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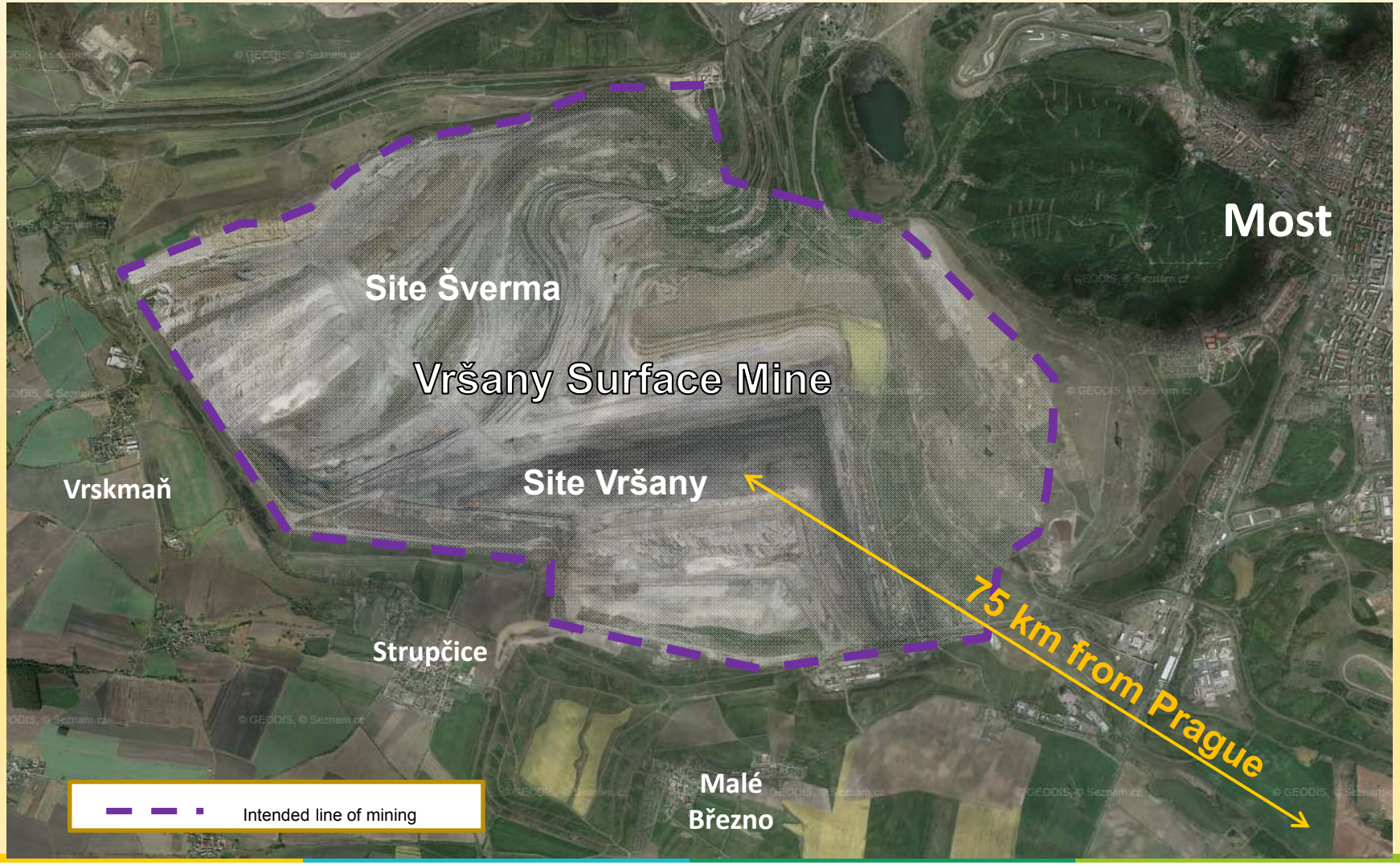
The Vršany surface mine is located to the north-west of Prague on the south western border of the North Bohemian Brown Coal Basin.



