Navigating next-generation broadcasting technologies for developing countries

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ITU Expert in Broadcasting



Outline

- Background
- Evolution
- Broadcasting Services
- Next-generation Distribution
- Analogue Switch Off (ASO)
- Distribution over the Internet/Online
- Lessons
- Constraints
- Key factors for success
- Summary and Conclusions



Question 2/1

Study Questions

ITU-D Study Group 1

Universal meaningful connectivity for bridging the digital divide

2026-2029

Q 1/1	Enabling policies and strategies for universal connectivity with a focus on underserved, remote and rural areas
Q 2/1	Enabling policies and regulations for adopting digital telecommunication/ICT services and technologies for distribution and broadcasting



Question 2/1

- For distribution and broadcasting

Q 2/1

Enabling policies and regulations for adopting digital telecommunication/ICT services and technologies for distribution and broadcasting

Background

- Adapting to changing audience behaviour
- Increasing competition
- Continued pressure on the advertising market
- Funding/revenue pressures
- Transformation strategy
- Job cuts/Service reduction or closure



Evolution

- One to many
- Monochrome
- Colour – NTSC, APL & SECAM
- Terrestrial, Satellite, Cable, IP-based
- Analogue to Digital transmission
- Digital Transformation

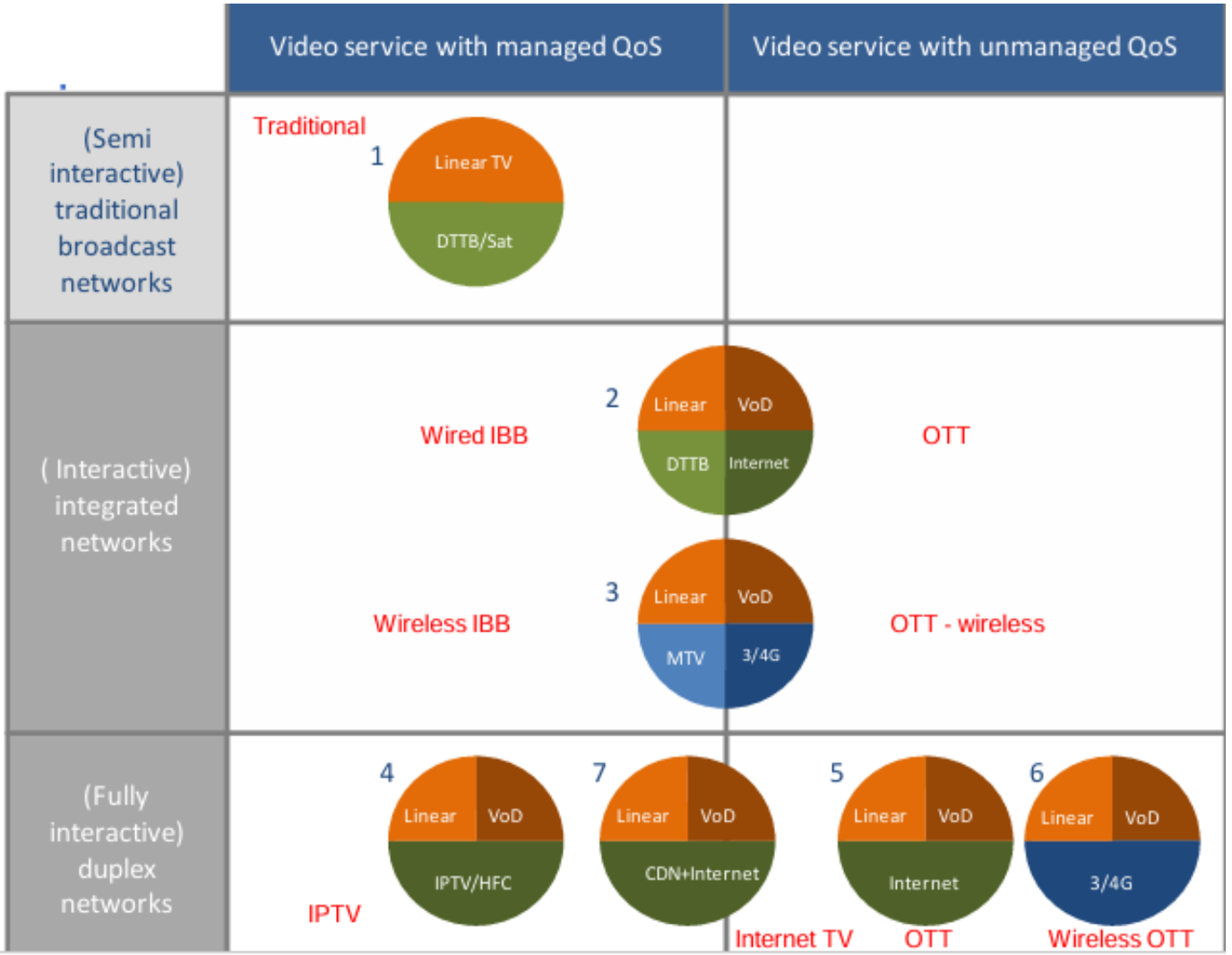


Sustainability (both financial and climate change related) and Efficiency

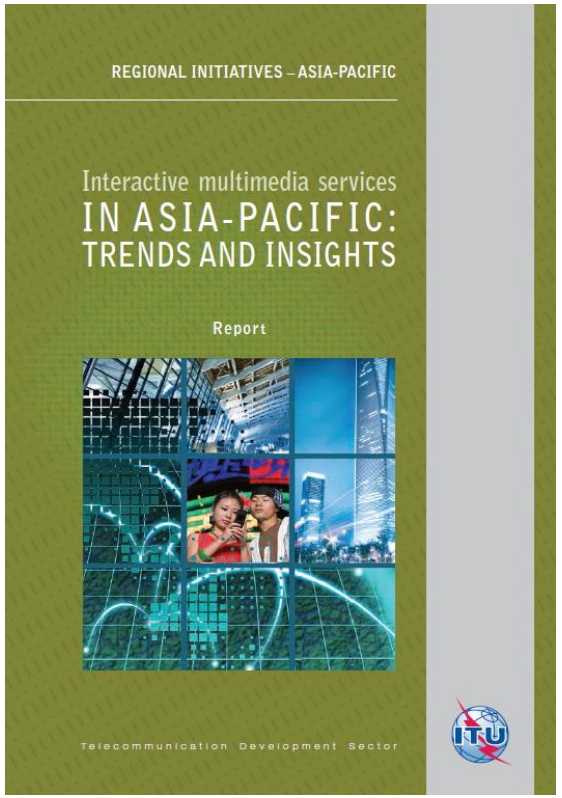
- Broadcasting over the air is still the most efficient way to deliver content to masses

Broadcasting Services

Amal, 2016



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IPTV

- Multimedia services such as television, video, audio, text, graphics, and other data delivered over IP based networks managed to provide the required level of Quality of Service/Quality of Experience (QoS/QoE), security, interactivity and reliability [Source: ITU]

