



[www.geology.sk](http://www.geology.sk)

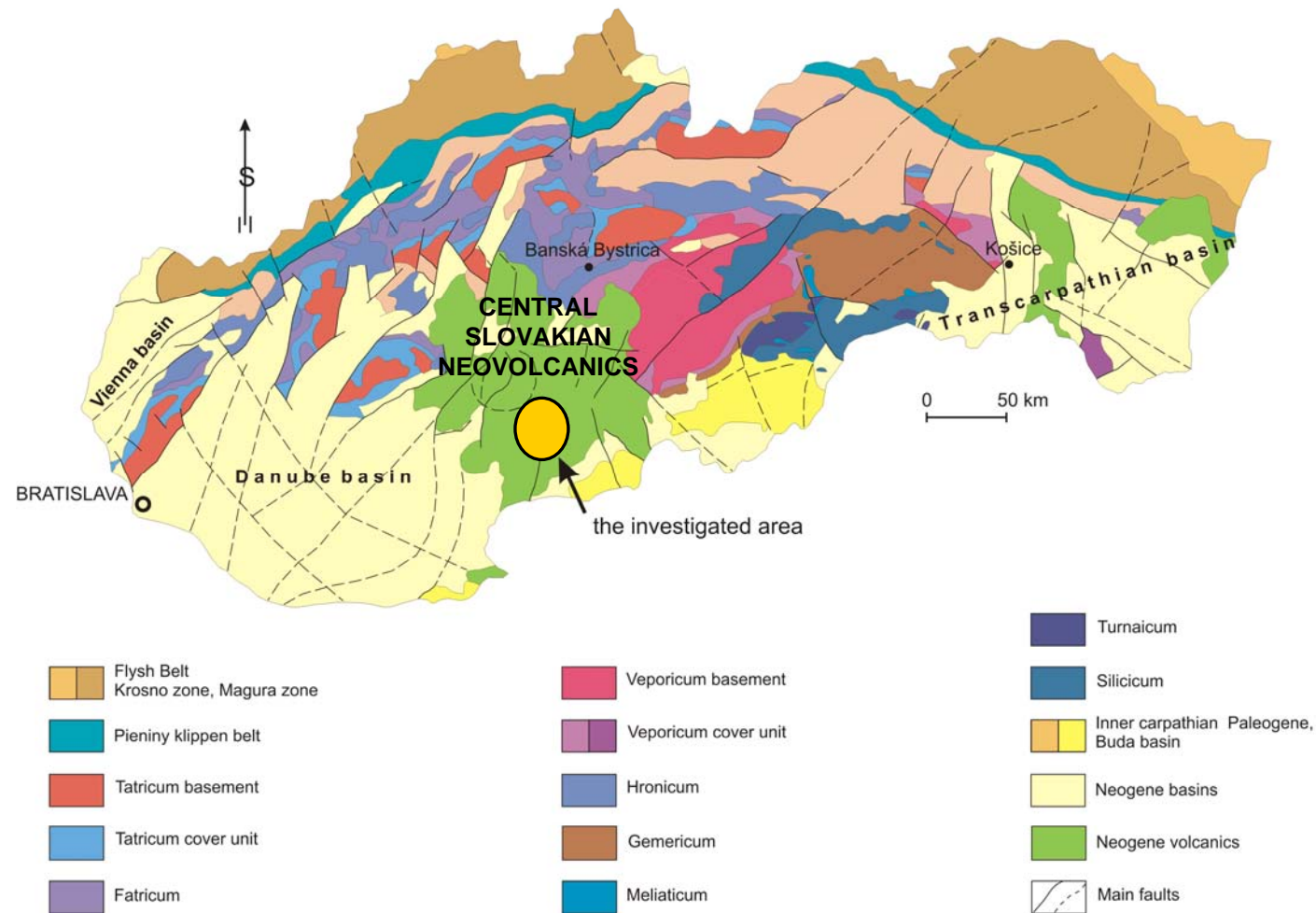
# Example of a geological structure possible for CO<sub>2</sub> storage

