

**EBU Seminar on Spectrum Policy**

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# **Service Demands for Terrestrial Broadcasting**

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# How important is terrestrial broadcasting?

- Requirements differ from country to country depending for instance on cable and satellite penetration
- Terrestrial is probably the platform where broadcasters are in the best position to control delivery of their channels
- Terrestrial broadcasting can reach "everybody" - if sufficient spectrum is available
- Terrestrial platform necessary to deliver portable and mobile services
- The terrestrial platform should be attractive in order to compete with other platforms

# Do we know how much spectrum the broadcasters need from the Digital Dividend?



Two recent headlines from Europe

*Despite official claims that there is no digital dividend the country's largest communications association says there clearly is but it's been grabbed by the powerful broadcasting industry*

*There should be enough spectrum to accommodate the ambitions of both TV companies and telecoms operators when the digital switchover is complete, according to the country's digital dividend commission*

Which one is true?

There is great interest in the value of the digital dividend and other users are making their bids



*“TV white space offers a once in-a-lifetime opportunity to provide ubiquitous wireless broadband access”*

*Following a successful campaign in the US 700MHz auction, Google stepping up its lobbying for “greater wireless choice and innovation” both in the US and internationally*

**GSM Association/GSM Europe**  
objectives for 470-862 MHz

Efficient solution for the band 790-862MHz

Flexibility for the extension of mobile spectrum below 790MHz, for countries that wish to implement

Enable countries needing to protect broadcasting in neighbouring countries to make efficient use of the available spectrum

**Broadcasters need to make their case!**

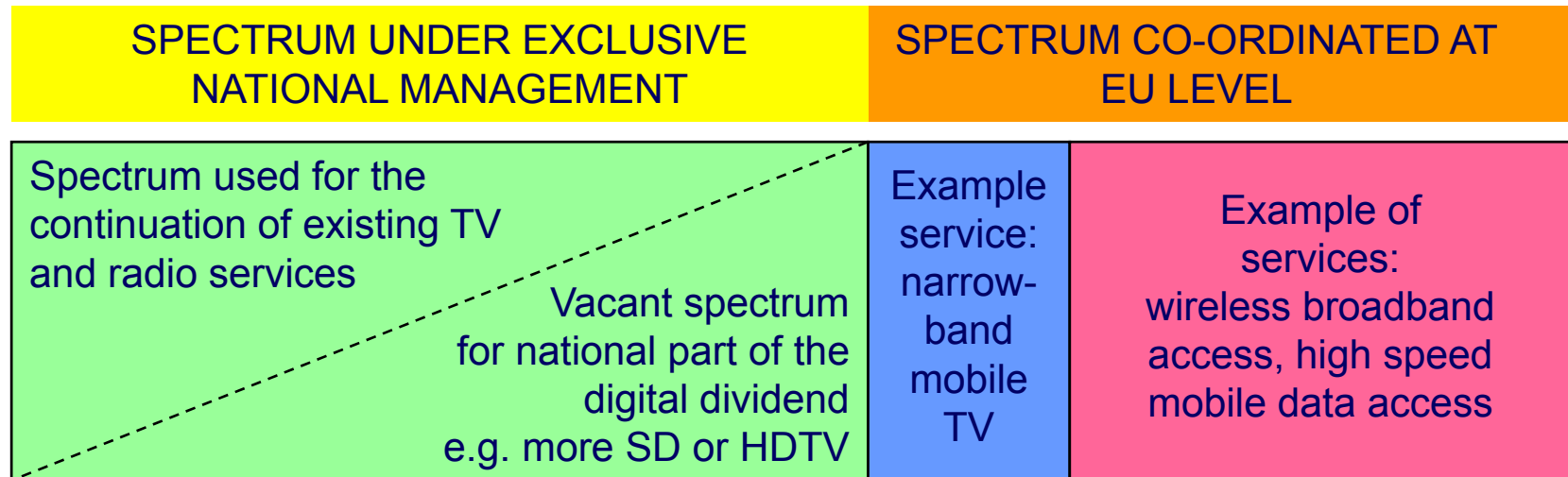


# Communication from the Commission to the European Parliament



... concerning reaping the full benefits of the digital dividend in Europe. A common approach to the use of spectrum released by the digital switchover

