



cutting through complexity™

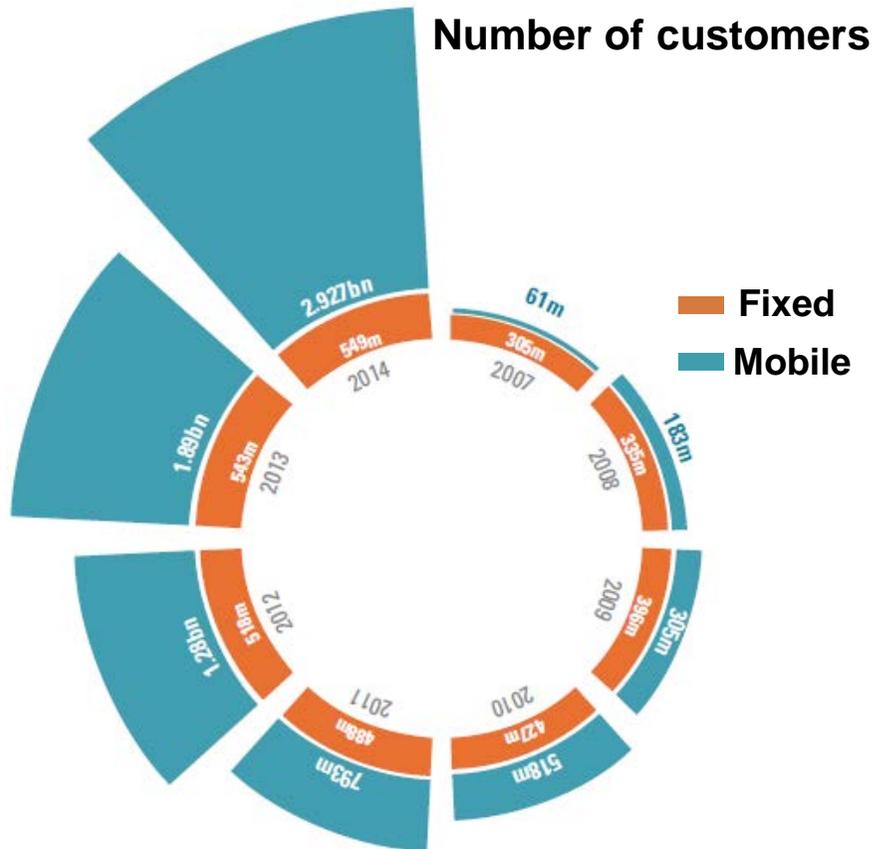
How does the investment community view spectrum assets?