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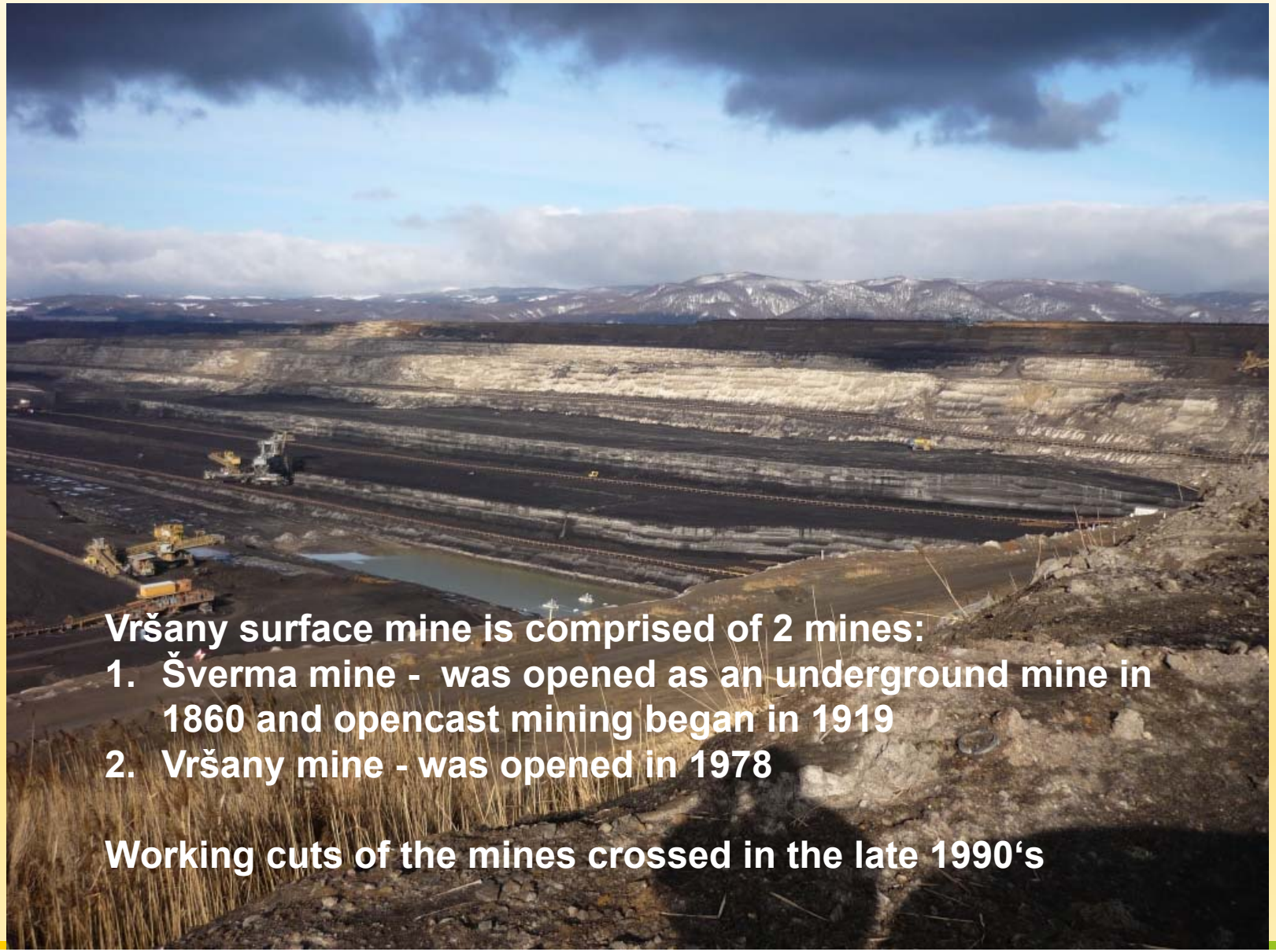

Vršany surface mine is comprised of 2 mines:

1. Šverma mine - was opened as an underground mine in 1860 and opencast mining began in 1919
2. Vršany mine - was opened in 1978

