

Bridging Malaysia's Digital Divide: Focus on Broadband, Next-Generation Networks (NGNs) and Enhancing Network Planning Skills for Rural Connectivity

Ministry of Communication

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MINISTRY OF COMMUNICATIONS

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Introduction



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Country Profile: **Malaysia**

Geographical Overview:

Malaysia is located in Southeast Asia, comprising two main regions: Peninsular Malaysia and East Malaysia (on the island of Borneo). It shares land borders with Thailand, Indonesia, and Brunei, and maritime borders with Vietnam and the Philippines.

Country Profile: **Malaysia**

Capital	Kuala Lumpur, Putrajaya (Administrative)
National Language	Malay
Ethnic Groups	68.8% Bumiputera (Malay, Orang Asli, Sabah & Sarawak), 23.2% Chinese, 7.0% Indian, 1.0% Others
Religion	61.3% Islam (Official), 19.8% Buddhism, 9.2% Christianity, 6.3% Hinduism, 1.3% Chinese Folk Religion, 1.7% Unknown, 0.4% Others
Prime Minister	Dato' Seri Anwar Ibrahim
Independence Day	31 st August 1957
Population	34.1 Million
Currency	Ringgit (RM) (MYR)
Time Zone	UTC+8 (MST)
Mobile Service Providers	CelcomDigi, Maxis, Umobile, TM, and YTL
Economic Overview	Malaysia is an upper-middle-income economy, with significant contributions from manufacturing, mining, agriculture, and services. It is a major exporter of palm oil, electronics, petroleum products, and natural gas. The government's Vision 2020 aimed at making Malaysia a high-income nation, with the Twelfth Malaysia Plan (2021–2025) targeting post-pandemic recovery and sustainable growth.

Present Status and Future Plans of Info-communications

Overview of Malaysia's Info-communications Industry:

Malaysia has a well-developed telecommunications infrastructure, with ongoing initiatives to improve digital services and connectivity across the country. The telecommunications industry is regulated by the Malaysian Communications and Multimedia Commission (MCMC) under the supervision of the Ministry of Communications (Kementerian Komunikasi).

Current Status:

Internet Penetration:

97.28% of the populated area has internet access as Q2 of 2024, with a high focus on 4G LTE coverage.
5G deployment: Current, 81% of populated areas are ready with 5G access.

Technology

Mix of fixed-line fiber, DSL, 4G, and 5G

Mobile Network:

Malaysia has a well-established 4G network and is currently expanding its 5G infrastructure. With 81% of the country covered, most key urban areas already have access to 5G services.

Broadband Access:

The National Fiberisation and Connectivity Plan (NFCP) aims to deliver high-speed broadband to both urban and rural areas. Fixed-line broadband services are widely available in urban regions.

Satellite Communications:

For remote and underserved areas, satellite communications are an important alternative for internet connectivity. The development of low Earth orbit (LEO) satellite solutions is also being considered.

Present Status and Future Plans of Info-communications

Future Plans for Broadband and NGNs

1. National Fiberisation and Connectivity Plan (NFCP) 2.0
2. 5G expansion to 80% coverage by 2024
3. 6G research and development
4. Satellite solutions for remote areas
5. Smart City and Industry 4.0 integration

Pelan Jalinan Digital Negara (JENDELA)

- A government initiative to strengthen the country's digital infrastructure by expanding mobile broadband and transitioning from 3G to 4G and 5G services.
- Malaysia began deploying 5G in 2022, with Digital Nasional Berhad (DNB) coordinating efforts for nationwide coverage.
- Fiberisation Initiatives aims to provide fiber optics-based broadband to more than 70% of premises in Malaysia by 2025, with a focus on rural connectivity.

Future Plans:

- Achieving 100% internet coverage, especially in rural and underserved areas, by 2025.
- Accelerating the 5G network rollout across the country to support advanced digital services, IoT, smart cities, and automation.
- Expanding satellite and wireless broadband solutions to address geographic challenges, particularly in East Malaysia (Sabah and Sarawak).

1. Geographical Barriers (Digital divide between urban and rural areas)

- Terrain:** Malaysia's diverse and often challenging topography, particularly in rural and remote regions like Sabah and Sarawak, presents significant difficulties. Dense forests, mountains, and scattered islands make it hard to deploy physical infrastructure such as fiber-optic cables and mobile towers.
- Isolated Communities:** Many rural populations are spread across vast areas, making the logistics and cost of connecting these areas through traditional broadband solutions difficult.

2. High Costs of Infrastructure Development (High infrastructure costs in remote regions)

- Financial Constraints:** Extending fiber-optic and mobile infrastructure to remote regions involves high capital expenditure, with potentially low returns for service providers. This is especially true in areas with low population density.
- Government Funding and Investment:** While the government has invested in programs like JENDELA, the need for continuous and substantial funding may limit the speed of network expansion. Budget constraints could delay projects or reduce their scope.

