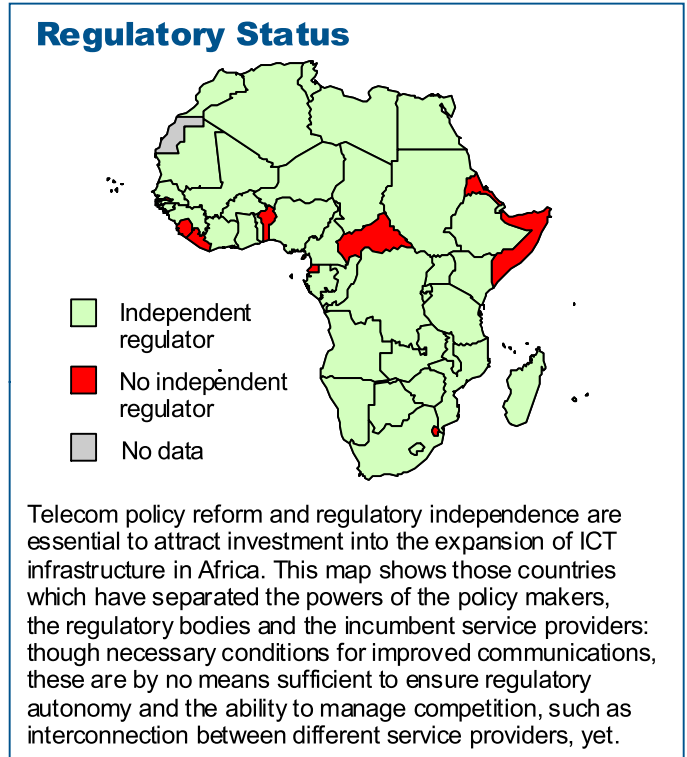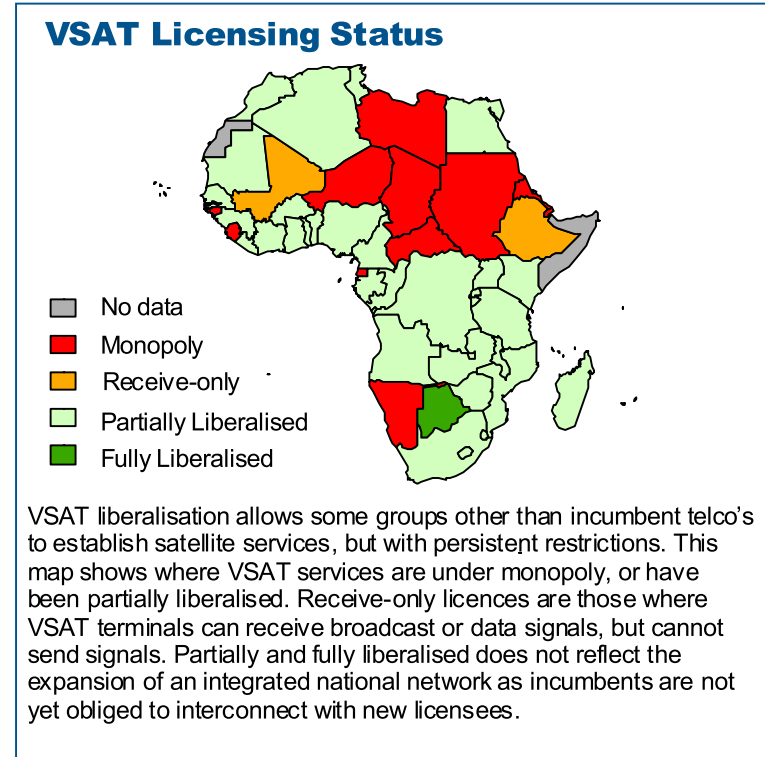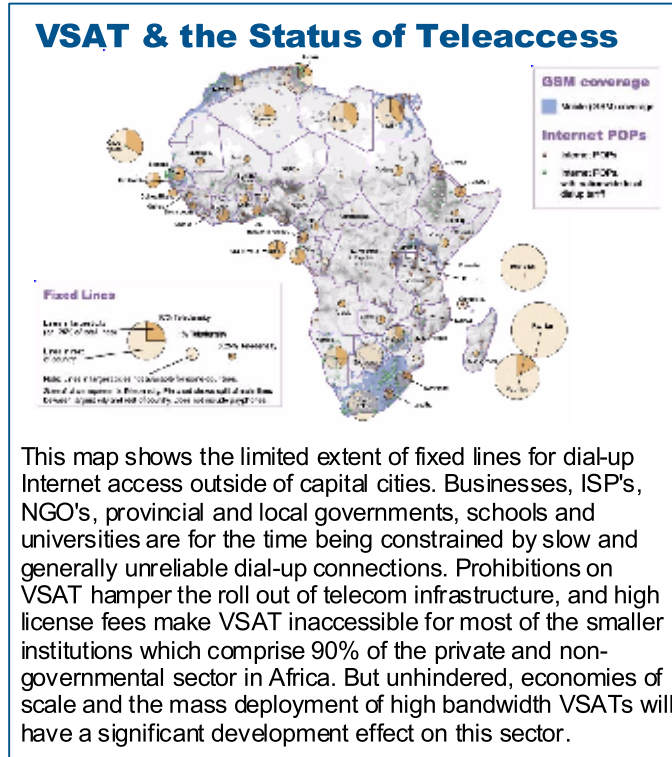