L'udovít Kucharič





## Tectonic sketch of Slovakia (after Biely, 1995)

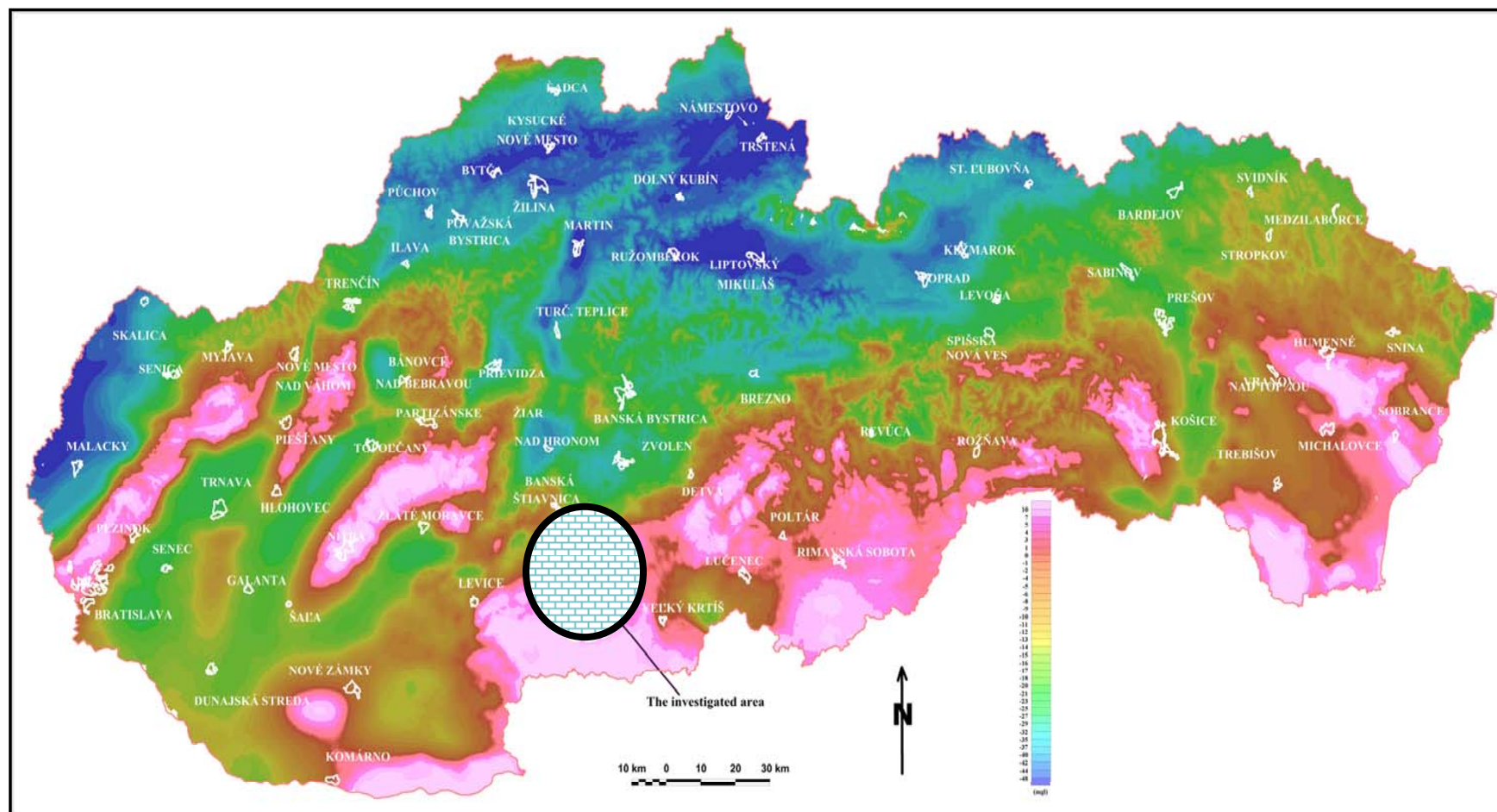




# BOUGUER'S ANOMALIES MAP

vol. density 2,2 g/cm<sup>3</sup>

