

# Ultra Broadband Deployment: Private and Public Finance

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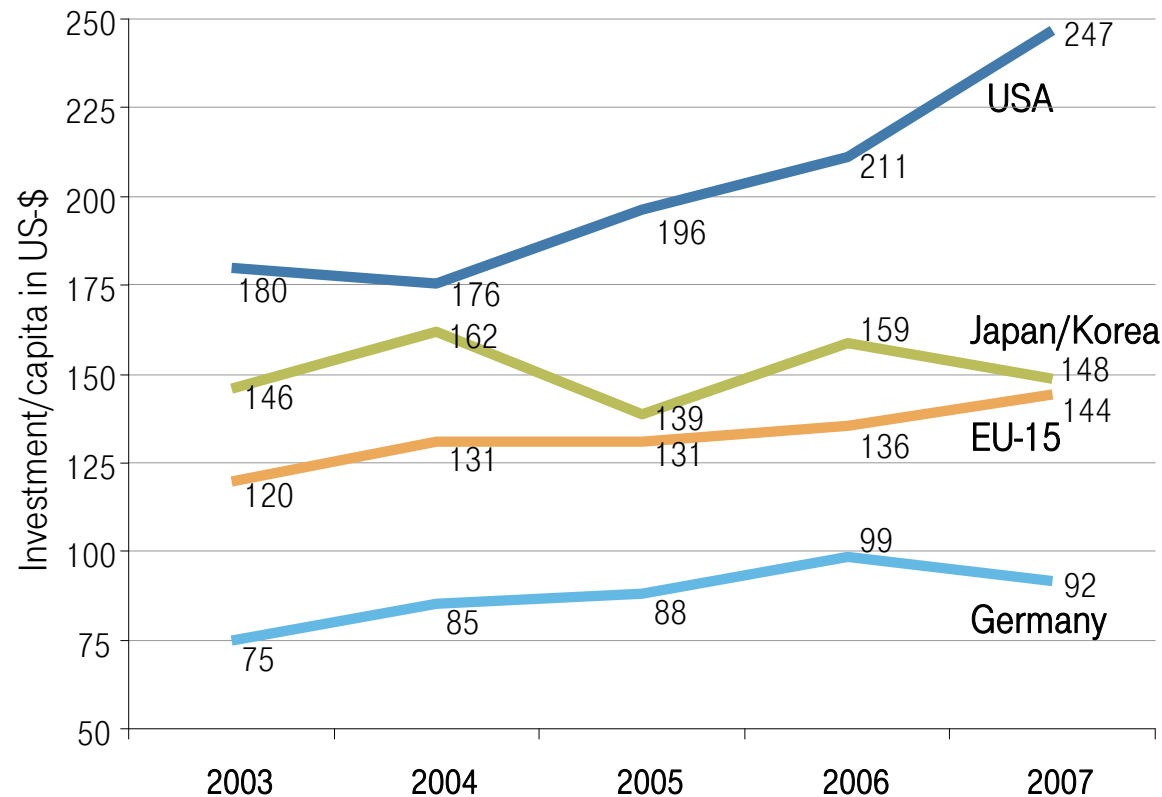
Life is for sharing.



# Telecommunications Investment (per capita)

U.S. strength driven by private investments

Public telecommunications investment per capita  
(OECD 2009)



Data: OECD (2009a)

