



# Radio spectrum strategies – necessity, opportunity, involvement

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Licensing of the 800/2600 MHz bands

view from Bosnia nad Herzegovina

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# Introduction

## BiH national frequency allocation table

Use the advanced search to filter frequency bands by specified parameters in lower fields

Lower Frequency	Upper Frequency	Unit	Allocation	Footnotes	Application	Regulation	ETSI Standards	Manner of Assignment	Documents
790	862	MHz							
<input type="button" value="Pretraži"/>									
790	862	MHz	BROADCASTING MOBILE except aeronautical mobile		IMT				
			5.316 5.316B 5.317A	EU2 EU13	Radio microphones and ALD	ERC/REC 70-03	EN 300 422		
					SAP/SAB and ENG/OB			po primljenim zahtjevima	Application Form
					Defence systems				
					TV analogue (terrestrial)	GE06	EN 300 744 EN 302 297		





## Relevant footnotes from WRC07

**5.316** Additional allocation: in .... Bosnia and Herzegovina, ..., the band 790-830 MHz, and ...830-862 MHz, ...**allocated to the mobile**, except aeronautical mobile, service on a primary basis. However, stations of the mobile service ... **shall not cause harmful interference** ...This allocation is **effective until 16 June 2015**. (WRC-07)

**5.316B** In Region 1, the **allocation to the mobile**, except aeronautical mobile, service **on a primary basis** in the frequency band 790-862 MHz **shall come into effect from 17 June 2015** ...

**5.317A** Those parts of the band ....790-960 MHz ...are allocated to the mobile service on a primary basis are **identified for use by administrations wishing to implement International Mobile Telecommunications (IMT)**. .... (WRC-07).





## COMMISSION DECISION 2010/267/EU Annex Part A1. General parameters:

790-791	791-796	796-801	801-806	806-811	811-816	816-821	821 – 832	832-837	837-842	842-847	847-852	852-857	857-862
Guard band	Downlink						Duplex gap	Uplink					
1MHz	30 MHz (6 blocks of 5 MHz)						11 MHz	30 MHz (6 blocks of 5 MHz)					

Figure 2: Preferred harmonised channelling arrangement for the band 790-862 MHz

### Predictions of Delta Partners\*:

- o In most countries three equally sized 2 x 10 MHz DD licenses to be awarded
- o National incumbent to get one of 3, other two to be acquired by early or late entrant challengers i.e. in countries with more than three operators at least one of them will be left out without a 800 MHz license.

\*The Digital Dividend in Europe: in the eye of “The Perfect Storm” April 2011 [www.deltapartnersgroup.com](http://www.deltapartnersgroup.com)





## Current situation in BiH

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**Three incumbents (with mobile operations) defined by BiH telecommunication sector policy for the period from 2008 – 2012:**

### **GSM**

*The number of Global System for Mobile Communication (hereinafter: GSM) in BiH remains three (3). This limitation expires if comes to market of mobile communication increasing, through uniting, or through introducing new operator on market.*

### **UMTS**

*During 2008, the Council of Ministers will, by the special Decision, fortify when and under which conditions the CRA will publish UMTS Licences to the existing GSM operators in B&H.*