470 MHz <-----UHF band-----> 872 MHz



**Unidirectional Networks (high power)**

**Unidirectional networks (low to medium power)**

**Bi-directional networks (low power)**



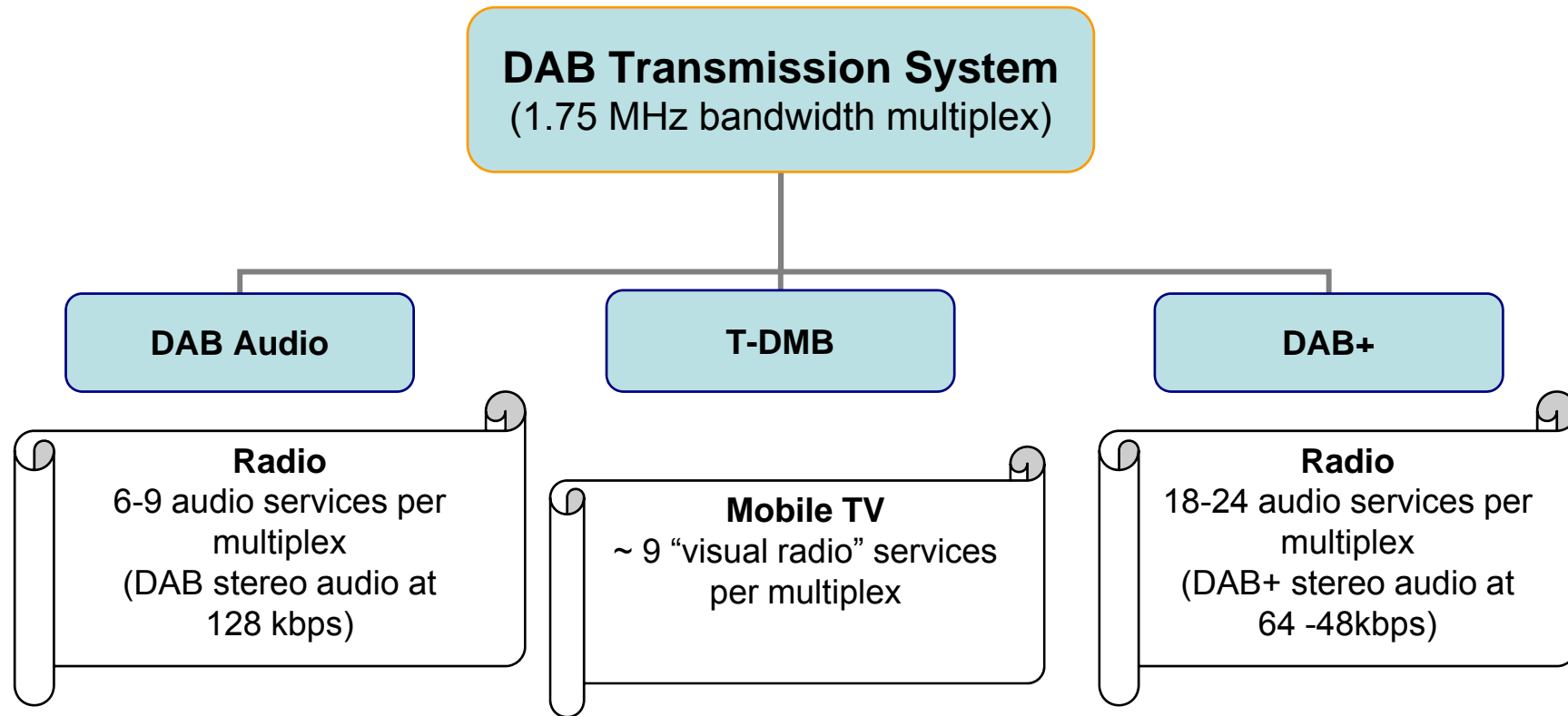
# *HDTV & Mobile Television*

## Basic assumptions to derive service demands

- HD expected to be necessary by most channels by 2015-20
- 20 to 25 broadcasting programmes necessary
- DVB-T2 & MPEG-4 (H264) will be the standard for terrestrial TV
- Compatibilities guaranteed by DVB-T2
  - current transmitting sites
  - current receiving installation (single polarisation)
  - GE06 plan
    - Compatible spectrum mask
    - same or better protection ratios
    - better impulsive noise rejection (> 10 dB)
    - larger allowed SFN transmitter inter-distance
- One multiplex will be able to carry 3-4 HD programs
- Mobile TV will use DVB-H with a mixture of broadcasting and other services combined in a multiplex - assume 20-25 programmes

