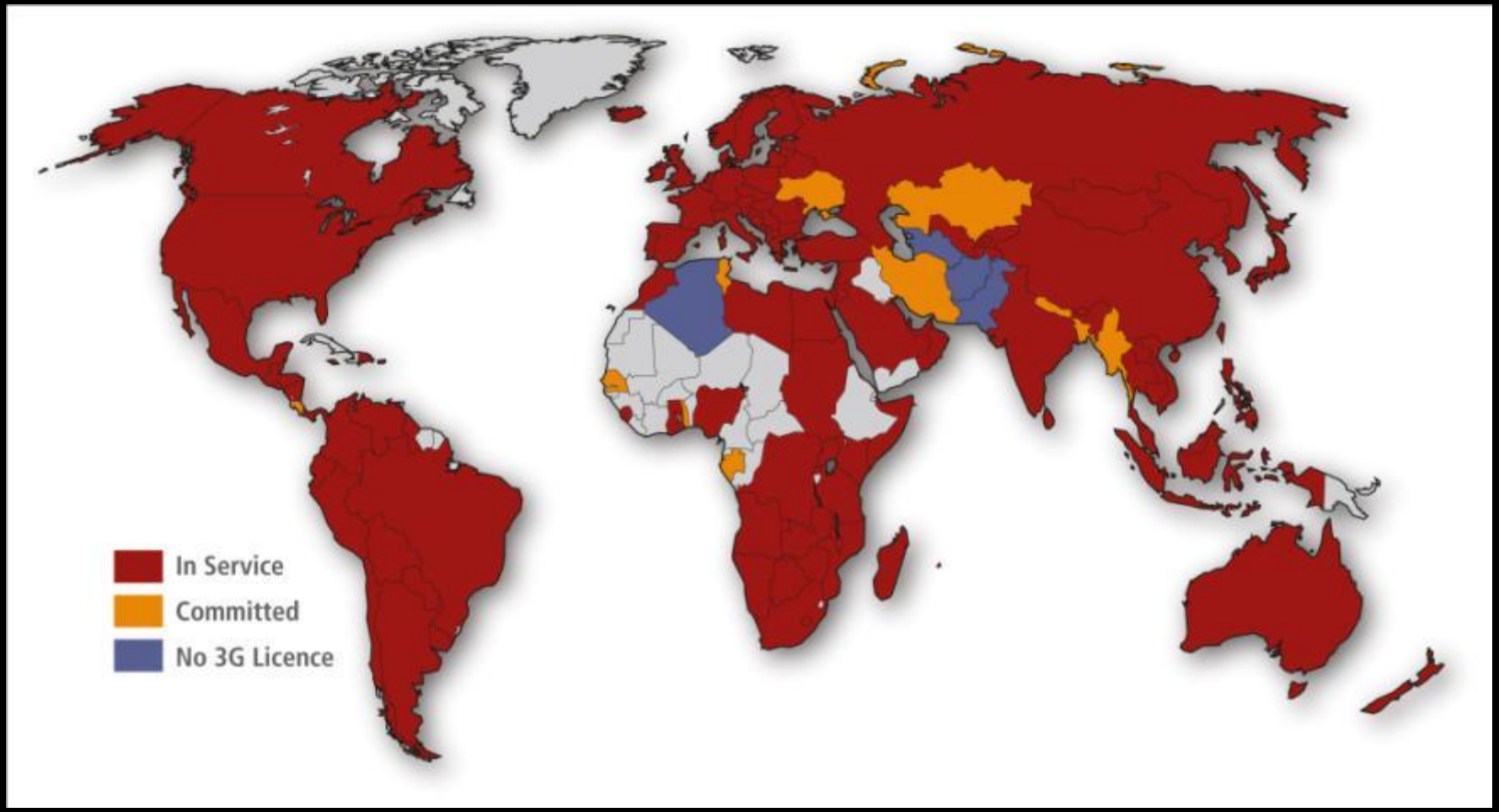
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Licensing to support Iraq's mobile broadband revolution

