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| **Radiocommunication Study Groups** |  |
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| To Administrations of Member States of the ITU, Radiocommunication  Sector Members, ITU-R Associates participating in the work of  Radiocommunication Study Group 6 and ITU-R Academia | |

**Subject**: Questionnaire on spectrum requirements for the future of sound and television broadcasting

**References**: Documents [6/ 93](http://www.itu.int/md/R12-SG06-C-0093/en) and [6/249](http://www.itu.int/md/R12-SG06-C-0249/en)

1 Study Group 6 (SG 6) is the ITU-R Study Group assigned to the Broadcasting service. Its scope covers radiocommunication broadcasting, including vision, sound, multimedia and data services principally intended for delivery to the general public.

2 SG 6 created a Rapporteur Group to look at the future spectrum requirements for the Broadcasting service in light of technical developments, decisions taken by WRC-03 and WRC-07 on the use of digital modulation in the HF Bands, and the changes to frequency allocations at WRC-97, WRC-07 and WRC-12, as part of the work in maintaining its catalogue of Reports and Recommendations.

3 One of the questions that needs to be addressed by SG 6 include how broadcast requirements are changing with the move to digital broadcast systems, and the introduction of new and enhanced broadcast services.

4 The following questionnaire, which is being sent to all Administrations and Sector Members, is designed to gather information on spectrum use by sound and television broadcasting in the bands allocated on a Regional[[1]](#footnote-1) or global basis to terrestrial broadcasting (see Annex 1).

5 Administrations and Sector Members are also invited to make more detailed inputs addressing the matter of current and future spectrum requirements for radio and television broadcasting to the next meeting of WP 6A and SG 6.

6 Administrations and Sector Members are requested to submit responses to [brsgd@itu.int](mailto:brsgd@itu.int) by 17 October 2014.

David Barrett

Chairman SG6 Rapporteur Group on spectrum requirements   
for the future of the broadcasting Service

QUESTIONNAIRE ON SPECTRUM REQUIREMENTS FOR THE FUTURE OF SOUND AND TELEVISION BROADCASTING

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| **Name of the Administration:** | **Agentschap Telecom** |
| **Contact person:** | **Huub Nagel** |
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| **Name of the Sector Member:** |  |
| **Contact person:** |  |
| E-mail address: |  |
| Telephone number: |  |
| **What best describes your organisation?**  Commercial broadcaster/Public service broadcaster/ Service provider/ Other (please describe) |  |
| **The geographical area over which you operate:** |  |

**SECTION ONE – Television broadcasting**

1) a) Is your country still using analogue television?

b) If yes, has analogue television switch-off commenced?

c) If your country has any plans to switch-off analogue television:

i) When is the analogue switch-off process expected to be completed?

ii) How much extra spectrum will be required during the transition phase to digital terrestrial television broadcasting?

**Reply:**

**The Netherland switched off analogue TV in December 2006.**

2) a) Please indicate how many analogue television transmitters are in operation in your country and in which bands.

b) What channel bandwidths are used for analogue television?

c) What is the spectrum requirement for analogue television in your country?

A proposed format for responses to question 2a) and 2b) is provided in Annex 1

**Reply:**

**N.a.**

3) a) What is the percentage of viewer uptake of terrestrial television in your country?

b) If possible, please also provide details of the number or proportion of users who receive television primarily by terrestrial means by:

i) Fixed roof top antenna, or  
ii) Portable indoor antenna.

**Reply:**

**Approximately 500k unique subscribers for DTT plus 200k subscriptions in order to receive DTT besides their main IPTV connection. The latter is usually meant for bedroom use when ADSL does not provide sufficient bandwidth for a second or third TV. The percentage of viewer uptake is around 7%.**

4) If your country has switched or is considering switching to digital terrestrial television broadcasting

a) What system standard is your country using or considering adopting   
(as specified in Recommendations ITU-R BT.1306 and BT.1877)?

b) When did your country start or when is it proposing to start the introduction of digital terrestrial television services?

c) Please provide further detail on the number of multiplexes in use, their technical specifications, the percentage of geographic area or population they cover or are intended to cover and the total spectrum use.

