

***Ministry of Environment
of the Slovak Republic***



***STATE OF THE
ENVIRONMENT REPORT
SLOVAK REPUBLIC
2010***



Slovak Environmental Agency

• ROCKS

Key questions and key findings

◆ Key questions

- What is the trend in the development of geological hazards that threaten the natural environment and ultimately also the humans?

◆ Key findings

- Large number of newly formed accidental landslides occurred due to extremely intensive precipitations in 2010.
- Extreme precipitations have negatively impacted also the condition of already existing slides and slope deformities.
- In terms of long-term stability, there is an increased risk of damage to the physical stability of the sludge beds of Slovinky and Nižná Slaná.
- Adverse situation in environmental pollution remains at the sites monitored within the subsystem of environmental loads of Anthropogenic sediments character, as well as at other sites classified into the system of monitoring the impact of mineral extraction on the environment.
- Alluvial sediments of the rivers of Váh (upper and lower region), Hron (upper region), Muráň, and Danube together with the majority of water courses of the East-Slovakian lowland and the adjacent territories are in fact free of contamination, and concentrations of substances represent mainly their natural contents. Sediments of selected profiles of the Rivers of Nitra, Štiavnica, Hornád, and Hnilec show significant and permanent contamination.

Geological environmental factors

In 2010, monitoring of three basic land movements was implemented within this subsystem - slides (14 monitored sites), creeps (4 sites), and signs of falls activation (10 sites). Sites within the Stabilisation embankment in Handlová and the projected territory of the PVE Ipeľ represent a special group of specific cases for the assessment of the environment stability.

In 2010, 5 878 tele-seismic, regional, or local seismic phenomena were interpreted on the basis of records of seismic stations. More than 26 000 seismic phases were determined on the seismic records. 80 - 90 earthquakes were localised with the epicentre in the focal area of the Slovak Republic.

With regard to the type of environmental threat in 2010, environmental monitoring of landfills and sludge beds was implemented (the sites of Bojná, Myjava, Surovín, and Holíčov hill), Šulekovo, Krompachy - Halňa, Zemianske Kostolňany - Chalmová, Poša, Modra, Hrabovčiek, and Uzovská Panica) along with geotechnical passportisation and the assessment of sludge beds. Sites in the territory of **ore deposits** (Rudňany, Slovinky, Smolník, Novoveská Huta and Rožňava, Pezinok, Kremnica, Špania Dolina, Dúbrava, Nižná Slaná and Banská Štiavnica ore deposits) were monitored in 2010, along with the sites in the areas of **magnesite and talc extraction** (Jelšava, Lubeník, Hnúšťa - Mútnik and Košice - Bankov) and **brown coal extraction** (Mines of the Horná Nitra region).

Geothermal energy

At present, there are 26 designated geothermal areas in Slovakia, taking up 27% of the state's territory. So far, 124 geothermal wells have been made in these designated areas and 1 835 l/s of water with the outflow temperature of 18 - 129°C were analysed. Geothermal water was detected through boreholes of the depth of 92 - 3 616 m. Thermal output of geothermal water at these wells, at using the reference temperature of 15°C, is 313.83 MWt, which represents 5.6% of total above-mentioned geothermal energy potential of Slovakia.

Abandoned mining works

Pursuant to Act No. 44/1988 Coll. on protection and exploitation of mineral deposits (Mining Act), as amended, MoE SR also ensures searching for abandoned mining works. The State Geological Institute of Dionýz Štúr in Bratislava was commissioned to maintain the Register.

Abandoned mining works (state to the date 31st December 2010)

Type of abandoned mine	
Mining shaft	5 561
Pit (hole)	695
Chute	65
Cut, excavation	133
Pingo	3 988
Pingo field	107
Pingo draw	130
Dump	6 646
Old randing	204
Sink mark	281
Placer	26
Tailings dump	53
Other	146
Total	18 035

Source: SGI DS

Minerals deposits balance

Under the geology legislation and pursuant to the GS SR status - the GEOFOND department keeps the register of survey areas for selected geological activities. In 2008, there were 44 survey areas and 50 registered proposals to designate a survey area. As of December 31, 2008, there were 157 recognised areas.

Energy deposits (state to the date 31st December 2010)

Raw material	Number of deposits included into balance	Number of free balance deposits	Number of deposits for mining	Unit	Balance deposits free
Anthracite	1	-	thous. t	2 008	8 006
Bitumen sediments	1	-	thous. t	9 778	10 795
Brown coal	11	4	thous. t	118 599	469 211
Flammable natural gas – gasoline gas	9	2	thous. t	202	398
Lignite	8	1	thous. t	111 535	618 665
Non-resinous gases	1	-	mil. m ³	680	1 360
Underground stores of natural gas	12	1	mil. m ³	133	5 373

COMPONENTS OF THE ENVIRONMENT AND THEIR PROTECTION

Crude oil non-paraffinic	3	-	thous. t	1 632	3 422
Crude oil - semi-paraffinic	8	4	thous. t	129	6 367
Uranium ores	2	-	thous. t	1 396	5 272
Natural gas	35	12	mil. m ³	7 919	24 520
Total	91	24		-	-

Source: SGI DS

Ore deposits (state to the date 31st December 2010)

