Part 01
Data-Story

Searching for my Data-Story:

Data-story: Health, Industry, Environmental issues.

Is your chosen data-story a fair representation of your region?

1. Kuznetsk Basin is one of the largest coal mining areas in Russia, covering an area of around 10,000 square miles. Leninsk-Kuznetskiy is located in Kuznetsk Basin (Kuzbass).
2. Earthquake of 7 on Richter scale in Siberia was partly 'man-made', say top Russian scientists. Scientists claimed that the deep mines of Kuzbass may have contributed to the earthquake.
3. Black Snow in Kemerovo Oblast.
4. Coal mining environmental impacts - (Coal dust/ Toxic dust/ Flammable/ Chemicals/ Radio active) - Human health issues - Blow up the mountains/ Flattening mountains - Toxic water - Nature diversities.
5. Mining or coal industry financial benefits.
6. Surface mining.
7. biochemistry scientist.
8. Trump: "And for those miners get ready because you are gonna be working your asses off, all right?"
9. Miners.
10. The Living condition of a miner. Food and types of equipment.

Have you balanced possible negative stories with possible positive stories from a region? A negative is mentioned, but positive could be the financial progress and jobs for local residents.

Have you avoided stereotypes, and found something unique? There is no stereotypes involved and the story is not unique.

Is your story interesting? The story is not unique but I am going to come up with some interesting ways to tell my story.

Are your supporting data well-sourced and a fair representation of your region? Yes, The data is solid and reliable.

Is your visual language informed by your research into the characteristics of your region and the content of your data-story? Yes, typography and all other visuals match my Data-Story.

How do you plan to use other content (data visualisations, maps, diagrams) to support the storytelling? Maybe real-time data and 3d visuals.

What is my story?

- My story is an account of real people and events.
- My story is a report of news.
- My story is An account of past and today's events in the development of something.
- The story of the facts of a matter.
- My story is a situation viewed in terms of the information known about it.
- My story consists of facts about the present situation.
- My story is a narrative; a series of connected events.
- My story is about the real world, it is non-fiction, evidence-based/factual, issue-driven, contemporary, how history impacts the now.
- My story is not unique, but maybe unknown.
- My story is diverse, positive, negative and balanced.
- My audience: The general public.

My main domains: environmental, economy
My story is open-end
My story has multiple perspectives

What domains?

- Environmental
- Political
- Societal
- Cultural
- Economy

What sort of story is my story?

- Real-world
- Non-fiction
- Evidence-based/ factual
- Issue-driven
- Contemporary
- How history impacts the now
- Unique, unknown
- Diverse
- Positive and negative
- Consider your audience: UK general public

These are essential elements to any story:

Who? The people of the Kemerovo region.
What? The impact of the coal industry.
When? Contemporary.
Where? Kemerovo Oblast, Russia.
Why? Negative impacts on the environment are increasing.
How? Surface coal mines.

My Data-Story

Title: Precious Polluting Industry

Subtitle:

The Kuznetsk Basin is one of the largest coal mining areas in Russia. It possesses some of the most extensive coal deposits anywhere in the world; The region's economy is based on coal mining, on the other hand, the coal-mining impact on the environment is extensive.

Summary:

Coal deposits in the area were first discovered in 1721. The late 19th-century industrialisation of Russia prompted rapid growth in the area's industries, which was further boosted by the completion of the Trans-Siberian Railway. Under Joseph Stalin's first five-year plan, the Ural-Kuznetsk industrial combine was formed in the early 1930s. It became a centre for the production of iron and steel, zinc, aluminium, machinery and chemicals, with raw materials and finished products being shipped to and from sites in the Kuzbass and Urals.

The Kuznetsk Basin (often abbreviated as Kuzbass or Kuzbas) is one of the largest coal mining areas in Russia. It possesses some of the most extensive coal deposits anywhere in the world; coal-bearing seams extend over an area of 10,309 square miles (26,700 km2) and reach a depth of 5,905 feet (1,800 m). The region's other industries, such as machine construction, chemicals and metallurgy, are based on coal mining. The Kuzbass now extracts ca. 60 per cent of Russia's total coal production and is the main fuel and energy base for eastern Russia.

Coal energy is an affordable energy source because of the coal's stable price compared to other fuel sources, it is easy to burn, it produces high energy upon combustion, it is inexpensive, abundant and a reliable energy source. On the other hand, coal energy produces a large amount of carbon dioxide which leads to global warming and climate change.
The burning of coal is not environmental friendly because it produces harmful byproducts and gas emissions such as sulphur dioxide, carbon dioxide and nitrogen oxide that causes pollution to the environment including acid rain, it is a nonrenewable energy source, it is fast depleting because we consume too much of it. Coal mining ruins the environment and puts the lives of people especially the coal miners in danger.

A large amount of coal mining in the region resulted in significant pollution. In a report done by the Central Intelligence Agency, the region was said to be home to "environmental problems" which were "causing increasing deaths and genetic defects among babies". A study by the British Geological Survey found that "Annual methane emissions into the atmosphere from Kuzbass coal mines amount to 1–2 billion cubic metres", with much of that coming from now abandoned mines.

Now the question is how precious is this polluting industry?

Sources:
https://en.wikipedia.org/wiki/Kuznetsk_Basin
https://sunglitz.wordpress.com/
Climate Action Network International - (https://www.youtube.com/watch?v=2Lj3LfvgqGs)

Part 01

Visual Language Toolkit

VISUAL TOOLKITS

Cyrillic Alphabet: Аа Бб Вв Гг Дд Ее Ёё Жж Зз Ии Йй Кк Лл Мм Нн Оо Пп Рр Сс Тт Уу Фф Хх Цц Чч Шш Щщ Ъъ Ыы Ьь Ээ Юю Яя

Visцdl Яesедгсн === Visual Research
Дмія GнояБдиі === Amir Ghorbani
Ддтд Visцdlisдтіои === Data Visualisation
Desigи === Design
ЯдvеиsБоцяие Циivеяsітч === Яavensbourne Цniversity

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Яegіои:
Яussia
Leиiиsk-Kuzиetsky (city)
Кemerovo OБlast oг KuzБass
Kuzиetsk Basiи

The Kuznetsk Basin (Russian: Кузнецкий угольный бассейн, Кузбасс; often abbreviated as Kuzbass or Kuzbas) in southwestern Siberia, Russia, is one of the largest coal mining areas in Russia, covering an area of around 10,000 square miles (26,000 km2).

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CODL MIIJG

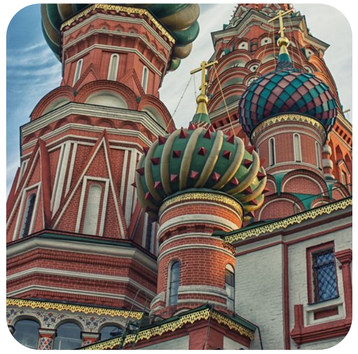


ГИЗ
КНИГИ
ГИЗ

СВЕРГНИТЕ
ИМПЕРИАЛИЗМ



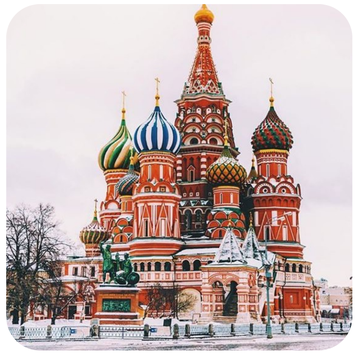
КУЗБАССРАЗРЕЗУГОЛЬ



МЕХАНИЗИРОВАННУЮ
ДОБЫЧУ УГЛЯ!