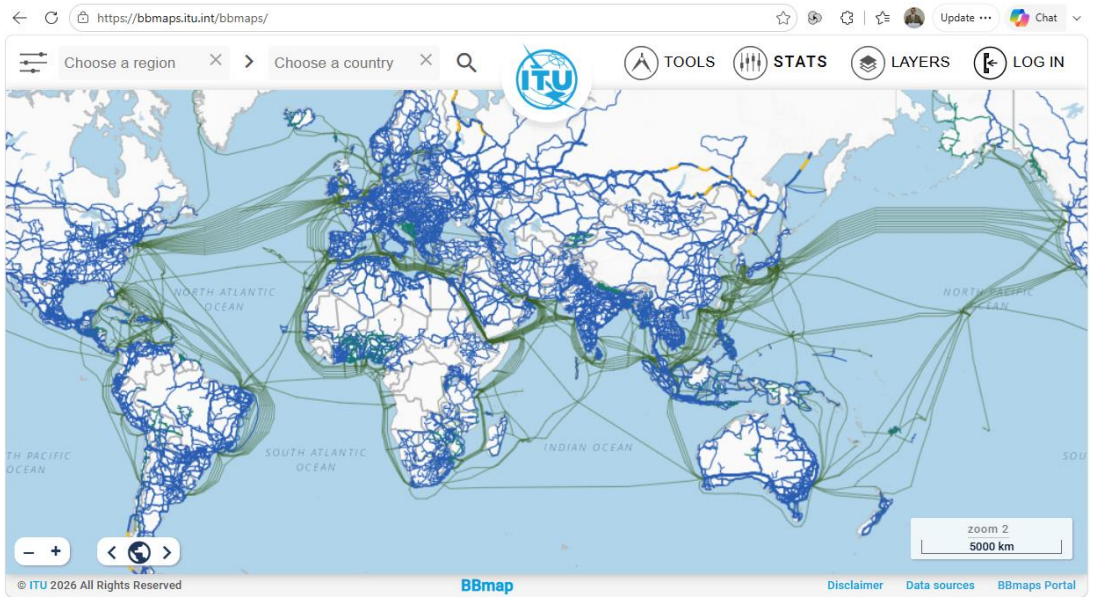
- Need a core network

- Telcos have such Networks – Core, Edge/distribution



OTT

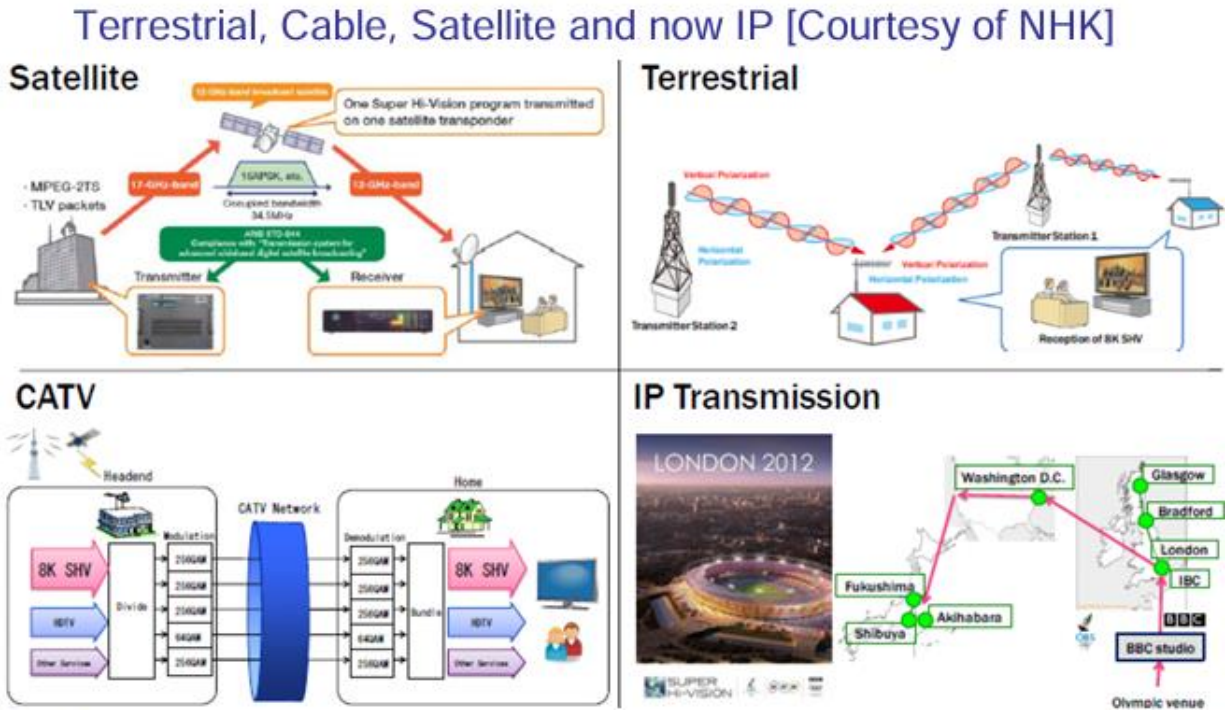
- Over the Top are the audio-visual services delivered over broadband and the Internet
- OTT are over unmanaged networks
- As there is a return channel, full interaction is possible.