Dr. Jerzy Kalinowski

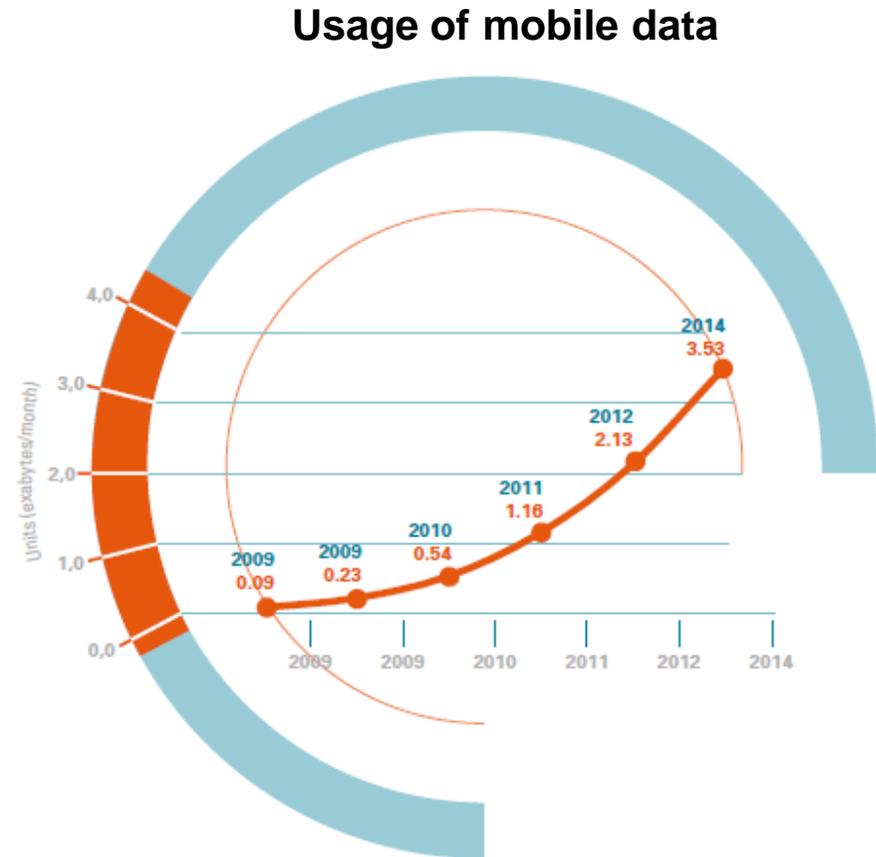
July 2, 2013



Mobile communications has dominated the sector today. Exploding demand for data is driving the demand for spectrum

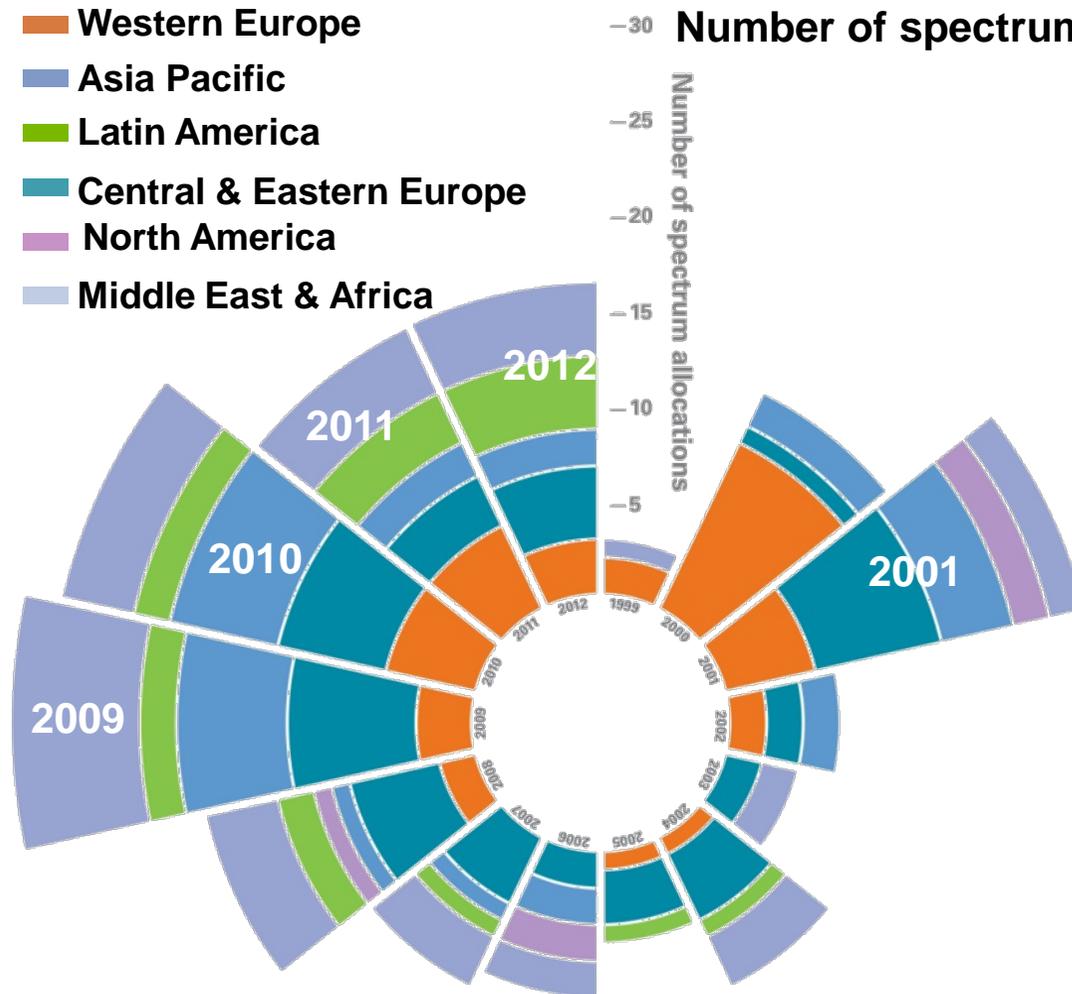


Number of active SIM cards used for mobile broadband now far exceeds the number of broadband fixed lines, and is growing at a much faster rate...