Z-TRIP
SHEPARD FAIREY
9.24-AMSTERDAM
PARADISO
9.25-LONDON
MATTER
9.26-PARIS
LA MAROQUINERIE

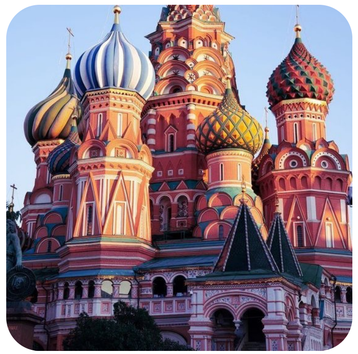

2063

РАБОТНИКИ
и БАТРАКИ
ЗАЖМИТЕ
КОСАРЬ и КОВАТЕЛЬ
ВИНТОВКУ
В ЖЕЛЕЗО РУКИ!
ВВЕРХ—
ФЛАГ!
РВАНЬ—
ВСТАНЬ!
ВЛАДИМИР МАЯКОВ
ХОРОШО!







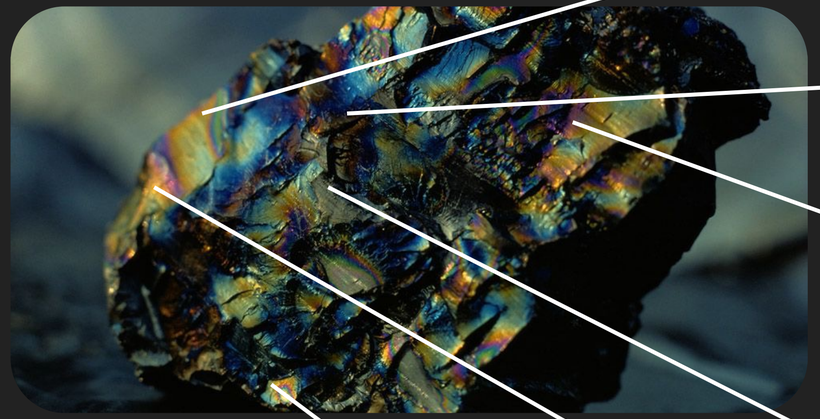




Фстобея цдяо / RUSSIAN

Title: Coal-mining Industry in southwestern Siberia, Russia.

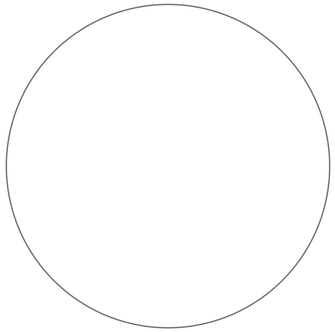
Subtitle: The Kuznetsk Basin (often abbreviated as Kuzbass or Kuzbas) is one of the largest coal mining areas in Russia. It possesses some of the most extensive coal deposits anywhere in the world; coal-bearing seams extend over an area of 10,309 square miles (26,700 km2) and reach a depth of 5,905 feet (1,800 m). The region's other industries, such as machine construction, chemicals and metallurgy, are based on coal mining.

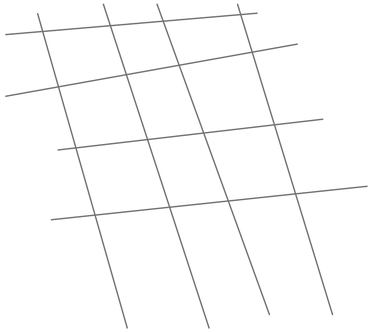


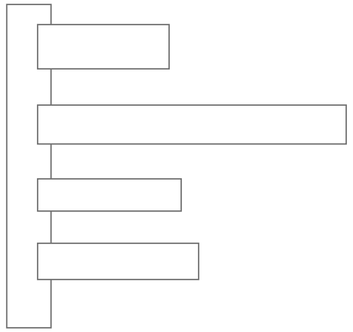
Coal deposits in the area were first discovered in 1721. The late 19th-century industrialisation of Russia prompted rapid growth in the area's industries, which was further boosted by the completion of the Trans-Siberian Railway. Under Joseph Stalin's first five-year plan, the Ural-Kuznetsk industrial combine was formed in the early 1930s. It became a centre for the production of iron and steel, zinc, aluminium, machinery and chemicals, with raw materials and finished products being shipped to and from sites in the Kuzbas and Urals.

The Kuzbass now extracts ca. 60 per cent of Russia's total coal production and is the main fuel and energy base for eastern Russia.

FORMS








РАБОТНИКИ
и БАТРАКИ
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КОСАРЬ и КОВАТЕЛЬ
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ВВЕРХ—
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ВЛАДИМИР МАЯКОВ
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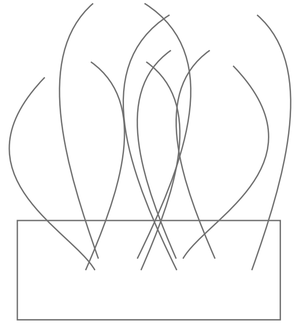

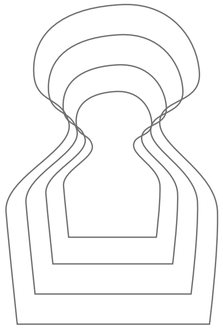

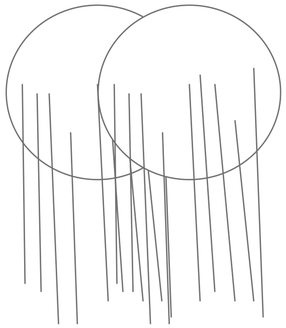

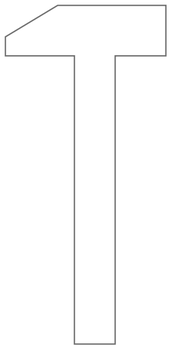

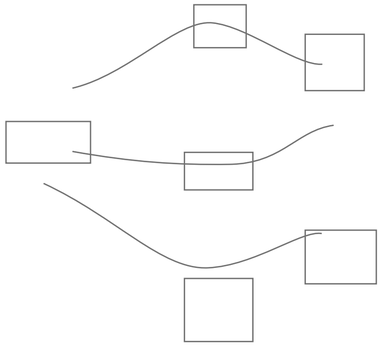

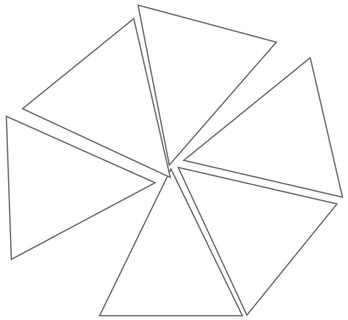


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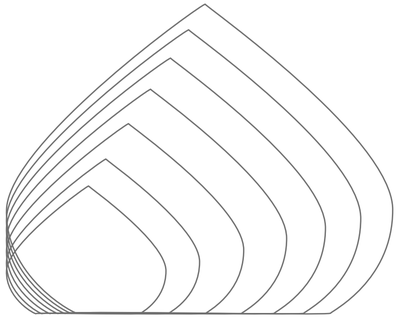

