

QUESTIONNAIRE ON SPECTRUM REQUIREMENTS FOR TERRESTRIAL TELEVISION BROADCASTING IN CONNECTION WITH WRC-15 AGENDA ITEM 1.2

Name of the Administration: AUSTRIA

Contact person: Peter Reindl

E-mail address: peter.reindl@rtr.at

Telephone number: +43 1 58058 350

- 1**
- a) What standards have you adopted for digital terrestrial television broadcasting?
 - b) Have you started introduction of digital terrestrial television services?
 - c) If yes, please provide further detail on the number of multiplexes in use, their technical specifications, the percentage of geographic area or population they are intended to cover and the total spectrum use to inform WP 6A.

Reply:

- a) DVB-T with MPEG 2 and DVB-T2 with MPEG 4.
- b) Yes, regular transmissions started in 2006.
- c) See the following table.

Country	No of multiplexes	System & modulation	FEC	GI	Reception mode ¹	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	Any additional comments (e.g. duration of licences)
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¹ E.g. fixed, portable outdoor/mobile, portable indoor.

											imple- mentation (MHz)²	
AUT	7 MUX 1 Layer	DVB-T, 16-QAM	3/4	1/4	Fixed/port able indoor	14.93	96.0%	96.0%	3 SD MPEG2	38,89-46.45	320	Public and commercial service multiplex licensed until 2016
	2 MUX 1 Layer	DVB-T, 16-QAM	5/6	1/8;1/4	Fixed/port able indoor	16.59	88.0%	88.0%	4;5 SD MPEG2			Public and commercial service multiplex licensed until 2016
	16 MUX 1 Layer	DVB-T, QPSK- 16QAM	2/3; 3/4	1/8;1/4	Fixed	7.37- 14.94	32.0%	70.0%	1-4 SD MPEG2			Commercial service multiplex licensed range until 2017 – 2023 Some channels from TV white spaces are used see APPENDIX 1 Layer 7

In densely populated areas near the transmitter sites portable indoor is envisaged.

At the edge of the coverage area fixed reception is used.

A Layer consists of a certain amount of allotment areas which covers the whole country.

Licence duration is always 10 years.

The used channels stem from the GE06 plan, and are spread over the channels 21 to 60.

² Refer Sections 2 and 3 on page 1 of this circular.

- 2 a) Have you commenced analogue television switch-off?
b) If you have any such plans, when do you expect to have completed the analogue switch-off process?

Reply:

- a) Analogue switch-off was finished on 7 June 2011.

- 3 a) What is the percentage of viewer uptake of terrestrial television in your country, including those whose service provider uses terrestrial broadcast re-transmission (e.g. in cable networks)?
b) If possible, please also provide details of the number or proportion of users who receive television primarily by terrestrial means.

Reply:

- a) 11%
b) 5% at the moment, 8 nationwide programmes are provided. The number should increase after starting with DVB-T2 transmissions and additional programmes including HD.

- 4 a) Indicate how many analogue television transmitters use channels in the frequency sub-band 694-790 MHz (as indicated in Resolution **232 (WRC-12)**).
b) How many are in the remaining part of the UHF band.

Reply:

- a) Not applicable, see reply to question 2.
b) Not applicable, see reply to question 2.

- 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) If allotments/SFNs are in use, a sketch map of frequency allocations could be included, with an accompanying table of allocations, as shown in Annex 2. Otherwise, it might be possible to show main transmitters and channels, grouped in layers, in a table.
c) Please indicate how many digital television assignments/allotments use channels in the frequency sub-band 694-790 MHz (as indicated in Resolution **232 (WRC-12)**), and
d) How many are in the remaining part of the UHF band.

Reply:

- a) Channels in use range from 21 to 60. Channels intended to use range from 21 to 60.
b) See Appendix 1.
c) About 70 assignments use channels in the range 694-790 MHz.
d) About 390 assignments use channels in the range 470-694 MHz.

- 6 a) Are those frequency bands also shared with other primary services?