### **Result**

**Sector spectrum symmetry (equal licence duration and spectrum ownership)**

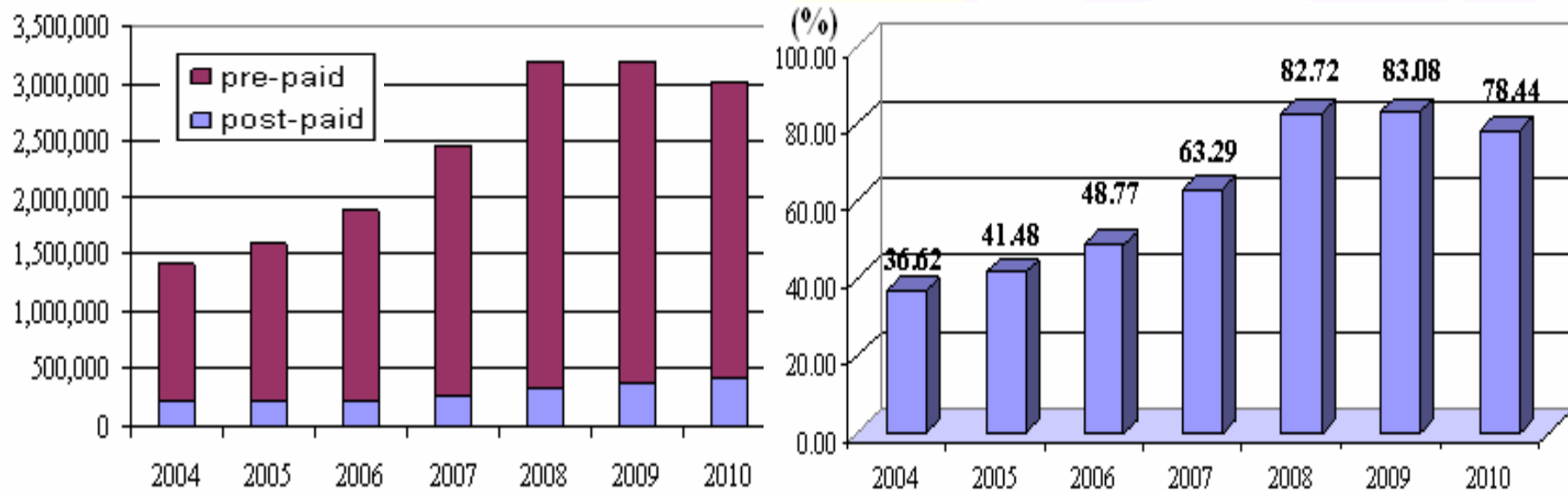




## Current situation in BiH

2/4

### Mobile subscribers in BiH