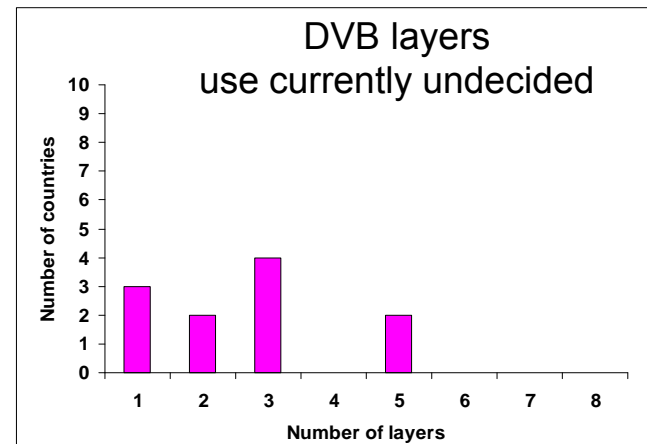
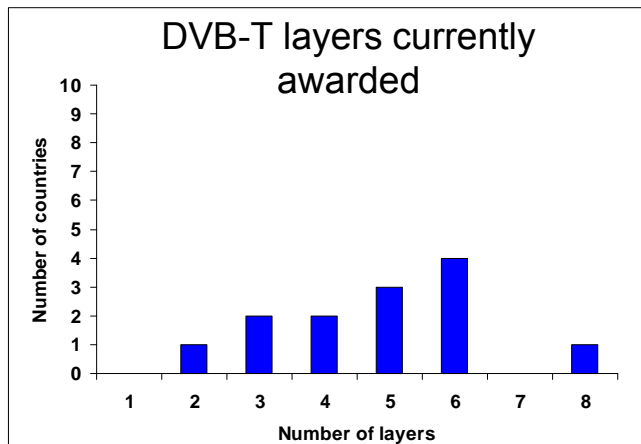
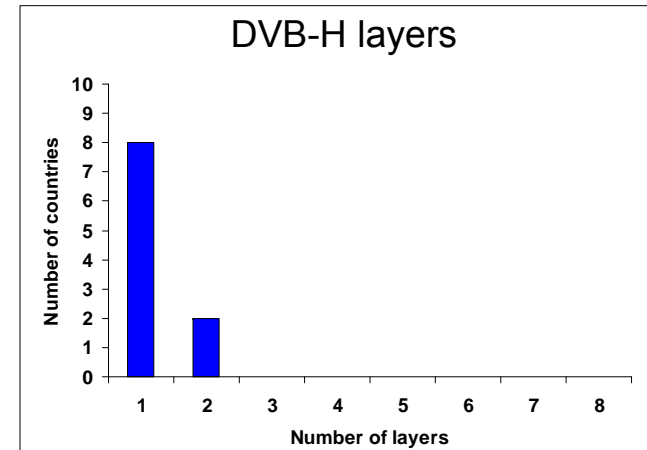
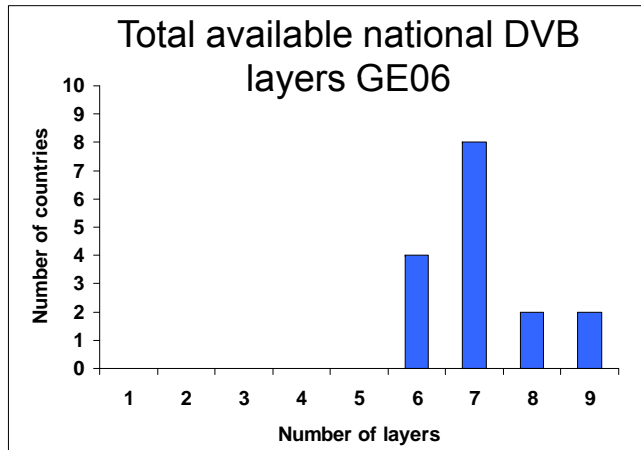
# Mobile Radio & Multimedia

## basic assumptions to derive service demands



It is necessary to provide 50-70 audio programmes  
plus 20 to 25 multimedia programmes