Source: Amal Punchihewa, ABU, 2015 (page 11)

Broadcasting

- Universal
  - for all
  - available
  - no gatekeepers
  - affordable (if PSB/PSM, free to access)
  - adequate capacity, scale
- Inclusive
  - no divide
  - Accessibility
- Resilience
  - Architecture
  - Early warnings and disaster communication e.g. COVID-19
- Trust
- Sovereign



Source: Amal, 2012

Broadcasting

- Sovereign
- Trust
- Resilience
  - Architecture, scale, managed quality
  - Early warnings and disaster communication e.g. COVID-19
- Inclusive
  - no divide
  - Accessibility
- Universal
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  - available
  - no gatekeepers
  - affordable (if PSB/PSM, free to access)
  - adequate capacity

> ***"Terrestrial services give countries sovereign control over content and distribution. Ongoing discussions focus on how nations can maintain control over content, privacy, and data while distributing programming."***
>
> *— Dr Amal Punchihewa,*
> *Executive Member, Media Technical Network,*
> *Institution of Engineering & Technology;*
> *Distinguished Lecturer, Broadcast Technology Society,*
> *Institution of Electrical & Electronics Engineer.*



ITU-R definition of Broadcasting

ITU-R definition

- RR 1.38 broadcasting service: A radiocommunication service in which the transmissions are intended for direct reception by the general public. This service may include sound transmissions, television transmissions or other types of transmission.– Radio Regulations (RR) of ITU