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

Reply:

- a) In the bands 470 – 790 MHz there are no other primary services.

- 7 a) Are those frequency bands also shared with secondary services such as PMSE (Programme Making and Special Events), radio astronomy or wind-profile radar?
b) If yes, please give details of those systems and their spectrum use.

Reply:

- a) 470 – 790 MHz is widely used for PMSE especially for radio microphones; in certain locations huge demand during festival seasons; in some country border areas the demand exceeds the availability of TV white spaces for PMSE in 470 - 790 MHz.

No usage for radio astronomy or wind-profile radar

- 8 a) Do you foresee the adoption or expansion of television services broadcast using second-generation systems such as DVB-T2?
b) If yes, please give indicative details of the planned transition, including any simulcast period.

Reply:

- a) The introduction of DVB-T2 on 3 layers is starting 2013 in addition to existing DVB-T channels, encompassing 8 nationwide channels plus a selective range of regionally available channels).
b) No simulcast is necessary as these 3 GE06 layers are not yet in operation.

- 9 a) Do you foresee a requirement for new and enhanced services, including HD and 3D 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:

- a) DVB-T2 starting in 2013 including HD programmes; no 3D programmes planned for the time being due to capacity restrictions. Apart from some local services, the all HD future will start after 2016 (switchover of existing DVB-T layers to DVB-T2).

- b)
- Launch of new TV product planned for first half of 2013
 - Programme variety enhanced from 8 to 40
 - 30 SD + 10 HD programmes
 - Focus on urban areas (indoor reception)
 - Payment model: subscription fee
 - Set Top Boxes as well as TV sets with integrated T2-Tuner at launch
 - Mobile applications in preparation

- 10** 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:

- a) No additional layers as already used and intended are available in the GE06 plan and therefore there are no more possibilities for new country wide multiplexes, however some re-planning could result in some additional channels in densely populated areas in exchange of channels in rural allotment areas.

- 11** a) What is the amount of spectrum you foresee that will be required for terrestrial television broadcasting, if plans in Questions 8, 9 and 10 are to be supported, and services identified in Questions 6 and 7 are to be taken into account? Please indicate the modes of transmission that will be used, and timeframes.
If appropriate, a suggested form to express these requirements is shown in Annex 3.

Reply:

- a) See the following table

Country	No of multiplexes	System & modulation	FEC	GI	Reception mode ³	Capacity per multiplex (Mb/s)	Intended percentage population coverage	Content per multiplex	Total capacity (Mb/s)	Total spectrum bandwidth needed (MHz) ⁴	Any additional comments including time frames
AUT	7 MUX 1 Layer	DVB-T, 16-QAM	3/4	1/4	Fixed/portable indoor	14.93	97.0%	3 SD MPEG2	14.93	320	Licence till 2016 New licence with switchover to DVB-T2 after 2018
AUT	2 MUX 1 Layer	DVB-T, 16-QAM	5/6	1/8;1/4	Fixed/portable indoor	16.59	86.0%	4;5 SD MPEG2	16.59		Licence till 2016 New licence with DVB-T2 starting 2016
AUT	3 MUX 3 Layer	DVB-T2, 64-QAM	3/4	1/8	Fixed/portable indoor	27.61	85%	9 HD MPEG4 17 SD MPEG4	82.83		In operation from 2013
AUT	9 MUX 1 Layer	DVB-T, QPSK; 16-QAM	2/3;3/4	1/8;1/4	Fixed	7.37-16.59	70%	5 SD MPEG2	7.37-16.59		Consists of regional and local multiplexes
AUT	7 MUX	DVB-T, QPSK; 16-QAM	2/3;3/4	1/8;1/4	Fixed	7.37-16.59	10%	1-3 SD MPEG2	7.37-16.59		Local multiplexes using TV white spaces

The figure of the intended coverage means always for fixed reception.