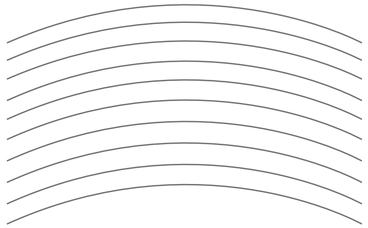

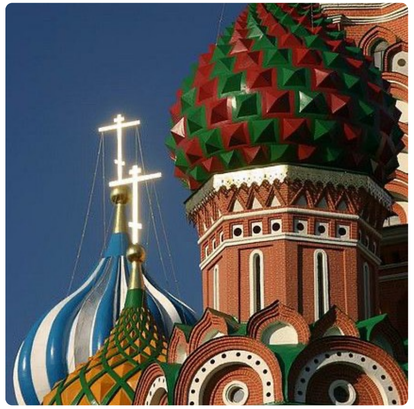

Part 02
Data

DATA-01: The ten biggest coal mines in the world

https://www.mining-technology.com/features/feature-the-10-biggest-coal-mines-in-the-world/
Mining Technology

The ten biggest coal mines in the world

03 Jan 2020 (Last Updated June 2nd, 2020 12:23)
Two of the largest coal mines in the world by reserves are located in the Powder River Basin in Wyoming, US, while Australia and China host four and two of the biggest coal mines, respectively. Mining Technology profiles the ten biggest operating coal mines in the world, based on recoverable coal reserves.

Which are the biggest coal mines in the world?

1- North Antelope Rochelle coal mine, US
2- Haerwusu coal mine, China
3- Hei Dai Gou coal mine, China
4- Raspadskaya coal mine, Russia
5- Moatize coal mine, Mozambique
6- Black Thunder coal mine, US
7- Peak Downs coal mine, Australia
8- Mt Arthur coal mine, Australia
9- Goonyella Riverside coal mine, Australia
10- Saraji coal mine, Australia

1. North Antelope Rochelle, US – 1.7 billion tonnes

Location: North Antelope Rochelle coal mine in the Powder River Basin of Wyoming, US.
Size: 1.7 billion tonnes of recoverable coal as of December 2018.
Owner: Peabody Energy.
Type: Surface mining operation with the sedimentary coal deposit mined at three pits.
Mine/s: It consists of two mines, namely North Antelope, which was opened in 1983, and Rochelle, which commenced production in 1985. The two mines were combined into a single operation in 1999.
Product: Produced 98.4 million tonnes (Mt) of thermal coal in 2018, compared to 101.5Mt in 2017. The mine is believed to produce the cleanest coal in the US, with the coal quality averaging at 8,800 British thermal units per pound (Btu/lb) and sulphur content as low as 0.2%.

2. Haerwusu, China – 1.6 billion tonnes

Location: Inner Mongolia Autonomous Region of China. The mine is spread across 67km^2 in the middle of the Zhungeer Coalfield.
Size: 1.6 billion tonnes recoverable.
Owner: China's state-run Shenhua Group.
Type: The biggest open-cast coal mine in China.
Mine/s: Its development cost was approximately $1.1bn, while the first coal was produced in October 2008.
Product: 20Mt of crude coal.

3. Hei Dai Gou, China – 1.5 billion tonnes

Location: Located in the middle of Zhungeer coalfield in the Inner Mongolia Autonomous Region of China. 150km southwest of Ordos city and has a planned mining area covering 42km^2.
Size: 1.5 billion tonnes of recoverable coal reserves.
Owner: Shenhua Group.
Type: An open-pit coal mine
Mine/s: Hei Dai Gou has been in production since 1999 and is China's first coal mine to use AC-powered Walking Dragline.
Product: It produces low-sulphur and low-phosphorus coal. The designed annual raw coal output of the mine is up to 31Mt.

4. Raspadskaya, Russia – 1.34 billion tonnes

Location: In the Kemerovo region of the Russian Federation is the biggest coal mine in Russia.
Size: 1.34 billion tonnes as of December 2018.
Owner: Coal Company Raspadskaya.
Type: Two underground mines. and one open-pit mine.
Mine/s: Two underground mines, namely Raspadskaya and MUK-96, and one open-pit mine called Razrez Raspadsky. Coal mining at Raspadskaya was started in the late-1970s.
Product: 100% coking coal. The production totalled 12.7Mt in 2018, increasing by 11% from 11.4Mt in 2017.

5. Moatize, Mozambique – 985.7 million tonnes

Location: Tete Province of Mozambique.
Size: Recoverable coal reserves of 985.7Mt (194.8Mt proven and 791Mt probable) as of December 2018.
Owner: The Brazilian mining company Vale, which holds an 80.75% interest in the mine. The remaining interests are held by Mitsui (14.25%) and Empresa Mocambicana de Exploracao Mineria (5%).
Type: The open-pit coal mine.
Mine/s: Moatize is Vale's first Greenfield project in Africa. The concession to build and operate the mine was granted in 2006. The open-pit coal mine commenced operations in August 2011.
Product: The mine produced 11.5Mt of coal, including 6.1Mt of metallurgical coal and 5.4Mt of thermal coal. Vale plans to ramp up the annual production capacity of the mine to 22Mt.

6. Black Thunder, US – 816.5 million tonnes

Location: Powder River Basin, Wyoming, US.
Size: 816.5Mt of recoverable coal reserves as of December 2018.
Owner: Arch Coal.
Type: Surface mine spread across 35,700 acres.
Mine/s: Seven active pit areas and three loadout facilities. The produced raw coal is directly shipped via the Burlington Northern-Santa Fe and Union Pacific railroads. The coal produced by the mine is shipped to the customers via the Burlington Northern Santa Fe and Union Pacific railroads.
Product: 71.1Mt of raw coal in 2018, compared to 70.5Mt in 2017.

7. Peak Downs, Australia – 718 million tonnes

Location: In the Bowen Basin of central Queensland, Australia
Size: 718Mt of recoverable coal reserves as of June 2019.
Owner: BHP Billiton Mitsubishi Alliance (BMA).
Type: Open-cut mine using dragline and truck/shovel fleets for overburden removal.
Mine/s: Peak Downs is one of the seven Bowen Basin mines. The coal output of the mine is sent by rail to the Hay Point Coal Terminal near Mackay, for shipping.
Product: It started production in 1972 and produced more than 11.8Mt of metallurgical coal in the year ending 30 June 2019.

