

Brazil's viewpoint



- Population: 203 million
- 55% Households (37 million) connected (2014)
 - 23% exclusively by mobile broadband
- Mobile accesses: 268 million (133%)
- Fixed broadband: 23,73 million
- TV: 97,2% households
- Refrigerator: 96,7% households

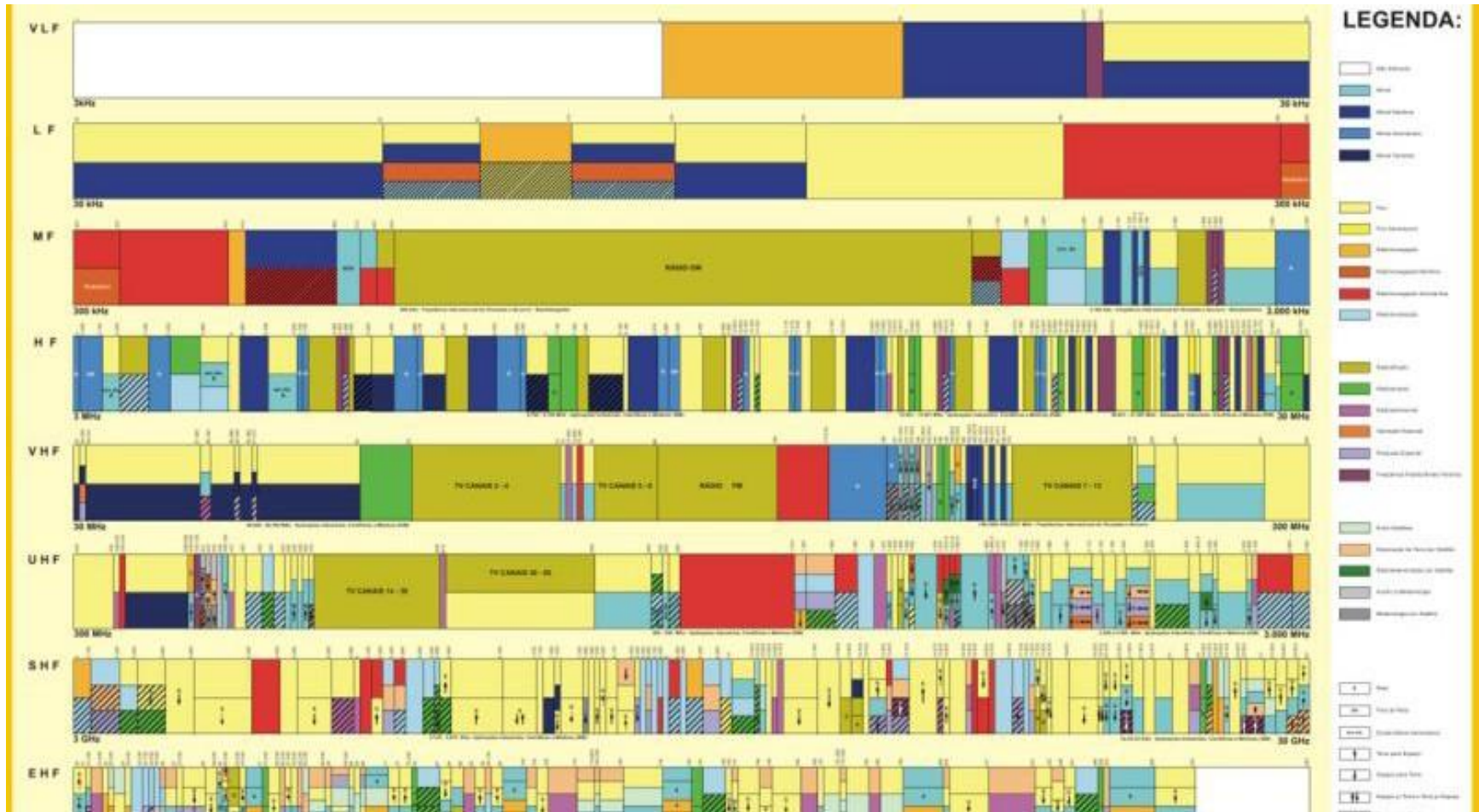
Analog Switch-Off Process

- Currently on initial phase of the Analog to Digital TV switchover
- Schedule has been slightly postponed
 - First trial happened in March in a small city of population 200k
 - 87% of the households had Digital TV access
 - One month later that figure had reached 94%
 - STBs were distributed to low income population
 - Brasilia (the capital) will switch off on October
 - Final switch off planned for Dec/2018