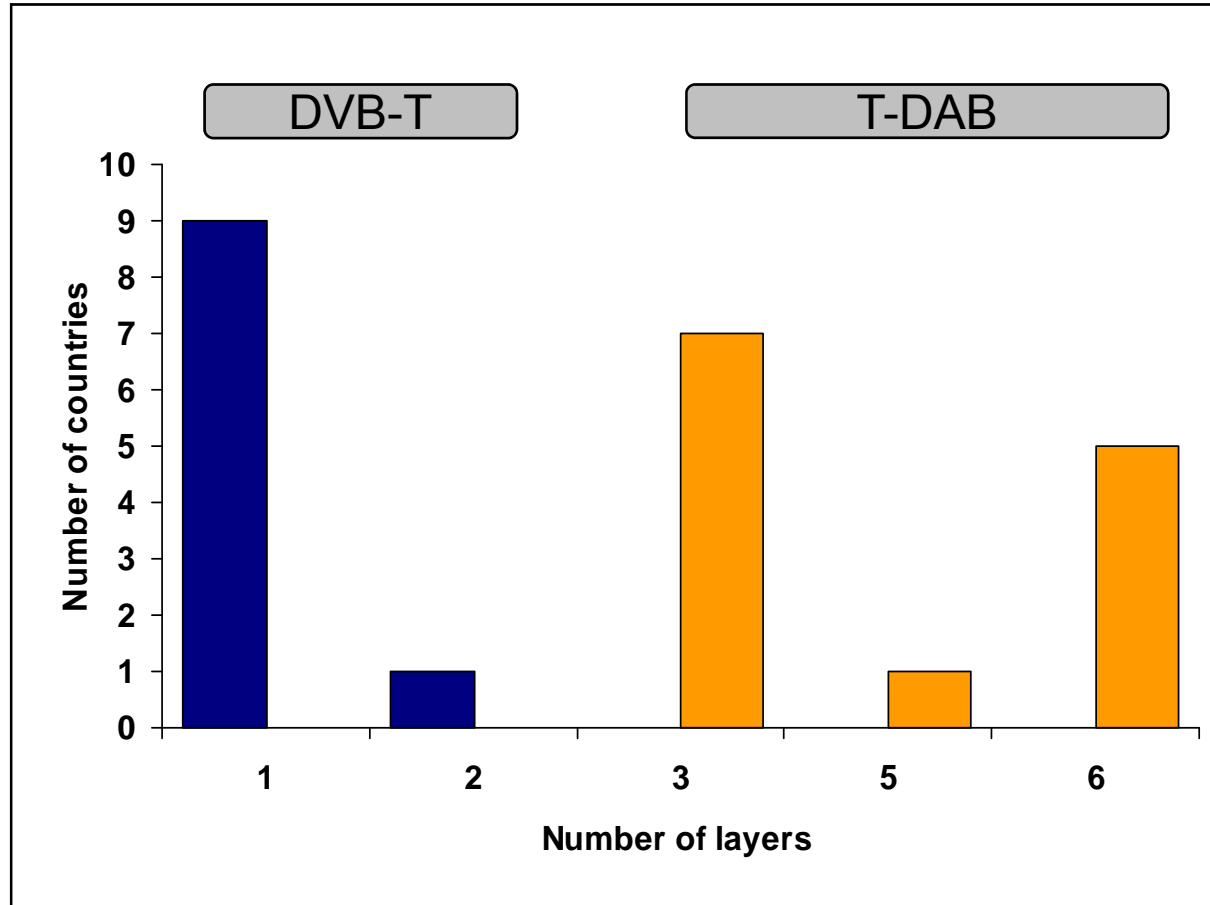
# Capacity of UHF bands IV/V for broadcasting



Do broadcasters need the layers whose use is currently undecided?