adapted after Grand, et al., 2001

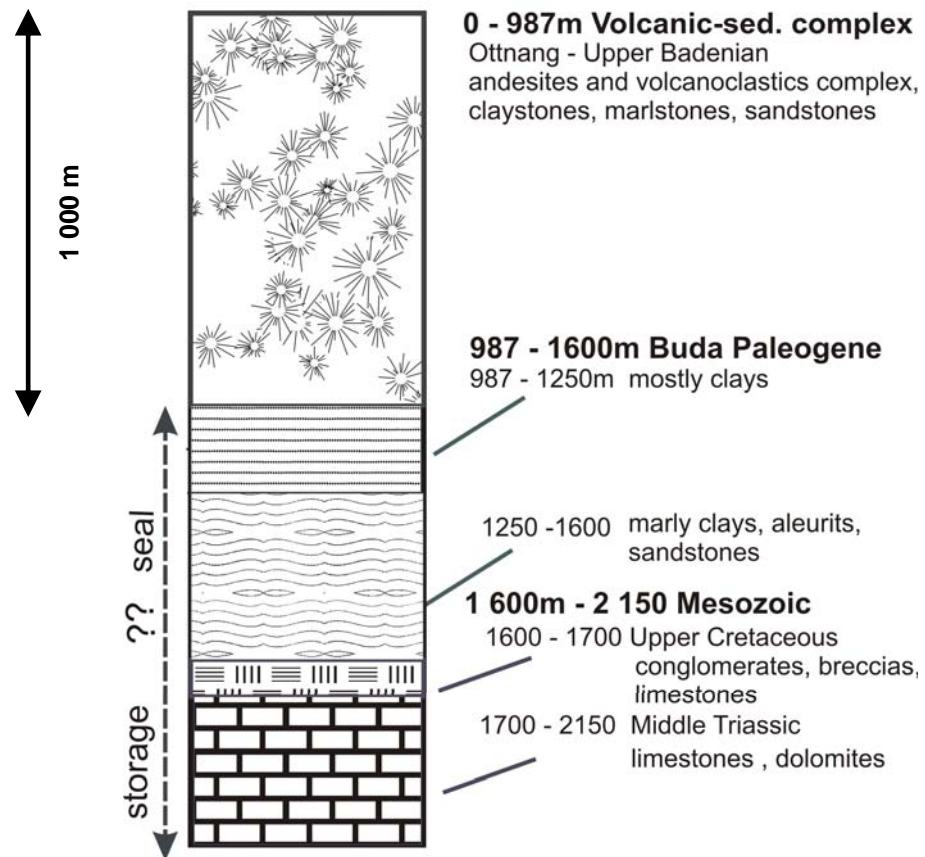






# GRAVITY ANOMALY VERIFICATION

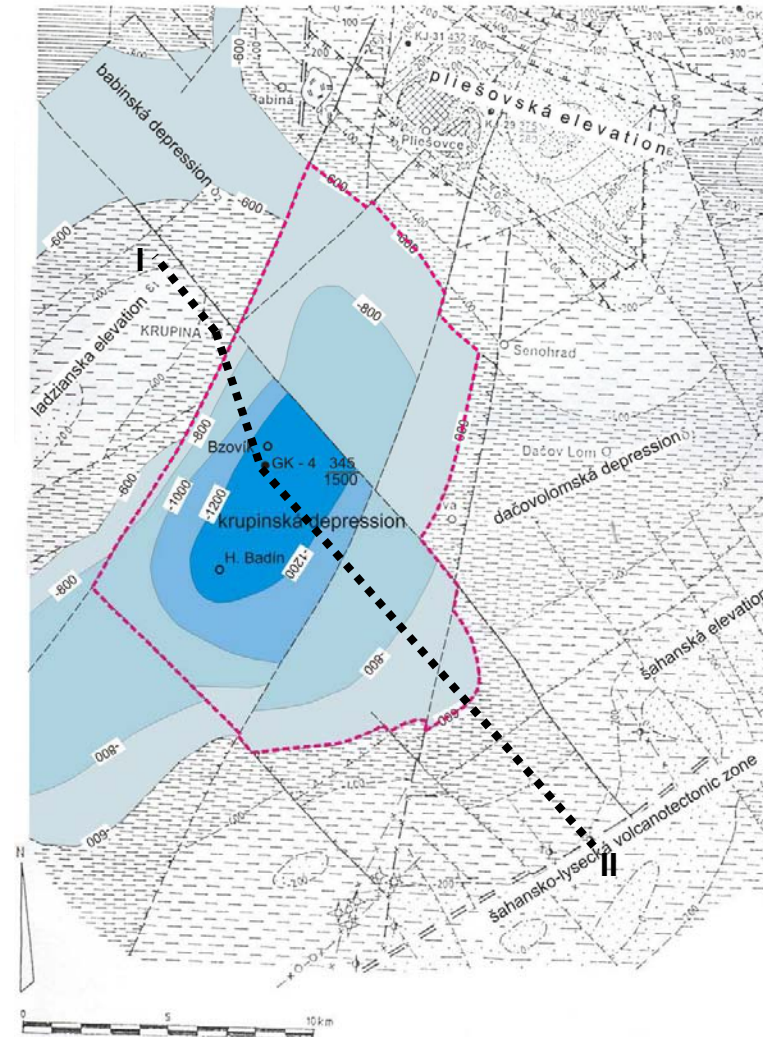