\*Decrease of mobile subscribers in 2010 due to implementation of a new definition of mobile subscribers.

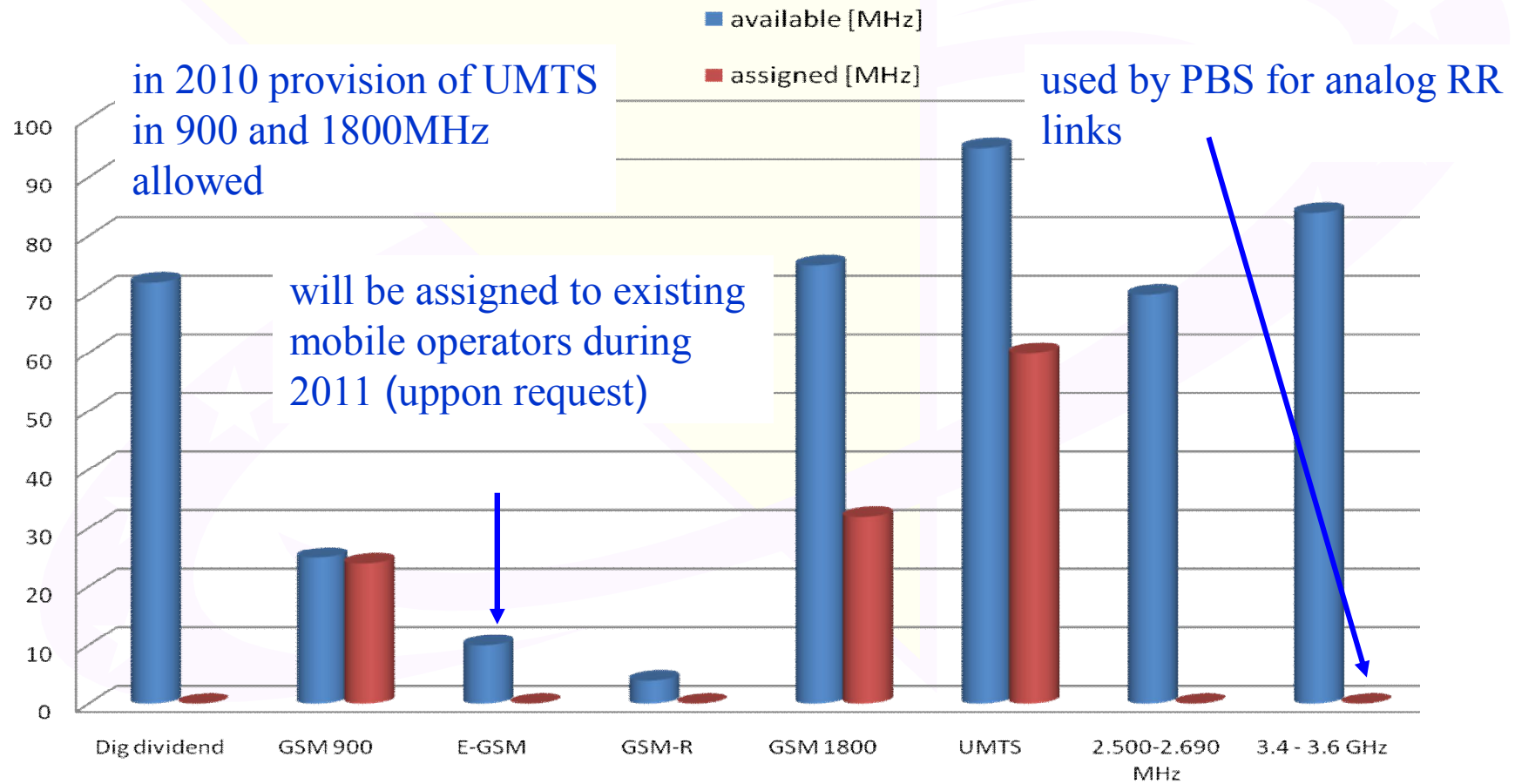
Use of mobile network  $\approx$  predominant voice traffic