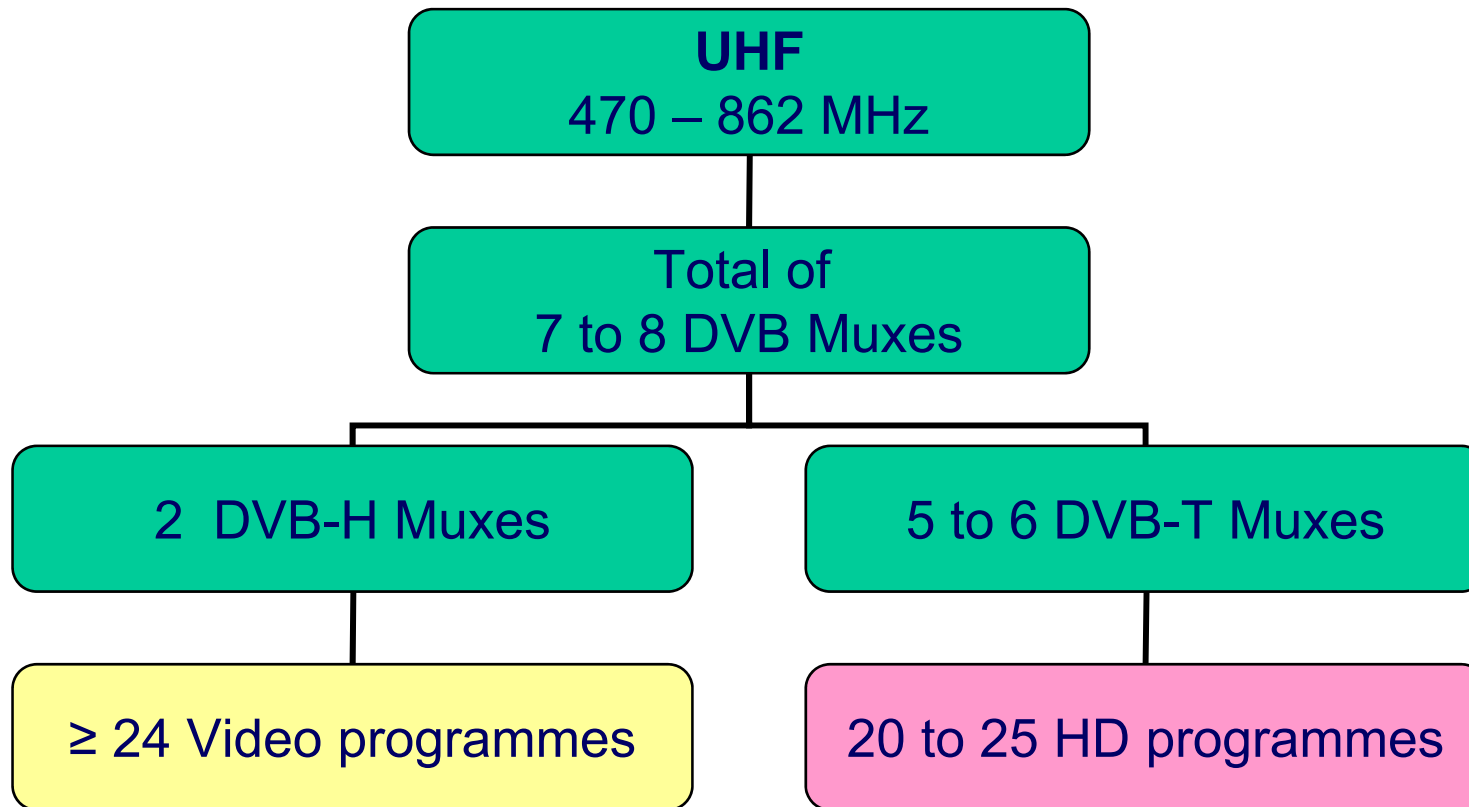
# Capacity of VHF band III for broadcasting