Working cuts of the mines crossed in the late 1990‘s

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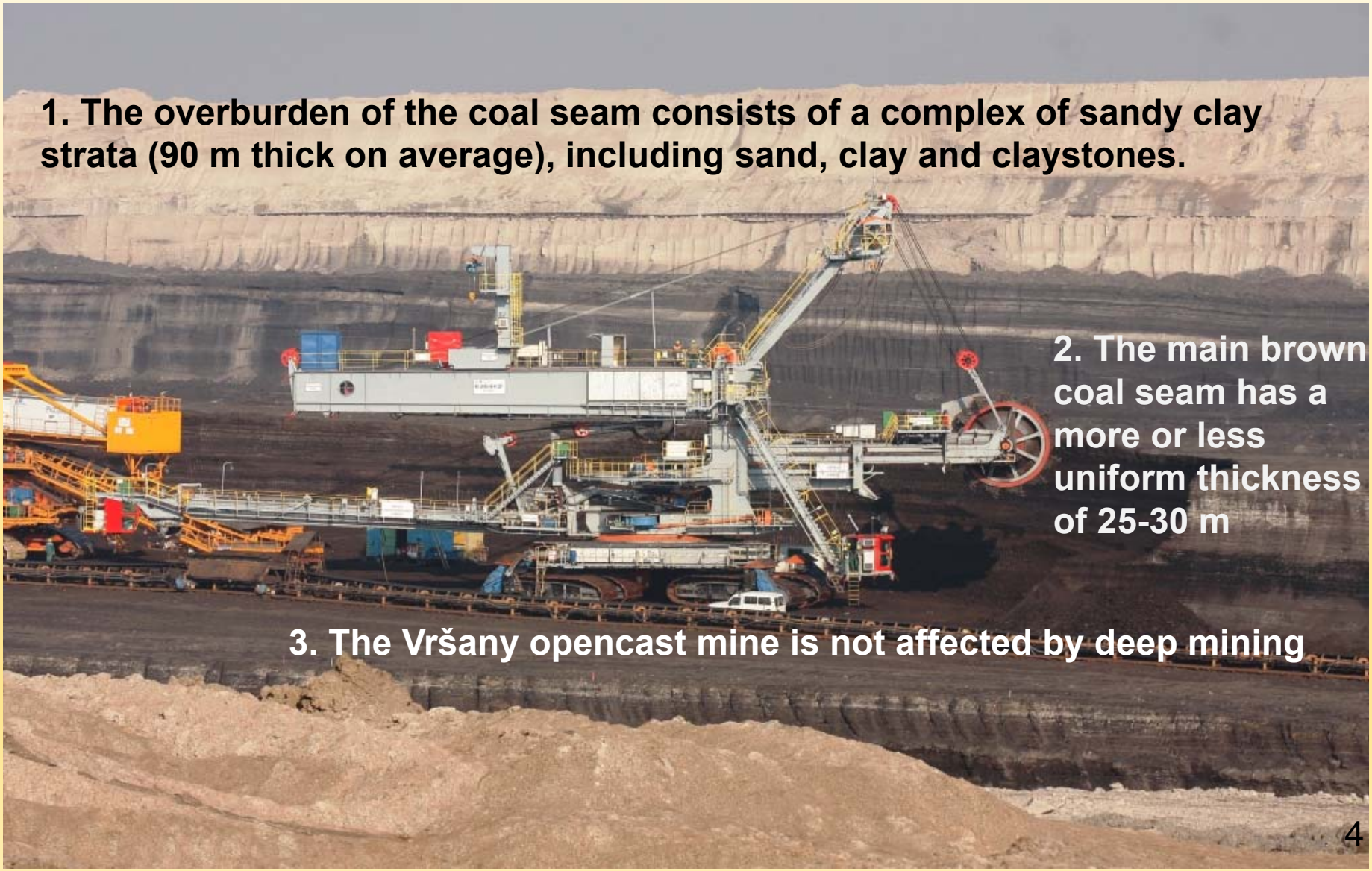
A little of geology



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A little of geology

Surface mining is hindered by the frequent occurrence of very hard silty claystones and pelocarbonate layers,

which must be broken by drilling and blasting before the very mining.

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Present and future of the Vršany mine

1. The reserves of brown coal for extraction at the mine are about 260 million tonnes.
2. The gross output of the mine is about 7 million tons of brown coal per year. There are about 10 million m3 (cubic metres) of overburden extracted every year, too.
3. The coal can be mined there at the current rate until 2052. Thanks to the long perspective of mining, the mine is able to supply the new generation of facility, which could replace the coal power plants and heating plants getting obsolete with coal.
4. Most of coal, about 5 million tons, is transported by trains to Počerady power station which is only 7 kilometres far. The rest of coal is transported to other power stations or heating plants.

- Current surface of the opencast mine is about 18 square kilometres.
- Overburden benches are about 2.5 km long and coal cuts are about 3 km long.
- Maximum depth is 115 m.
- The deepest point, where the main pump station is located, is 155 m. a. s. l. The original ground was about 270 m a. s. l.

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The mine and transport technology

The coal as well as the overburden are exploited by bucket-wheel excavators. Extracted coal is transported by a long-distance conveyor line to the transfer bin where the coal is loaded into wagons. The trains go directly to power stations or heating plants.

There are 4 pieces of bucket-wheel excavators in the mine. The 2 of them extract overburden and the other 2 extract coal seam. Extraction takes place on 4 overburden cuts and 2 coal cuts.

Mine, transport and stacking technology of overburden

The biggest excavator is type KU800 and it extracts the overburden.

Height/length…….51,3/150 m
Weight……..4 300 tons
Diameter of wheel…13 m
Members of crew…..5
Maximum daily volume of extraction…60 000 m³

Height/length…….30/156 m
Weight……..1 780 tons
Members of crew…..4

The overburden is stacked by overburden dumping machines, type ZP 6600 on inside dump.

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Mine and transport technology of coal

Coal seam is extracted by 2 excavators, type KU300.

Height/length…….27,5/62 m
Weight……..1 250 tons
Diameter of wheel…7,5 m
Members of crew…..4
Maximum daily volume of extraction…25 000 t

Extracted coal, about 7 million tons per year is transported by trains to power plants.

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Relocation of pipelines and power lines
- The biggest challenge which we are facing

The Vršany opencast mine will be able to operate after 2026 only if the underground utilities and power lines will be relocated.
There are 12 various pipelines, 6 power lines and several control and data cables which are owned by 10 various owners. The length of the relocation is about 4 km and estimated costs of that are 1.9 billion CZK or 73 million €.