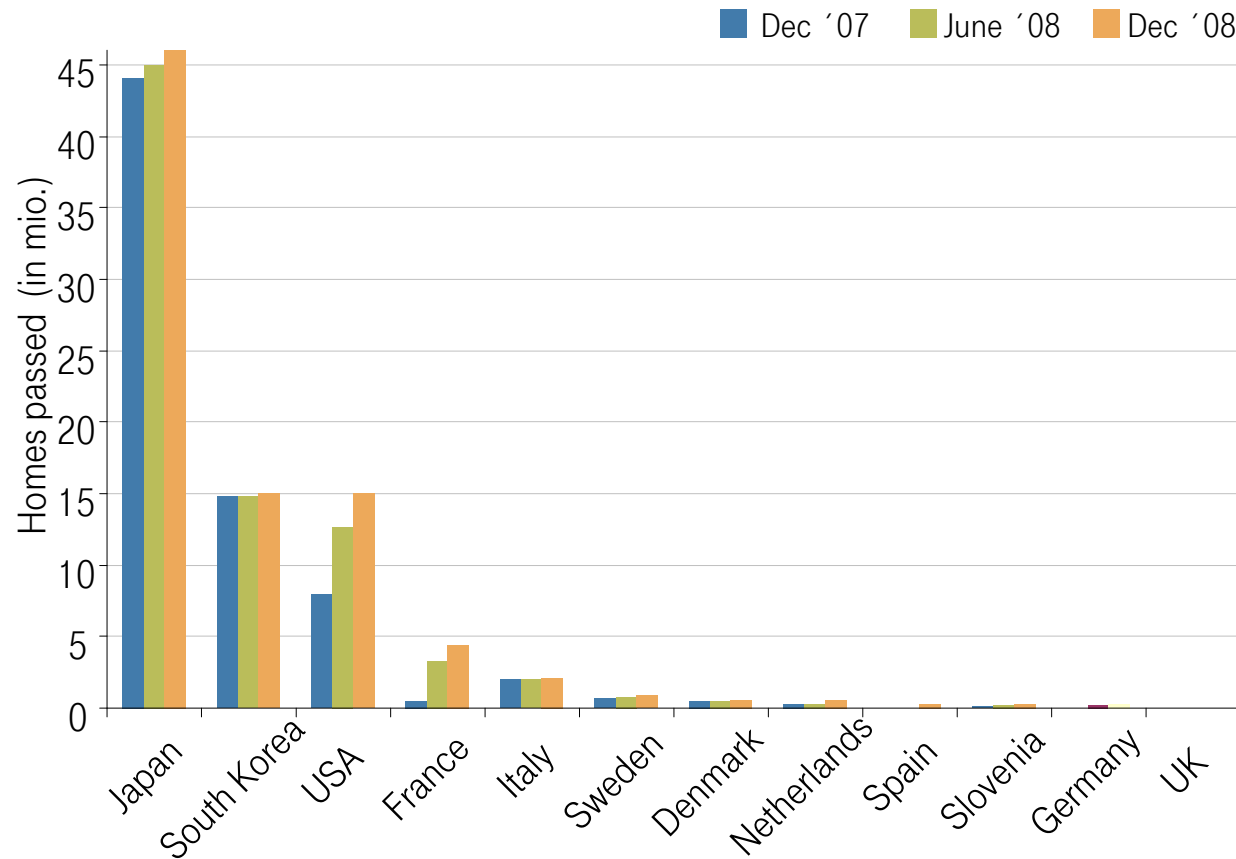
- Despite recent growth, investment in 2007 was still 24% lower than historical 2000 levels.
- The United States led in total telecommunication investment with nearly USD 75 billion in 2007.
- Three operators in the OECD invested more than USD 12 billion during 2007. Japan's NTT had the highest total capital expenditure (USD 18 billion). ATT (United States) and Verizon (United States) both have total capex of over USD 17 billion.



# Evolution of FTTx

## Ultra Broadband Worldwide (homes passed)

Total FTTH/B homes passed



Total FTTH/B homes passed (in mio.)

	Dec'07	June'08	Dec'08
Japan	44,100	45,000	46,000
South Korea	14,760	14,760	15,000
USA	8,000	12,700	15,000
France	0,510	3,362	4,455
Italy	2,062	2,062	2,110
Sweden	0,698	0,812	0,910
Denmark	0,463	0,522	0,622
Netherlands	0,271	0,322	0,573
Spain	0,043	0,043	0,298
Slovenia	0,141	0,169	0,282
Germany	0,031	0,211	0,282
UK	0,002	0,003	0,005