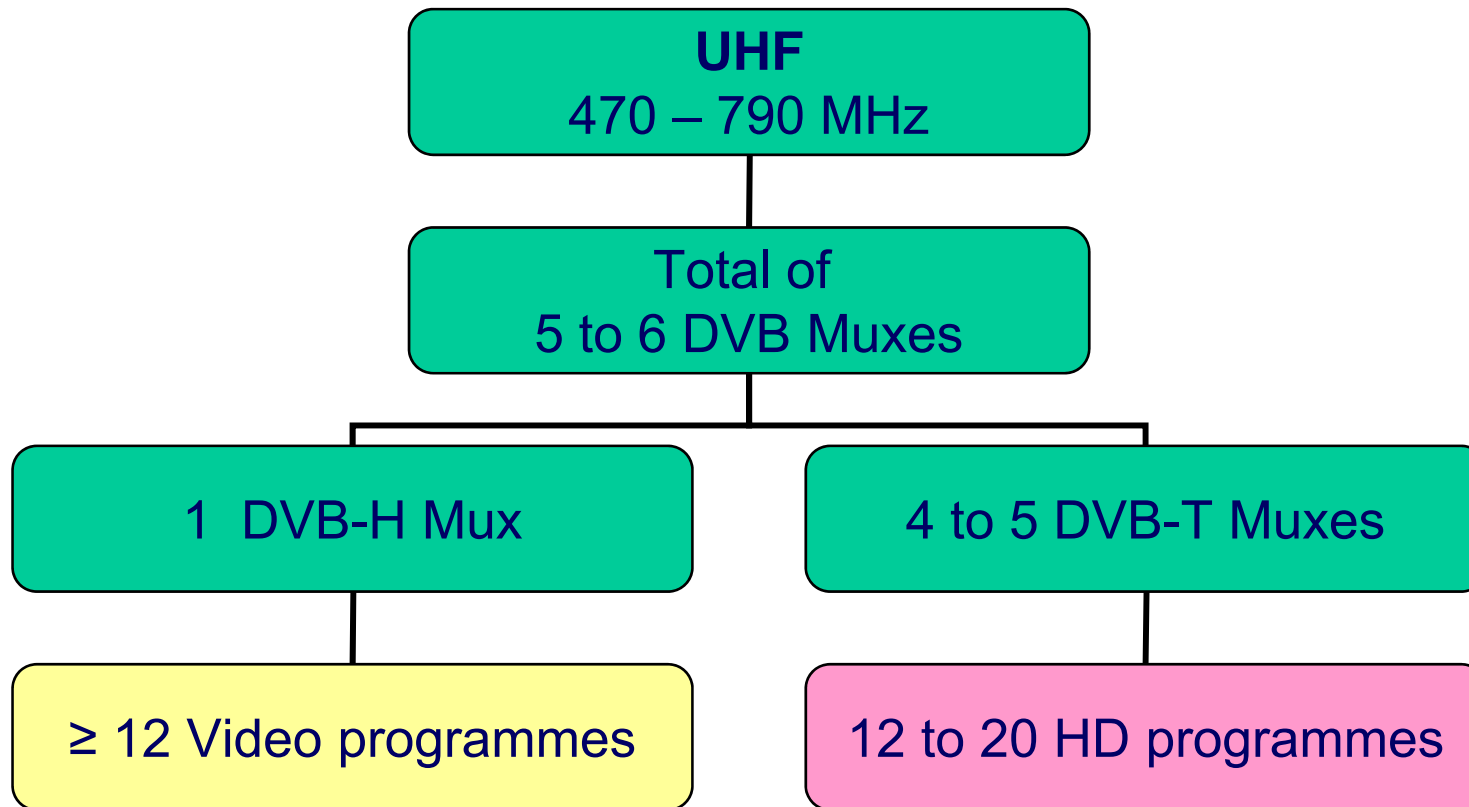
A (7 MHz) DVB-T channel can be converted into 4 (1.75 MHz) T-DAB blocks.