## The borehole GK - 4 simplified profile (after Biela, 1978)





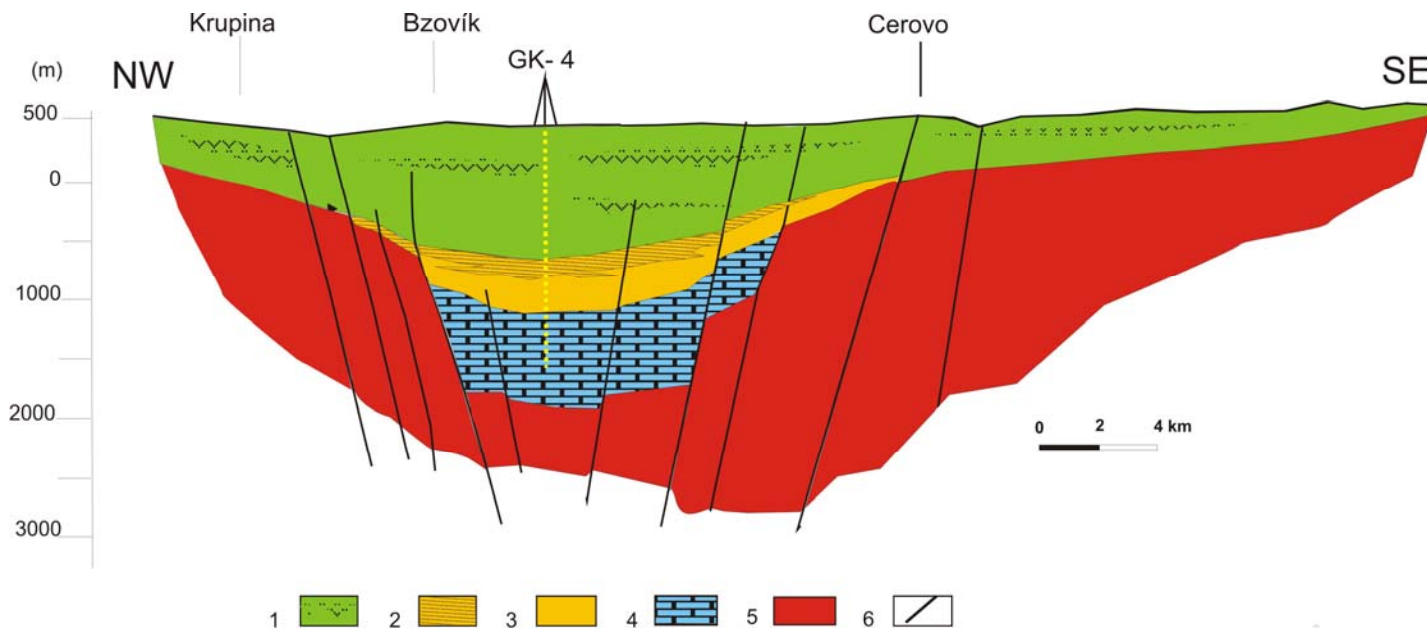
# Structural - tectonic map with depth of pretertiary basement