A proposed format for detailed responses is provided in Annex 2

**Reply:**

**System standard for DVB-T: 64QAM 2/3 or ½. Nationwide DTT licenses were issued in 2003. Five Multiplexes are on air, one of them is Free to Air from the Public Service Broadcasters. The remaining four belong to a commercial license holder (Digitenne), 80% of the population has indoor coverage at 70% location probability. This was reached in 2007. 98% of the geographical area has rooftop reception. The 800 MHz band is cleared for LTE use.**

5) a) What frequencies/channels are currently used or intended to be used by digital terrestrial television broadcasting in your country? Please distinguish between those in use and those intended to be used?

b) Please indicate how many digital terrestrial television transmitters are currently used or intended to be used and in which bands.

c) What channel bandwidth is used or intended to be used for digital terrestrial television in your country?

A proposed format for responses to question 5b) and 5c) is provided in Annex 1

**Reply:**

**All Ge’06 rights (frequencies/channels) in band IV/V are in use. Some allotment parts are not in use. In those cases the needed services areas differ from the allotment shapes.**

6) a) Are the terrestrial television frequency bands also shared with other primary services in your country?

b) If yes, please give details of those systems and their spectrum use.

**Reply:**

**Band III is allocated for T-DAB services. The UHF band 608-614 MHz has a primary allocation for the radio astronomy service.**

7) a) Are the terrestrial television frequency bands also shared with secondary services used for the support of broadcasting such as SAB/SAP (services ancillary to broadcasting/production), or other types of services such as radio astronomy or wind-profile radar?

b) If yes, please give details of those systems and their spectrum use.

**Reply:**

**Yes, the UHF terrestrial television band is used for both PMSE secondary services and radio-astronomy.**

**Radio microphones are license exempt (max. 50 mW) and are allowed to operate in almost the entire band IV/V on a non-interference base. The sum of tuning ranges for microphones in this band is more than 300 MHz.**

**SAP/SAB or ENG/OB (audio) use is limited to a total of 14 MHz of tuning ranges in band IV/V and a license is required (max. 10 W/200kHz)**

**UHF frequency range 608-614 MHz is used by radio-astronomy.**

8) a) Does your country foresee a requirement for new and enhanced services, including multimedia and data applications, HD, 3D, and UHD television, on the terrestrial television platform?

b) If yes, please give indicative details of the number and nature of services planned, and if known, the expected timeframe for their introduction.

**Reply:**

**Yes. In the near future (<2020) the license holder of the DTT frequencies, will probably launch HD programs. When transition to DVB-T2 takes place, most channels will probably be transmitted in HD.-**

9) a) Are there plans in your country to launch more multiplexes in the future?

b) If yes, how many more and when? Please also indicate the expected timeframe for their introduction.

**Reply:**

**No. At present the Netherlands have 5 DVB-T multiplexes on air. The plan is to modify the allotment sizes in such a way that 5 multiplexes based on DVB-T2 are possible. This is necessary w.r.t. the expectation that the 700 MHz band will be allocated for IMT services in the near future.**

10) a) What is the amount of spectrum your country foresees will be required for terrestrial television broadcasting, taking into consideration the responses to Questions 5, 6, 7, 8, and 9? Please indicate the modes of transmission that will be used, and timeframes.

**Reply:**

**Due to the introduction of HD TV and the expected loss of the 700 MHz band to mobile services, the transition to DVB-T2 is expected. In order to allow for 5 multiplexes of DVB-T2 in the frequency band 470-694 MHz the size of the allotments needs to increase. For modes of transmission see annex 2.**

**SECTION TWO – Sound broadcasting**

11) a) What analogue sound broadcasting standards are used in your country and what bands are they operating in?

b) Please indicate how many analogue radio transmitters are in operation in your country and in which bands.

c) What channel bandwidths do they use?

A proposed format for responses to question 11b) and 11c) is provided in Annex 1

**Reply:**

**MF band: analogue AM modulation; VHF II: analogue FM modulation. See further Annex 1.**

12) a) Is additional spectrum required for growth in the analogue sound broadcasting platform in your country?

b) If yes, how much additional spectrum is required?