The adoption of smartphones and tablets enables a plethora of mobile data services including video streaming, email, messenger services, online gaming, and social networking.

Considerable number of auctions/allocations initiated by governments these days

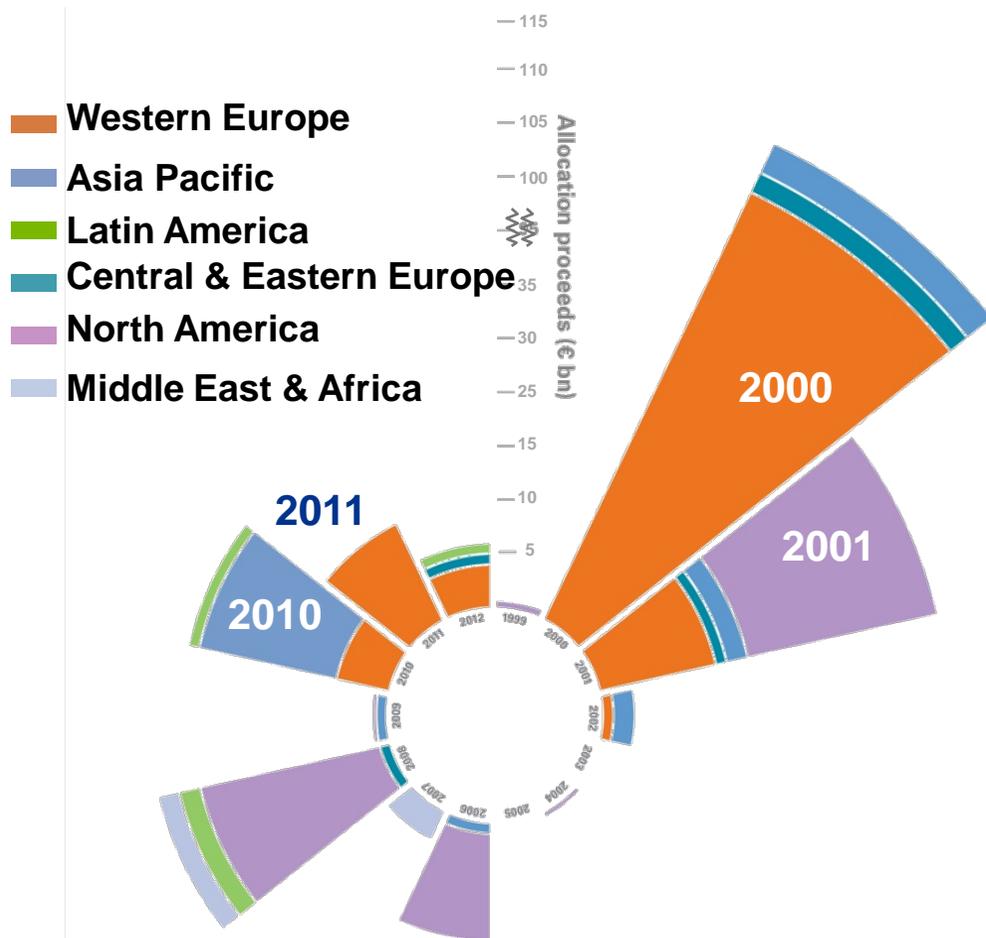


- After a **peak at the turn of the millennium** there has been a resurgence of the number of allocations from 2008 until now
- This trend is driven twofold by auctions related to:
 - **4G licenses** in the **developed regions**
 - **3G licenses** in **emerging market**
- This trend will carry on over the next few years as:
 - Trend towards mobile broadband will lead to **demand for additional spectrum globally**
 - Renewal/prolongation of frequencies granted in the first wave (1990/2000) will trigger further activity over next years