# Current situation in BiH

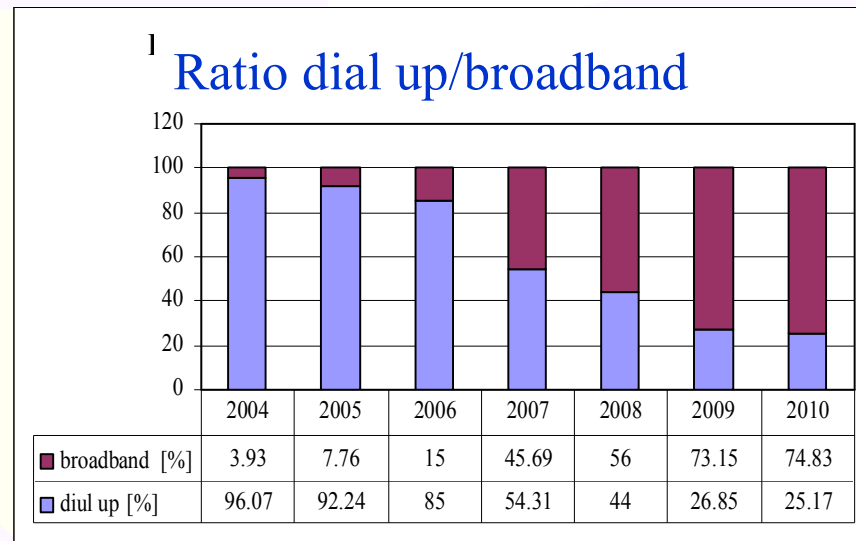
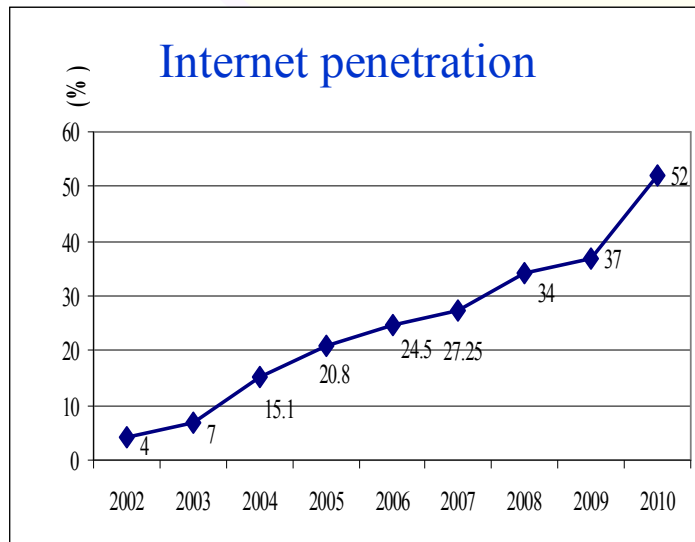
## Mobile spectrum in BiH.