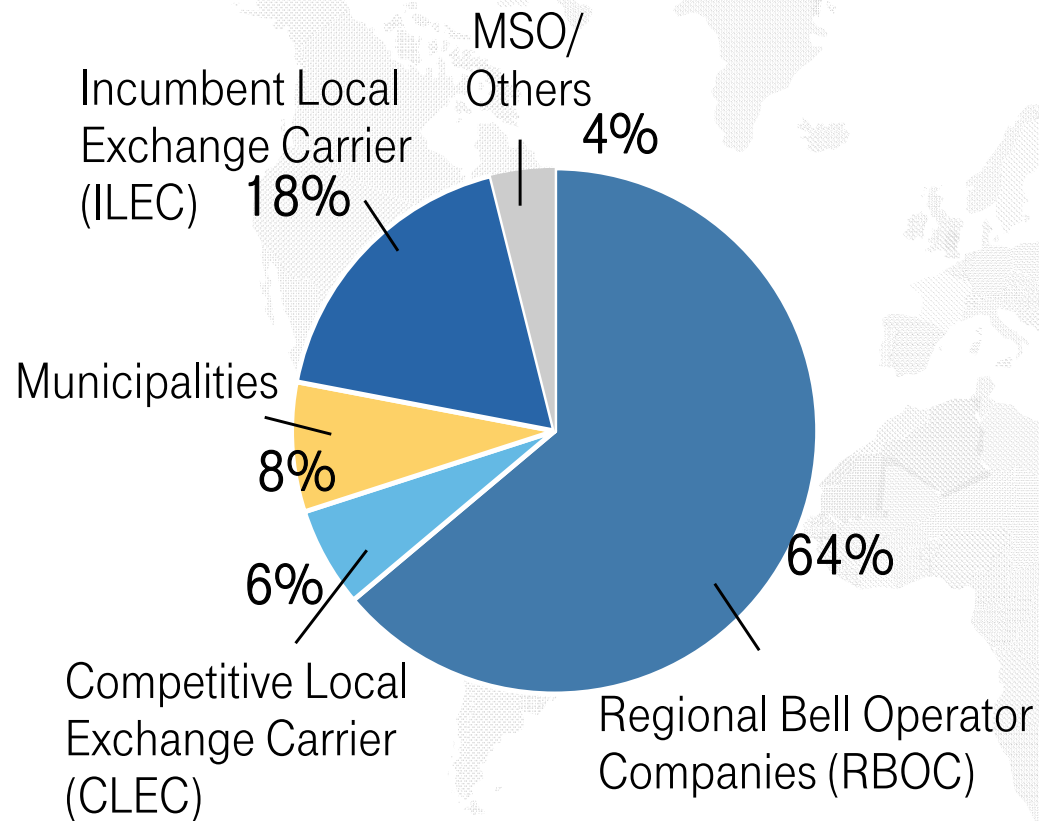
Data: IDATE (2009a)



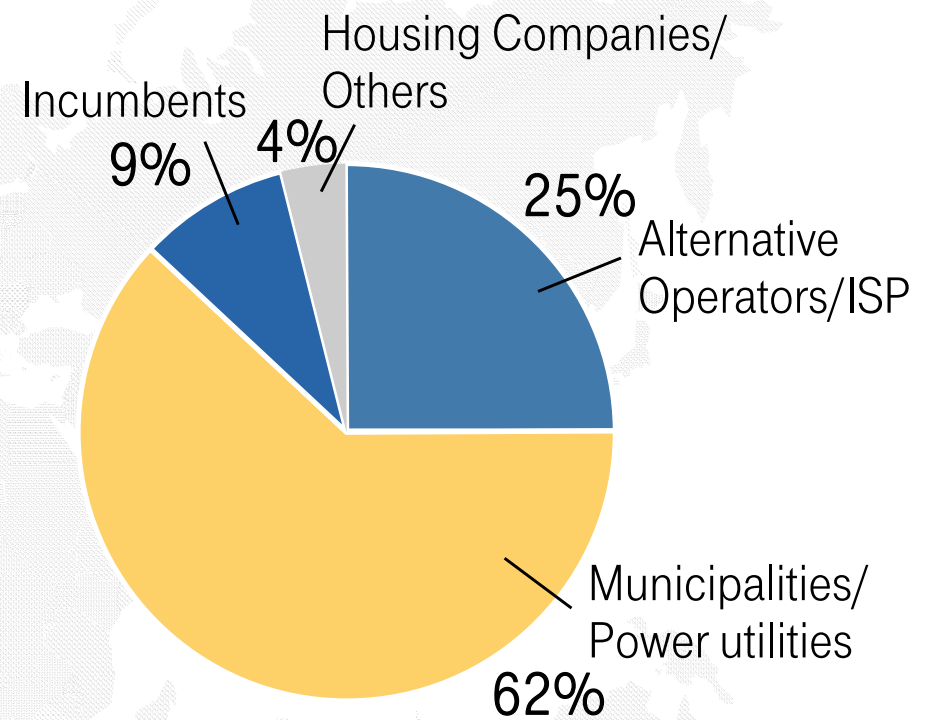
# FTTx players in North America and Europe

North America mainly driven by private investments, Europe driven by public investments