Type of ore	Number of deposits included into balance	Number of deposits for mining in 2005	Unit	Balance deposits free	Geological deposits
Sb ores	9	0	thous. t	85	3 291
Complex Fe ores	7	0	thous. t	5 751	57 762
Cu ores	10	0	thous. t	-	43 916
Hg ores	1	0	thous. t	-	2 426
Poly-metallic ores	4	0	thous. t	1 623	23 671
Wolfram ores	1	0	thous. t	-	2 846
Gold and silver ores	12	1	thous. t	58 334	172 605
Fe ores	2	0	thous. t	14 476	18 743
Total	46	1		80 269	325 260

Source: SGI DS

Non-metallics deposits (state to the date 31st December 2010)

Minerals and minerals based products	Number of deposits included into balance	Number of deposits for mining	Unit	Balance deposits free	Geological deposits
Anhydride	7	1	thous. t	658 908	1 250 101
Baryte	6	1	thous. t	9 203	12 653
Bentonite	23	7	thous. t	34 758	47 906
Cast basalt	5	1	thous. t	22 563	39 738
Decorative rock	22	2	thous. m ³	11 811	26 193
Diatomite	3	0	thous. t	6 556	8 436
Dolomite	21	8	thous. t	645 284	671 751
Precious stones	1	-	ct	1 205 168	2 515 866
Graphite	1	-	thous. t	-	294
Halloysite	1	-	thous. t	-	2 249
Rock salt	4	-	thous. t	838 697	1 349 679
Kaolin	14	-	thous. t	50 891	59 778
Ceramic clays	38	6	thous. t	117 778	192 661
Quartz	7	-	thous. t	301	327
Quartzite	15	-	thous. t	17 448	26 950
Magnesite	10	3	thous. t	757 337	1 159 843
Talc	5	1	thous. t	93 706	242 171
Mineralized I - Br waters	2	-	thous. m ³	3 658	3 658
Pearl stone	5	1	thous. t	30 164	30 484
Pyrite	1	-	thous. t	-	14 839
Gypsum	6	1	thous. t	49 192	93 428
Sialitic raw material	5	2	thous. t	109 021	122 384
Glass sands	4	2	thous. t	410 742	589 468
Mica	1	-	thous. t	14 073	14 073
Building rock	133	85	thous. m ³	637 959	756 272
Gravel sands and sands	23	11	thous. m ³	145 491	164 577
Brick clay	38	7	thous. m ³	96 322	118 944
Techn. usable miner. crystals	3	-	thous. t	253	2 103
Limestone – unspecified	30	15	thous. t	1 933 740	2 293 424
High-content limestone	10	4	thous. t	3 189 433	3 353 355
Limestone-marl	8	2	thous. t	164 669	166 921
Zeolite	6	3	thous. t	108 024	113 215
Foundry sands	14	1	thous. t	277 336	508 028
Refractory clays	7	-	thous. t	3 090	5 314
Feldspars	8	-	thous. t	20 548	21 786
Total	487	164	-	-	-

Source: SGI DS

Classification of mineral deposits by state of extraction (state to the date 31st December 2010)

Extraction symbol	Characteristics	Number of deposits
1	<i>Deposits with developed extraction activity</i> include exclusive mineral deposits sufficiently open and technically apt for extraction of industrial deposit.	225
2	<i>Deposits with fading extraction activity</i> include extraction mineral deposits where extraction activity will cease in a near future (within 10 years)	29
3	<i>Deposits before completion</i> include exclusive mineral deposits with documented deposits that give basis to one of the construction phases (starting with the projection phase)	27
4	<i>Deposits with ceased extraction</i> include exclusive mineral deposits with definitely or temporarily stopped extraction activity.	92
5	<i>Non-extracted deposits</i> include documented exclusive mineral deposits soon to be constructed and extracted.	43
6	<i>Non-extracted deposits</i> include documented exclusive mineral deposits with no plans for their extraction.	200
7	<i>Surveyed deposits</i> include deposits of exclusive and non-exclusive minerals with various degree of mapping.	13
Total		629

Source: SGI DS

Non-reserved mineral deposits (state to the date 31st December 2010)

Raw material	Number of listed deposit sites	Number of sites with extraction activities
Slate	3	-
Floatation sand	1	-
Tailing rocks	7	2
Clay	1	-
Other minerals	2	-
Sialitic raw material	6	-
Building stone	175	52
Gravel sand and sands	218	77
Brick clay	45	-
Tuff	2	-
Brucite	1	1
Total	461	132

Source: SGI DS

Other raw material deposits (state to the date 31st December 2010)

Raw material	Number of listed deposit sites	Number of sites with extraction activities
Slate	3	-
Floatingsand	1	-
Tailing rocks	7	2
Clay	1	-
Other minerals	2	-
Sialitic raw material	6	-
Building stone	175	52
Gravel sand and sands	218	77
Brick clay	45	-
Tuff	2	-
Brucite	1	1
Total	461	132

Source: SGI DS

Ground water volumes

Ground waters deposits in the SR (state to the date 31st December, 2010)

Category	A	B	C	Total
Efficient deposits of the ground waters (l.s-1)	824.10	2 166.72	5 484.52	8 475.34
Efficient amounts of the ground waters (l.s-1)	-	-	15 796.47	15 796.47

Source: SGI DS

*Legend:**A calculated on the basis of hydrogeological mapping with semi-operational test****B calculated on the basis of hydrogeological mapping with long-term extraction test****C calculated on the basis of assessment of the existing hydrogeological mapping*