An alternative arrangement for Band III is 7 layers of DAB+ or T-DMB

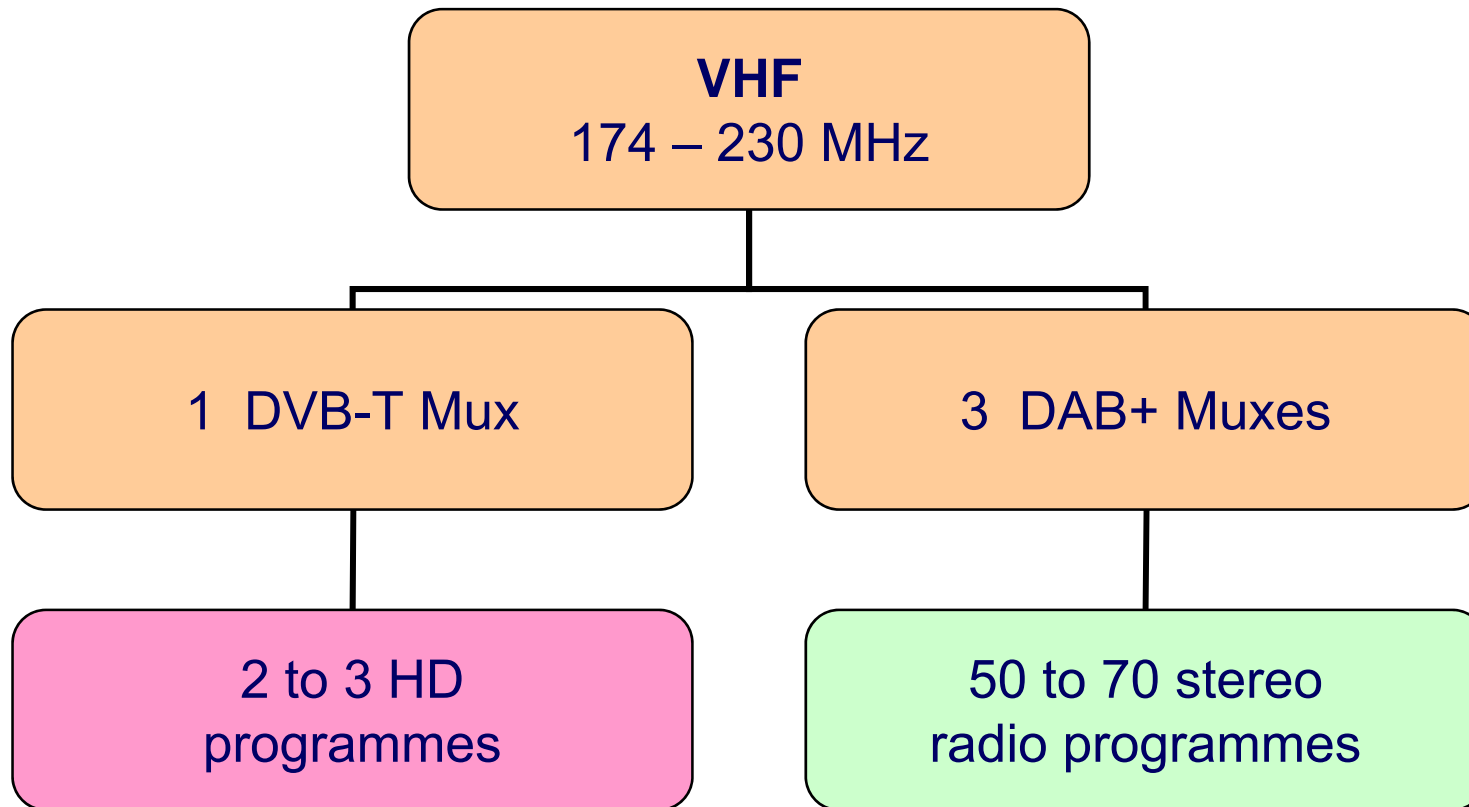
# Spectrum Demands for Bands IV/V full access



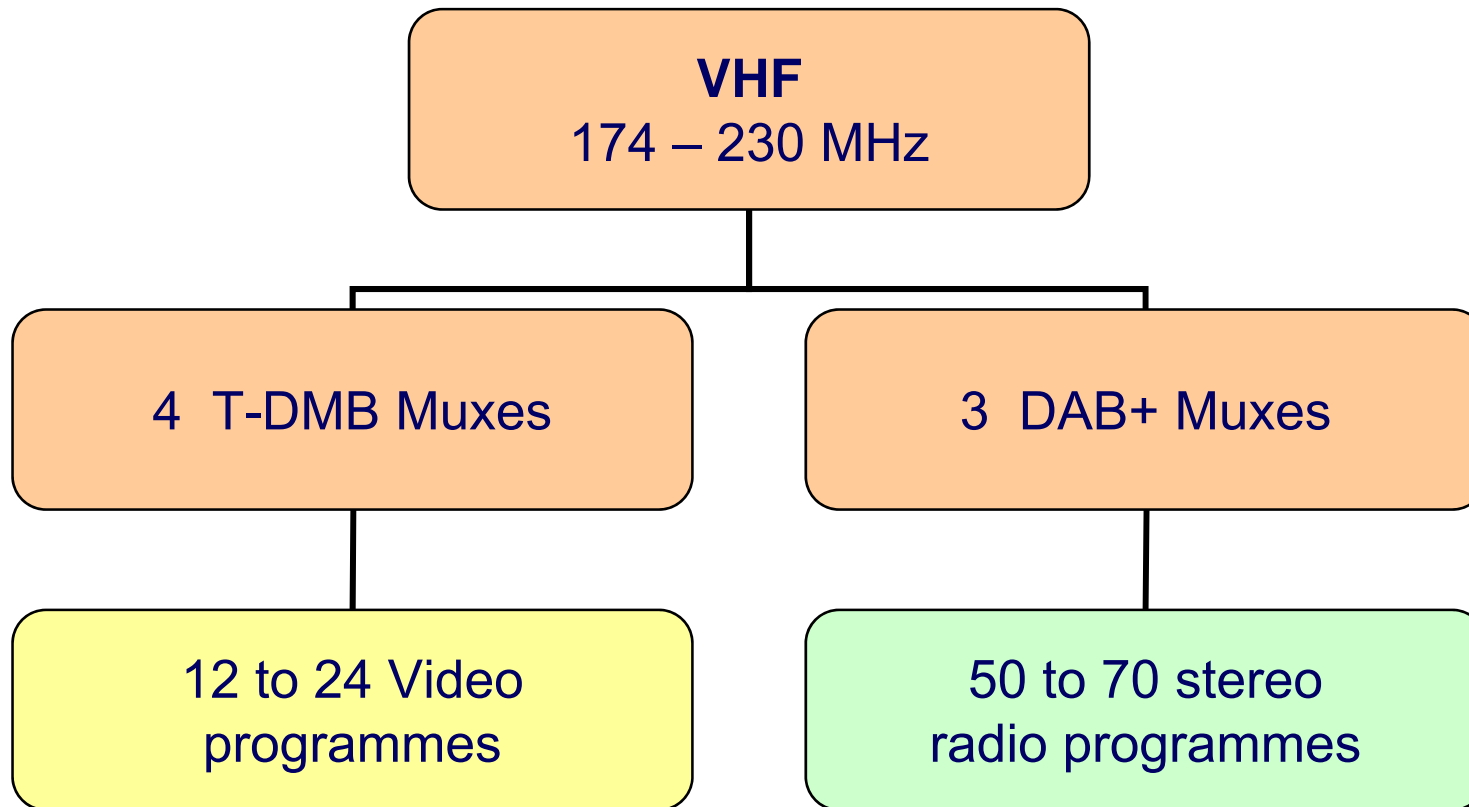
# Spectrum Demands for Bands IV/V with no access to 790-862 MHz