# Current situation in BiH

## Growth of Internet subscribers in BiH



Economic Recovery Plan... cannot be achieved without a significant role being played by wireless infrastructures...,  
...designation of the 800 MHz band for terrestrial systems capable of providing electronic communications services would be an important element... services provided in this frequency band should mainly target end-user access to broadband communications.... (2010/267/EU)





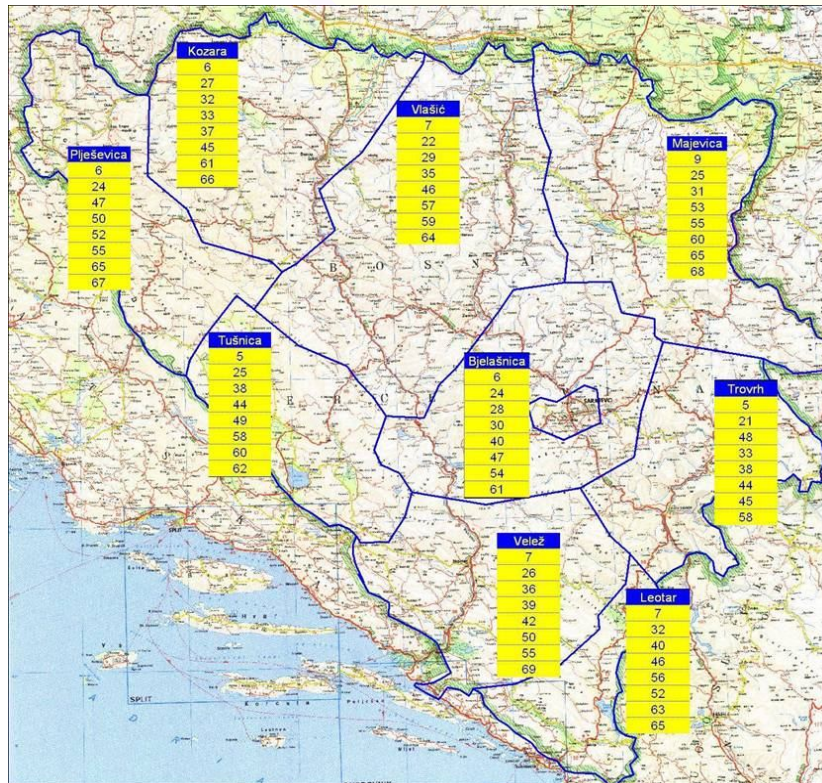


# Issues to be solved

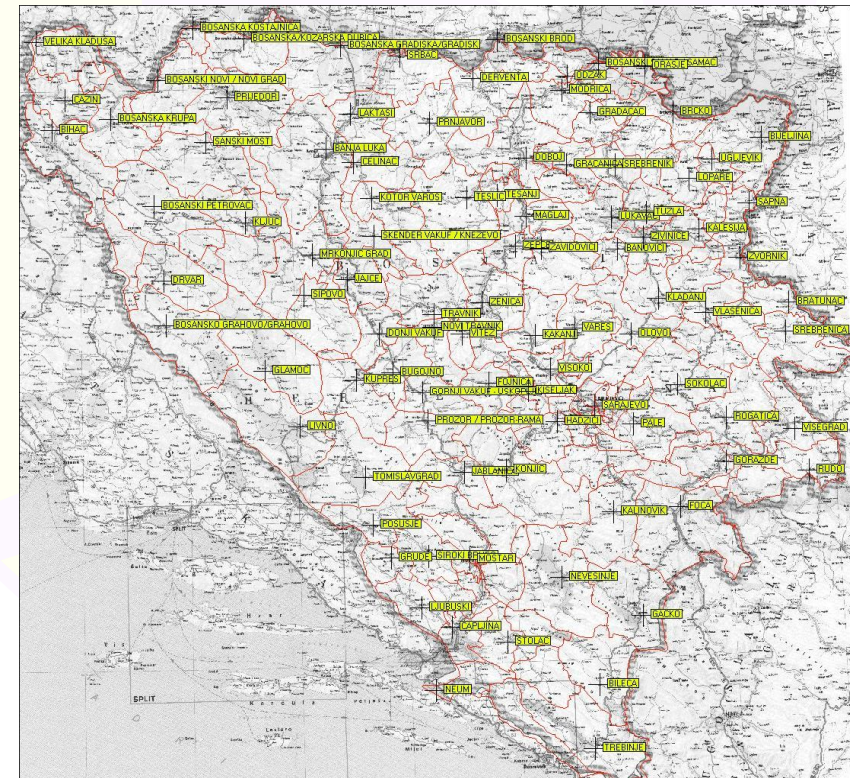
1/4

## GE06 for BiH

National and regional coverage



Local (municipal) coverage:  
2 UHF - channels





# Issues to be solved

2/4

Planned frequencies for MUX A for PBS

Ongoing negotiation for new frequency plan

BIH	BJELAŠNI CA	KOZARA	LEOTAR	MAJEVICA	PLJEŠEVI CA	TROVRH	TUŠNICA	VELEŽ	VLAŠIĆ
1	6	6	7	9	6	5	5	7	7
2	24	27	32	25	24	21	25	26	22
3	28	32	40	31	47	48	38	36	29
4	30	33	46	53	50	33	44	39	35
5	40	37	56	55	52	38	49	42	46
6	47	45	52	60	55	44	58	50	57
7	54	61	63	65	65	45	60	55	59
8	61	66	65	68	67	58	62	69	64