( After: V. Konečný, A. Panáček, J. Šefara, 1988 )





# Geological profile through the GK – 4 borehole

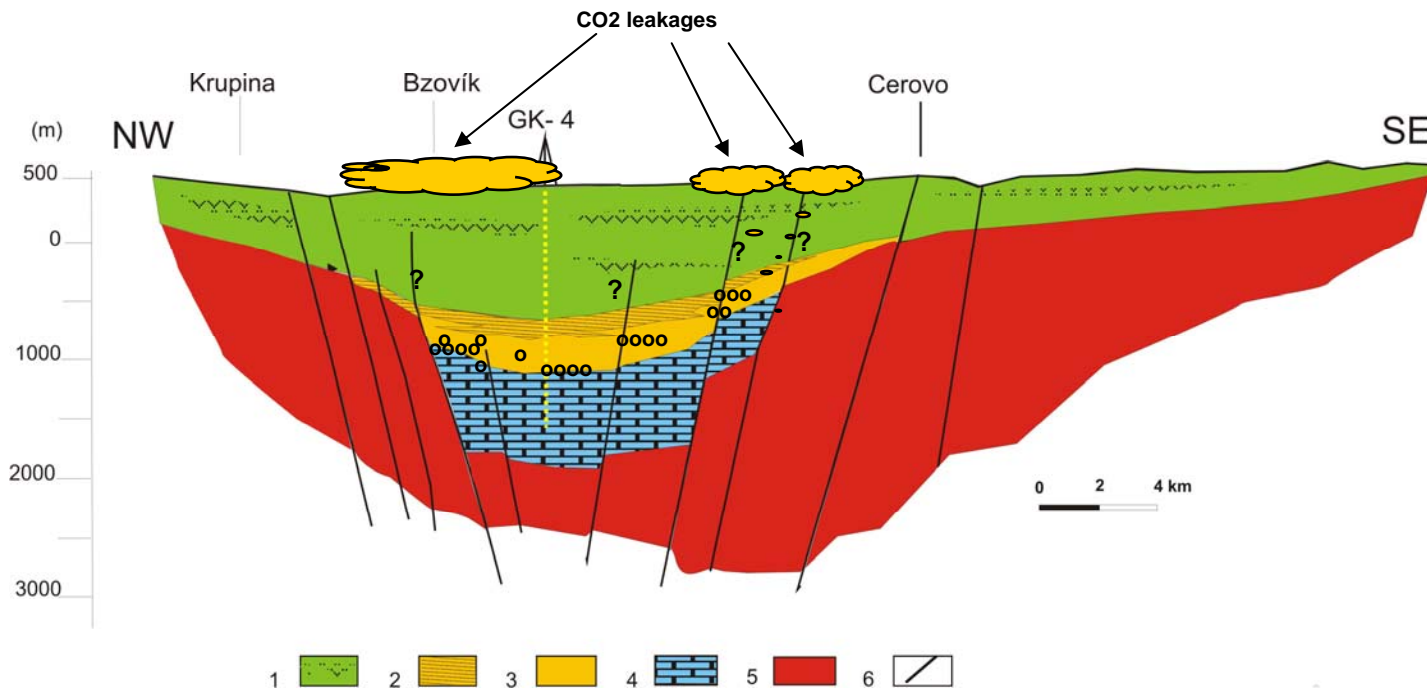


1 volcanic - sedimentary complex; 2 clays; 3 sandstones; 4 carbonates; 5 basement; 6 faults