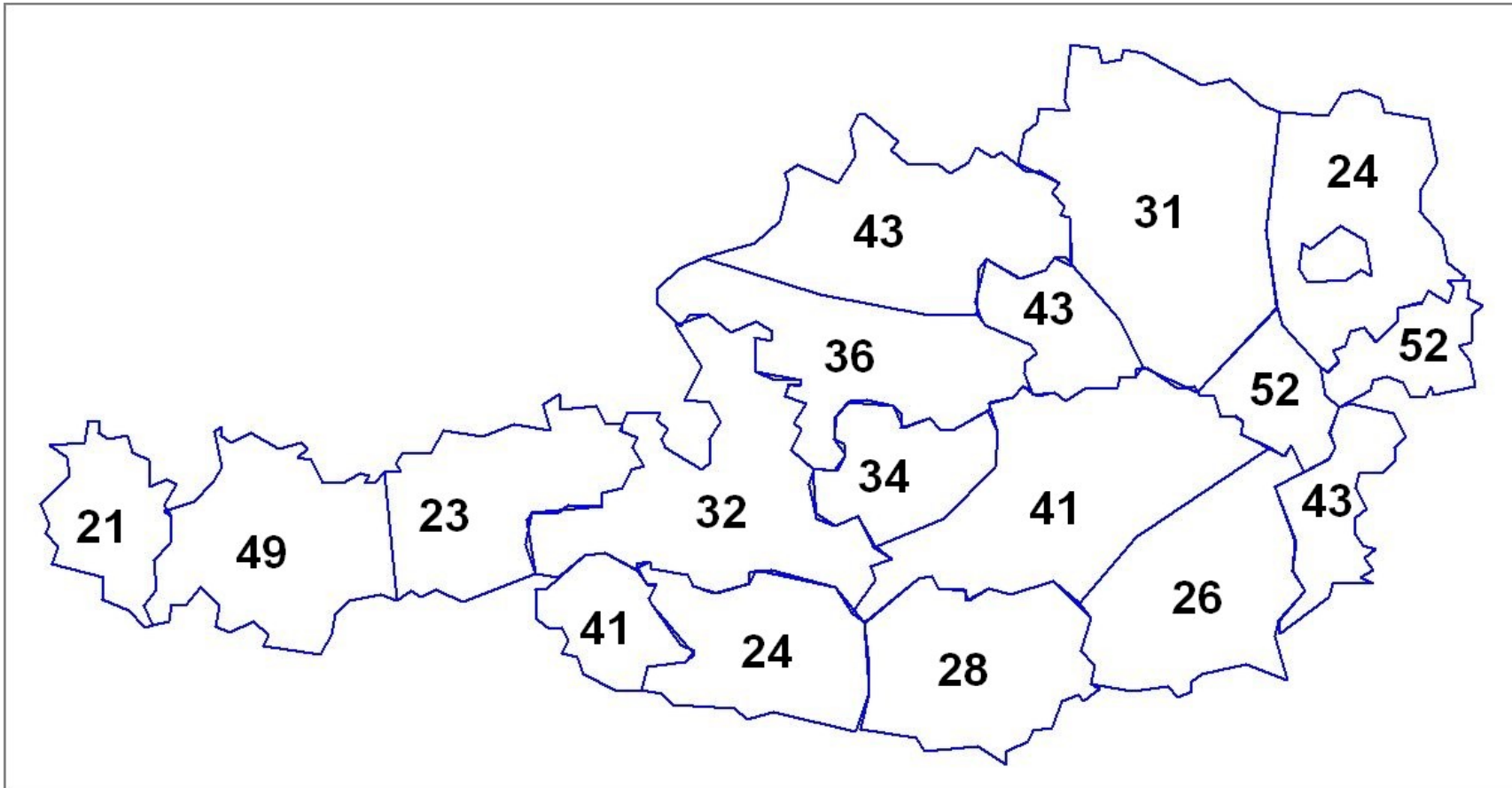
For 5 Layers the intended coverage for portable indoor is 35%.

³ E.g. fixed, portable outdoor/mobile, portable indoor.