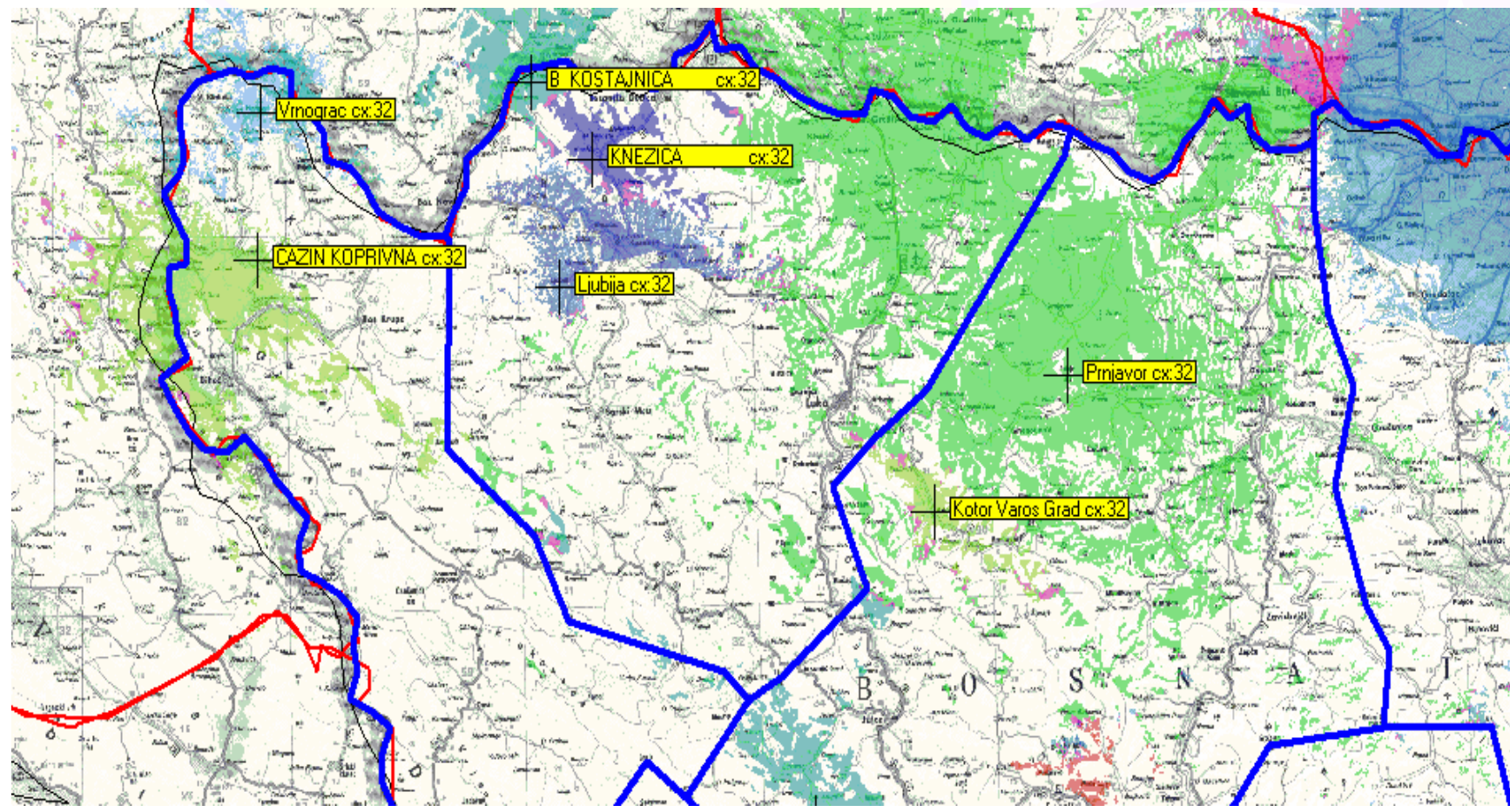




# Issues to be solved

3/4

## Example 32 channel - Kozara



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Slide 11

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Регулаторна агенција за комуникације  
Communications Regulatory Agency