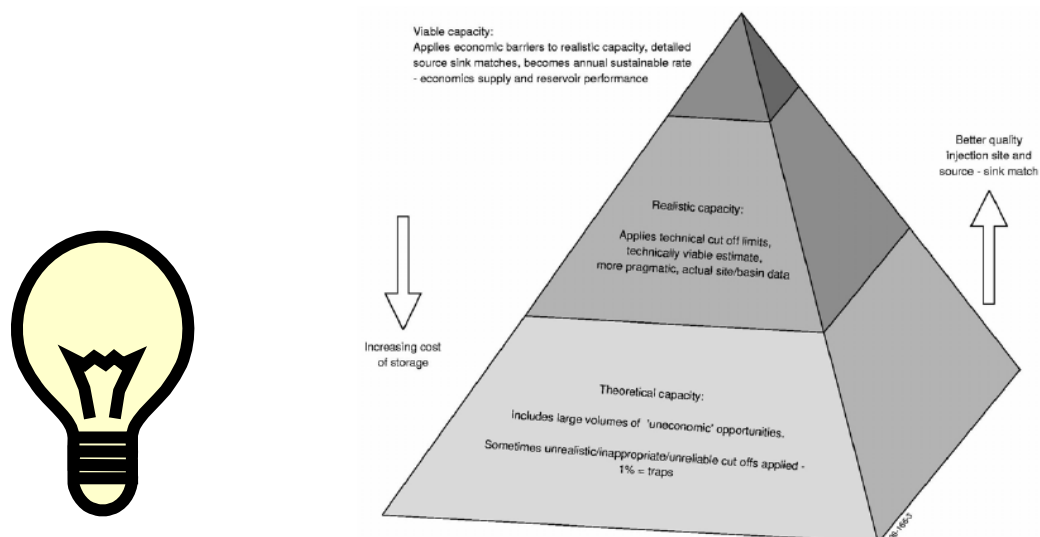
# Geological profile through the GK – 4 borehole



1 volcanic - sedimentary complex; 2 clays; 3 sandstones; 4 carbonates; 5 basement; 6 faults



# Capacity calculation shadiness



Capacity Bzovík	area extension	thickness	porosity	CO2density	sweep coef.	capacity CO2	Remark
	(m2)	(m)	(%)	(g/cm3)	(%)	(tons)	
the initialt calcul.	146 000 000,00	200	0,15	0,63	0,30	<b>827 820 000</b>	
variation1	170 000 000,00	300	0,08	0,63	0,10	<b>257 040 000</b>	
variation2	200 000 000,00	300	0,05	0,70	0,08	<b>168 000 000</b>	
variation3	150 000 000,00	200	0,04	0,68	0,06	<b>48 960 000</b>	
variation4	120 000 000,00	150	0,03	0,63	0,04	<b>13 608 000</b>	61x less than the1st





## Discussion

Presented structure possesses features suitable for potential CO<sub>2</sub> storage purposes but it is needed to pay attention at:

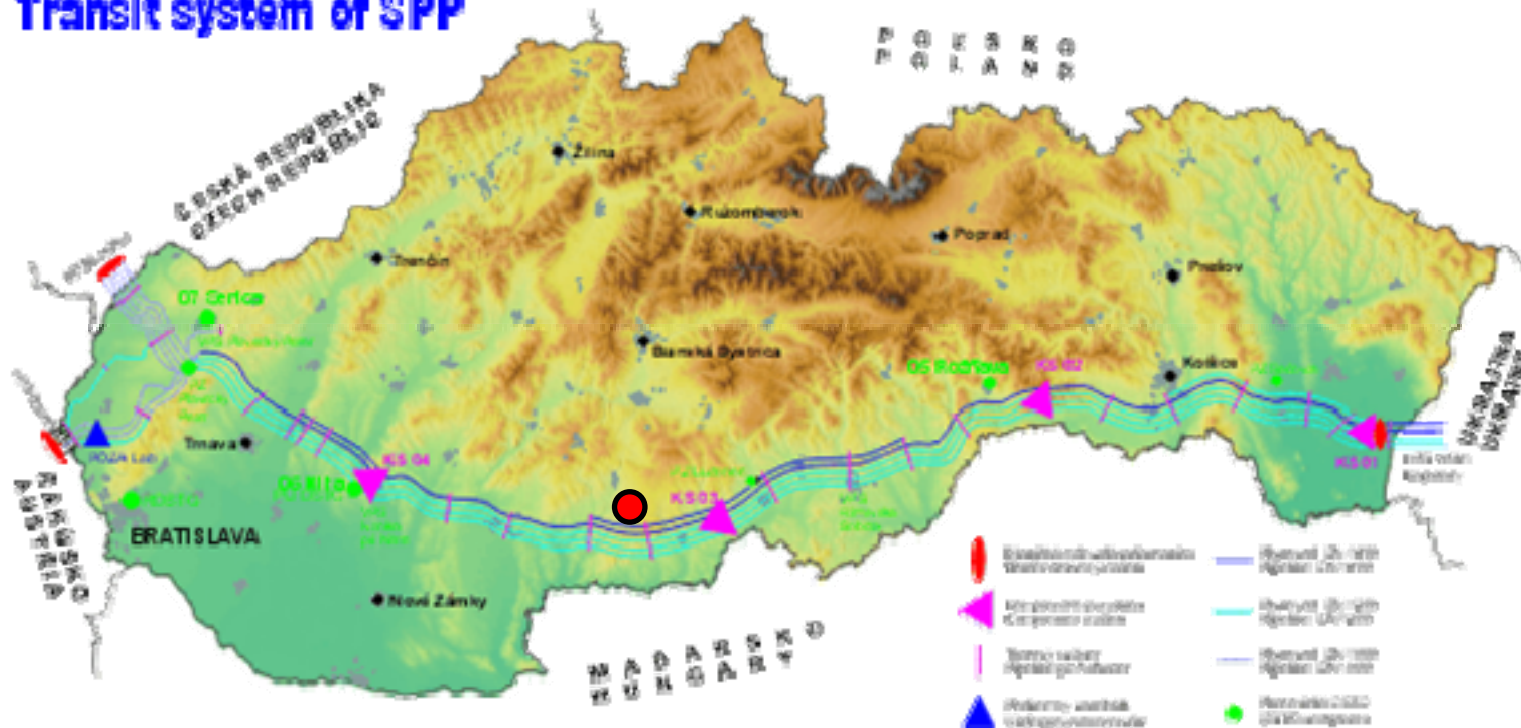
- Storage capacity calculation ambiguity (positive and negative approach) due to lack of reliable data
- Sharing hydrogeological storage and mineral sequestration
- Faulting effect - connected with structural pattern (open, closed faults)
- Lithology influence – continual development trapping and collector horizons in 3D space
- Footwall character is derived from general geological pattern only



# Storage site – CO<sub>2</sub> big source position

Source [www.spp.sk](http://www.spp.sk)

**Tranzitný systém SPP**  
**Transit system of SPP**







## Storage site – CO<sub>2</sub> big source position, more detail







# CONCLUSION

- Locality in question exhibits feature suitable for potential CO<sub>2</sub> storage site in this stage of investigation
- The big source of CO<sub>2</sub> emissions – transform gas station Veľké Zlievce (transit gas pipeline) with annual production 520 kT is situated ca 25 km of storage site
- Pessimistic calculation volume is sufficient for at least 20 years life cycles of storage site by using above mentioned source only
- There are in the radius about 100 km of locality several big sources with overall annual production to 1.5 mil. Tons of CO<sub>2</sub>
- From this point of view the locality in question can be a good potential target for possible CO<sub>2</sub> storage, on condition, that detailed tangible geological and technical works will be realized.



Thank you very much for your attention