4G Spectrum Awards

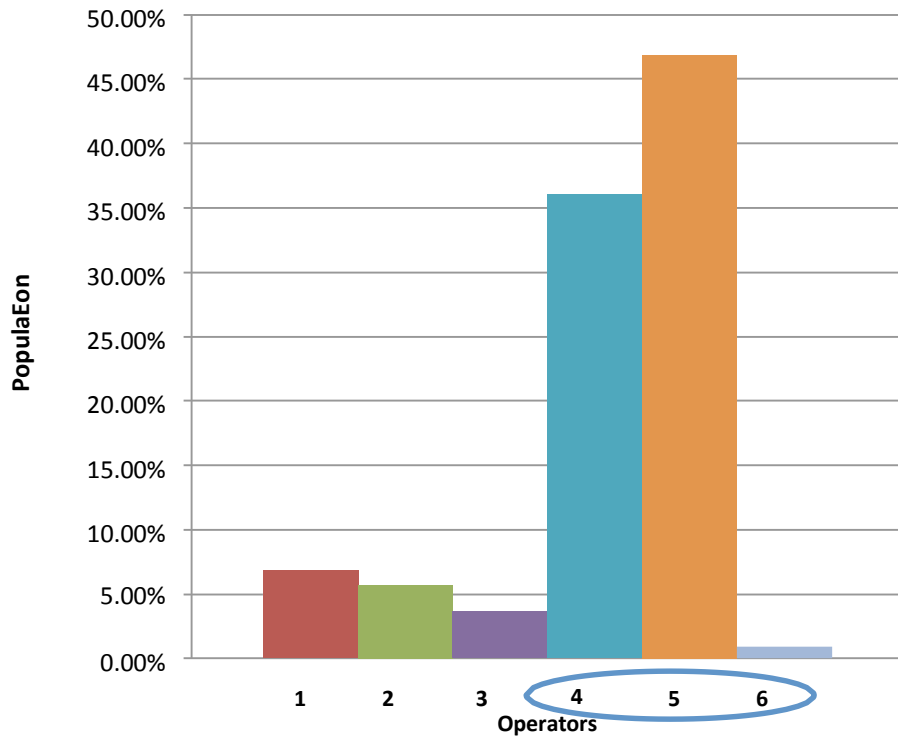
- 4G auctions included the 2,5 GHz, 700 MHz (Technology neutral)
- Most recent auction in Brazil took place on December 2015
 - FDD spectrum blocks:
 - Bands: 1.8 GHz, 2,5 GHz (10+10 MHz)
 - Per region basis
 - Required financial guarantees – traditional service providers
 - TDD spectrum blocks:
 - Bands: 1.9 GHz, 2.5 GHz (15 MHz, 35 MHz)
 - Per municipality basis
 - 20 thousand blocks were auctioned
 - **5500 blocks were bought by 324 small service providers**

Opportunities for Dynamic Spectrum Access

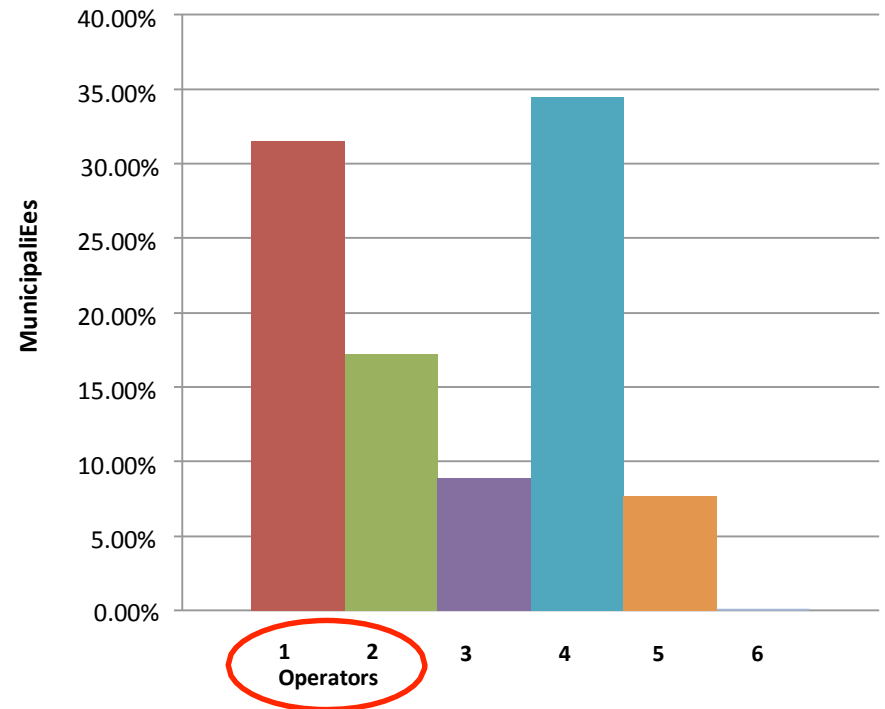


Opportunities for Dynamic Spectrum Access

Number of mobile service providers (%)



