2003 from Telkom Press Releases.



Telkom Lines Per Employee, 1998-2002*



Residential Mainlines

Residential Main Lines Per 100 Inhabitants				
Country	1996	2000	CAGR 1996-2000	Residential Lines as a % of Total Main Lines (2000)
South Africa	6.50	6.38	-0.46%	56%
Botswana	2.90	5.49	17.32%	60%
Korea	33.70	34.59	0.66%	75%
Mauritius	13.30	18.82	9.07%	80%
Mexico	6.92	9.14	7.19%	73%
Morocco	3.48	3.87	2.75%	77%
Namibia	2.99	3.76	5.94%	60%
Poland	14.04	21.72	11.54%	77%
Seychelles	13.36	15.24	3.34%	65%
Turkey	16.96	21.38	5.97%	76%



Fixed, Mobile, and Total Telecommunications Subscribers per 100 Inhabitants

Country	Total telecommunications subscribers per 100 inhabitants			Main telephone lines per 100 inhabitants			Mobile subscribers per 100 inhabitants		
	1996	2000	CAGR %	1996	2001	CAGR %	1996	2001	CAGR %
South Africa	12.84	35.77	22.74	10.49	11.3	1.41	2.35	24.53	59.85
Angola	0.5	1.23	19.73	0.47	0.59	4.65	0.03	0.64	84.42
Botswana	4.83	—	44.95	4.83	—	17.32	0	16.54	124.08
DRC	0.09	0.32	28.88	0.08	0.04	-12.94	0.02	0.29	70.72
Korea	50.02	108.44	16.74	43.04	47.60	2.03	6.98	60.84	54.19
Lesotho	0.83	—	25.06	0.77	—	7.54	0.06	1.53	91.12
Malawi	0.41	0.95	18.30	0.37	0.47	4.90	0.04	0.48	64.38
Mauritius	18.06	48.27	21.73	16.22	25.56	9.52	1.84	22.70	65.29
Mexico	10.36	35.40	27.86	9.28	13.72	8.13	1.07	21.68	82.53
Morocco	4.6	19.60	33.63	4.45	3.92	-2.50	0.16	15.68	150.18
Mozambique	0.34	1.28	30.36	0.34	0.44	5.29	0	0.84	202.74
Namibia	5.85	12.16	15.76	5.43	6.57	3.89	0.42	5.59	67.82
Poland	17.48	55.53	26.01	16.91	29.51	11.78	0.56	26.02	115.49
Seychelles	21.93	81.87	30.14	20.56	26.73	5.39	1.36	55.15	109.70
Swaziland	2.41	9.61	31.87	2.41	3.14	5.43	0	6.47	136.36
Tanzania	0.33	1.60	37.13	0.3	0.41	6.45	0.03	1.19	108.78
Turkey	24.07	58.70	19.52	22.79	28.52	4.59	1.29	30.18	87.86
Zambia	0.97	1.72	12.14	0.94	0.80	-3.17	0.03	0.92	98.30
Zimbabwe	1.59	4.27	21.84	1.59	1.86	3.19	0	2.41	163.49

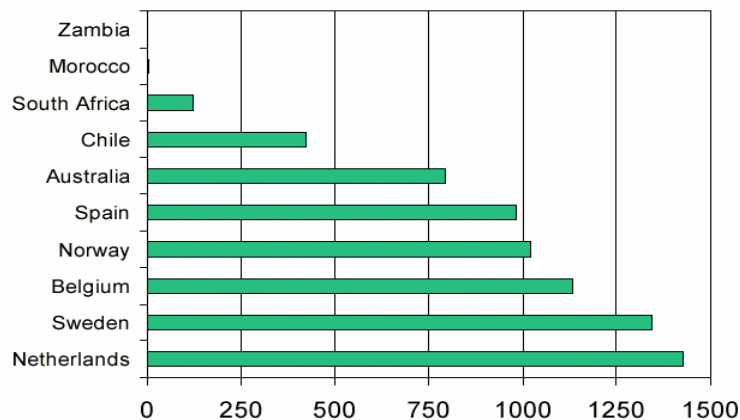


Source: ITU World Telecommunications Indicators Database (2002)
Note: Botswana and Lesotho CAGRs only calculated for 1996-2000