Source: KPMG Radio Spectrum Monitor; Number of allocations 1999-Sept 2012

Proceeds from recent frequency auctions

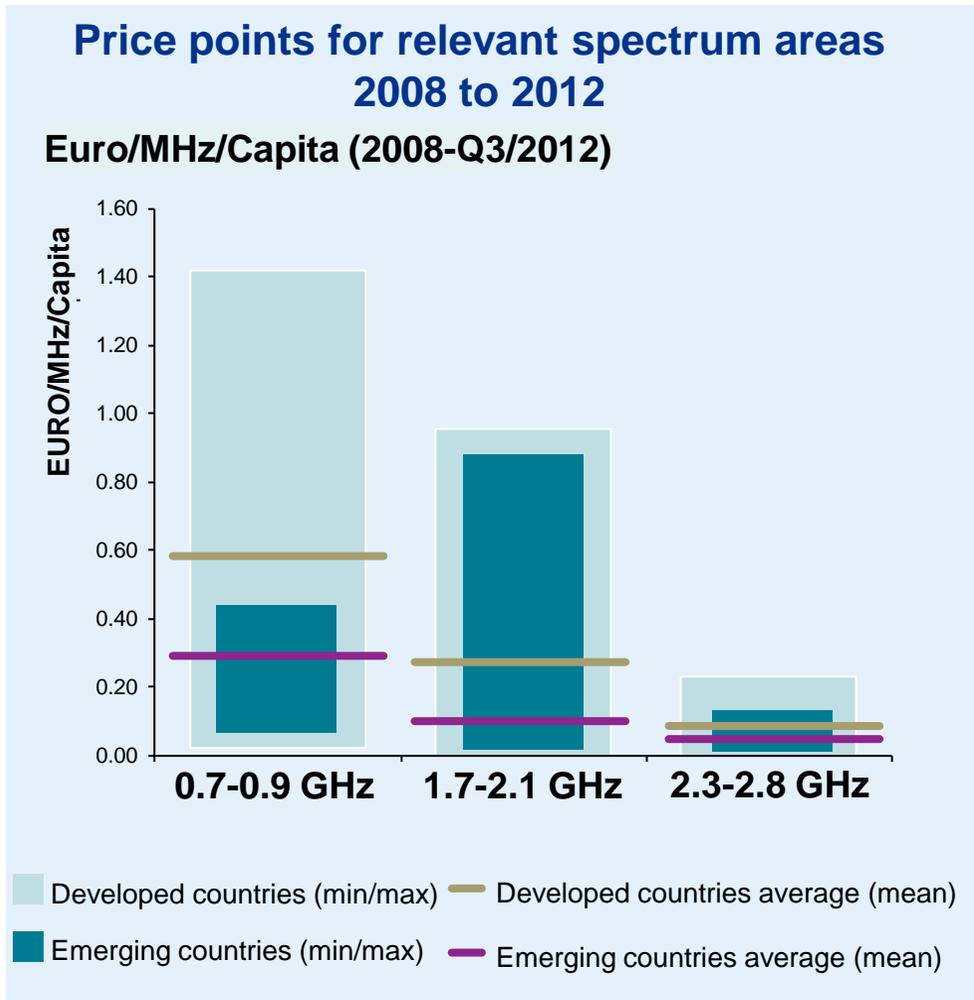
Proceedings from spectrum allocations (in Euro bn)



Source: KPMG Radio Spectrum Monitor; Allocation proceeds 1999-Sept 2012

- Levels in the turn of **the millennium remain far away** from the proceeds realized since then
- Over the last years, above **50 % of proceeds** realized in auctions resulting from **Western European countries**
- Today proceeds realised in emerging markets substantially lower compared to developed countries
 - The **maturity of the economies** pursuing auctions is a **main influencing factor**
- Allocations of frequencies on the basis of **non-financial criteria** is still a basis for the frequency granting in certain countries