## North America



## Europe



Source: IDATE (2009b)



# Stimulus packages and ICT investments

## Planned investments, penetration and speed targets

Stimulus Packages for ICT				
	Planned investments	Goals	Penetration targets*	Speed targets*
Australia	USD 33.4 billion	Fibre all the way to the premises	90 % of Australians	100 MB/s
Japan	USD 29 billion	Intelligent transport system, improving IT in the medical sector, training IT personnel, e-government, and the creation of new industries	–	–
United States	USD 7.2 billion	To foster broadband services to unserved/underserved areas, promote broadband in schools, libraries, health care providers, and other entities.	–	No set minimum data speeds
EU	USD 1.46 billion	Extending & upgrading high-speed internet (focus on rural communities)	100 % coverage of high-speed internet by 2010	–
⋮	⋮	⋮	⋮	⋮
Germany	USD 219 million	Accelerating spread of broadband. Unserved areas connected and nationwide capable (2010) and high-speed broadband access until 2014	2010: unserved areas connected and nationwide capable ( $\geq 1$ MB/s)	2014: 75 % of all households $\geq 50$ MB/s

Source: OECD (2009b); \*German data by October 2009



# Regulation, Investment, Innovation, Education, Growth, and Employment

Recent research



Regulation

- Hausman (1999)
- Wallsten (2006)
- Waverman et al. (2007)
- Röller et. al (2007)
- [...]

Investment

- Ezell et al (2009)
- Greenstein/McDevitt (2009)
- IDC (2009)
- Lehr et al. (2006)
- Röller/Waverman (2001)
- Thomason/Garbacz (2008)
- Wallsten (2009)
- Waverman (2009)
- [...]