Mobile Cellular Telephone Tariffs

Country	Mobile Cellular activation charge (US\$)			Mobile Cellular monthly subscription (US\$)			Cost of a local 3 minute call (peak rate) (US\$)		
	1996	2000	%Change	1996	2000	%Change	1996	2000	%Change
South Africa	\$21.21	\$13.69	-35.45%	\$34.47	\$25.22	-26.83%	\$0.96	\$0.69	-28.13%
Botswana	—	—	—	—	—	—	—	—	—
Korea (Rep)	\$87.02	\$44.21	-49.20%	\$27.35	\$14.15	-48.26%	\$0.71	\$0.35	-50.70%
Mauritius	\$27.86	\$19.05	-31.62%	\$16.71	\$4.76	-71.51%	\$0.17	\$0.15	-11.76%
Mexico	\$13.03	\$0.00	-100.00%	\$28.82	\$25.37	-11.97%	\$0.88	\$0.82	-6.82%
Morocco	\$91.79	\$9.41	-89.75%	\$22.95	\$11.76	-48.76%	\$1.38	\$0.56	-59.42%
Namibia	\$58.15	\$36.02	-38.06%	\$23.26	\$14.41	-38.05%	\$0.95	\$0.70	-26.32%
Poland	\$198.43	—	—	\$13.89	—	—	\$2.14	—	—
Seychelles	\$201.21	\$87.39	-56.57%	\$60.36	\$17.34	-71.27%	\$0.83	\$0.50	-39.76%
Turkey	\$184.26	—	—	\$6.14	\$3.42	-44.30%	\$1.11	\$0.59	-46.85%

Mobile fixed termination Charge Difference

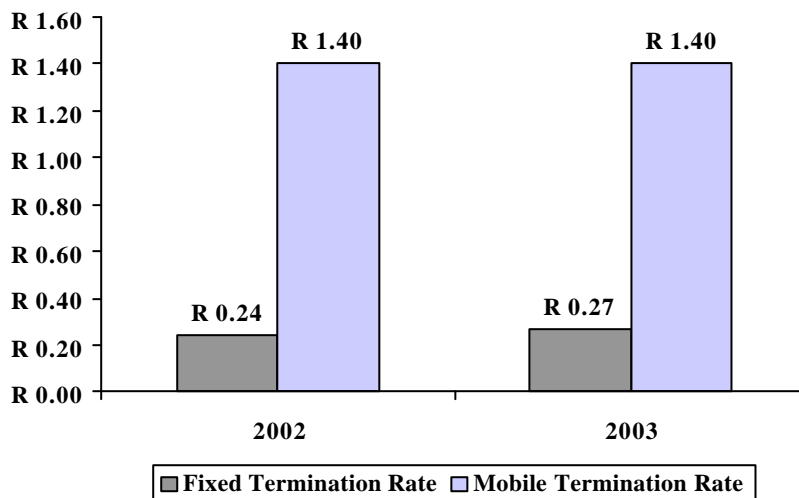


Source: <http://www.intug.net/>

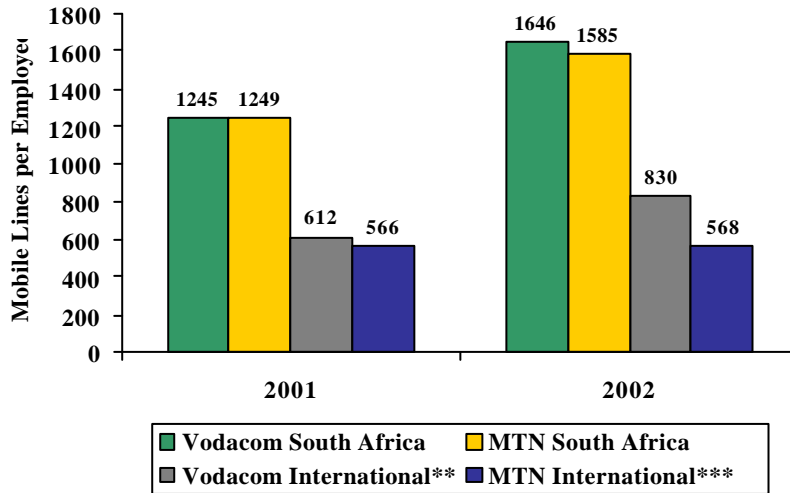
Mobile Operator Peak Rate Charges in Rands

Provider	Activation Charge	Monthly Charge	Minutes Provided	Call on own Network	Call to other Mobile Network	Call to Fixed Network
Vodacom Contract*	R 97	R135	120 off peak	R1.70	R2.70	R2.70
Vodacom Pre-Paid**	N/A	N/A	N/A	R2.85	R2.85	R2.85
MTN Contract***	R95	R120	15 peak, 85 off peak	R1.70	R2.20	R2.20
MTN Pre-Paid	N/A	N/A	N/A	R2.60	R2.85	R2.85
Cell C Contract [?]	R94	R78 ^{??}	N/A	R1.60	R2.00	R2.60
Cell C Pre-Paid	N/A	N/A	N/A	R2.40	R2.70	R2.70

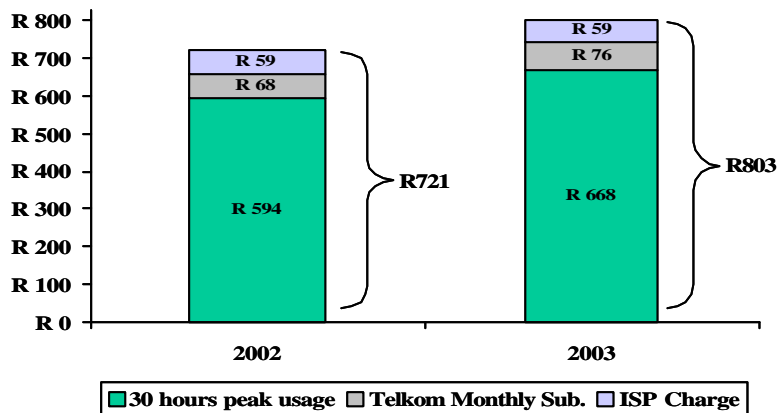
Termination rates



Mobile Lines Per Employee, 1998-2002*



Effect of 2003 Telkom Price Increase on South Africa Internet Access Basket



Personal Computers, Internet Hosts and Internet Users per Inhabitant

Country	2001 Personal Computers per 100 inhabitants	2001 Internet hosts* per 1 million inhabitants	2001 Internet users per 100 inhabitants (estimated)
South Africa	6.85	9213.64	51.07
Angola	0.13	0.59	0.44
Botswana	3.87	757.35	2.97
DRC	—	2.19	0.01
Korea (Rep. of)	25.14	9213.64	51.07
Lesotho	—	27.78	0.23
Malawi	0.11	1.90	0.17
Mauritius	10.83	2605.00	13.17
Mexico	6.87	9149.21	3.62
Morocco	1.31	80.64	1.31
Mozambique	0.35	0.79	0.07
Namibia	3.64	2590.60	2.52
Poland	8.54	12682.05	9.84
Seychelles	15.00	3275.00	11.25
Swaziland	—	1119.61	1.37
Tanzania	0.33	41.10	0.83
Turkey	4.07	1607.79	3.77
Zambia	0.70	102.83	0.23
Zimbabwe	1.21	255.97	0.73

* Internet hosts refer to the number of computers in an economy that are directly linked to the worldwide Internet network. This statistic is based on the country code in the host address and thus may not correspond with the actual physical location

Source: ITU World Telecommunications Indicators Database (2002)

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South Africa Dial-up Subscribers

Year	Dial-up Subscribers
1994	15,000
1995	33,600 (155%)
1996	79,700 (137%)
1997	196,620 (146%)
1998	366,235 (86%)
1999	560,000 (53%)
2000	782,000 (40%)
2001	960,000 (22%)
2002 (estimate)	1,115,000 (12%)

Source: Internet Access in South Africa, 2002, p21, p23.

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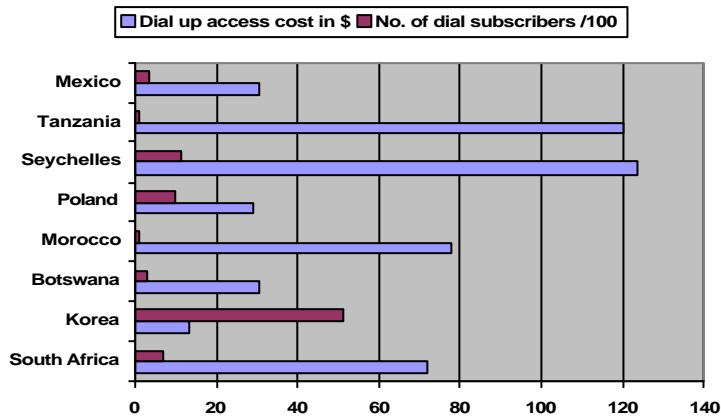
30 hours of Peak use per month