Still high volatility of frequency prices even within homogenous frequency bands



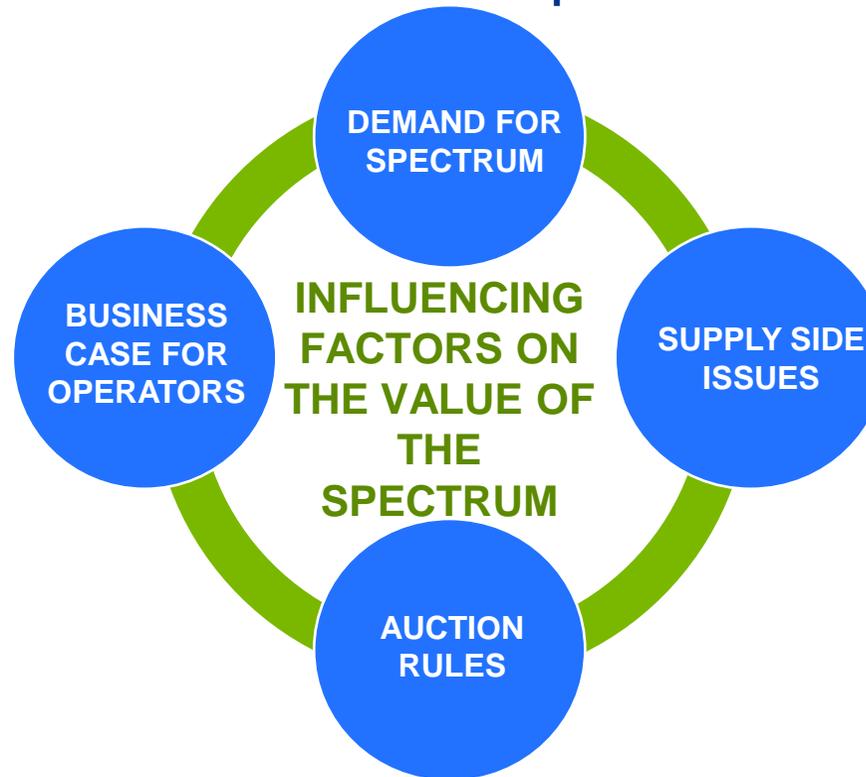
Source: KPMG Radio Spectrum Monitor; Euro/MHz/Capita 2008-Sept 2012

- The **physical nature** of attractive frequency band is **reflected in pricing**
- ‘**Digital dividend**’ spectrum price levels significantly **above other areas** on the frequency band
- Overall a **high volatility** within and across various frequency bands observable
- **Each country** needs to be **analyzed separately**, considering also the specific auction model

Value drivers of spectrum in auctions

Industry and governments see increased need for spectrum

Considerable uncertainty in the future business case



Freeing up gaps across a crowded spectrum could generate income but also dilute the value per MHz

Many regulators are consulting on award procedures and auction rules. A variety of factors could influence the value of spectrum at auction

How investors value frequencies?

External factors

Competitive environment

- Consumer price sensitivity
- Fixed/mobile penetration
- Existing infrastructure
- Number of licences

Macroeconomic country profile

- GDP
- Population
- Urbanization/population density
- Political risk
- Regulatory environment
- Economic/capital market climate

Conditions of frequency auction

- Bandwidth
- Frequency band
- Licence period
- Paired/unpaired
- Coverage obligations

Internal factors

- Cost of capital
- Cost structures
- Available resources
- Synergies
- Strategic premiums

Investor discounts in pricing reflect uncertainty of doing business based on granted frequencies

Technology risk

- Verification of new technologies
- Cost of new technologies

Regulatory risk

- Changes of regulatory frameworks
- Decisions on frequency sharing, infrastructure sharing, etc.

Market risk

- Adoption of new services by customers
- Substitutes for telco services
- New business models

Competition risk

- Availability of new frequencies
- Opportunities for new entrants
- Scenarios for market developments

Financial risk

- Financial turbulences on the money market
- Investors sentiment
- Financial standing of operators/systematic margins erosion

Emerging trends have the impact on the relationship between demand and supply... and influence spectrum value



Disruptive entry of new market participants



Demand shocks based on innovation



From tower to network to spectrum sharing



Infrastructure / sovereign funds interest



Cognitive radio



Competition and state aid



Licensed/unlicensed



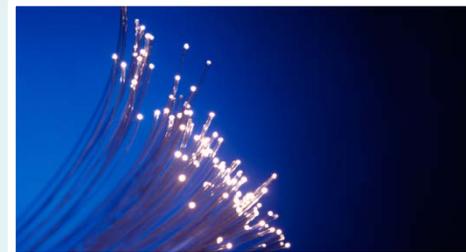
Broader communications issues



Spectrum trading



Refarming



Backbone capacity



Health studies



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Discussion Material Only

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