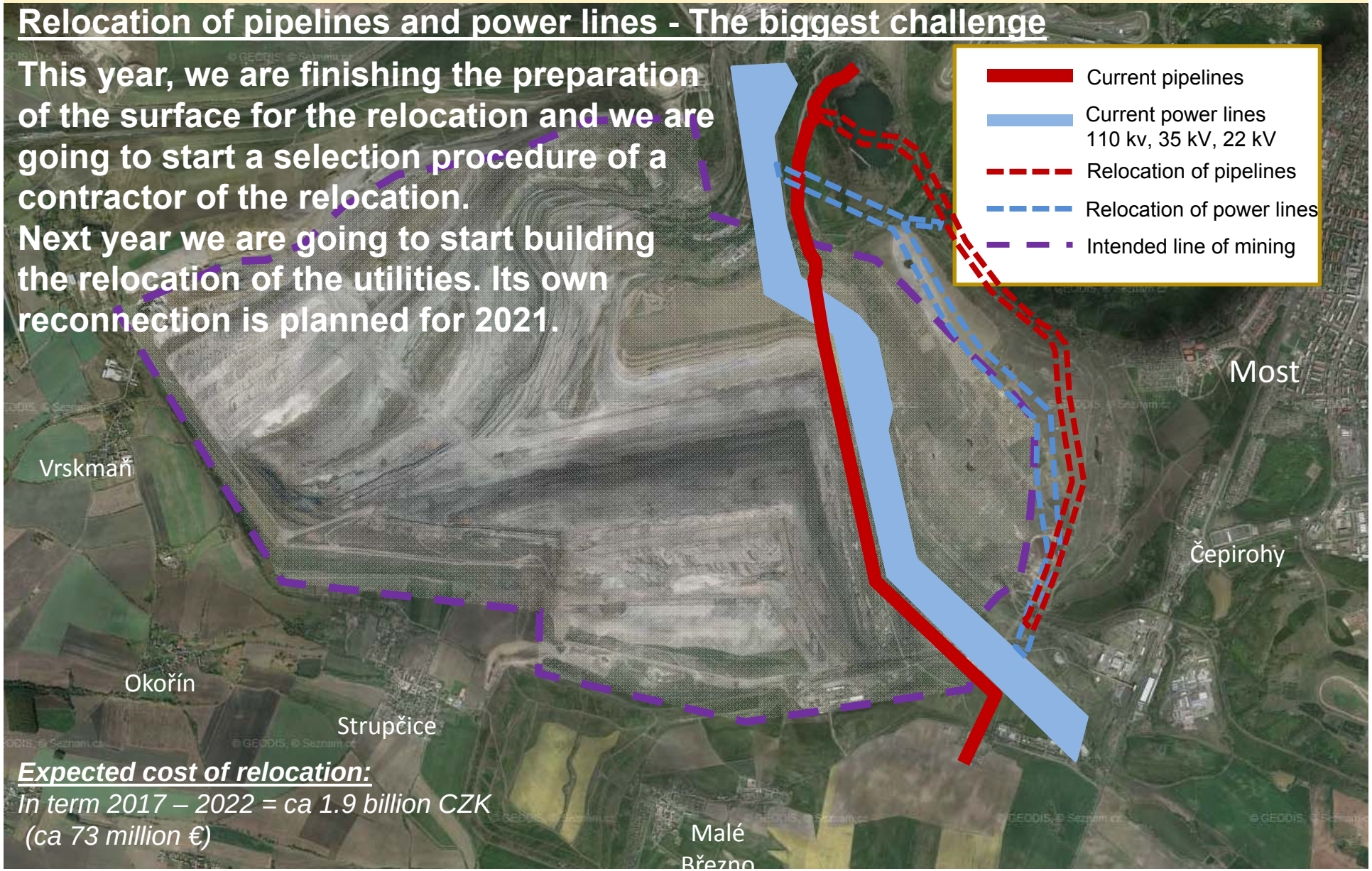
There are:
1. oil pipeline
2. 2 pieces of main gas pipelines
3. ethylbenzen pipeline
4. ethyl pipeline
5. 2 pieces of semi-finished product pipelines
6. 2 pieces of main raw-water pipelines and 2 pieces of main drinking water pipelines
7. 4 pieces of power lines of 110 kV, 1 power line of 35 kV and 1 power line of 22 kV

Most of the pipelines supply materials to refinery and chemical factory which are located between the towns of Most and Litvínov.

Vršany Surface Mine

Relocation of pipelines and power lines - The biggest challenge

This year, we are finishing the preparation of the surface for the relocation and we are going to start a selection procedure of a contractor of the relocation.
Next year we are going to start building the relocation of the utilities. Its own reconnection is planned for 2021.