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The 3G World



Mobile broadband revolution

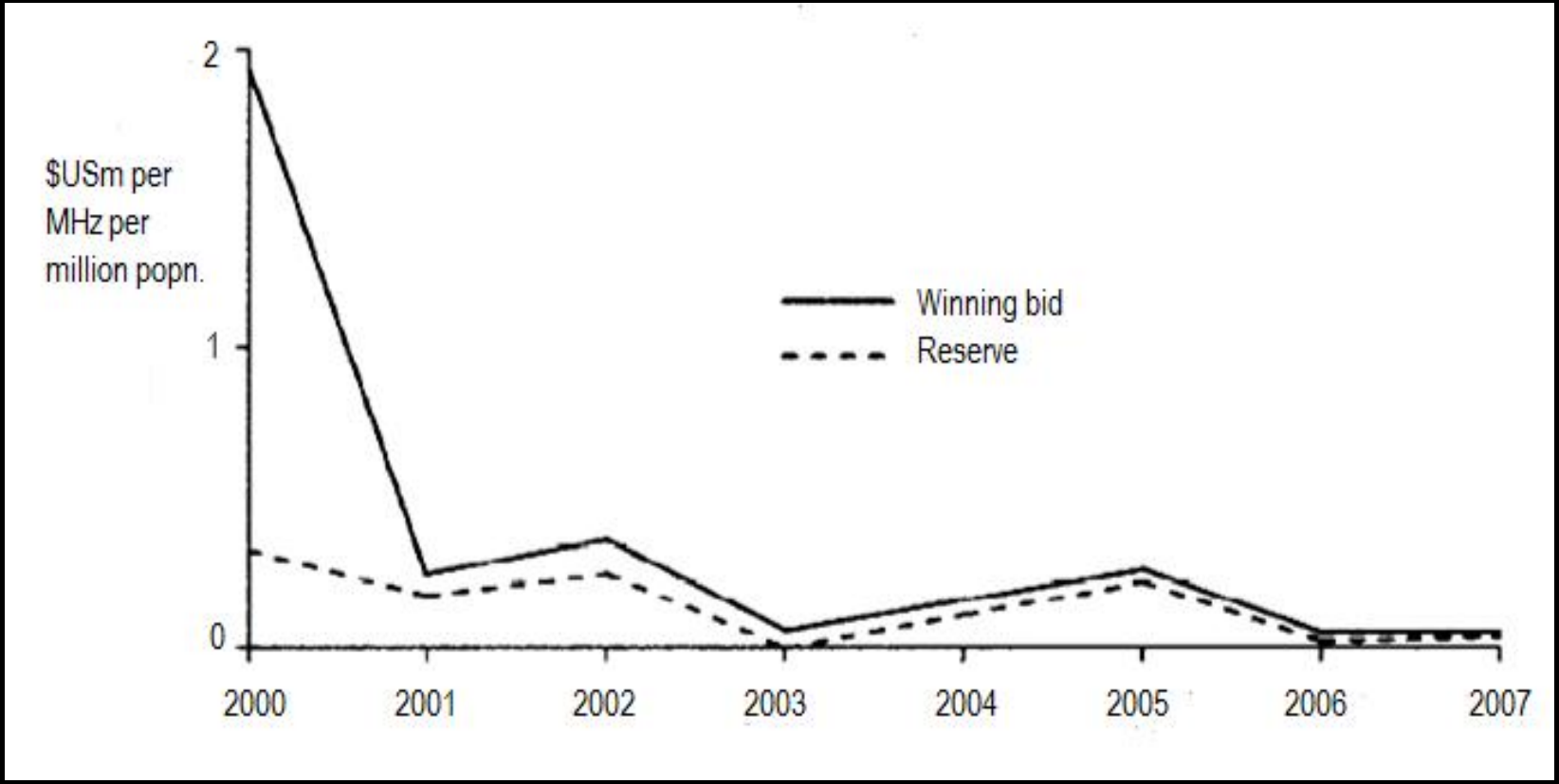
- Mobile data services support access to the Internet and email for business & personal use, mobile video, business applications, cloud applications and services, social networking and other online services
- For Iraq, mobile broadband will be the key means by which most of the population accesses broadband – connecting businesses with customers and future employees, improving productivity and living standards and linking Government with its citizens
- World Bank estimated that in low and middle income countries every 10 percentage points increase in broadband penetration accelerates economic growth by 1.38 percentage points

Importance of spectrum

- The amount of spectrum made available and the terms on which it is made available substantially drive the cost, range and availability of mobile services

- Meeting the rapid growth in demand for mobile services will require
  1. More spectrum being made available and ensuring that the spectrum goes to the use and users which will maximise its benefits to society
  2. Removing unnecessary restrictions on the use of spectrum including allowing for new technologies
  3. Ensuring that the overall regulatory and policy framework (including taxation) facilitates the investments required for Iraq to take full advantage of its spectrum resources

2.1GHz Band - Annual average winning bid and reserve



2.1GHz Band - Pricing spectrum

- Variety of approaches to pricing spectrum where regulator called upon to set a price
  - **benchmarking/indexation** – comparability issues
  - **opportunity cost modelling/DCF modelling** – requires detailed assumption-driven modelling
  - **Royalties –** reduces risks but increases service prices and undermines efficiency (operator with few customers pays little for valuable spectrum)
- Benchmarking to international prices needs to take into account key differences in demand and supply conditions: GDP per capita, population density, expected competition, type of spectrum
- High upfront fees risk exit or failure to enter, collusion and can create high debt and financing costs which undermine investment

Refarming and service and technology neutrality

- **Lower cost of provision**. For example, Elisa in Finland found that 3G at 900 MHz requires around half the number of cell sites as 3G at 2100 MHz in rural and suburban areas and this translated to a 50%-70% savings on opex and capex

- **Wider geographic coverage**. The need for fewer cell sites improves the economics of extending mobile broadband coverage further into rural and remote areas

- **Better indoor coverage**. Ofcom found that a 3G network at 900 MHz delivered a minimum of 8 Mbps to 70% of indoor locations whereas 3G at 2100 MHz delivers the same data rate to only 45% of indoor locations

- **Greater capacity**. 3G and, to an even greater extent, LTE uses spectrum more efficiently enabling greater capacity (i.e. more services and better, innovative services) to be provided from a country's scarce spectrum resources

Key conclusions

- Rapid growth of mobile broadband makes spectrum licensing more difficult and more important
  - access to additional spectrum will be needed to meet demand
  - restrictions on use should be reviewed and relaxed
  - The overall regulatory and policy framework also needs to support substantial new investment

- The countries that get their spectrum policy right will achieve widespread access to affordable and innovative mobile broadband services. Strong communications infrastructure, in turn, brings significant wider economic benefits including in boosting productivity and living standards