**Reply:**

**Although government policy is aimed at promoting DAB services, the incumbents are still looking for additional FM spectrum. As the FM band in the Netherlands is already fully occupied, any significant gain is not to be expected.**

13) a) Is your country considering introducing, or has it already introduced digital sound broadcasting?

b) If yes, which system standards are used or are being considered for adoption (as specified in Recommendations ITU-R BS.1114, BS.1514, BS.1615)?

c) When did your country start or when does it propose to start digital sound broadcasting?

d) What channel bandwidths is your country using or considering using?

e) What frequencies are currently used or intended to be used by digital sound broadcasting in your country? Please distinguish between those in use and those intended to be used.

f) What is the percentage of the population that is covered by digital sound broadcasting by direct reception in your country?

g) What additional spectrum was required or is considered to be required for the transition to digital sound broadcasting?

h) Please indicate how many digital radio transmitters are currently used or intended to be used and in which bands.

i) What is the spectrum requirement for digital sound broadcasting in your country?

j) If your country has introduced digital sound broadcasting, how long will it continue to use analogue sound broadcasting?

A proposed format for responses to question 13d) and 13h) is provided in Annex 1

**Reply:**

**The Netherlands have introduced T-DAB services in Band III since February 2004.The system variant is DAB+/HE-AAC. The bandwidth is 1,75 MHz. Block frequencies for digital sound broadcasting in use are 11C, 12C. Intended for use are 6B,7A,8A,9D. DAB transmitters are used on approximately 50 sites. They are intended to be used on about 20 additional sites. Although the policy in relation to the switch off of analogue sound broadcasting is not clear, it is, depending on the take up rate of DAB, expected that analogue sound broadcasting may end somewhere around 2025. Approx. 90% of the population has indoor coverage. Another 12 sites are planned**

14) a) Are the terrestrial sound broadcasting bands also shared with other primary services in your country?

b) If yes, please give details of those systems and their spectrum use.

**Reply:**

**No other primary services use the band.**

15) a) Are the terrestrial sound broadcasting bands also shared with secondary services e.g., used for the support of broadcasting such as SAB/SAP (services ancillary to broadcasting/production), or other types of services such as radio astronomy or wind-profile radar?

b) If yes, please give details of those systems and their spectrum use.

**Reply:**

**The VHF band III is also used for PMSE secondary services. SAP/SAB or ENG/OB (audio) is allowed in almost the entire band on a non-interference base and under a license regime. The sum of tuning ranges for ENG/OB SAP/SAB in this band is 42 MHz. Radio-microphones are allowed in channel 8 (195-202 MHz) and are license exempt.**

16) a) What is the amount of spectrum your country foresees will be required for terrestrial sound broadcasting, taking into consideration the responses to the previous questions? Please indicate the modes of transmission that will be used, and timeframes.

**Reply:**

**At present, the general idea is that sufficient spectrum for TSB is available.**

**SECTION THREE –Multimedia broadcasting**

17) a) Is your country considering introducing or has already introduced multimedia broadcasting?

b) If yes which system standards is your country using or considering using (as specified in Recommendations ITU-R BT.1833 and BT.2016)?

c) In which Bands?

d) When did your country start or when does it propose to start digital multimedia broadcasting?

e) What are the current and proposed population coverages for digital multimedia broadcasting in your country?

f) What is the spectrum requirement for multimedia broadcasting in your country?

g) If your country has introduced digital multimedia broadcasting, please provide further information to describe the system, its implementation and any limitations on its operation.

**Reply:**

**Yes. The PSB has added HBB services in one of their DTT transport streams using the UHF band. As there are a limited number of “connected” DTT set top boxes, it is more of an experimental nature which started in 2011. Interactive services in the Netherlands are provided through cable, fiber or IP networks as their penetration in households is around 98%. DMB has been introduced in Band III with block frequencies 5B, 8C, 9C, 11A, 12B. The coverage is around 30% of the Netherlands. The spectrum requirements are not yet known.**

ANNEX 1

Suggested form of presentation of reply to Questions 2, 5, 11, and 13:

A sample response is shown in *Italics* for guidance only.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Country** | **Band** | | **Number of Transmitting Stations\*** | | | |
| **Analogue Radio**)(Q11b & Q11c) | **Digital Radio** (Q13d & Q13h) | **Analogue TV** (Q2a & Q2)b | **Digital TV** (Q5b & Q5c) |
| **Channel bandwidth (MHz)** | | MF 9kHz  VHF II 300kHz | 7MHz | 7 MHz | 8MHz |
| **XX** | **LF** | 148.5-283.5 kHz |  |  |  |  |
| **MF** | 525-526.5 kHz |  |  |  |  |
| **MF** | 526.5-1606.5 kHz | 13 |  |  |  |
| **MF** | 1606.5-1705 kHz |  |  |  |  |
| **HF** | 2.3-26.1 MHz\*\* |  |  |  |  |
| **VHF I** | 47-50 MHz |  |  |  |  |
|  | 50-54 MHz |  |  |  |  |
|  | 54-68 MHz |  |  |  |  |
|  | 68-72 MHz |  |  |  |  |
|  | 76-87.5 MHz |  |  |  |  |
| **VHF II** | 87.5-108 MHz | 790 |  |  |  |
| **VHF III** | 174-216 MHz |  | 4 |  |  |
| **VHF III** | 216-230 MHz |  | 58 |  |  |
| **UHF IV** | 470-694 MHz |  |  |  | 176 |
| **UHF V** | 694-790 MHz |  |  |  | 96 |
| **UHF V** | 790-890 MHz |  |  |  |  |
| **UHF V** | 890-960 MHz |  |  |  |  |
|  | 1452-1492 MHz |  |  |  |  |
|  | 11.7-12.5 GHz |  |  |  |  |
|  | 12.5-12.7 GHz |  |  |  |  |
|  | 40.5-42.5 GHz |  |  |  |  |
|  | 74-76 GHz |  |  |  |  |
| \* Transmitting stations please include “main stations” and “relay stations.” Please use parenthesis to indicate stations that have still to be brought into use  \*\* The bands 3900-3950D, 3950-4000D kHz; the bands for tropical broadcasting: 2300-2498, 3200-3400D, 4750-4995 D, 5005-5060D kHz and the Article 12 Bands 5 900-5 950D, 5 950-6 200, 7 200-7 300, 7 300-7 400D, 7 400-7 450, 9 400-9 500D, 9 500-9 900, 11 600-11 650D, 11 650-12 050, 12 050-12 100D, 13 570-13 600D, 13 600-13 800, 13 800-13 870D, 15 100-15 600, 15 600-15 800D, 17 480-17 550D, 17 550-17 900, 18 900-19 020D, 21 450-21 850, 25 670-26 100.  D Resolution 517 (Rev.WRC-07) applies. In the HF bands subject to Article 12 see also No. 5.134. | | | | | | |

**ANNEX 2**

Suggested form of presentation of reply to Question 4: *If your country has switched or is considering switching to digital terrestrial television broadcasting, what system standards is it using or considering adopting? When did your country start, or when is it proposed to start the introduction of digital terrestrial television services? Please provide further detail on the number of multiplexes in use, their technical specifications, the percentage of geographic area or population they cover or are intended to cover and the total spectrum use.*

A sample response is shown in *italics* for guidance only.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Country** | **No of multi-plexes** | **System & modulation** | **FEC** | **GI** | **Reception mode[[2]](#footnote-2)** | **Capacity per multiplex (Mb/s)** | **Current percentage population coverage** | **Intended percentage population coverage** | **Content per multiplex** | **Total capacity (Mb/s)** | **Total spectrum bandwidth used or intended for implementation (MHz)** | **Any additional comments (e.g. duration of licences)** |
| **NL** | 3 | DVB-T, 64-QAM | 2/3 | 1/4 | Portable indoor | 19,91 | 80% | 80%  98% roof top | 6 SD MPEG2 | 90 | 320 | Commercial service multiplexes licensed until 2017 |
| 2 | DVB-T, 64-QAM | ½ | ¼ | Portable indoor | 14,93 | 80% | 80%  98% roof top | 6 SD MPEG2 | Public and commercial service multiplexes licensed until 2017 |
| 5 | DVB-T2, 256-QAM | 2/3 | 1/16 | Portable indoor | 36.1 | - | 80% | 6 HD MPEG4 | 180 | 224 | From 2017. No final decisions on date and technology (DVB-T/DVB-T2) are made |

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

1. Regions 1, 2 or 3 as defined in Nos. **5.3** to **5.9** of the Radio Regulations. [↑](#footnote-ref-1)
2. E.g. fixed, portable outdoor/mobile, portable indoor. [↑](#footnote-ref-2)