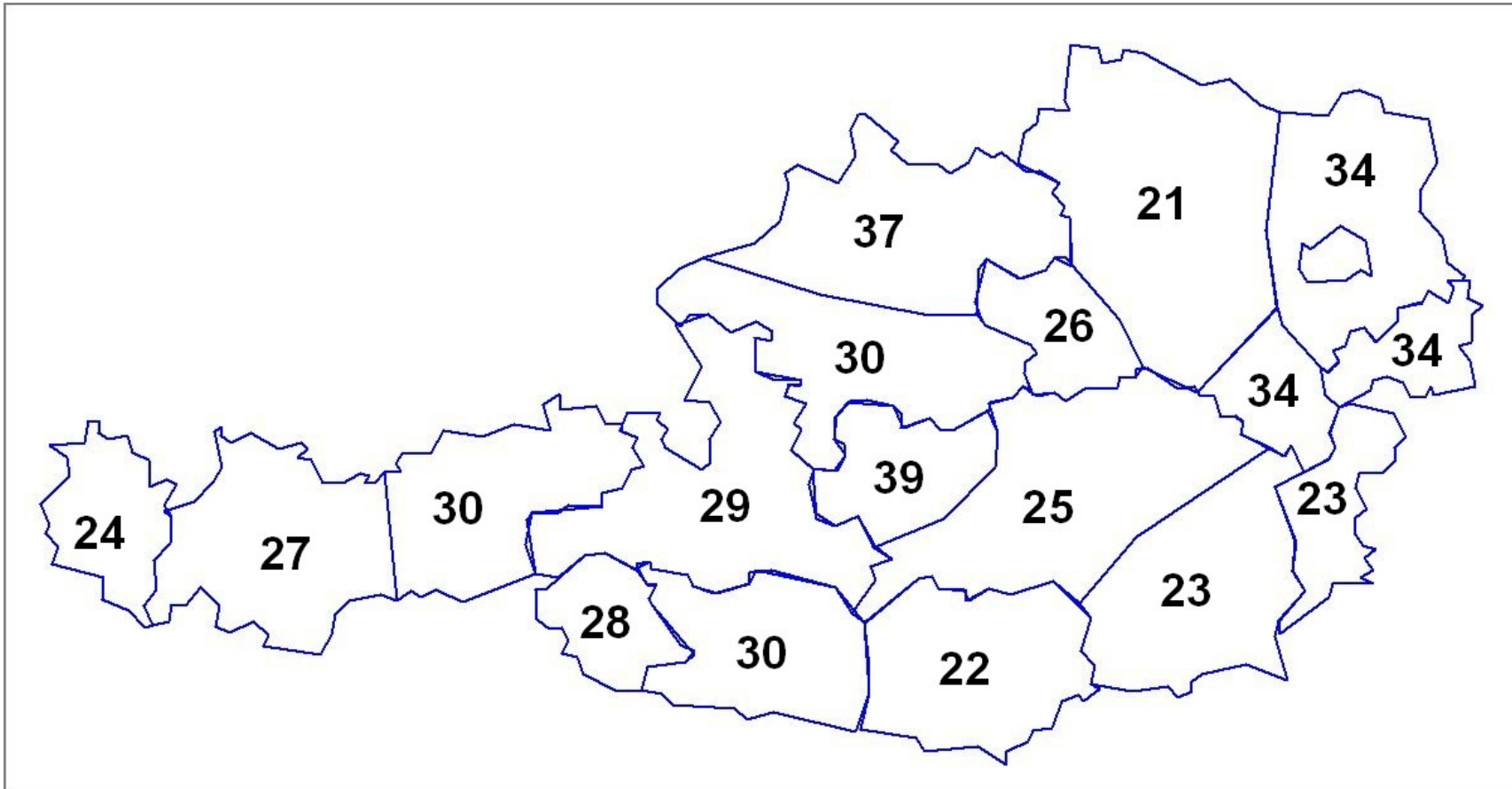
⁴ Refer Sections 2 and 3 on page 1 of this circular.