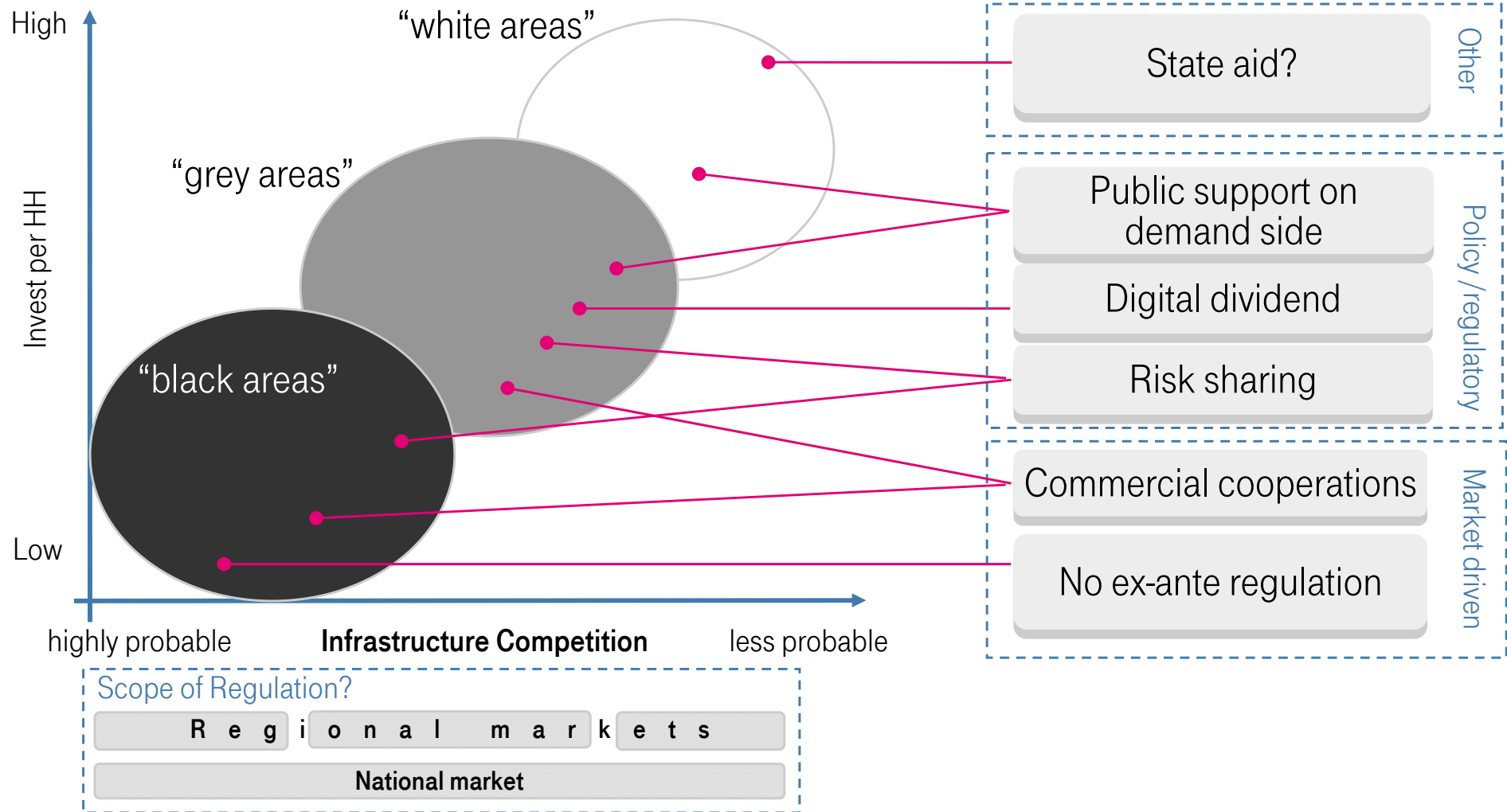
Growth

- Atkinson et al. (2009)
- Crandall et al. (2006)
- Katz et al. (2009a, b)
- Liebenau et al. (2009)
- Quiang et al. (2009)
- [...]

Employment



# Complex landscape requires cautious handling – Clear rules needed to enable private investment



# Role of State



Setting of an investment-friendly regulatory framework



State aid can play a role, e.g.

- in geographic areas in which private sector investment is not profitable (“white areas”)
- Example: set-up of a national duct program (passive infrastructure)



Public support can play a role, e.g.

- by stimulating end user demand, e.g. by boosting e-government and e-health services. This might help to stimulate the demand for high-speed broadband services and can hence help overcome demand uncertainty.



Crowding out: Public intervention should however refrain from supporting initiatives competing against investments of private operators.

- Example: New Community Guidelines for the application of State aid rules in relation to rapid deployment of broadband networks





# List of publications

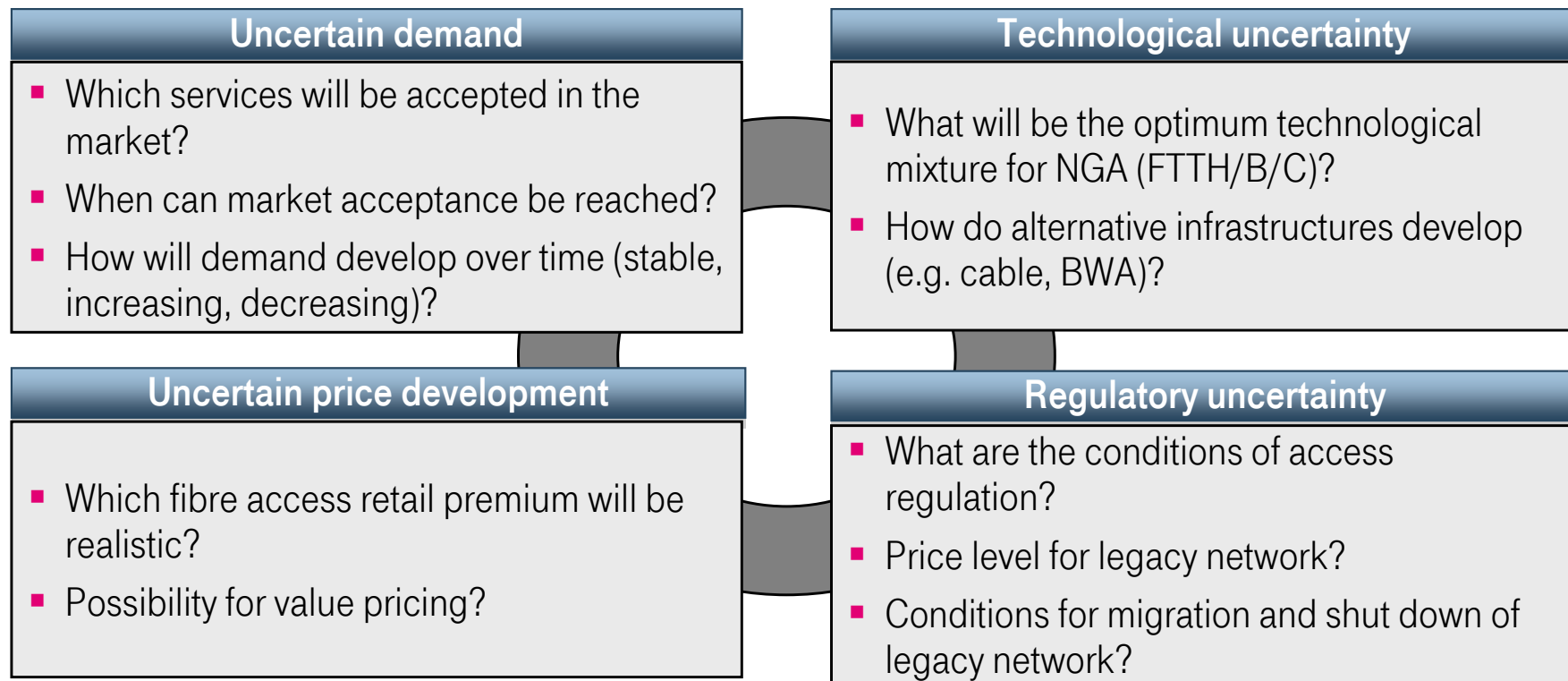
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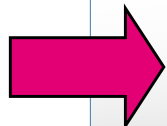
Backup