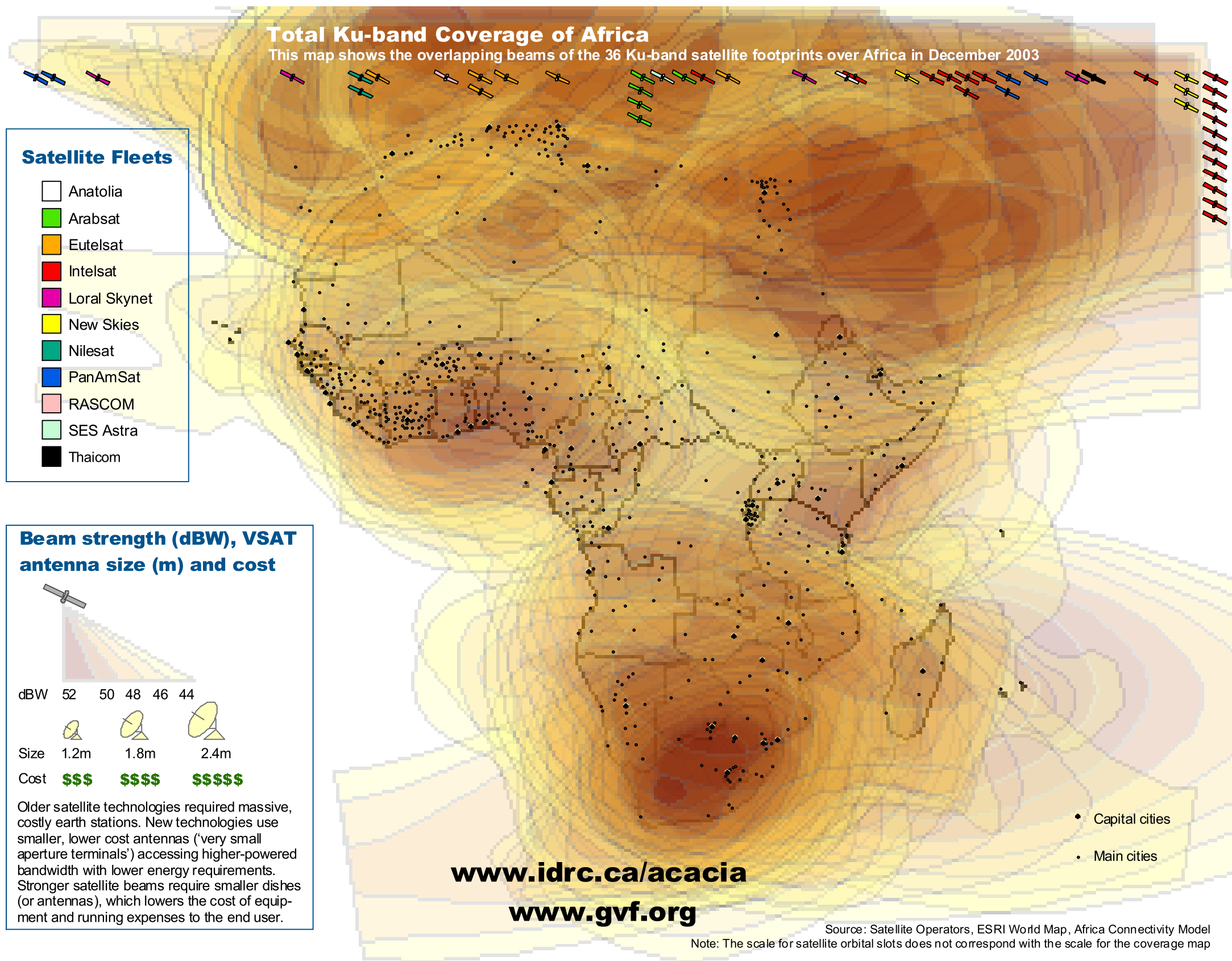# Open and Closed Skies: Satellite Access in Africa

