Economic and Policy Aspects of Providing High Speed Internet Connectivity by Retail Satellite Operators

Satellite Internet in Mozambique: Economic, Policy, and Lessons Learned

INCM's Strategy for Bridging the Digital Divide

Joaquim Zindoga

Introduction

Objective of the Presentation:

- Explore the economic and policy challenges of satellite-based high-speed Internet.
- Share INCM Mozambique’s experience in deploying satellite connectivity services.

Key Questions:

- What are the economic and policy considerations for satellite Internet?
- What lessons can other countries learn from Mozambique’s experience?

Overview of Satellite Internet Connectivity

What is Satellite Internet?

- High-speed Internet delivered via satellites in low Earth orbit (LEO) or geostationary orbit (GEO).

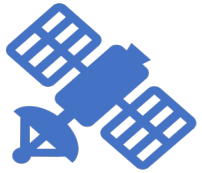
Key Players:

- Retail satellite operators (e.g., Starlink, OneWeb, HughesNet).

Advantages:

- Wide coverage, especially in remote areas.
- Rapid deployment compared to terrestrial infrastructure.

Economic Aspects of Satellite Internet



Cost Structure:

High initial investment in satellite deployment and ground infrastructure.

Lower marginal costs for expanding coverage.

Pricing Models:

Subscription-based pricing for end-users.

Potential for public-private partnerships to subsidize costs.

- *The satellite antenna price continues to be the biggest barrier to wide access of satellite Internet (main aspect of subsidy instead of service)*

Economic Benefits:

Bridging the digital divide.

Enabling e-commerce, education, and healthcare in underserved areas.

Economic Implications

Driving Growth Through Satellite Connectivity

Key Points:

Market Competition: Starlink vs. SATCOM (established 1999) → lower costs, innovation. The brave new world of satellite technology is bringing several new market entrants very shortly (Amazon Kuiper, China, Direct to Device constellations, and others)

Infrastructure: LEO satellites (550km) (and soon VLEO) vs. VSAT systems → remote access (deserts, rainforests). (KU, KA, C Band, Eband and other spectrum bands soon)

Jobs: Local expertise (SATCOM's provincial branches) + global partnerships (Starlink maintenance roles), Gateways investment, Data Centers for POPs, etc.

Policy Considerations

Regulating a Hybrid Digital Ecosystem

Key Policies:

⚡ Fast-Track Licensing: Starlink approved in <1 year (first in Africa)

🔄 **Complementary Tech**: Satellite + fiber/mobile → no monopolies.

🌀 **Disaster Resilience**: Cyclone-prone areas prioritized.

Lessons Learned (Part 1)

INCM's Key Takeaways

1. **Balance Competition**: SATCOM (500+ VSATs) + Starlink → hybrid market stability.
2. **Speed Matters**: Streamlined licensing attracts global players and furthers continued investment (Gateways, PoPs, International Fiber data transfer, etc).
3. **Rural Focus**: Gorongosa Park case study (SATCOM) vs. Starlink's rural broadband.

Lessons Learned (Part 2)

Partnerships & Adaptation

4. **PPP Success**: SpaceX collaboration → aligns ICT goals with private innovation.

5. **Tech Evolution**: GEO (35,000 km) → LEO (550 km) → VLEO (400-380km)→ updated regulations for latency/coverage.

GEO vs. LEO Technology

Why LEO Satellites Matter

Comparison table:

METRIC	GEO	LEO
Altitude	35,000 km	550 km
Latency	600+ ms	<50 ms
Coverage	Fixed	Dynamic
Speed	20mbps	200 mbps

Case Studies

Real-World Impact

Gorongosa Park: SATCOM's VSAT enables conservation + tourism.

Cyclone Response: Satellite Internet restores emergency comms.

The last cyclone in December 2024, Starlink played a huge role in establishing communications between different teams.

Conclusion

Key Takeaways

Flexible regulation + tech-neutral policies = stability.

Strategic PPPs drive infrastructure growth.

Prioritize underserved regions to close the digital divide (connecting the unconnected).

Q&A

Questions?