- Universal access - Right to access, Accessibility, inclusiveness

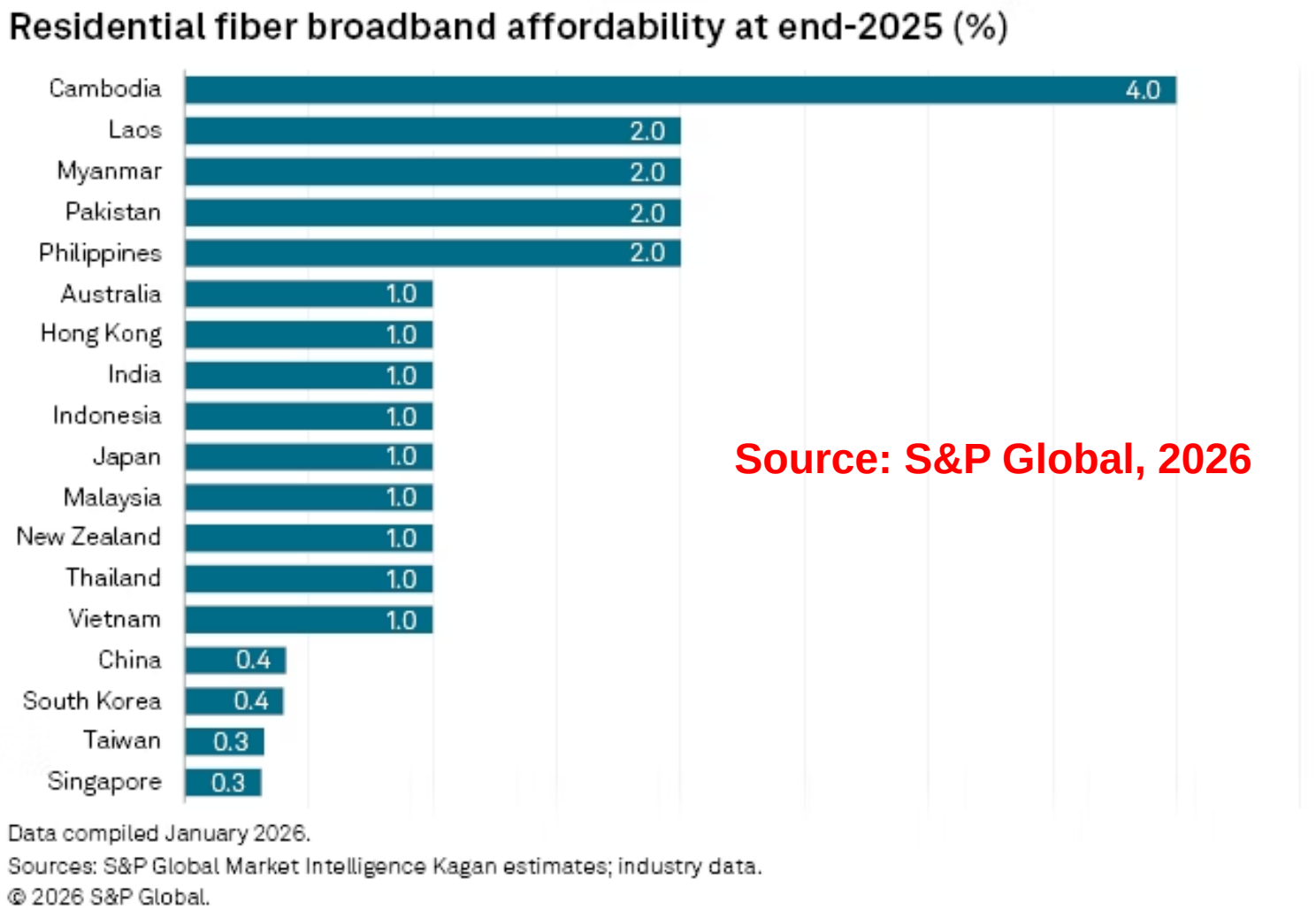
- No gatekeepers, available, affordable, adequate, sustainable

- Principles and value based – Universal, Inclusive, inform (News/trust), entertain & educate



Broadcasting/Distribution

- Over-the-air
  - Terrestrial
  - Satellite
- Over-the-cable
  - Copper
  - Fibre
- Online
  - OTT
  - IPTV
- Over-the-broadband
  - Unicast
  - Multicast
  - Unmanaged/Best effort
  - Partially managed/CDN



Source: S&P Global, 2026

Drivers in Digital transformation of Broadcasting

- Capture, Production, Post-production, Storage are digital only
- Only operation that is not digital is some analogue transmissions
- Digital dividend is also not a key driver, especially for small economies, landlocked Pacific nations, …