8. Mt Arthur, Australia – 591 million tonnes

Location: Hunter Valley region of New South Wales, Australia.
Size: Recoverable coal reserves of 591Mt (292Mt proven and 299Mt probable) as of June 2019.
Owner: BHP Billiton.
Type: Two open-cut mining areas.
Mine/s: Northern Open Cut and the Southern Open Cut. More than 20 coal seams are mined at Mt Arthur. The mining operation was started in 1968.
Product: Thermal coal for local and international customers in the energy sector. Its annual coal production is more than 18Mt. The estimated reserve life of the mine is 35 years.

9. Goonyella Riverside, Australia – 549 million tonnes

Location: Bowen Basin of central Queensland, Australia.
Size: Recoverable coal reserves of 549Mt (530Mt proven and 19Mt probable) as of June 2020.
Owner: BHP Billiton Mitsubishi Alliance (BMA).
Type: The open-pit coal mine.
Mine/s: The Goonyella mine, which commenced production in 1971, was merged with the adjacent Riverside mine in 1989.
Product: 17.1Mt of coking coal in the year ending 30 June 2019, compared to 15.8Mt of coal in the preceding year. BMA announced plans to implement autonomous haulage at Goonyella Riverside in 2019.

10. Saraji, Australia – 502 million tonnes

Location: Bowen Basin of central Queensland, Australia,
Size: 502Mt of recoverable coal reserves (442Mt proven and 60Mt probable) as of June 2019.
Owner: BHP Billiton Mitsubishi Alliance (BMA)
Type: The open-pit coal mine has been producing since 1974.
Mine/s:
Product: 9.7Mt of metallurgical coal in the year ending 30 June 2019, compared to 10.1Mt in the previous year.

DATA-02: Countries with the biggest coal reserves

https://www.mining-technology.com/features/feature-the-worlds-biggest-coal-reserves-by-country/
Mining Technology

Countries with the biggest coal reserves

06 Jan 2020 (Last Updated June 17th, 2020 11:44)
More than 90% of the world's total proved coal reserves are located in just ten countries. The US tops the list holding more than one-fifth of the total proven coal reserves, while China, which ranks third, is the biggest producer and consumer of coal. Mining Technology profiles the ten countries with the biggest coal reserves, based on total proved reserves.

1. United States of America – 250.2 billion tonnes

Size: As of December 2018 stood at 250.2 billion tonnes (Bt) accounting for approximately 24% of the world's proven coal reserves.
Mine/s: Montana, Wyoming, Illinois, West Virginia, Kentucky, and Pennsylvania hosting more than three-fourth of the total reserves. The North Antelope Rochelle coal mine operated by Peabody Energy in the Powder River Basin of Wyoming is the world's biggest coal mine by reserves.
Production and consumption: The US is also the world's third-biggest producer and consumer of coal. It produced 685 million tonnes (Mt) of coal (approximately 9.3% of the world's total) in 2018. The country accounted for 8.4% of the world's total coal consumption in the same year. Coal accounts for approximately 27% of the country's electricity generation.

2. Russia – 160.3 billion tonnes

Size: As of December 2018 accounted for 15.2% of the world's total.
Mine/s: Donetskii reserves in Moscow, the Pechora basins in Western Russia, and the Kuznetski, Kansk-Achinsk, Irkutsk, and South Yakutsk basins in Eastern Russia. More than two-thirds of the coal produced in Russia is hard coal, with Pechora and Kuznetsk basins being the principal hard coal deposits. The Kansk-Achinsk Basin is known for huge deposits of sub-bituminous coal, while the Raspadskaya mine in the Kemerovo region is the largest coal mine in Russia.
Production and consumption: Russia is the sixth-biggest producer and consumer of coal in the world. It produced 420Mt of coal and consumed 88Mt oil-equivalent of coal in 2018. Russia is also the third biggest coal exporter in the world; the country exported 210Mt of coal in 2018.

3. Australia – 147.4 billion tonnes

Size: 147.4Bt (2018 estimate) account for approximately 14% of the total proven coal reserves in the world.
Mine/s: black coal reserves are mostly concentrated in New South Wales and Queensland, which together account for more than 95% of Australia's black coal output. Victoria hosts the majority of Australia's brown coal reserves. Peak Downs coal mine in the Bowen Basin of central Queensland, followed by the Mt Arthur coal mine in the Hunter Valley region of New South Wales, is the biggest Australian coal mine by reserve.
Production and consumption: Australia is the fifth largest coal producing country in the world. It produced 483Mt of coal (7.7% of the world total) in 2018. Most (79%) of Australia's coal output is, however, exported, making it the world's second-biggest coal exporter after Indonesia. Australia exported 382Mt of coal in 2018.

4. China – 138.8 billion tonnes

Size: 13% of the world's total.
Mine/s: More than 70% of China's proved recoverable coal reserves are located in the north and northwest parts of the country. Shanxi and the Inner Mongolia provinces host a major chunk of accessible coal reserves in the country. The Haerwusu coal mine in Inner Mongolia is the second biggest coal mine in the world, by reserves.
Production and consumption: World's biggest producer and consumer of coal. It produced 3.55Bt of coal (46.7% of the world's total coal production), while its coal consumption accounted for more than 50% of the world's total in 2018. More than 70% of China's electricity generation is based on coal. China imported 295Mt of coal in 2018, becoming the world's biggest coal importer.

5. India – 101.3 billion tonnes

Size: As of December 2018 accounted for more than 9% of the world's total.
Mine/s: The major hard coal deposits of the country are located in the eastern states of Jharkhand, Chhattisgarh, Orissa, and West Bengal, which account for more than 70% of the country's coal reserves. Andhra Pradesh, Madhya Pradesh, and Maharashtra are the other significant coal-producing states in India. The southern state of Tamil Nadu hosts most of the country's lignite deposits.
Production and consumption: second-biggest coal producer and consumer, after China. It produced 771Mt of Coal (7.9% of the world's total) in 2018. India also accounts for 12% of the world's total coal consumption. It imported 240Mt of coal in 2018, becoming the world's second-biggest coal importer. More than 70% of India's electricity generation is based on coal.

6. Indonesia – 37 billion tonnes

Size: As of December 2018 accounted for 3.5% of the world's total proved coal reserves.
Mine/s: South Sumatra, East Kalimantan, and South Kalimantan. The East Kalimantan province accounts for more than half of Indonesia's total coal output. The Kaltim Prima coal mine located in East Kalimantan is the biggest coal mine in Indonesia.
Production and consumption: Indonesia is the fourth biggest coal producer in the world. It produced 549Mt of coal and exported 439Mt in 2018, becoming the world's biggest coal exporter. Indonesia is a major regional supplier of coal for the Asian markets including China and India.

7. Germany – 36.1 billion tonnes

Size: Holding the biggest coal reserves in Europe, Germany hosts 3.4% of the world's total proved coal reserves.
Mine/s: The Ruhr Coal Basin in the North Rhine-Westphalia state and the Saar Basin in southwest Germany account for more than 75% of the country's hard coal production. The Rhineland region hosts the country's largest lignite deposits. The Garzweiler and Hambach open-cast coal mines in the North Rhine-Westphalia state are considered to be Europe's biggest brown coal mines.
Production and consumption: Germany produced 169Mt of coal in 2018, out of which 185Mt was brown coal. It contributed to 1.2% of the world's total coal production and accounted for 2.1% of the world's total coal consumption in 2018. Germany imported 45Mt of coal in 2018. Coal accounts for 43% of Germany's electricity generation.