Expected cost of relocation:
In term 2017 – 2022 = ca 1.9 billion CZK
(ca 73 million €)

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Reclamation and rehabilitation

Rehabilitation and reclamation is the final stage of a mining activity under Act No 44/1988 on the protection and use of mineral resources.
Rehabilitation and reclamation plans and projects are consulted over several stages which are linked up with each other.
The basic document is called

„The Summary Rehabilitation and Reclamation Plan“

The plan has to be approved prior to the very extraction work, i.e. prior to the approval of the development and working advance plan.
The Summary Rehabilitation and Reclamation Plan conceptually handles the framework for the creation and protection of the area environmental stability system.

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Reclamation and rehabilitation

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Reclamation and rehabilitation

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State of reclamation and rehabilitation in Vršany surface mine,

- The area of reclamation in Vršany mine, which was being finished from its opening to 31th December 2016, is 2,554 ha.
- This year we have 532 ha of ongoing reclamation
- Reclamation of the remaining area is 2,155 ha and it will have started gradually by the Vršany mine will be decommissioned.

In Vršany surface mine each type of reclamation is implemented:

- agricultural reclamation
- forest reclamation
- water reclamation
- other reclamation (parks near the town and villages)

We use the contemporary knowledge and the experience of Czech reclamation school.

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State of reclamation	Type of reclamation [ha]				Total area [ha]
	Agriculture	Forest	Water	Other	
Finished to 31th December 2016	511,78	776,74	64,44	1201	2554,14
Ongoing on 1th January 2017	146,3	205,45	3,48	176,9	532,15
Starting after 1th January 2017 to decommision	689,29	728,06	284,6	452,9	2154,86
Total	1347,37	1710,3	352,52	1831	5241,15

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Lancinger David (lancinge); 30.8.2017

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Reclamation and rehabilitation, agricultural reclamation

658 ha of agricultural reclamation were finished or currently ongoing

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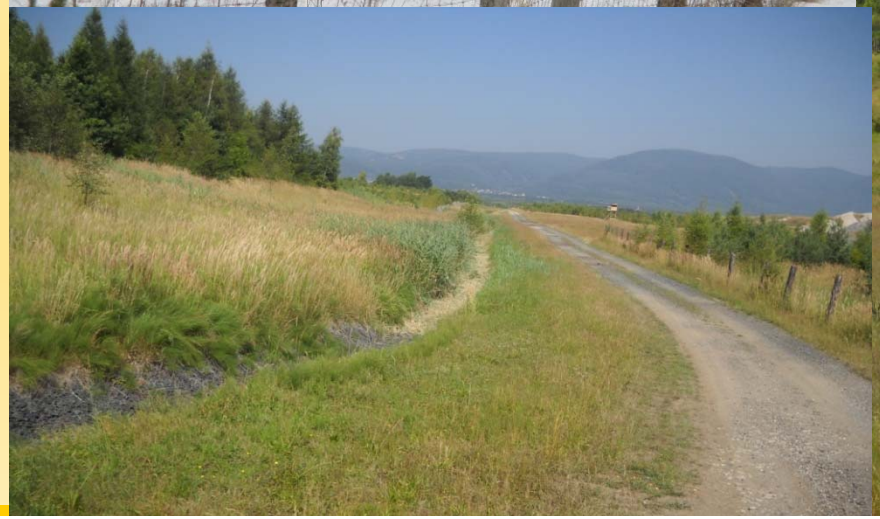
Reclamation and rehabilitation, forest reclamation



982 ha of forest reclamation were finished or currently ongoing

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Reclamation and rehabilitation, water reclamation

68 ha of water reclamation were finished or currently ongoing

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Reclamation and rehabilitation, other reclamation