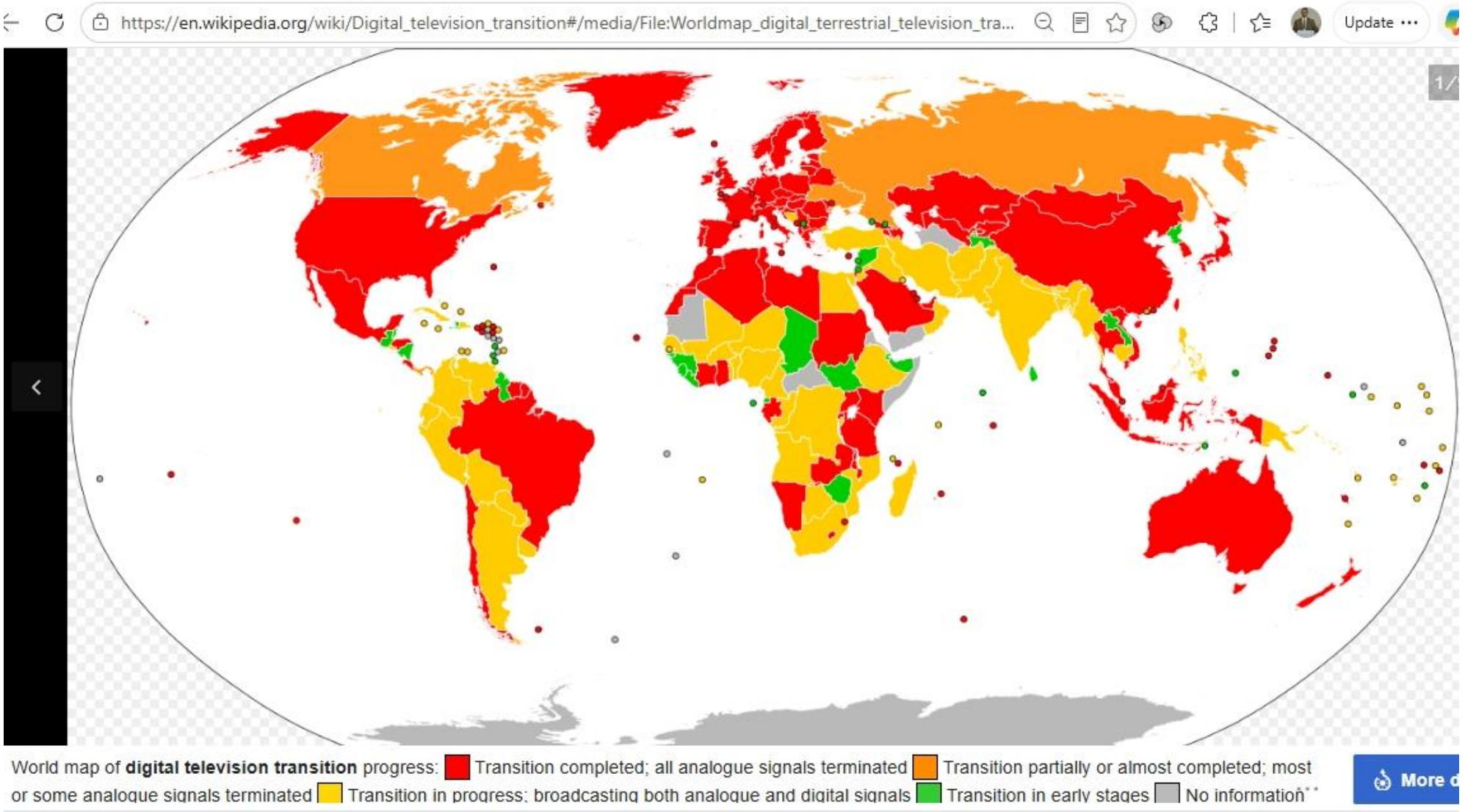
ASO in ASP or APAC countries

- 43 countries (38 ITU member countries)
- Japan - 2011
- Korea - 2012
- Australia – Dec 2014
- New Zealand - 2014
- Mongolia - Oct 2015
- Singapore - 2019
- Malaysia – 2019
- Vietnam – December 2020
- China – 2021
- Brunei - 2019
- Samoa – Dec 2021
- Thailand- 2022
- Indonesia - 2023
- Fiji - 2023
- PNG - 2024
- India - 2021