Every square inch of Africa is covered by satellite bandwidth, but restrictive telecom policies stop this from supporting Africa's development. There are 48 satellites with coverage, pointing 36 Ku-band frequency beams (this side) and 28 C-band beams (reverse side) over Africa which can be accessed to provide international and national voice calls, broadcasting, data and Internet services.

Africa's vast inaccessible terrain and insufficient energy infrastructure make it difficult and costly to roll out wire-line networks and fibre optic links in heartland areas. Low-cost satellite-based Internet therefore responds to the access crisis in the region, and provides a potentially affordable opportunity for connectivity. Until recently PTOs have been the main users of satellite technologies, but some liberalisation is slowly opening up avenues for new licensed service providers to compete for broadcasting, data and lastly voice traffic (see VSAT Licensing Status map). But even where private or public satellite services are allowed, hefty license fees are levied; or are only allowed for monopoly or duopoly operators. It is clear that policies for low cost 'consumer grade' satellite Internet access have not yet been developed in many nations.

To overcome the restrictions on access to bandwidth there needs to be an 'Open Skies' policy in order to achieve African development goals. Then the conditions for economies of scale will result in lower prices and affordable subscriptions to community access points, SMEs, governments and households.

Total Ku-band Coverage of Africa
This map shows the overlapping beams of the 36 Ku-band satellite footprints over Africa in December 2003

Satellite Fleets

- Anatolia
- Arabsat
- Eutelsat
- Intelsat
- Loral Skynet
- New Skies
- Nilesat
- PanAmSat
- RASCOM
- SES Astra
- Thaicom

Beam strength (dBW), VSAT antenna size (m) and cost

dBW	52	50	48	46	44
Size	1.2m		1.8m		2.4m
Cost	$$$		$$$$		$$$$$

Older satellite technologies required massive, costly earth stations. New technologies use smaller, lower cost antennas ('very small aperture terminals') accessing higher-powered bandwidth with lower energy requirements. Stronger satellite beams require smaller dishes (or antennas), which lowers the cost of equipment and running expenses to the end user.

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- ◆ Capital cities
- • Main cities

Source: Satellite Operators, ESRI World Map, Africa Connectivity Model
Note: The scale for satellite orbital slots does not correspond with the scale for the coverage map

VSAT & the Status of Teleaccess

This map shows the limited extent of fixed lines for dial-up Internet access outside of capital cities. Businesses, ISP's, NGO's, provincial and local governments, schools and universities are for the time being constrained by slow and generally unreliable dial-up connections. Prohibitions on VSAT hamper the roll out of telecom infrastructure, and high license fees make VSAT inaccessible for most of the smaller institutions which comprise 90% of the private and non-governmental sector in Africa. But unhindered, economies of scale and the mass deployment of high bandwidth VSATs will have a significant development effect on this sector.

VSAT Licensing Status

- No data
- Monopoly
- Receive-only
- Partially Liberalised
- Fully Liberalised

VSAT liberalisation allows some groups other than incumbent telco's to establish satellite services, but with persistent restrictions. This map shows where VSAT services are under monopoly, or have been partially liberalised. Receive-only licences are those where VSAT terminals can receive broadcast or data signals, but cannot send signals. Partially and fully liberalised does not reflect the expansion of an integrated national network as incumbents are not yet obliged to interconnect with new licensees.

Regulatory Status

- Independent regulator
- No independent regulator
- No data

Telecom policy reform and regulatory independence are essential to attract investment into the expansion of ICT infrastructure in Africa. This map shows those countries which have separated the powers of the policy makers, the regulatory bodies and the incumbent service providers: though necessary conditions for improved communications, these are by no means sufficient to ensure regulatory autonomy and the ability to manage competition, such as interconnection between different service providers, yet.

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