8. Ukraine – 34.37 billion tonnes

Size: Ukraine's share in the world's total proved coal reserves are 3.3%
Mine/s: Donets Basin in Eastern Ukraine. Also known as the Donbas Coal basin, the Donets Basin is spread across three Ukrainian provinces, namely Dnipropetrovsk, Donetsk and Luhansk. Ukraine has 149 operating coal mines, out of which 120 are state-owned and 29 are private mines. The Komsomolets Donbasu coal mine in the Donetsk Oblast is one of the biggest coal mines in the country.
Production and consumption: Ukraine produced 0.4% of the world's total coal and accounted for 0.7% of the world's total coal consumption in 2018. It produced 33.29Mt of coal including 27.48Mt of thermal coal and 5.81Mt of coking coal in 2018.

9. Poland – 26.4 billion tonnes

Size: At the end of 2018 accounted for approximately 2.5% of the world's total proved coal reserves.
Mine/s: Most of the country's hard coal reserves are located in Upper Silesia and in the Lublin basin in eastern Poland, while the Belchatow lignite basin in central Poland accounts for more than half of Poland's total lignite production. The Belchatow lignite mine provides coal supply for the 5.29GW Belchatow power plant, which is the biggest coal-fired power plant in Europe.
Production and consumption: Poland is the world's ninth biggest and Europe's second-biggest coal producer. It produced 122Mt of coal in 2018, accounting for 1.2% of the world's total coal output. It also accounted for 1.3% of the world's total coal consumption during the same year. Approximately 80% of the country's electricity generation is based on coal.

10. Kazakhstan – 25.6 billion tonnes

Size: With more than 400 coal deposits, Kazakhstan has approximately 2.4% of the world's total proved coal reserves.
Mine/s: The country's proved coal reserves are mostly concentrated in three provinces including Karaganda Oblast in Central Kazakhstan and the Pavlodar and Kostanay Oblasts in North Kazakhstan. Karaganda and Ekibastuz are the two major coal-producing basins in the country. Turgay, Nizhne-Iliyskiy, and Maikuben basins are known for their lignite reserves. Bogatyr Access Komir is the biggest opencast mining company in Kazakhstan.
Production and consumption: Kazakhstan is the tenth biggest coal producer in the world. It produced 114Mt of coal in 2018, accounting for 1.3% of the world's total coal production in the year. The country accounted for 1.1% of the world's total coal consumption during the same year.

Data-03: Type of coal mines

https://www.worldcoal.org/coal-facts/coal-mining/
World Coal Association

TYPES OF MINING

06 Jan 2020 (Last Updated June 17th, 2020 11:44)
More than 90% of the world's total proved coal reserves are located in just ten countries. The US tops the list holding more than one-fifth of the total proven coal reserves, while China, which ranks third, is the biggest producer and consumer of coal. Mining Technology profiles the ten countries with the biggest coal reserves, based on total proved reserves.

Surface mining

When is this used?

Surface mining is used when the coal seam is near the surface. It recovers a higher proportion of the coal deposit than underground mining as all coal seams are exploited – 90% or more of the coal can be recovered.

How does it work?

The overburden of soil and rock is first broken up by explosives; it is then removed by draglines or by shovel and truck. Once the coal seam is exposed, it is drilled, fractured and systematically mined in strips. The coal is loaded onto large trucks or conveyors for transport to either the coal preparation plant or direct to where it will be used.

Large opencast mines can cover an area of many square kilometres and use very large pieces of equipment, such as draglines, power shovels, large trucks, bucket wheel excavators and conveyors.

What is the impact on the land?

Coal mining is only a temporary use of land, so it is vital that mine rehabilitation takes place once operations have stopped. Detailed rehabilitation or reclamation plans are designed and approved, covering the period from the start of operations until well after mining has finished.

Underground mining

Underground mining currently accounts for a bigger share of world coal production than opencast. There are two main methods of underground mining: room-and-pillar and longwall mining.

Room and pillar

When is this method used?

Room and pillar are usually used for flat-lying deposits.

How does it work?

In room-and-pillar mining, coal deposits are mined by cutting a network of 'rooms' into the coal seam and leaving behind 'pillars' of coal to support the roof of the mine. These pillars can be up to 40% of the total coal in the seam – although this coal can sometimes be recovered at a later stage.

Longwall

When is this method used?

Longwall mining is used to mine a long wall of coal in a single slice.

How does it work?

Longwall mining involves the full extraction of coal from a section of the seam, or 'face' using mechanical shearers. The coal 'face' can vary in length from 100-350m. Self-advancing, hydraulically-powered supports temporarily hold up the roof while coal is extracted. When the coal has been extracted from the area, the roof is allowed to collapse. Over 75% of the coal in the deposit can be extracted from panels of coal that can extend 3km through the coal seam.

ДАТА-ФАЙЛ: Impact of Russian coal mining

Impact of Russian coal mining on the environment, local communities and indigenous peoples

«The Cost of Coal»
Produced by Ecodefense, 2015
Text: Natalia Paramonova
Editing: Vladimir Slivyak, Galina Ragouzina
Translation to English language: Galina Ragouzina

Kuzbass, or the Kuznetsk Coal Basin, is the largest coal mining area in Russia. Total reserves of Kuzbass coal would be enough to load a train stretched from the Earth to the Sun. And Russians are loading.

59% of all Russian coal is mined in the region.
76% of Russia's coal export.
2014: 211 million tons of coal were mined.
2012: 201.4 million tons of coal were mined.
2013: 202.7 million tons of coal were mined.
Fertile soils are destroyed by the mining of coal which is once mined and, unlike agricultural land can never be recycled.

Coal mono-economy and poor quality of life cause people outflow from Kuzbass.

Kemerovo region population trends

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total (thousand people)	2893	2862	2833	2806	2786	2780	2776	2773	2761	2751	2742	2734
Urban	2508	2783	2410	2390	2374	2369	2367	2365	2357	2351	2345	2340
Rural	385	379	423	417	412	411	410	409	404	400	400	394

Environment and Health:
The average life length of the Kuzbass population is 3 to 4 years shorter than the average in Russia.
The tuberculosis rate is 1.7 time above Russia's average.
The child mental disorder rate is 1.8 times higher, and child mental deficiency is 2.4 times higher in the region than the average in Russia.
Kuzbass rated first in 2011 and second in 2012 in Russia for child cerebral palsy. The incidence of 15 cancer diseases is above Russia's average.
Kuzbass has the highest incidence of acute myocardial infarction and neonatal congenital malformation in the Siberian Federal District.
Infant circulatory system anomaly rate is 1.6 times higher and female reproductive system anomaly rate is 3.3 times higher than the average in Russia.
Kuzbass is the only region in Siberia where child infectious and parasitic diseases incidence is 2 to 3 times above Russia's average. While in Russia there are 988 cases for every 100,000 children, in Kuzbass the rate is 2,400-3,200 cases per 100,000.
Kemerovo Oblast has the highest professional diseases rate which has increased by 5% over the last two years.
Soil is saturated with coal particles. Besides that, the atmosphere in Kuzbass is polluted by industrial plants most of which were built in the 1950-es and renovation of which are now economically comparable with the construction of new ones.
According to the official data, only three out of a hundred Kuzbass inhabitants have satisfactory habitation conditions.
This situation contradicts the constitutional right of every Russian citizen to access a favourable environment.