- ASO - analogue switch off done in more than 16 countries among 38



World map of digital television transition progress

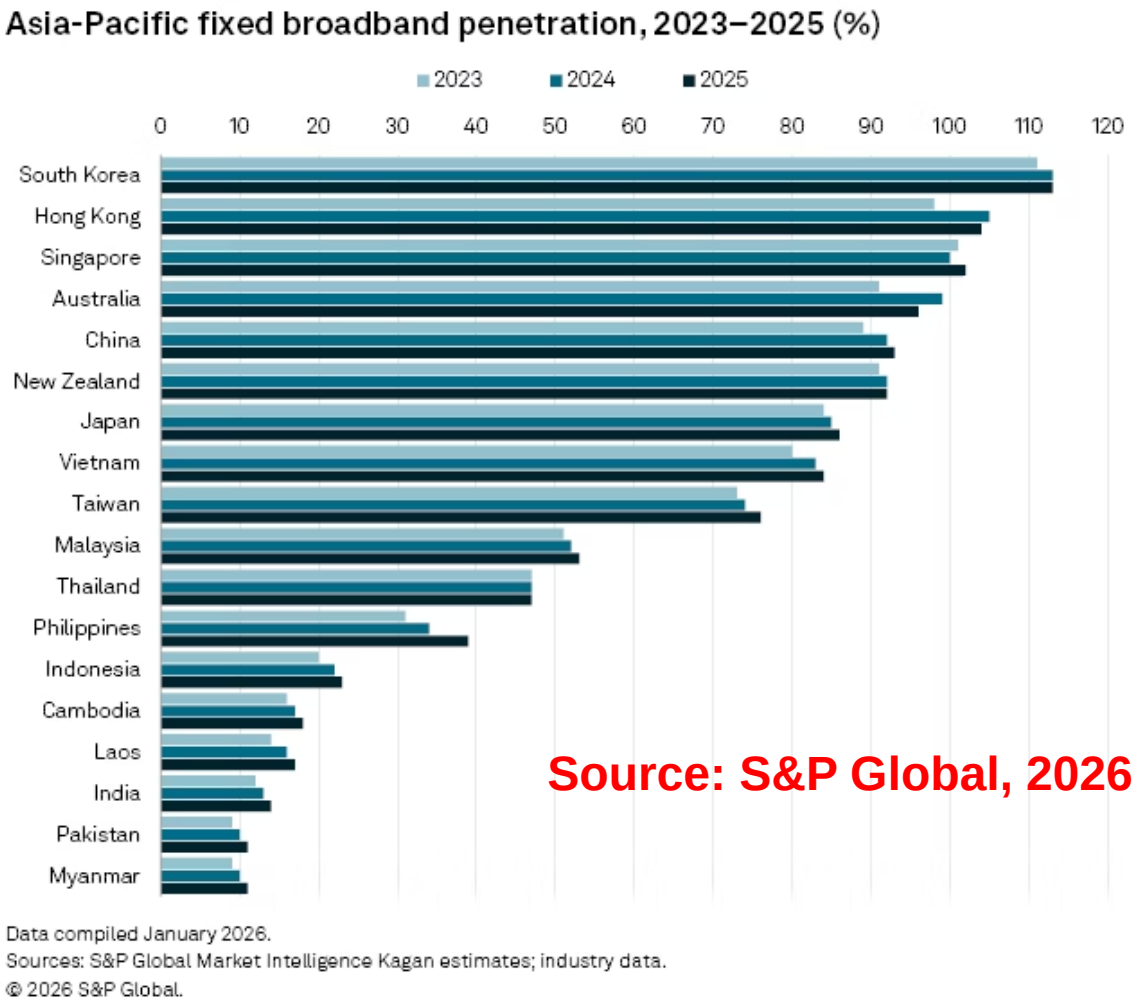


Distribution over IP

- Unconnected population
- Digital divide

Challenges are how to make it:

- Universal
  - for all
  - available
  - no gatekeepers
  - affordable (if PSB/PSM, free to access)
  - adequate
- Inclusive
  - no divide
  - Accessibility



Future of terrestrial broadcasting services

- Fragmented audience demand content over multiple platforms
- Can we replace DTT (ATV) fully with streaming?
- Universal access
- Available
- Affordable
- Discoverable
- Prominence
- Integrated (IBB)/Converged
- When?
  - The UK - DTT - Freeview TV 2034 to 2044
  - Australia - Consultation on future free-to-air television delivery
- Multiplatform



Can the broadcast industry operate online-only by 2030?