1,378 ha of other reclamation were finished or currently ongoing

The house for beetles and other species of insect

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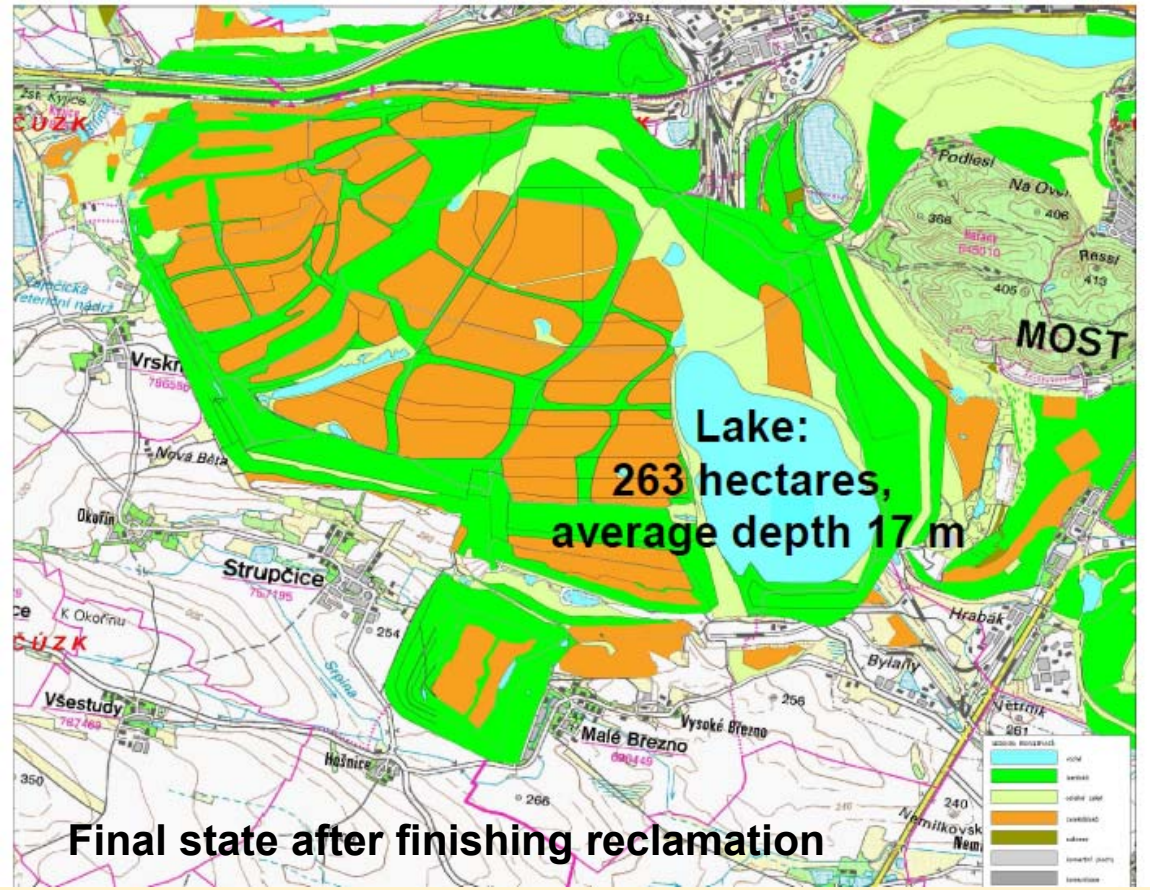
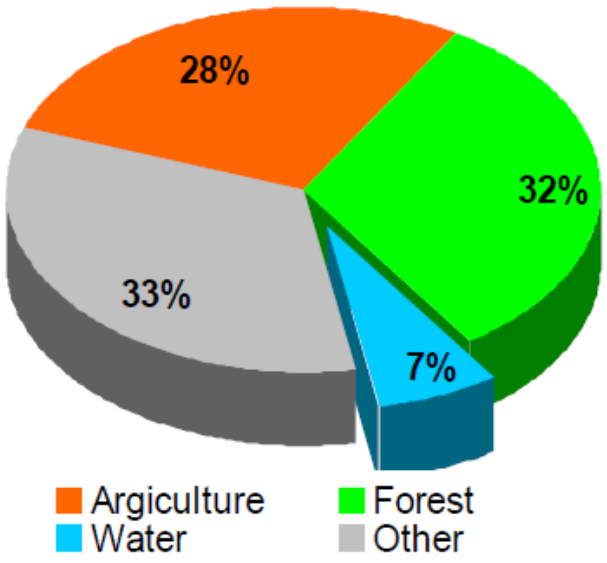
The land reclamation of the Vršany mine, final state after finishing the reclamation



Type of reclamation
Percentage of the total area (5,241 ha)



Decommission of the mine in 2052 - Reclamation to 2061

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Reclamation and rehabilitation, new way

Cattle farming

Since last year we have tried cattle breeding as part of agricultural reclamation.

We bought 20 cows and 1 bull and this year 9 calves were born and we bought other 20 cows.

Area of the pasture is about 50 ha.

The cattle are bred only for their meat.

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Reclamation and rehabilitation, new way

Arrival to the new place

We are getting used to new scenery

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Reclamation and rehabilitation

Our bull came half a year later and we welcomed him with pleasure.

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Reclamation and rehabilitation

Biodiversity, wild animals and rare and endangered species

The care of biodiversity is part of the comprehensive solution of reclamation. The Summary Rehabilitation and Reclamation Plan conceptually handles the framework for the creation and protection of the area environmental stability system. Biological research is conducted to support and map the existing biodiversity, and measures are proposed for its preservation and development.

On the land where the reclamation was finished or where are ongoing reclamations but even on the surface where extraction or stacking of overburden are going on we can find a lot species of animals and birds. There are endangered species among them.