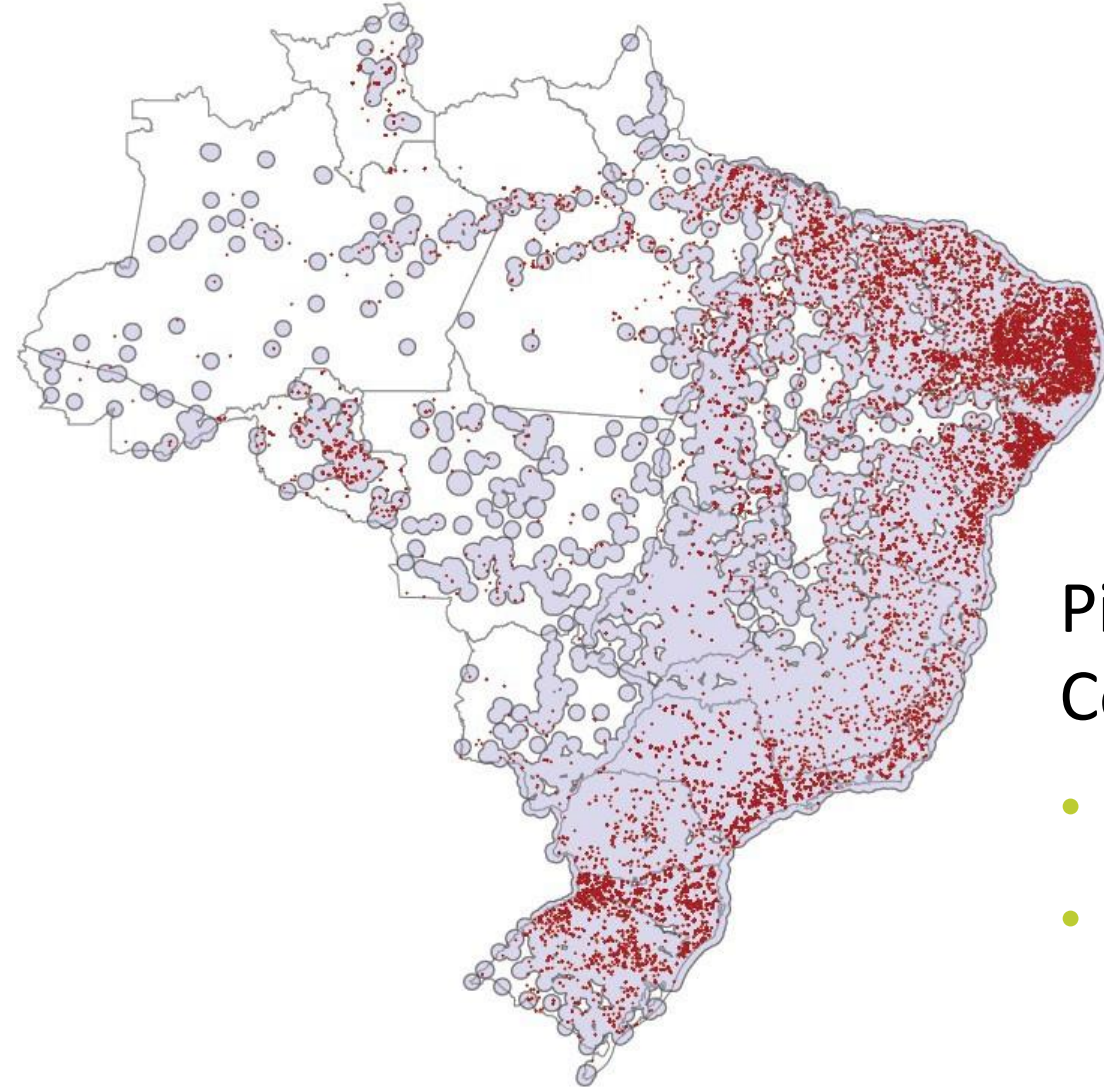
Number of operators (%)



84% of the population have access to 4 or more operators
 50% of the municipalities only have access to 1 or 2 operators!

Source: Anatel

Opportunities for Dynamic Spectrum Access: Whitespaces



Pilots planned (Ministry of Communications + Anatel):

- Whitespace Alliance / INATEL
- Goiás Government / Microsoft

Novel approaches for broadband expansion

- Public Consultation nº 23 – September 2015
 - Exempts service authorization for service providers with less than 5.000 acceses that uses only short range devices
 - Exempts licencing for stations using short range devices

Challenges

- Increase the coverage of mobile and broadband networks to rural and underserved areas
- Increase fiber backhaul infrastructure
- Establish public-private partnerships
- Constantly search ways to increase spectrum usage

Find solutions and new technologies that enable service universalization without causing undue constraints to existing services!

Thank you!

Otavio Caixeta

Ministry of Communications, Brazil

otavio.caixeta@comunicacoes.gov.br