# Spectrum Demands for Bands III Option for DVB and DAB



# Spectrum Demands for Bands III Option for DMB and DAB



# Summary results

- HDTV: 20 - 25 programmes  
6-8 (8 MHz) multiplexes for DVB-T/T2
- Mobile TV: 20-25 programmes  
1 to 2 (8 MHz) multiplexes for DVB-H
- Mobile Radio: 50 programmes  
3 (1.75 MHz) DAB+ multiplexes
- Mobile Radio plus Multimedia: 20 to 25 multimedia programmes, plus  
50-70 audio programmes  
7 (1.75 MHz) DAB+/DMB multiplexes

# Conclusions on spectrum requirements

- In order to accommodate projected future broadcasting requirements full access to the VHF/UHF bands is needed.
- This assumes, based on some optimistic forecasts, that certain key technological advances are realised within the next five or so years.
- If significant proportions of the digital dividend are re-allocated to other services, it will severely inhibit the potential for broadcasters to provide the range of national services needed to attract a viable audience on the terrestrial platforms

**What to do?**



# Digital Dividend - possible strategies

- If assumption on requirements is correct all of the digital dividend is necessary for broadcasting
- EC (and others) want wireless communication in the upper part of the UHF frequency band
  1. **Should broadcasters accept that we will lose some spectrum and work for the least radical solution?**  
or
  2. **Should broadcasters take the position that we have a strong case for use of the spectrum and use any possibility at national and international level to argue for that position?**



# Possible strategy 1

- Accept that spectrum will be used for other services and work for the least radical solution
  - As small part of the UHF spectrum as possible for other services (CH 61-69?)
  - No mandation: national decision depending on requirements and national frequency management
  - Transition period necessary in order to replan (if possible) and to recap investments in networks
- Broadcasters could perhaps also benefit:  
we are all offering a wide selection of services on the internet and want these services to be widely available

## Possible strategy 2

- The Digital Dividend should be used for broadcasting
  - Broadcasters fight for use of the spectrum
  - The spectrum is planned and readily available for that use (after switchover)
  - There are other frequency bands available (and not used today) for mobile communication and wireless internet services
  - Other (higher) frequency bands technically more suitable for wireless broadband
- Even the present Digital Dividend spectrum is barely sufficient for estimated broadcasting requirements

# Using the Digital Dividend what strategy for broadcasters???

- **Strategy 1?**
  - Work for least radical solution
- **Strategy 2?**
  - Fight for broadcasting use of the *Digital Dividend*
- **Are there other alternatives?**
  - **Broadcasters discuss on a national basis with their administrators**

**Thank you for your attention**