APPENDIX 1

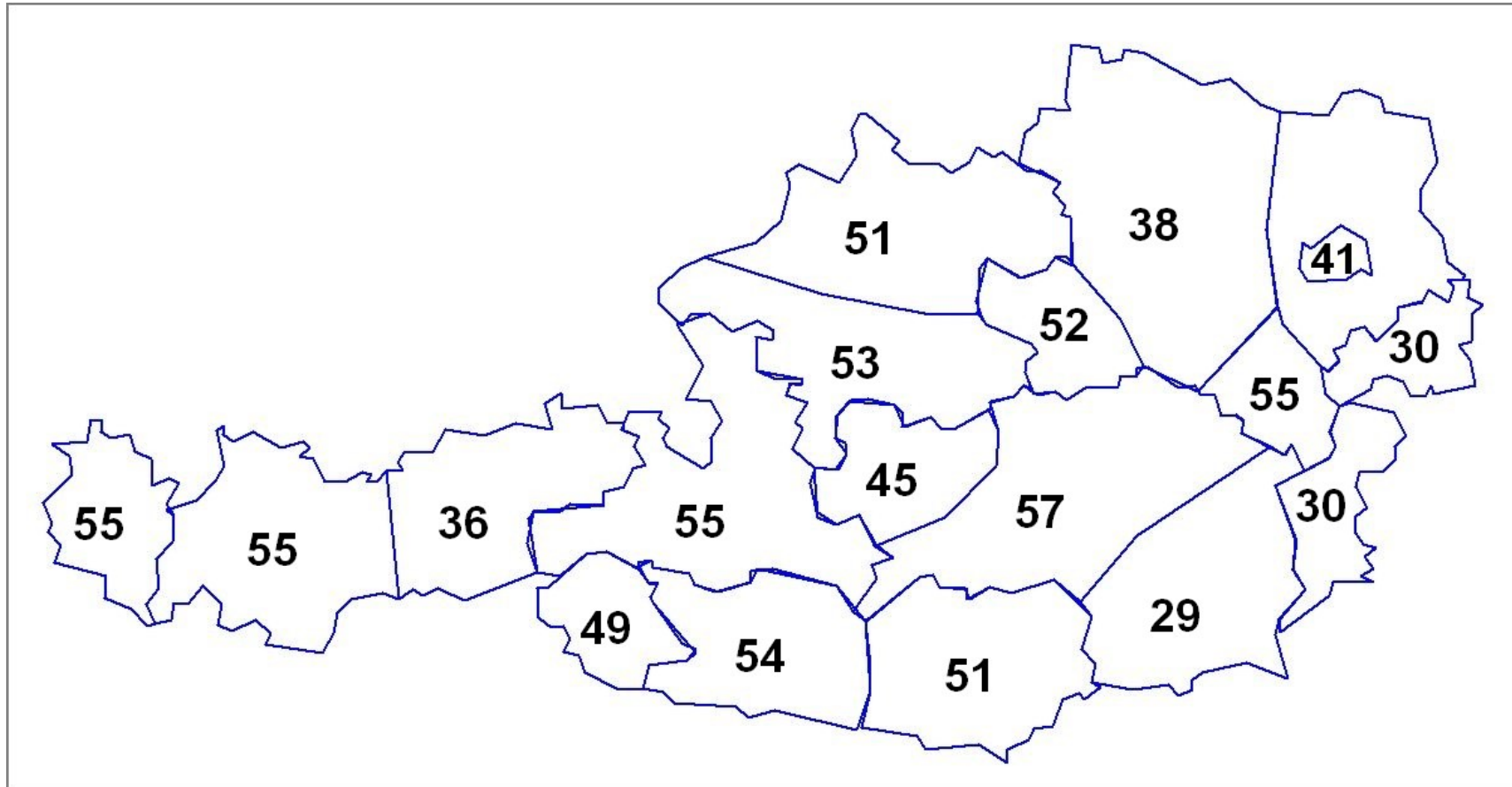
Layer 1:



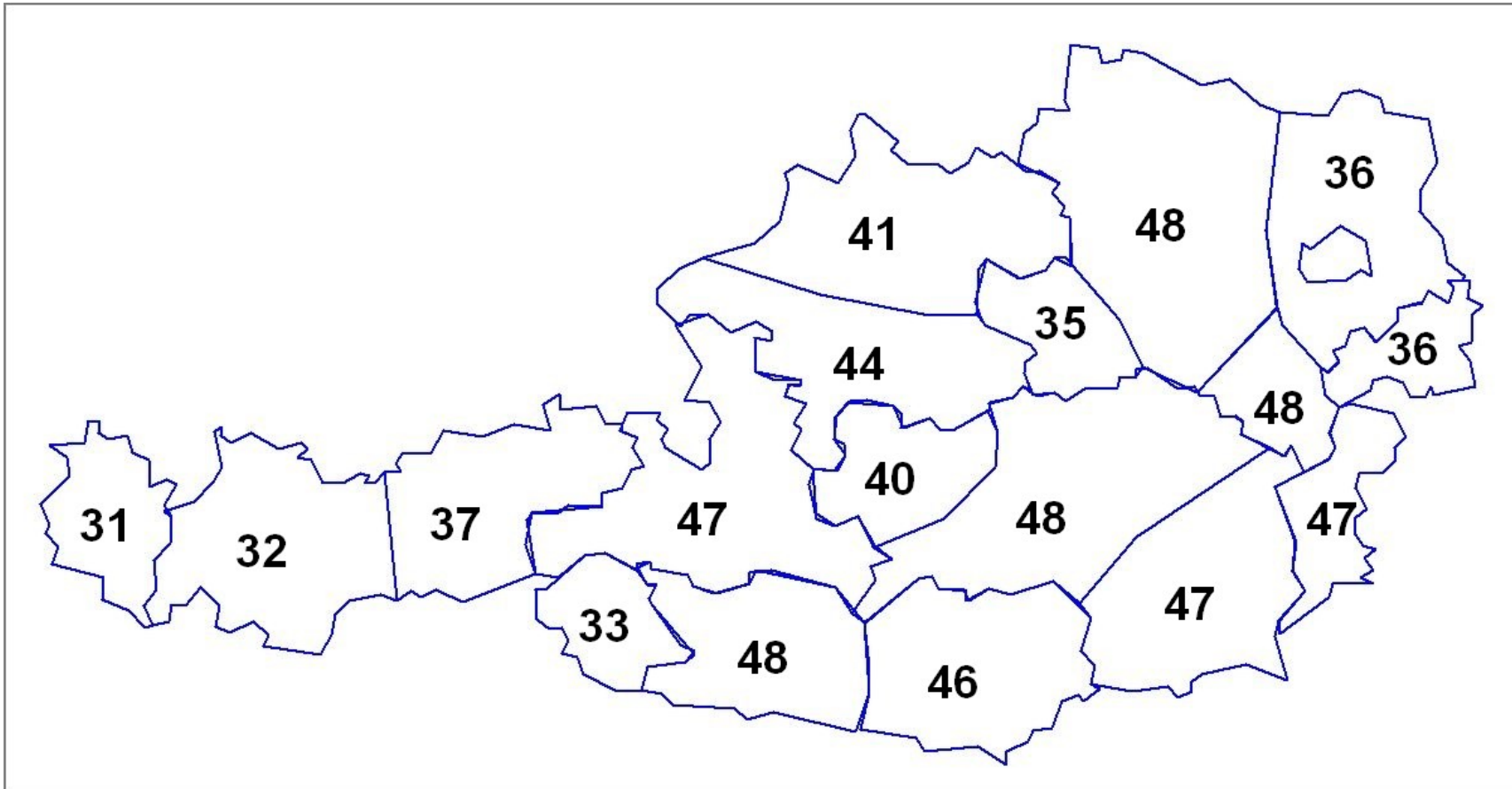
Layer 2:



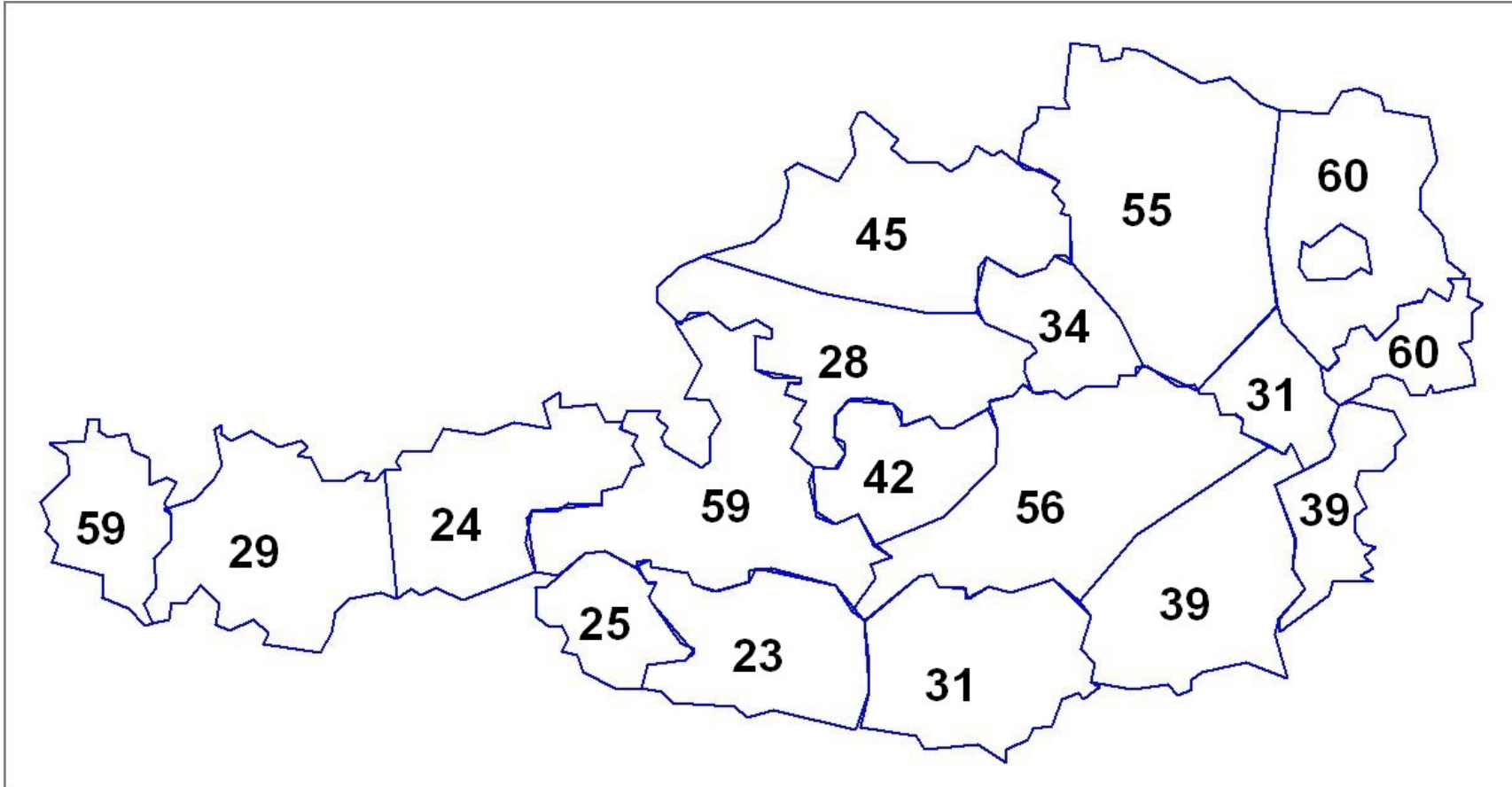
Layer 3:



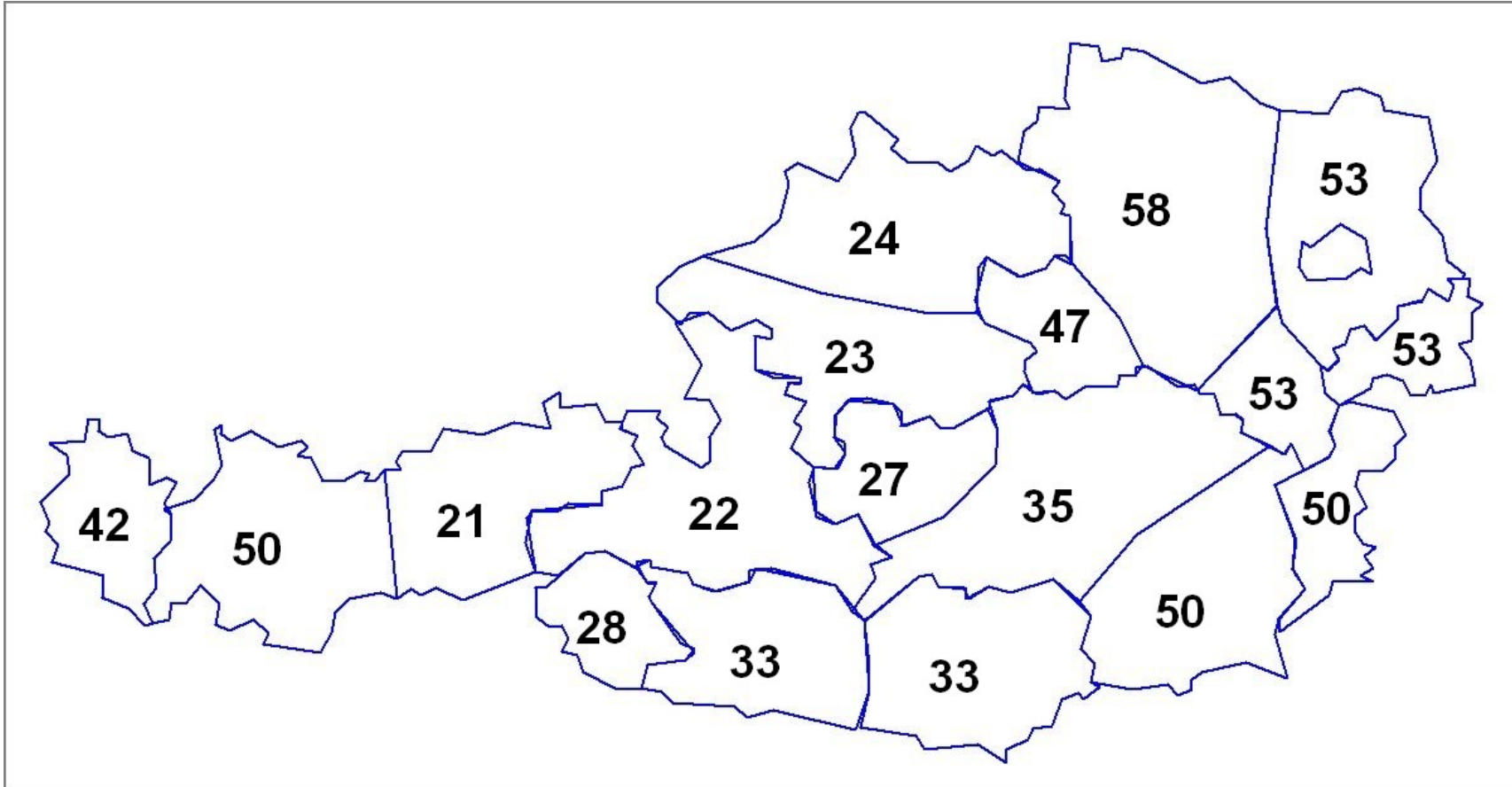
Layer 4:



Layer 5:



Layer 6:



Layer 7:

