Gauging the economic value of spectrum

Middle East Spectrum Conference

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21 March 2012

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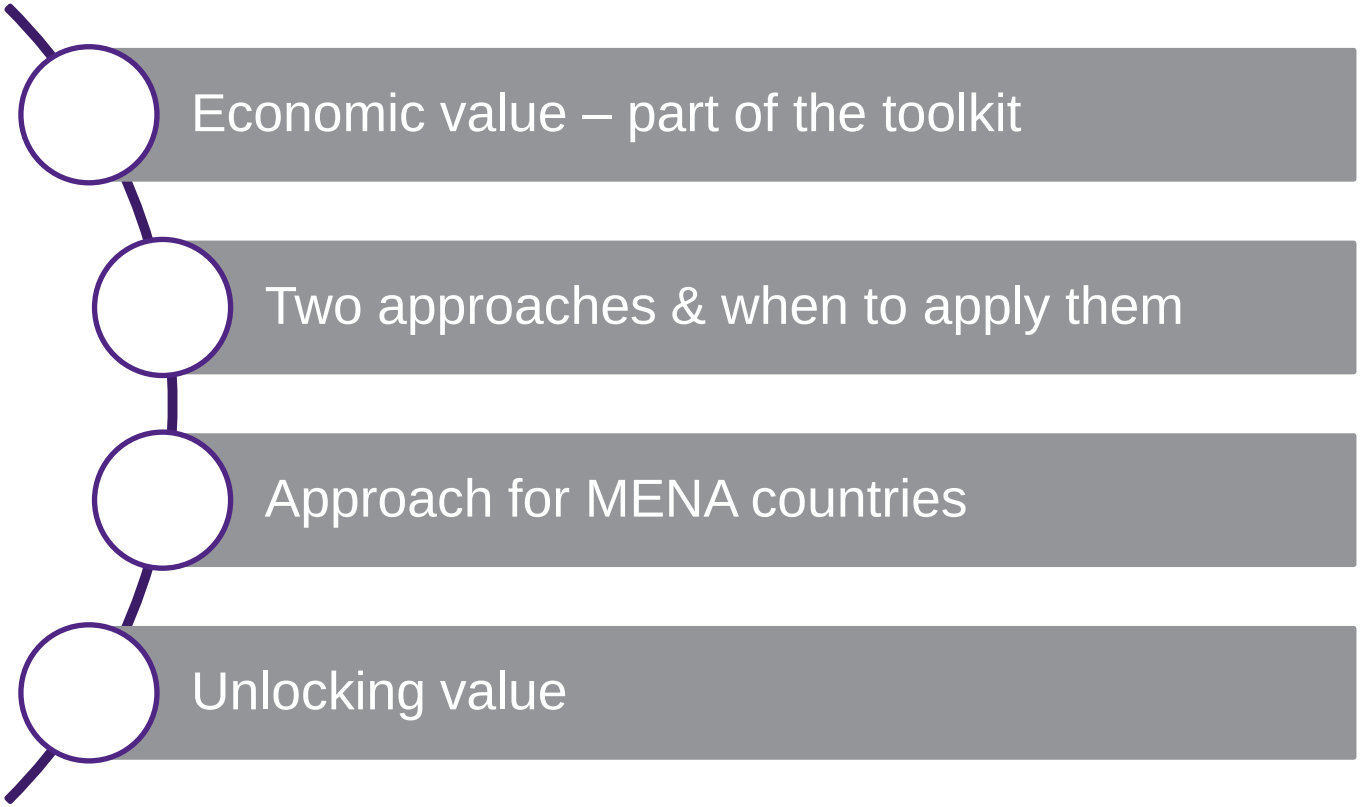
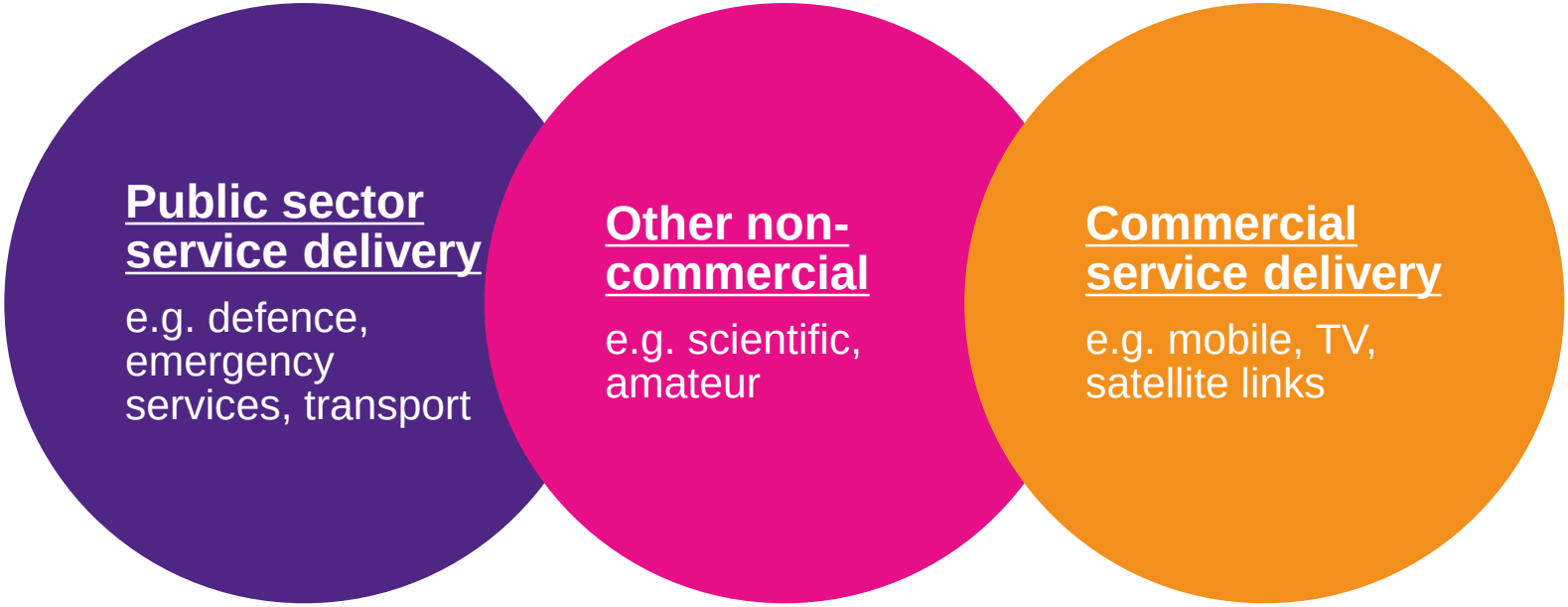
Agenda



Spectrum is used for many purposes – not all are economic



Qualitative information is also required

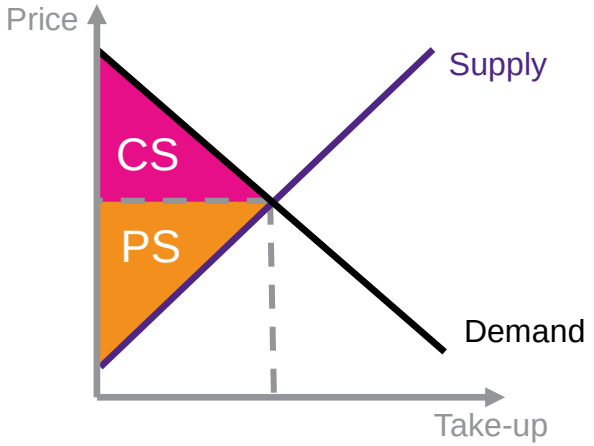
Two measures of economic welfare – do not add them!

Impact on GDP

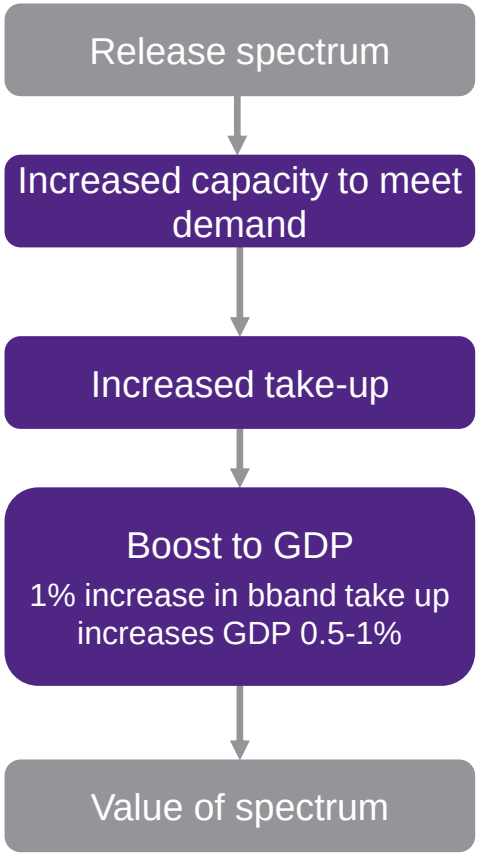
- **Gross Domestic Product measures the output of the economy**
- **The release of spectrum can increase output through reducing costs, new/improved services etc.**
- **Strong link between mobile broadband take-up and GDP, if there is no/little fixed broadband**
- **GDP is an incomplete measure of Welfare**

Consumer surplus + Producer surplus

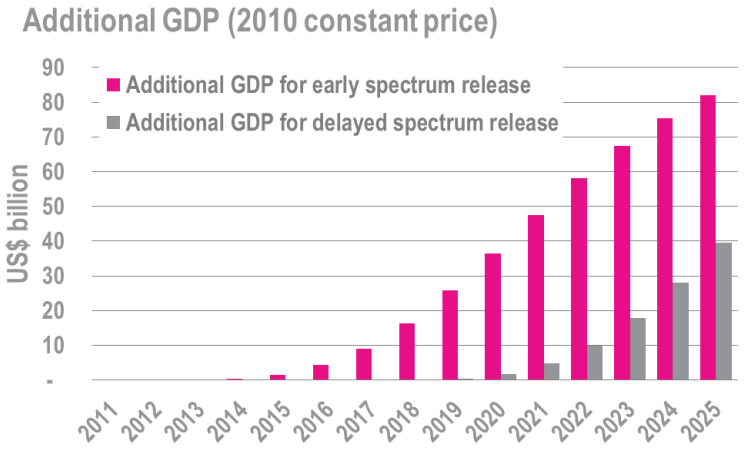
- **Consumer surplus (CS) is the difference between what consumers are willing to pay and what they actually pay**
- **Producer surplus (PS) is the difference between the price producers' receive and their costs of supply**