3. Dependence on Satellite for Remote Areas

- Satellite Latency and Bandwidth:** For the most remote areas, satellite communications are a key solution. However, satellite broadband services often face issues with latency and limited bandwidth, which may not provide the same quality of service as fiber-optic or mobile networks.
- Cost and Reliability:** Satellites, especially newer low Earth orbit (LEO) ones, are expensive to launch and maintain. Ensuring affordability and reliability for end-users in remote areas remains a challenge.

4. Sustainability, Affordability and Readiness

- Environmental Concerns:** Large-scale infrastructure projects, especially in rural and ecologically sensitive areas, must navigate environmental regulations and concerns about deforestation, habitat disruption, and carbon emissions.
- Affordability:** especially in rural areas
- Energy Supply:** Remote areas often lack reliable electricity, and deploying communication towers and equipment in such regions will require sustainable and efficient power solutions, such as solar or wind energy.
- Telecom Industry Readiness:** Some telecom operators may be hesitant to invest heavily in rural areas due to concerns about profitability, requiring stronger incentives or regulatory mandates.

5. Regulatory and policy coordination challenges

4. Selected Area Information: Rural and remote Connectivity in Sarawak

Geographic Overview:

Sarawak, located on the island of Borneo, is Malaysia's largest state by land area. It has a dispersed population, with many rural and remote communities spread across mountainous and forested terrain.

Population:

Approximately 2.9 million (2024 est.)

Current Connectivity Status:

Internet Penetration:

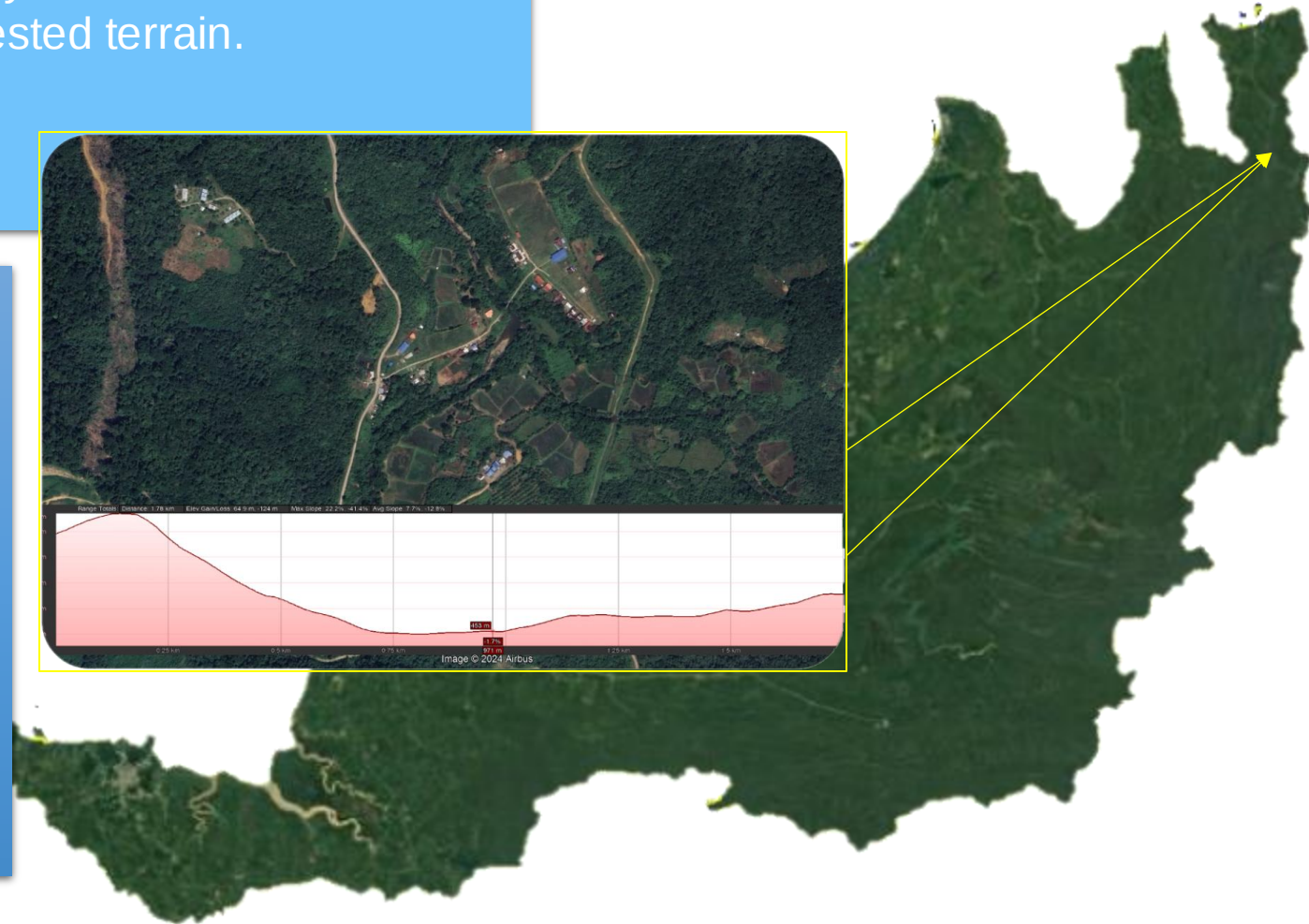
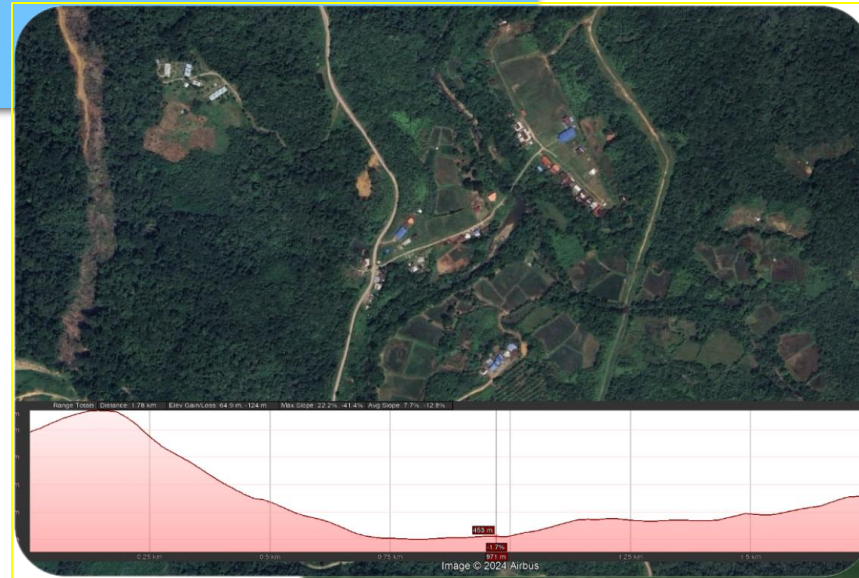
- Sarawak has lagged behind in terms of internet penetration due to its challenging topography. Current penetration is estimated at 80%, with limited 4G coverage in certain rural regions.