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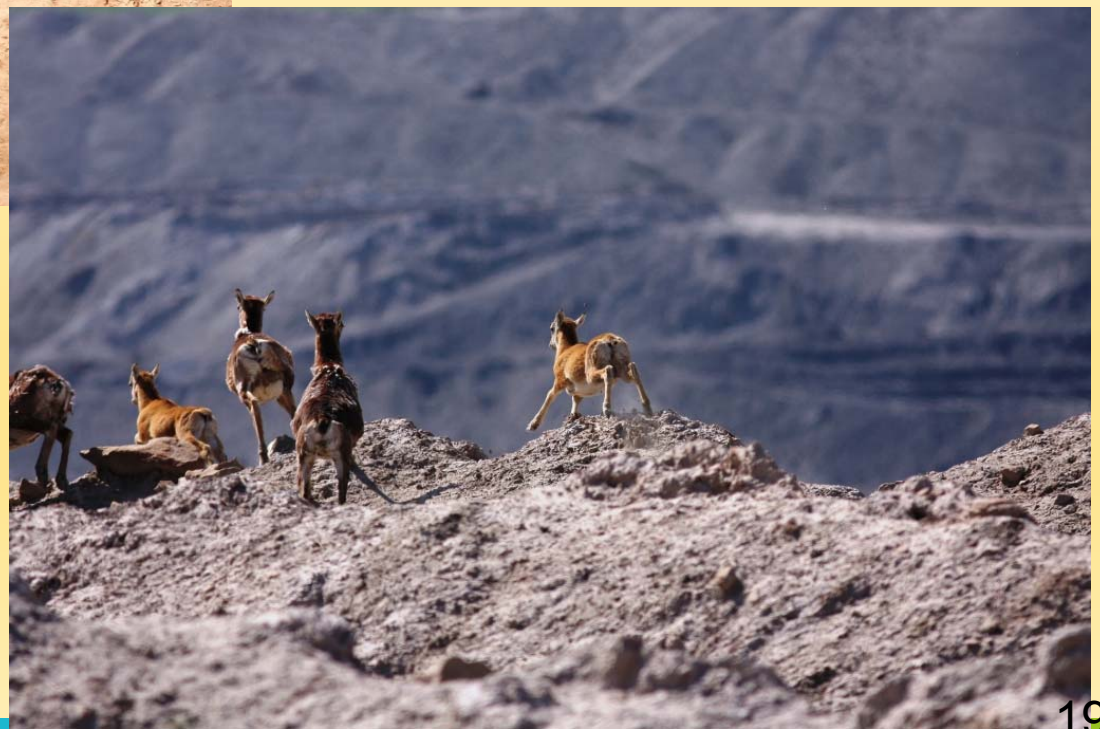
Reclamation and rehabilitation, animals which live in Vršany mine

horned mine foreman on the overburden cut is checking operation

Mouflons prefer overburden cut and overburden dump.



…but they harm young trees, which are planted in forest reclamations.

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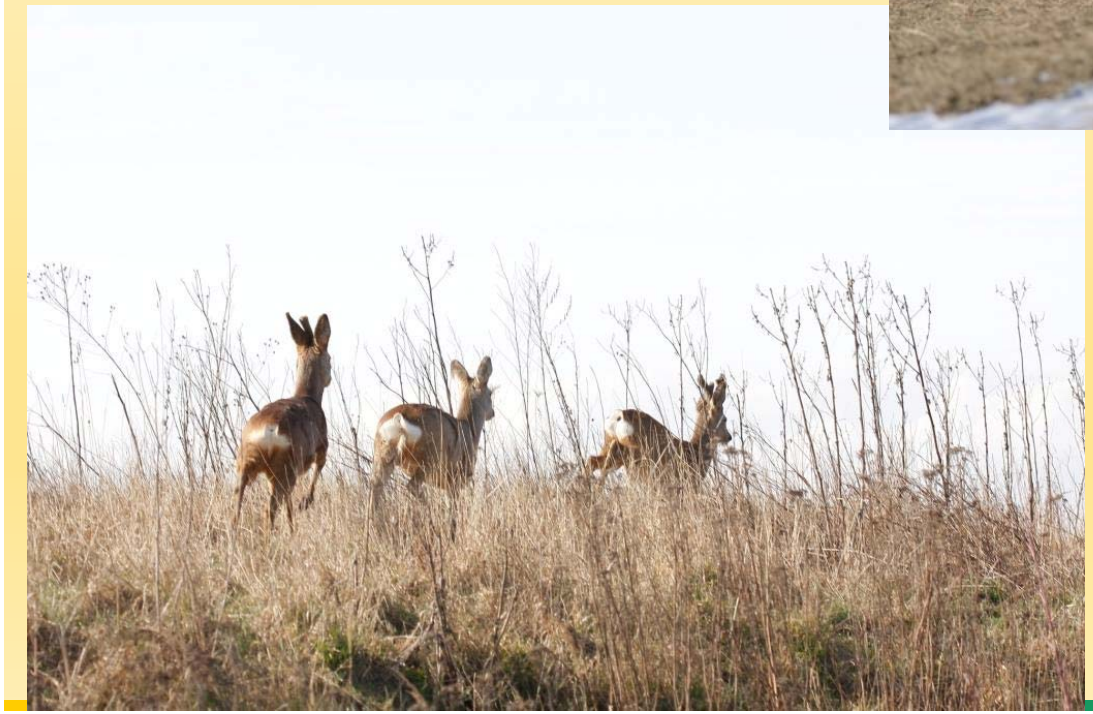
Reclamation and rehabilitation, animals which live in Vršany mine

Roe deer and wild boars like meadows and fields which are founded on agriculture reclamations.