Source: 2002 ITU Internet Report: Internet for a Mobile Generation, Mobile Internet Statistical Annex 11.
 * - Unlimited Internet Access
 ** - Monthly Subscription and Peak Rate from ITU World Indicators Database
 Subscription from Miller Esselaar and Associates (2001), A Country ICT Survey for Mozambique

Country	PSTN Monthlv	PSTN Usage	ISP Charge	Total	PSTN Charges % of
South Africa	\$9.00	\$54.50	\$8.50	\$72.00*	88.2%
Angola	\$1.10	\$9.60	\$20.00	\$30.66	34.9%
Botswana	\$3.00	\$12.90	\$14.70	\$30.65*	51.9%
Korea (Rep. of)	\$2.30	\$0.00	\$11.20	\$13.52	17.0%
Lesotho	\$4.30	\$10.40	\$12.20	\$26.95*	54.5%
Mauritius	\$2.30	\$22.90	\$22.90	\$48.00	52.5%
Mexico	\$20.10	\$0.00	\$10.70	\$30.78	65.3%
Morocco	\$6.10	\$45.20	\$26.30	\$77.61	66.1%
Mozambique**	\$7.16	\$42.00	\$30.00	\$79.16	62.1%
Namibia	—	—	—	—	—
Poland	\$10.70	\$18.40	\$0.00	\$29.11	100.0%
Seychelles	\$8.80	\$84.10	\$30.60	\$123.47	75.2%
Swaziland	\$1.50	\$28.50	\$11.50	\$41.57	72.2%
Tanzania	\$3.80	\$47.20	\$69.00	\$120.06*	42.5%
Turkey	\$3.70	\$7.40	\$1.40	\$12.52	88.7%
Zambia	\$1.60	\$36.60	\$19.00	\$57.25	66.7%
Zimbabwe	\$3.60	\$27.00	\$49.20	\$79.83	38.3%



Relation of access cost to subscribers



Conclusions

- Part of policy success is its appropriateness to environment particularly its conduciveness to implementation
- Multilateral agency model of privatisation in exchange for monopoly in vertically integrated market not achieved objectives of universal access or competitive services sector and compounded by USF failure.
- Statutory protection of Telkom's revenues through requirement that all facilities be acquired by VANS from their competitor has a chilling effect on growth of this critical sector in network economy especially without timely interconnection and facilities regime.
- Regulatory uncertainty arisen from structural conflicts of interest of Ministry and co-jurisdiction of Ministry and ICASA on regulations (and licensing).

Conclusion continued.

- In ability to regulate private monopoly had negative effect on wholesale and retail pricing.
- Regulatory failure to create fair competitive market arising from market structure around vertically integrated incumbent who competes downstream in VANS and ISP market segments.
- Creates anti-competitive incentives **for the incumbent to deny access to its network to rival firms, whether through delays or pricing strategies.**
- Access regulation resource intensive and even skilled and experienced regulators cannot overcome information asymmetries.
- Need for resource intensive regulation can be reduced with a structurally separated market which reduced anti-competitive incentives.

Conclusions continued

- Additional universal services strategies, especially telecentres, largely unsuccessful.
- Equally unexpected but positive outcomes is exponential growth in mobile which is now believed to be the major form of access on the continent.
- Dangers of regulation African mobile market in terms of European mobile market and regulation.
- Dangers of neglecting fixed infrastructure currently still needed for affordable broadband access for data services.
- Creation of information infrastructure constrained by limitations on competitive deployment of alternative cost effective technologies eg. VSAT and VOIP.
- Where broadband technologies are being deployed it is not in a competitive environment and cost remain high.
- Restriction prevents optimisation of capacity of existing networks to provide integrated information infrastructure of network and services.

Conclusion continued

- Structural overhaul of market lengthy process, interim measures could remove some of existing constraints on market development:
 - Remove regulatory bottleneck in Ministry.
 - Clarify licensing procedures
 - Artificial distinction between voice and data in digital environment
 - Remove restrictions on resale, direct connect and self provisioning
- Relieve ICASA, Courts and Competition Commission of time and resource intensive complaints and free up Minister to focus on creating enabling policy environment for access to network economy for all.

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