Mobile Network:

- 3G is being phased out, with 4G expansion underway. Some regions still rely on satellite communications and basic telephony services.

Broadband Access:

- Fiber-optic infrastructure is limited to urban areas, with most rural areas dependent on wireless and satellite services.



Selected Area Information: Rural Connectivity in Sarawak

Challenges:

Terrain:

- The rugged landscape makes it difficult to extend fiber-optic cables and establish physical telecom infrastructure.

High Costs:

- Delivering broadband services to sparsely populated, remote areas is costly, with low returns on investment for telecom providers.

Plans for Improvement:

JENDELA Initiative:

- Specific projects under JENDELA aim to improve mobile broadband services in rural Sarawak, with a focus on providing connectivity to schools, clinics, and government offices.

Collaboration between state and federal government on expanding coverage:

- The Sarawak state government is working federal government to ensure the service availability to bridge the digital divide and enhance last-mile connectivity in difficult-to-reach areas, SMART600 project.

Multi-Operator Core Network (MOCN) framework

- Strategy to enhance network efficiency and reduce costs for telecommunications operators. The MOCN framework allows multiple mobile network operators (MNOs) to share both passive and active network infrastructure, including radio access networks (RAN), while maintaining independent core networks.

Satellite Expansion:

- Satellite broadband solutions are being explored to provide reliable internet access to remote villages.

THANK YOU

4. Selected Area Information

As of 2024, Malaysia's 5G coverage is expanding rapidly under the Digital Nasional Berhad (DNB) initiative. The government aims to achieve 80% population coverage by the end of the year, with major urban centers like Kuala Lumpur, Putrajaya, and Cyberjaya already having substantial 5G availability. Many key areas are expected to benefit from the technology, including:

- **Klang Valley:** Kuala Lumpur, Selangor, and surrounding regions have significant 5G deployments.
- **Major Cities:** Johor Bahru, Penang, Kota Kinabalu, and Kuching are part of the initial phases of rollout.
- **Industrial Hubs and Ports:** Areas critical for logistics and manufacturing, such as Port Klang and Bayan Lepas.

While 5G is rapidly spreading in urban and industrial zones, rural areas are likely to see delayed deployment due to infrastructure challenges.