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Reclamation and rehabilitation, rare and endangered species

Merops apiaster (vlha pestrá)

…and their nests or holes into pile of sand on overburden dump

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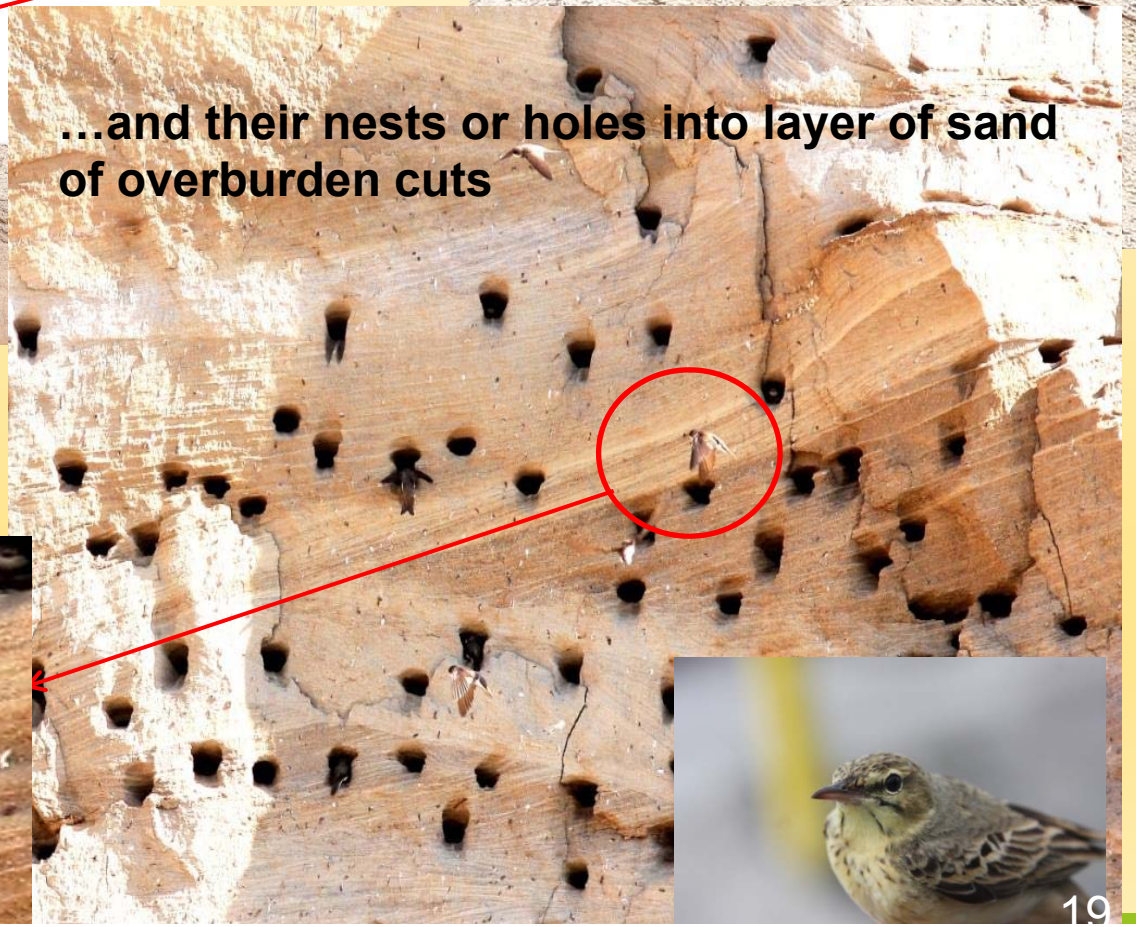
Reclamation and rehabilitation, rare and endangered species

Kestrel, (Falco tinnunculus), bird of prey

…and their nests or holes into layer of sand of overburden cuts



Riparia riparia (břehule říční) is species of swallow

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Reclamation and rehabilitation, rare and endangered species

Pheasant on reclamation meadow

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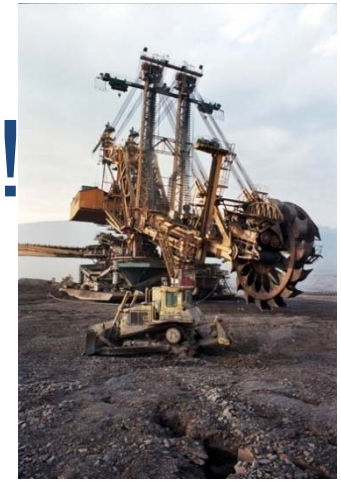
European Union
European Regional
Development Fund

Thank you for your attention!



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