As, Cl, S - Rivers - Forest - Environment - Polluting the air - Sick - Die - Violations - 200,000 people live within an environmental disaster zone - Human rights violation - Atmosphere: Coal terminal, Air pit, Spoil fire - Water: mine water discharge, Coal dust, Sewage tank - Soil: Reclaimed quarry, Dusting of gob pile, Reclaimed waste pile

Kuzbass has the highest incidence of acute myocardial infarction and neonatal congenital malformation in the Siberian Federal District. Infant circulatory system anomaly rate is 1.6 times higher and female reproductive system anomaly rate is 3.3 times higher than the average in Russia.
Kuzbass is the only region in Siberia where child infectious and parasitic diseases incidence is 2 to 3 times above Russia's average. While in Russia there are 988 cases for every 100,000 children, in Kuzbass the rate is 2,400-3,200 cases per 100,000.
Moreover, Kemerovo Oblast has the highest professional diseases rate which has increased by 5% over the last two years.

Water:
Kuzbass rivers are 67% of all Siberian rivers' flow.
The largest in Kuzbass Tom River is contaminated along its whole length.
The river is contaminated with oil products, phenols, nitrate nitrogen, ammonia nitrogen, iron, manganese, and copper. Concentrations of these substances routinely exceed several times the standards.
The Aba and Uskat, both rivers are classified as dirty by the Russian Federal Natural Resources Management Regulatory Service, Rosprirodnadzor.
The Aba is already heavily polluted with untreated discharges from industrial plants and municipal sewage.
The Inya River is classified as very polluted, mostly with iron and organic substances. Concentrations of manganese, iron and organic substances in the Belovo water reservoir are above the standards. The northern rivers of the region, the Kiya, Yaya, Tyazin, Barzas and Alchedat, are all contaminated with iron, oil products, organic and nitrogen compounds. The bad sanitary state of water supply sources is mainly related to the absence of sanitary protection zones and/or failure to comply with the requirements of their arrangement and operation.
The concentration of nitrates in drinking water in Kemerovo Oblast raises the risk of blood and cardiovascular diseases in both children and adults. 93.8% of drinking water sources in Kuzbass do not meet the sanitary chemical and microbiologic standards.

A resident's story: "I live in Novokuznetsk and have a summer house in Chicherbaevo village of Novokuznetsk district where the Uskat River flows into the Tom River. For the last 5 years, due to the operation of the coal mining facilities, the river has greatly shallowed. Once the high-water river, it's now in many spots less than knee-deep. The river strongly smells of oil products, its banks got overgrown with a rush.
In summer, children of our and nearby villages are forced to swim in the Uskat which can extremely hardly be called a river. The last outrageous incident took place in spring 2015 when due to the descent of waste pile produced by the SUEK-Kuzbass OJSC, the Uskat became an orange clayey stream with a poignant smell of diesel oil.
I believe no one cares about our river. I would very much like that the responsible organizations answer for their mistakes and help cleaning the river. Otherwise, the river will die."

Kuzbass water bodies, including the Tom, the major river of the region, are contaminated with coal dust. Residents remember the river rich in fish, while now only Amur sleeper (Percottus glehni) able to live in water contaminated with coal and chemicals is found there. Villagers living along the Tom witness periodical summer fish murrains.

COAL MINING PROS AND CONS
Power generating fuel
Coking
7000 kCal/kg
PCI technology
Metallurgy

Kemerevo Oblast - Kusbass
Kuznetsk Coal Basin: Anzhero-Sudzhensk and Leninsk-Kuzentsky and Belovo and Prokopyevsk and Novokuznetsk and Mezhdurechensk
Bachatsky mine - Krasnobrodskaya enrichment plant

80% of coal exports come from Kusbass
The main coal-mining region in the country
Private companies
Open method
No one wants to buy their house
Jobs concentrated around coal
The Government is protecting coal mining companies
Located in Kemerovo Region in Russia

Kuznetsk Depression
Slair Ridge
Mountain Shoria

Soil and noise:
Chemical elements concentration in soils of settlements and cities located in immediate proximity to mines and reprocessing plants exceed the Russian average rates. Official statistics also indicate that for the last two years an area of contaminated soils in Kuzbass has grown by 20%. The concentration of microorganisms and parasites in the soils of Kemerovo Oblast is also above the Russian average. 8.9% of soil samples exceed the hygienic standards, and 7.9% of soil samples exceed the microbiologic ones.

A resident, Kaza's village: „Mining is going on a hundred meter away. When they started blowing up, all the dust was brought to our vegetable gardens. Vegetables got covered with coal dust which is impossible to wash out. Now I don't want to harm myself by eating anything from this garden."

Kemerovo Oblast was one of the leading regions in Russia for several industrial plants not meeting noise level sanitary requirements. Over 50% of the plants in Kuzbass make noise above the maximum allowable.
But noise produced by huge dump trucks roaring along the region's roads has never been taken into account. The BelAZ dump trucks are the most common vehicles for coal transportation. Besides noise pollution, they contribute to air pollution with coal particles. Moreover, another source of noise pollution is explosions at mines and quarries development.

Air:
Data on air conditions for major cities of the region, such as Belovo, Leninsk-Kuznetsky, Mezhdurecensk, Myski, Polysaevo, Osinniki, is unavailable.
Meanwhile, the main inhabited area of Kemerovo Oblast is located in a cavity, therefore harmful substances emitted by the industry are not carried away with the wind but accumulate right there forming photochemical smog.

There was a very high level of air pollution in Novokuznetsk, a high level of air pollution in Kemerovo, and a heightened level of air pollution in Prokopyevsk. Air pollution in these cities is for the most part due to high concentrations of benzpyrene and nitrogen dioxide. Chronic poisoning by air polluted with harmful substances and dust increase the risks of sickness among the cities' residents.
In 2007 the most contribution to chronic air poisoning was made by carbon oxide (77.4%), dust (15%), and nitrogen dioxide (3%).
A characteristic for the Kuzbass phenomenon visualizing the level of air pollution is black snow fallout. According to the official report, snow in Kuzbass contains sulphur compounds, nitrites, nitrates, chlorides, potassium, and manganese.

Nature under the threat:
14% of the Kemerovo Oblast's territory belong to the nature conservation areas with various protected statuses. The most well-known among them is the Kuznetsky Alatau Nature Reserve.
Vital state of forest by measuring the concentration of sulphur and heavy metals in Siberian pine (Pinus sibirica) and fir (Abies sibirica) needles. The vital state index of the monitored species at most sample areas correspond to damaged and heavily damaged forest biocoenoses. Many of the sample trees have already died.
A large quantity of yellowed and dried-out needles, as well as affection by tree insects and mushrooms, are observed in both tree species, which can be related to strong and continuous environmental contamination in the protected area. All needle samples are found to contain sulphur concentration 6-7 times above the maximum allowable ones, and some of the samples have a big excess of zinc.
Viktor Kleutin, resident of Mezhdurechensk, a member of City Council: "I used to go right outside the vegetable garden and pick shamrock by bunches. There is no shamrock now even in the deep taiga. The sable is hard to find. Forest turned red. We are told it's caused by some kind of mite."