- The broadcast industry has been discussing and building an ecosystem that predominantly streams video and audio for television and radio services respectively.
- Technology companies, research institutions and consortia have been improving streaming performance to optimise quality of experience (QoE), resource requirements, scalability, and other factors compared to over-the-air (OTA) broadcasting services.
- The UK Streaming Box



How broadcast industry be survive fully releasing UHF?

- Can we replace DTT (ATV) fully with streaming?
- No gatekeeper
- Cost/Price of the service
- Available
- In APAC, just 50% have access to broadband
- Need for spectrum – APSMC2020
- Mobile Reception
- Mobile Reception
- 5G-MAG



Lessons

- Reviews/Public consultations - e.g. the UK
- Reviews/Public consultations - e.g. Australia
- Implementations – e.g. New Zealand
  - Universal, Industry driven
  - “defining an achievable minimum viable product”
  - relatively small broadcasting market,
  - strong relationships with broadcasters and manufacturers,
  - and high broadband connectivity
- Pragmatic approaches
- Discoverability – DVB-I
- Prominence

> In future, TV sets will allow the integration of programmes from various distribution channels, including cable, satellite and antenna, and pure IP streaming. This will provide viewers with direct access to TV content through a unified user interface, enhanced by additional features such as an improved programme guide and effortless transitions to non-linear offerings from broadcasters.
>
> — *Dr Amal Punchihewa*
> *Advisor/Consultant, AIBD*



Constraints

- Funding
- Monetisation
- Advertising
- Consumption patterns
- Devices, TV Receivers
- Cost of Infrastructure
- OPEX and CAPEX
- Out-dated regulation

"Significantly, traditional TV is the only channel forecast to decline over the next five years. This is a clear indicator that ad spend and viewer engagement are shifting decisively towards online platforms. This transition, driven by evolving consumer behaviours, new monetisation models, and the continued rise of streaming, reflects the rapid reconfiguration of the media landscape."

— Dr Amal Punchihewa
Advisor/Consultant, AIBD





The Television Bureau of Advertising (TVB), the trade association representing America's local broadcast television industry, recently commissioned GfK/NIQ to conduct its 2026 Purchase Funnel Study. The publicly released findings confirm that TV continues to play a key role in building brand awareness and influencing consumer purchase decisions.

— Dr Amal Punchihewa
Executive Member, Media Technical Network, IET;
Distinguished Lecturer, Broadcast Technology Society, IEEE

Key factors for success

- All actors on board
- Strong leadership
- Effective communication strategy
- Sufficient financial resources
- Correct Data Strategies



"In addition to appealing content, for a broadcast delivery system to survive and thrive, it needs an ecosystem in which all stakeholders including audience, device manufacturers, broadcasters, policymakers and technology developers work collaboratively to make operations affordable and sustainable."

— *Dr Amal Punchihewa*
Advisor/Consultant, AIBD
& former Director of Technology & Innovation, ABU



Successful data strategies are not purely technology projects. If the questions being asked during data acquisition are unclear to respondents, organisations quickly end up measuring non-specifics that shed little light on the issue at hand.

— *Dr Amal Punchihewa*
Executive Member, Media Technical Network, IET;
Distinguished Lecturer, Broadcast Technology Society, IEEE

Summary & Conclusions

- Each country is different – different approaches (the UK, Australia, New Zealand)
- No text book solution or prescriptions - need to engage public
- Think globally and act locally
- Terrestrial digital television services may operates for another two or three decades
- How quickly broadcast could be online only depends on broadband connectivity

THANK YOU for patience and listening