# NGA investment and the risky landscape



NGA profitability?



**Future demand and achievable price levels are uncertain. Future cash flows depend on this demand, price levels and regulatory environment.**



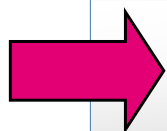
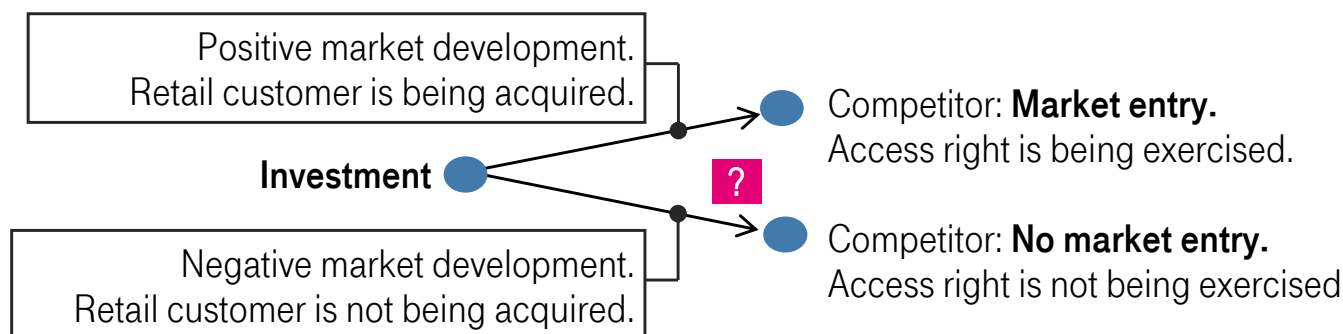
# Current regulatory regime maintains disparity between investor and non-investors

## The situation of investors:

- Massive NGA investments are mainly sunk.
- Limited alternative business options once investment has been made.
- Market exit very costly. Risk of a complete “write-off”.

## The situation of non-investors:

- Market entry on wholesale basis “any time”, “any volume”. Full participation in NGA success.
- Considerably less market exit costs if NGA not successful.
- Wait & See strategy: Benefit on the upside, avoiding the downside.



**Current framework still results in structural disadvantages for companies ready to invest in NGA.**



# Ensuring regulatory predictability and legal certainty

Long term predictability to be a core regulatory principle

- Regulation has to have a **long term vision and approach** due to the **long term nature of investment** and deployment of **NGA**.
- NGA-investment is commercially risky and regulation must not increase uncertainty.

Investors need clear and binding commitments on kind of regulation and remedies

- Investors need long term decisions of NRAs on the basic regulatory conditions affecting their specific NGA investments, i.e. **clear guidance on the principles** applied potential with regard to subsequent regulation as well as a **binding commitment on the kind of remedies** to be imposed (if any).
- Terms and conditions of any possible regulatory intervention must be
  - defined **before** investment decisions are taken; and
  - **binding and stable over time.**