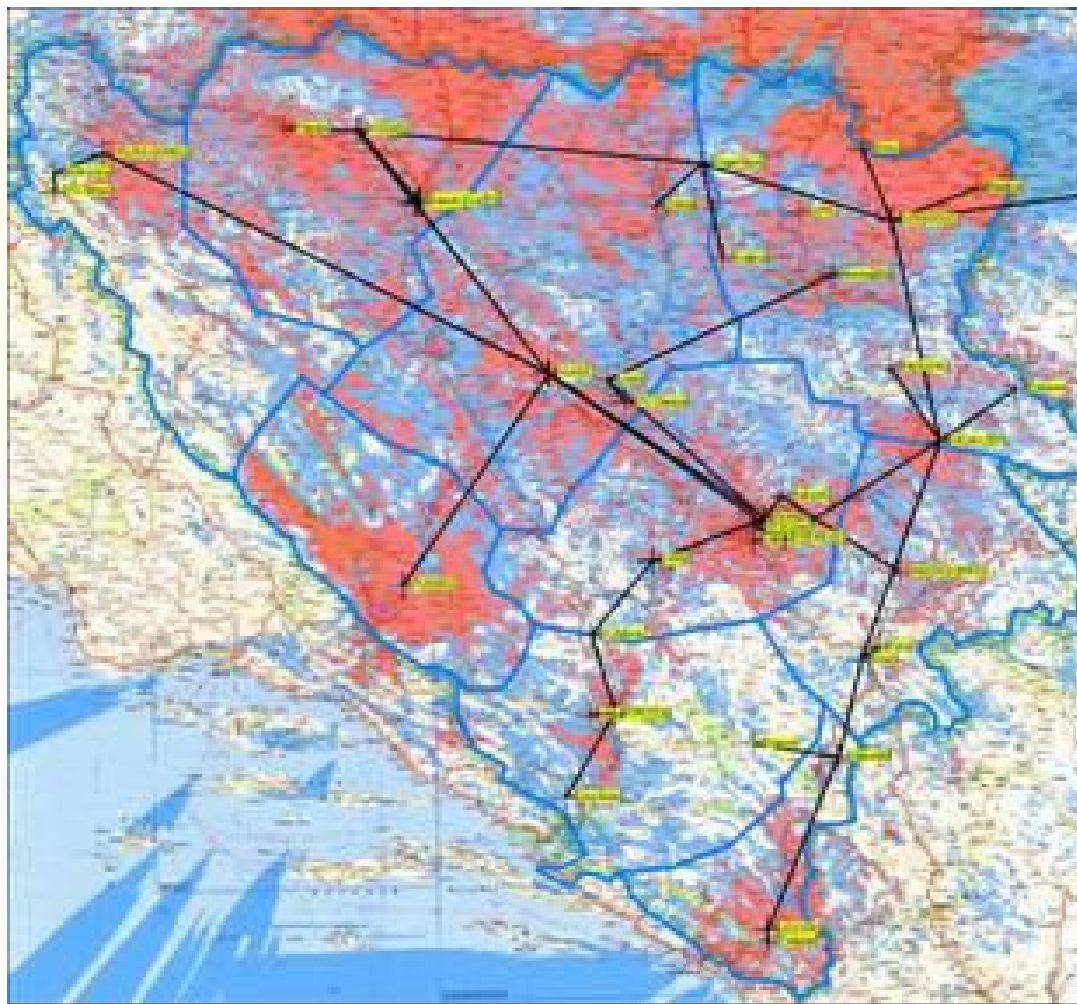




# Issues to be solved

4/4

Digitalisation of complete  
RR transmission system of  
PBS



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Slide 12

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Регулаторна агенција за комуникације  
Communications Regulatory Agency





# Issues to be solved

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## BiH DTT strategy - Conclusions

1. In Bosnia and Herzegovina, analogue broadcasting will be fully switched-off in UHF band not later than December 1<sup>st</sup>, 2011;
2. When introducing digital terrestrial television in Bosnia and Herzegovina, the DVB-T standard with MPEG-4 (H.264/AVC) compression system will be used;
3. The transition period for the switch-over to digital terrestrial broadcasting should be as short as possible;
4. The introduction process for the digital terrestrial broadcasting should be conducted in phases (which are interdependent and interrelated)
5. A public campaign should be conducted with the aim to inform and educate the BH public about the introduction process of digital terrestrial broadcasting, to present advantages of digital television and the steps expected from citizens in preparing their households to receive the digital TV signal in accordance with the given deadlines;
6. Provide subsidies for the purchase of the DVB-T receivers. These subsidies will significantly speed up the process of transition to DTT, because it is an efficient way to stimulate citizens to buy these devices as soon as possible. In this way the penetration of receivers in the market will be observed, which will enable TV stations to make sooner decisions to introduce digitalization to their programmes and access the multiplex.





## Possible way forward

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1. Reach agreement with PBS regarding use of new frequency plan for DTV (ongoing process already started);
2. In new Sector policy (for period after 2012) approach for licencing 800/2600 MHz spectrum should be defined.

Possible scenario (based on current policy):

- 800/2600MHz spectrum to be offered to incumbents;
- In case that one of the operators for any reason whatsoever does not accept the conditions ..., the Gov't will define the manner of disposal of unallocated range of frequency spectrum by special Decision.
- Frequency package for new entrant (800/2600MHz +?) maintain existing spectrum symmetry.
- In addition, due to the lack of spectrum resources for RR transmission network some changes in BiH utilisation table should be considered.





Thank you for your attention

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