Approach 1 – Impact on GDP

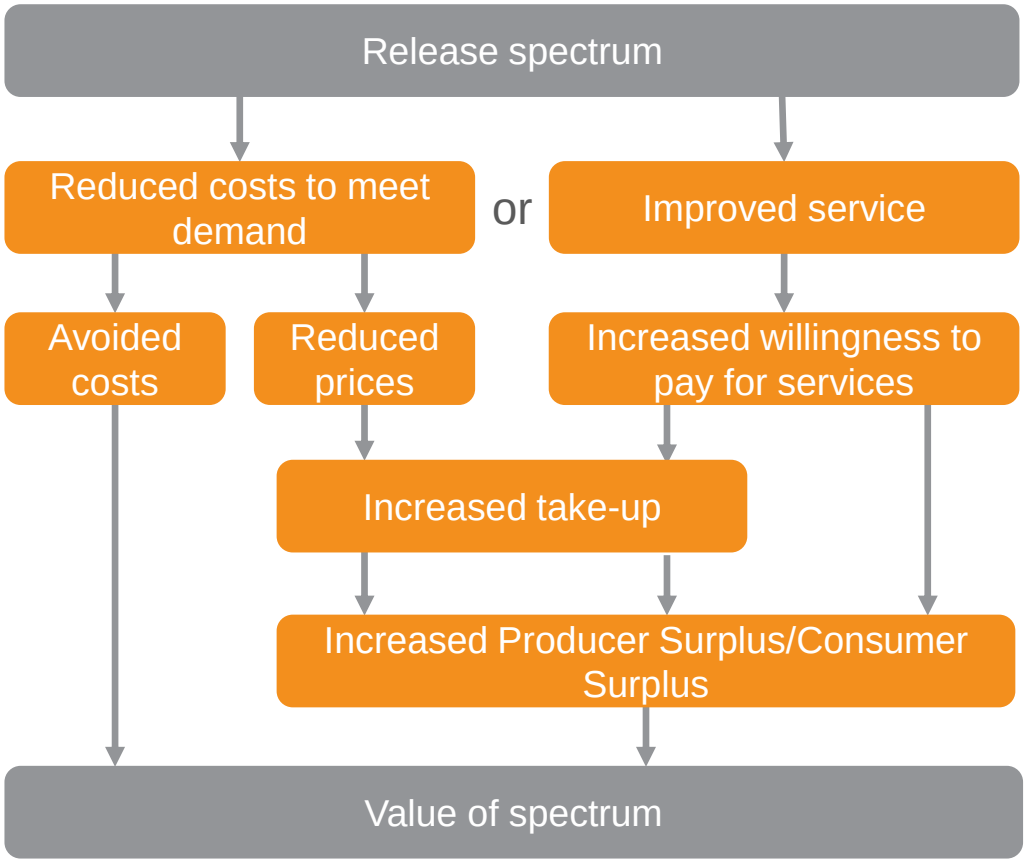


- **Digital dividend and 2.6 GHz spectrum in Sub-Saharan Africa:**
  - Increase overall annual GDP by $82 billion by 2025
  - Increase GDP per capita by 5.2 percentage point by 2025
  - Add up to 27 million jobs by 2025



Source: Plum Consulting

Approach 2 – Consumer & Producer Surplus



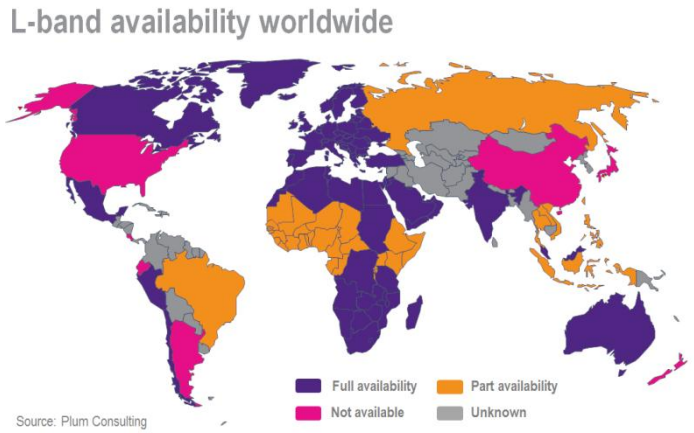
Approach 2 – Consumer & Producer Surplus

Digital dividend - Europe

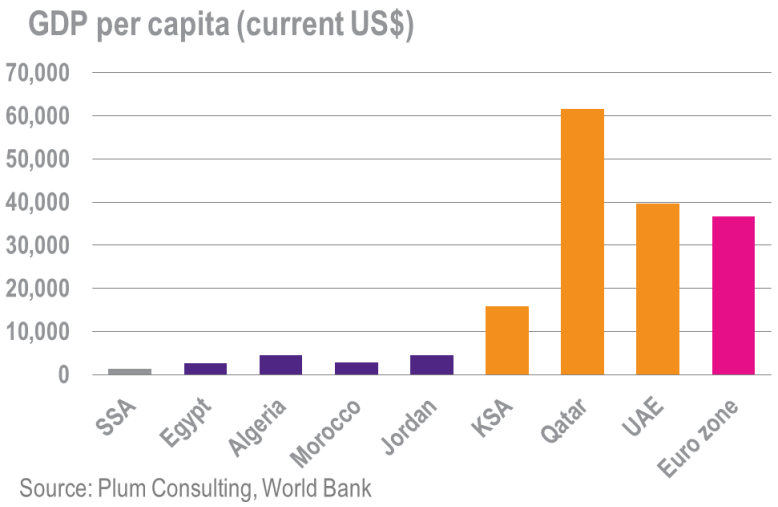
- **Benefits of 800 MHz digital dividend in Europe**
  - Mobile vs. TV
  - MBB value in new Member States ranges **€12 billion** to **€30 billion**
  - Other benefits between **€8 billion** to **€17 billion**
  - Costs (frequency re-planning and loss of benefits from DTT MUX) approximately **€3 billion**
  - Net benefit range **€17 billion** to **€44 billion**.

1452-1492 MHz - Europe

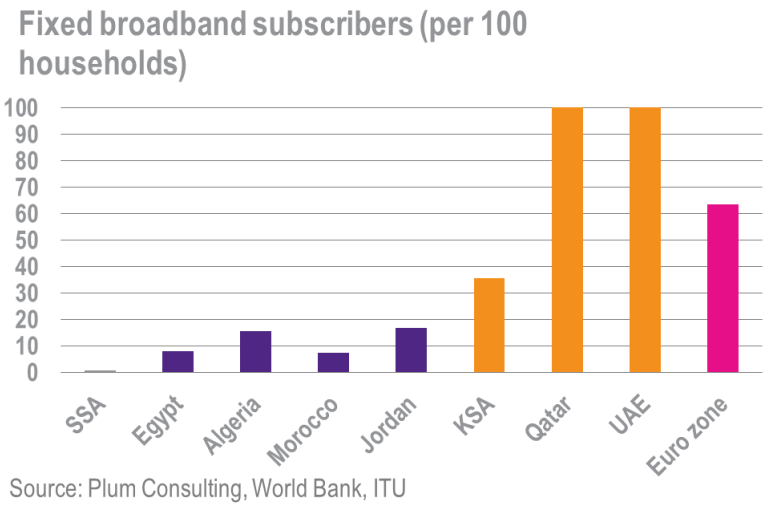
- **Benefits of a supplemental downlink for mobile at 1.4 GHz**
  - Mobile vs. no current use
  - Economic benefits up to **€54 billion** for Europe



What approach to use in Middle East & North African countries?



Source: Plum Consulting, World Bank

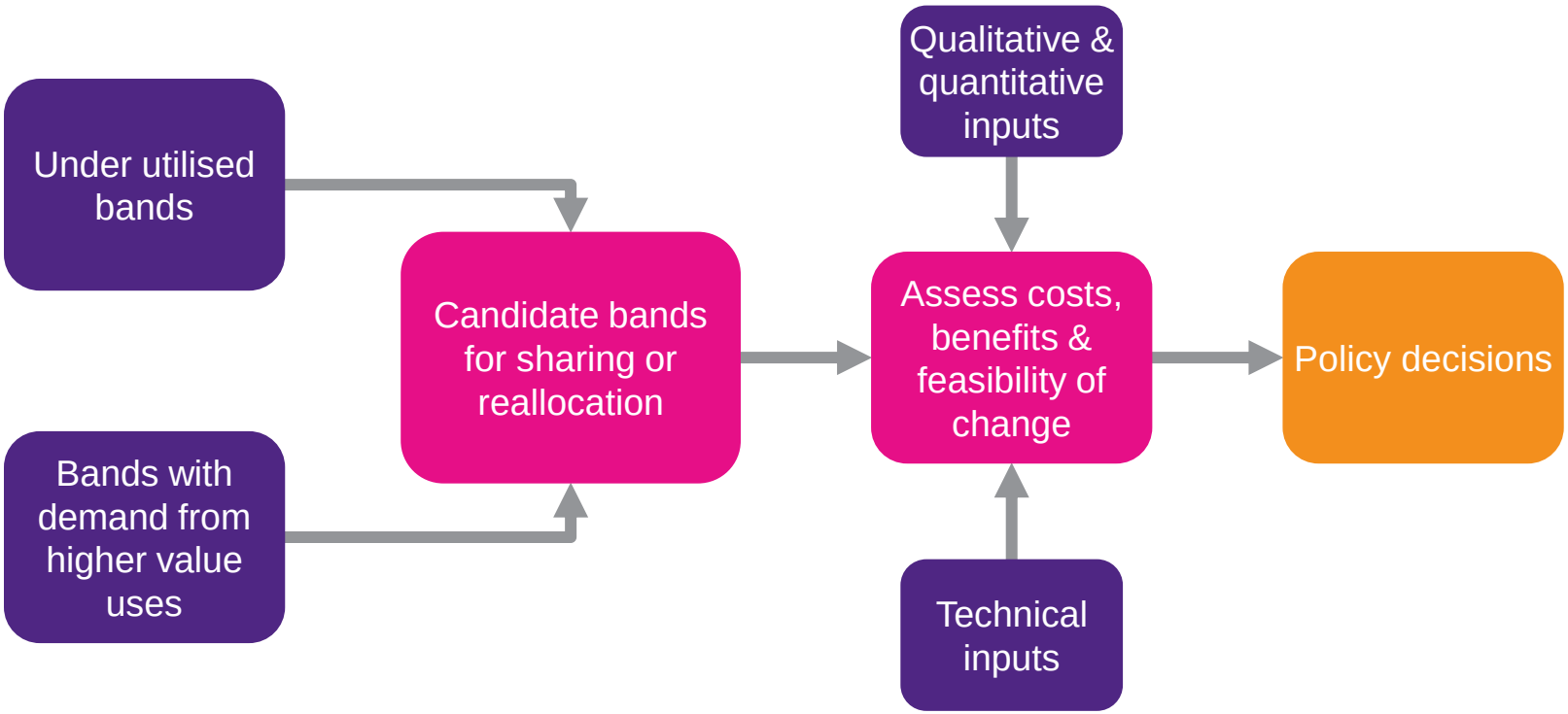


Source: Plum Consulting, World Bank, ITU

High income, high fixed broadband → Consumer & producer surplus methodology

Low income, low fixed broadband → Either methodology

Unlocking the benefits



Achieving change requires ....

- Information on spectrum use
- Resources for economic and technical analysis
- Existing users having incentives for efficient spectrum use
- Government working with the spectrum management agency to achieve change

Sources

- Plum Consulting, 2011, *"Economic benefits of 1.4 GHz spectrum for multimedia services"*
  http://www.plumconsulting.co.uk/pdfs/Plum_June2011_Benefits_of_1.4GHz_spectrum_for_multimedia_services.pdf
- Plum Consulting, 2011, *"The benefits of releasing spectrum for mobile broadband in Sub-Saharan Africa"*
  http://www.gsma.com/articles/increased-mobile-broadband-spectrum-vital-for-africa-s-socio-economic-development-says-gsma/20875/
- Analysys Mason, 2009, *"Exploiting the digital dividend – a European Approach"*
  http://www.analysysmason.com/PageFiles/13825/Analysys%20Mason's%20final%20report%20'Exploiting%20the%20digital%20dividend%20-%20a%20European%20approach'%2020090814.pdf
- Plum Consulting, 2009, "Impact assessment framework"
  http://www.plumconsulting.co.uk/pdfs/Plum_Aug09_Impact_assessment_framework.pdf

Thank you!

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Public sector spectrum policy reform

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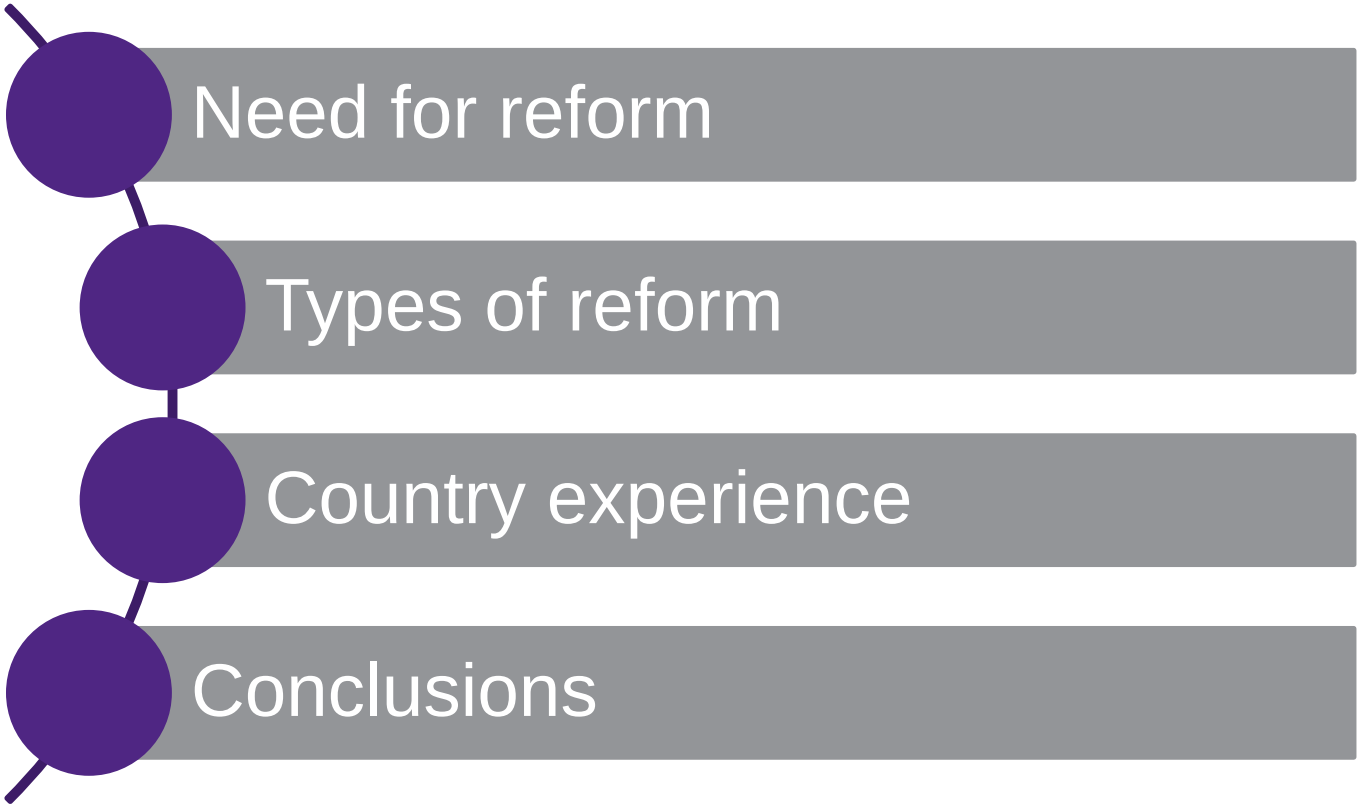
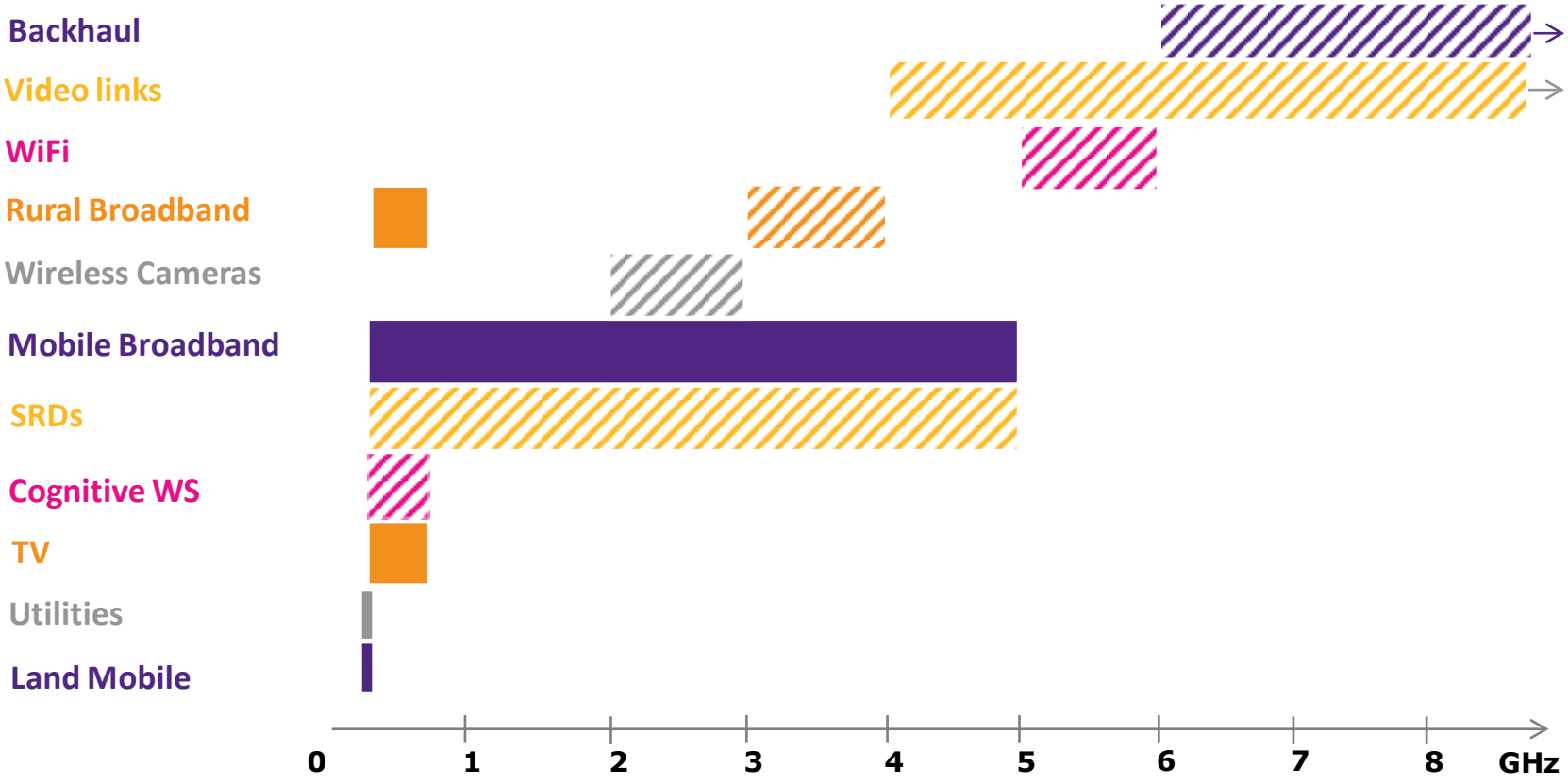
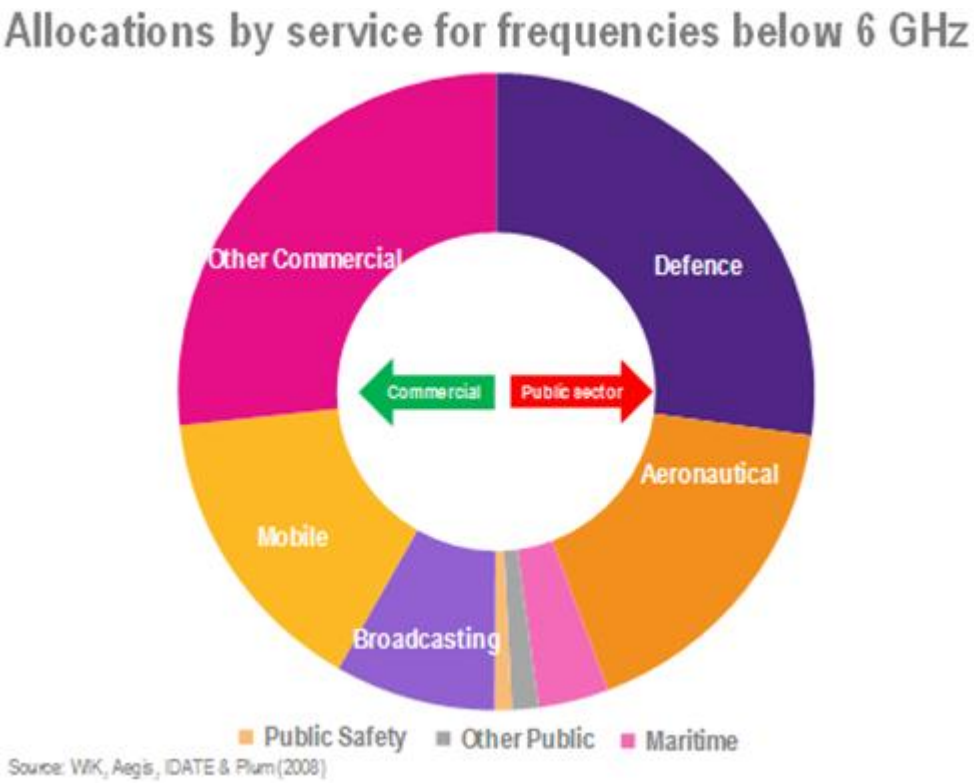


Spectrum demand is growing – UK example



Source: Plum analysis for "Enabling UK growth – releasing public sector spectrum", DCMS, UK, March 2011

“Public sector” has about 50% of prime spectrum – is this the right amount?



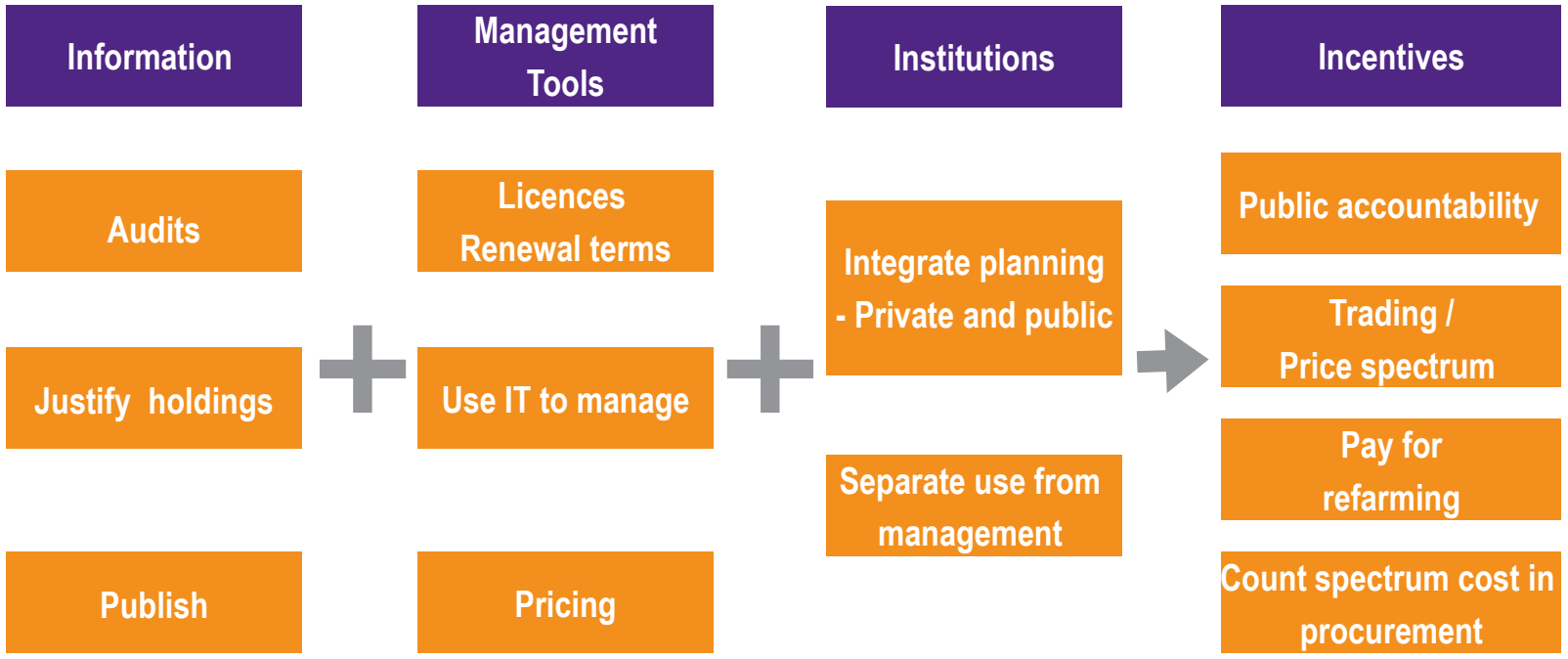
Aeronautical & maritime allocations include both civil and defence use.

All reviews of public sector spectrum conclude .....“room for improvement”

Few if any incentives for efficient use

- Access to spectrum regarded as perpetual
- Little understanding or scrutiny of actual use
- No or few financial incentives for efficient use
- Equipment procurement “assumes” spectrum available
- Access rights not well defined
- Institutional problems

Types of reform



Issues beyond spectrum policy
-Public sector budgeting
-Public sector procurement

Source: Optimising the public sector's use of the radio spectrum in the EU, WIK et al 2008

Systematic reform is happening in a small number of countries ...

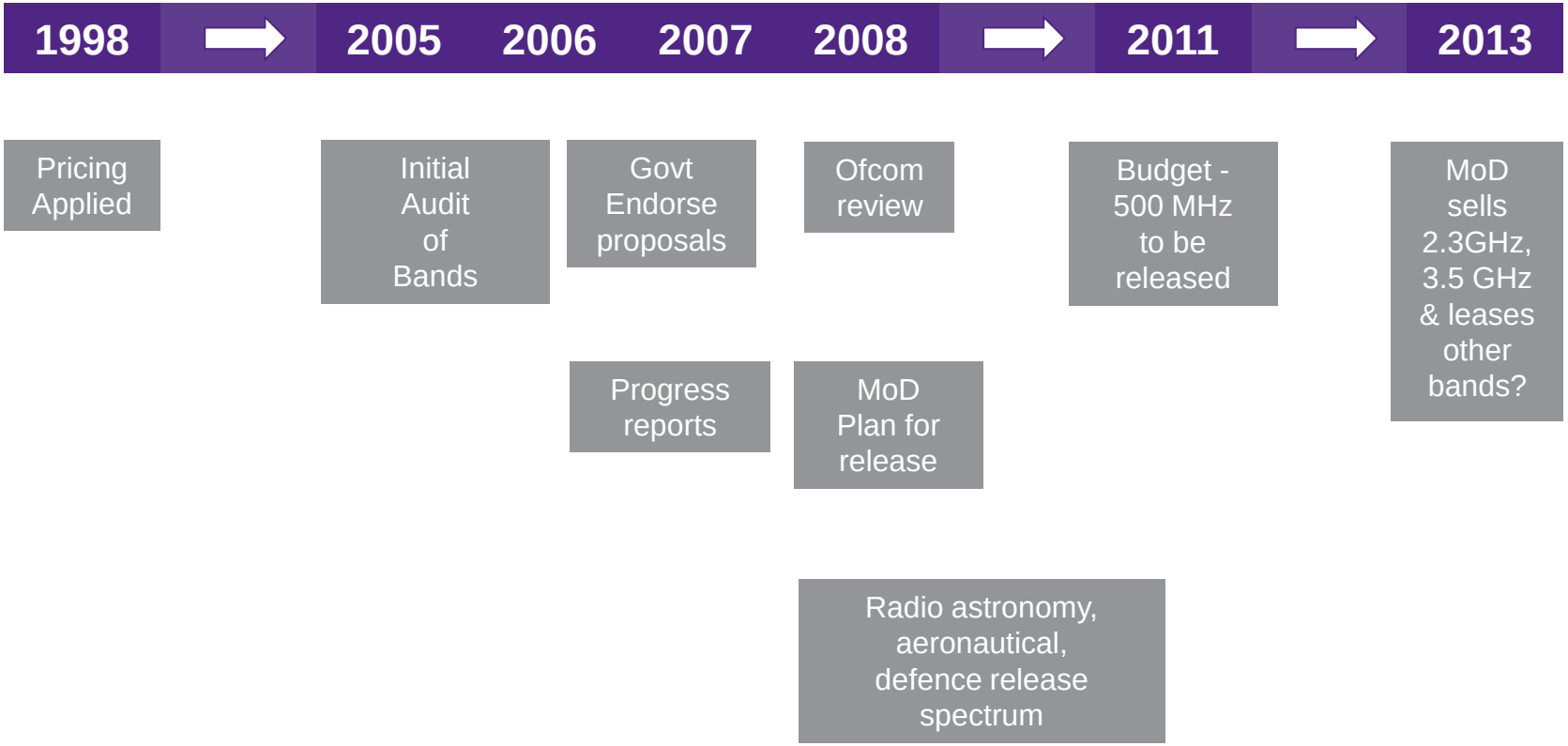
- **Audits and technical investigations**
  - Regular audits (Hong Kong, Netherlands, Sweden, Japan)
  - Specific reviews (Australia, US, UK, proposed for EU)
- **Information release (despite concerns about security)**
  - Public sector use is in published assignment database in Australia
  - Reviews published – Australia, Hong Kong, UK, US, Australia
- **Licences – time limited licences (Australia), licensing started (UK)**
- **Financial incentives**
  - Paying moving costs (France, UK, US, proposed in Netherlands)
  - Paying a share of auction or trading/leasing proceeds (UK, US)
  - Public sector budgets conditional on release (UK)
  - Spectrum pricing (UK, being considered in Australia)

Some outcomes .....

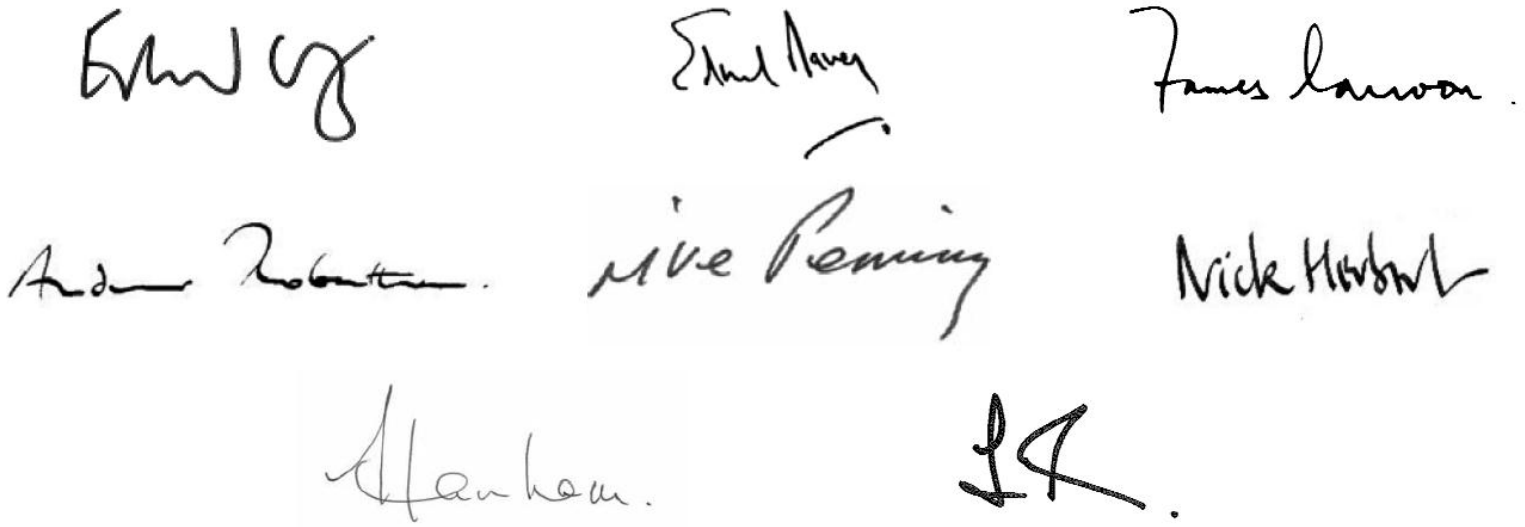
- **Hong Kong**
  - Public sector land mobile bands to be shared with commercial users
  - Guidelines for provision of additional spectrum to public sector – based on efficiency of current use
- **Netherlands/France – 800 MHz (and other) MoD bands cleared**
- **Sweden – Total of 6GHz moved from defence to regulator control**
- **UK**
  - MoD sharing strategy - http://www.mod.uk/DefenceInternet/AboutDefence/WhatWeDo/ScienceandTechnology/Spectrum/
  - Releases from defence, aeronautical, radio astronomy
- **US**
  - Release of spectrum for AWS through compensation from auction receipts
  - 500 MHz 2020 target for release – no conclusions yet

Changing public sector spectrum use & management is slow

UK developments



Commitment to reform across government is essential



BIS Department for Business Innovation & Skills

HM TREASURY

MINISTRY OF DEFENCE

Department for Transport

Home Office

Communities and Local Government

DH Department of Health

dcms department for culture, media and sport

Source: Enabling UK growth – Releasing public spectrum, March 2011

Conclusions

- **There are significant economic and social benefits from improving the utilisation of public sector spectrum**
- **Freeing public sector spectrum can take 5 years or more even when the spectrum is harmonised for the new use**
  - Understand current usage
  - Develop sharing and boundary conditions
  - Develop supporting financial arrangements
- **Need a comprehensive framework – not a series of one-offs**
  - A national strategy involving all spectrum - requires transparency, joined up institutions and trust
  - Build expertise and information in the public sector
  - Establish financial incentives if possible
  - Otherwise require justification of public sector spectrum holdings

Thank you!

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