Most barbarian technology of explosion which is, according to Kleutin who used to be a mine drilling technician, applied presently in Kuzbass. It leads to 30% of explosives, namely trinitrotoluol, being emitted in the atmosphere without burning out, and then falling out to the ground where it stays undecomposed for 25 years.

Earth-quakes:
Anthropogenic earthquakes.
It became known when in June 2013 a very powerful earthquake of anthropogenic nature happened nearby Bachatsky open-pit mine (Kuzbasrazrezugol JSC). The earthquake reached 5.8 points of magnitude and 7 points of intensity. About 500 building were damaged by the earthquake and the total damage is estimated as 1.7 billion rubles.

The anthropological nature of the quake was detected by Novosibirsk seismologists. The US experts monitoring undergrounds tremor supported their opinion.
If the earthquake was caused by natural processes then the coal mining company is exempted from responsibility for what happened. According to the quake victims, aid was given selectively and didn't cover houses repairs. Houses remain in the zone possibly affected by future earth tremors. The local authorities and the mine management did allocate the funds for house repair but there were neither a single compensation amount nor a clear payment mechanism applied. Those working at the mine received bigger amounts, while the others addressed the local authorities and received lesser aid. The earthquake was followed by a rising tide of complaints from the local people about explosions and coal dust. However, as the locals indicate, the inspection arrived to take measurements early in the morning before explosion and dust may appear. The resulting expert conclusion was that living conditions in the vicinity of Bachatsky mine satisfy the standards.

Conclusion:
59% of all Russian coal is mined in the region of Kuzbass, this coal makes up to 76% of Russia's coal export. During the last decade, both mining and export of coal were growing up tremendously. And residents, including indigenous people, are paying a very high price for such development. The average life length of the Kuzbass population is 3 to 4 years shorter than the average in Russia. Kuzbass rated first in 2011 and second in 2012 in Russia for child cerebral palsy. About 93.8% of drinking water sources in Kuzbass do not meet the sanitary chemical and microbiologic standards of Russia. A characteristic for the Kuzbass phenomenon visualizing the level of air pollution is black snow fallout. According to the official report, snow in Kuzbass contains sulphur compounds, nitrites, nitrates, chlorides, potassium, and manganese A particular new threat to Kuzbass people is so-called anthropogenic earthquakes. In June 2013 one of the earthquakes reached 5.8 points of magnitude and 7 points of intensity. About 500 building were damaged by the earthquake and the total damage is estimated as 1.7 billion rubles (about $60 million in mid-2013). The local authorities being controlled by the coal companies fail to recognize the damage caused by the coal industry. Mining developments often meet resistance from local communities, including indigenous people. Expansion of coal production planned by the regional government would produce more confrontation. If under the pressure of the public opinion the authorities take a clear and legally justified position, then the environment of Kuzbass may be preserved for its population. Otherwise, the negative impact on the environment and health will be getting even worse.

	The ten biggest coal mines in the world vs Kusbass Basin	https://www.mining-technology.com/features/feature-the-10-biggest-coal-mines-in-the-world/							
	Name	Location	Coal Reserve as of 2018 (Mt)	Owner	Type	Mines	Production Volume as of 2018 (Mt)		Needs to be modified
1	North Antelope Rochelle	North Antelope Rochelle coal mine in the Powder River Basin of Wyoming, US.	1700	Peabody Energy	Surface mining	1- North antelope 2- Rochelle	98.4		718Mt June 2019 *D9
2	Haerwusu	Inner Mongolia Autonomous Region of China Middle of the Zhungeer Coalfield	1600	China's state-run Shenhua Group	open-cast coal mine		20		Kusbass Basin data
3	Hei Dai Gou / Heidaigou	Zhungeer coal field in the Inner Mongolia Autonomous Region of China 150km south-west of the Ordos city	1500	Shenhua Group	open-pit coal mine		31		591Mt June 2019 *D10
4	Raspadskaya	In the Kemerovo region of the Russian Federation	1340	Coal Company Raspadskaya	Two underground mines. and one open-pit mine	1- Raspadskaya 2- MUK-96 3- Razrez Raspadsky	12.7		549Mt 2020 *D11
5	Moatize	Tete Province of Mozambique	985.7	1- The Brazilian mining company Vale 2- Mitsui 3- Empresa Mocambicana de Exploracao Mineria	open-pit coal mine		11.5		502Mt June 2019 *D12
6	Black Thunder	Powder River Basin, Wyoming, US	816.5	Arch Coal	Surface mine		71.1		11.8Mt 2019 *H9
7	Peak Downs	In the Bowen Basin of central Queensland, Australia	718	BHP Billiton Mitsubishi Alliance (BMA)	Open-cut		11.8		18Mt *H10
8	Mt Arthur	Hunter Valley region of New South Wales, Australia	591	BHP Billiton	open-cut mining	Northern Open Cut and the Southern Open Cut	18		17.1Mt 2019 *H11
9	Goonyella Riverside	Bowen Basin of central Queensland, Australia	549	BHP Billiton Mitsubishi Alliance (BMA)	open-pit coal mine	1- Goonyella mine 2- Riverside mine	17.1		9.7Mt June 2019 *H12
10	Saraji	Bowen Basin of central Queensland, Australia,	502	BHP Billiton Mitsubishi Alliance (BMA)	open-pit		9.7		
Kusbass Basin	Kusbass Basin		45730.812						

Countries with the biggest coal reserves

https://www.mining-technology.com/features/feature-the-worlds-biggest-coal-reserves-by-country/

	Name	Coal Reserve (Bt)	Coal Reserve (%) of all world's coal reserves
1	United States of America	250.2	24
2	Russia	160.3	15.2
3	Australia	147.4	14
4	China	138.8	13
5	India	101.3	9
6	Indonesia	37	3.5
7	Germany	36.1	3.4
8	Ukraine	34.37	3.3
9	Poland	26.4	2.5
10	Kazakhstan	25.6	2.4

Distribution of coal reserves in Russia as of year-end 2018, by basin

https://www.statista.com/statistics/1066681/russian-coal-reserves-share-by-basin/

	Name	% Reserve	% Production
1	Donetskii reserves in Moscow	3.5	3
2	The Pechora basins in Western Russia	3.5	5
3	Kuznetsk Basin	28.2	52
4	Kansk-Achinsk	40.4	12
5	Irkutsk	3.9	
6	South Yakutsk basins in Eastern Russia	2.3	3
7	Raspadskaya mine in the Kemerovo region		
8	Minusinsk	2.5	
		84.3	

2019	https://www.nsenergybusiness.com/features/countries-largest-coal-reserves/	
Basin	% Reserve	% Production
Kansk-Achinsk	40.4	12
Kuznetsk Basin	28.2	52
Other	31.4	36
	100	100

file:///Users/TinErf/Downloads/viz%20(1).svg	file:///Users/TinErf/Downloads/viz%20(2).svg

	Impacts of coal mining on environment	PDF	
	Impacts in details	General Imapcts	Other productions of the coal-mining
1	Contaminated air	Air	Coal dust
2	Contaminated air	Air	Explosives, namely trinitrotoluol
3	Climate change	Nature	Co2
4	Destroyed fish habitats	Water	Coal dust
5	Destroyed fish habitats	Water	Ammonia Nitrogen
6	Destroyed fish habitats	Water	Iron
7	Destroyed fish habitats	Water	Manganese
8	Destroyed fish habitats	Water	Copper
9	Contaminated rivers	Water	Coal dust
10	Anthropogenic earthquakes	Nature	Explosions
11	Fertile soils are destroyed	Nature	Excessive mining
12	High mortality and sickness rates	Air	Benzpyrene dioxide
13	High mortality and sickness rates	Air	Nitrogen compounds
14	High mortality and sickness rates	Air	Co
15	Violations over environmental rights	Health	Ignorant local authorities and regulatory bodies
16	Land disturbed and taken out of the productive cycle	Nature	Ignorant local authorities and regulatory bodies
17	Lower local population life quality	Health	Ignorant local authorities and regulatory bodies

Total proved reserves at end 2019	Statistical Review of World Energy 2020 | 69th edition					
Ordered based on the production				Ordered based on the production		
Region	Country	% Reserves		Region	Country	% Production
Asia Pacific	China	13.2		Asia Pacific	China	47.6
Asia Pacific	Indonesia	3.7		Asia Pacific	Indonesia	9
North America	US	23.3		North America	US	8.5
Asia Pacific	Australia	13.95		Asia Pacific	Australia	7.8
Asia Pacific	India	9.9		Asia Pacific	India	7.6
CIS	Russian Federation	15.2		CIS	Russian Federation	5.5
Middle East & Af	South Africa	0.9		Middle East & Af	South Africa	3.6
S. & Cent. America	Colombia	0.4		S. & Cent. America	Colombia	1.4
CIS	Kazakhstan	2.4		CIS	Kazakhstan	1.2
Europe	Poland	2.5		Europe	Poland	1.1
Europe	Germany	3.4		Europe	Germany	0.8
Asia Pacific	Other Asia Pacific	0.2		Asia Pacific	Other Asia Pacific	0.8
North America	Canada	0.6		North America	Canada	0.7
Asia Pacific	Mongolia	0.2		Asia Pacific	Mongolia	0.6
Asia Pacific	Vietnam	0.3		Asia Pacific	Vietnam	0.6
Europe	Turkey	1.1		Europe	Turkey	0.4
Europe	Other Europe	0.6		Europe	Other Europe	0.4
Europe	Czech Republic	0.3		Europe	Czech Republic	0.3
Europe	Ukraine	3.2		Europe	Ukraine	0.3
Middle East & Af	Other Africa	0.4		Middle East & Af	Other Africa	0.3
North America	Mexico	0.1		North America	Mexico	0.2
Europe	Serbia	0.7		Europe	Serbia	0.2
S. & Cent. America	Brazil	0.6		S. & Cent. America	Brazil	0.1
Europe	Bulgaria	0.2		Europe	Bulgaria	0.1
Europe	Greece	0.3		Europe	Greece	0.1
Europe	Romania	0.05		Europe	Romania	0.1

Tree Cover Loss in Kemerovo

Source: www.globalforestwatch.org

	umd_tree_cover_loss__year	umd_tree_cover_loss__ha
	2001	2906.259225
	2002	2431.837104
	2003	890.011085
	2004	4830.664159
	2005	4081.609261
	2006	6881.272849
	2007	5432.55294
	2008	3983.047774
	2009	2740.013382
	2010	6456.337153
	2011	6298.705315
	2012	9290.589962
	2013	2981.512785
	2014	4519.284931
	2015	2720.036282
	2016	5099.982698
	2017	5535.872216
	2018	6614.353234
	2019	5550.50291
	2020	7522.792849

Country	Name	capacity_mw	primary_fuel	other_fuel1	other_fuel2	other_fuel3	source	url	geolocation_source	year_of_capacity_data	latitude	longitude
Argentina	CENTRAL TERMICA GÜEMES SA	361	Coal	Gas			Ministerio de Energía y Minería	http://energia3.m	Ministerio de Energía	2015	-24.6894	-65.0425
Argentina	COSTANERA	1982.2	Coal	Gas	Other		Ministerio de Energía y Minería	http://energia3.m	Ministerio de Energía	2015	-34.626	-58.3393
Argentina	SAN NICOLAS	644	Coal	Gas			Ministerio de Energía y Minería	http://energia3.m	Ministerio de Energía	2015	-33.3562	-60.1729
Argentina	CENTRAL BAHIA BLANCA (PIEDRA BUE	620	Coal				Ministerio de Energía y Minería	http://energia3.m	Ministerio de Energía	2015	-38.7872	-62.2536
Argentina	CT ECOENERGIA (PETROBRAS)	13.2	Coal				Ministerio de Energía y Minería	http://energia3.m	Ministerio de Energía	2015	-38.6871	-62.3961
Argentina	NECOCHEA	206	Coal				Ministerio de Energía y Minería	http://energia3.m	Ministerio de Energía	2015	-38.5785	-58.7108
Argentina	PILAR ZANICHELLI	216	Coal				Ministerio de Energía y Minería	http://energia3.m	Ministerio de Energía	2015	-31.6662	-63.8344
Argentina	PUERTO NUEVO	589	Coal				Ministerio de Energía y Minería	http://energia3.m	Ministerio de Energía	2015	-34.5754	-58.3788
Argentina	SORRENTO	226	Coal				Ministerio de Energía y Minería	http://energia3.m	Ministerio de Energía	2015	-32.9053	-60.6807
Argentina	DEAN FUNES	70.12	Gas	Coal	Oil		Ministerio de Energía y Minería	http://energia3.m	Ministerio de Energía	2015	-31.3934	-64.2059
Argentina	LUJAN DE CUYO	549.76	Gas	Coal	Other		Ministerio de Energía y Minería	http://energia3.m	Ministerio de Energía	2015	-33.0551	-68.981
Argentina	MAR DEL PLATA (9 DE JULIO)	201.3	Gas	Coal			Ministerio de Energía y Minería	http://energia3.m	Ministerio de Energía	2015	-38.0495	-57.546
Argentina	NUEVO PUERTO	1217.7	Gas	Coal	Other		Ministerio de Energía y Minería	http://energia3.m	Ministerio de Energía	2015	-34.5721	-58.3835
Argentina	VUELTA DE OBLIGADO	560	Gas	Coal			Ministerio de Energía y Minería	http://energia3.m	Ministerio de Energía	2015	-32.5807	-60.7903
Australia	Anglesea	165	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-38.3861	144.1828
Australia	Bayswater	2640	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-32.3953	150.9491
Australia	Callide A	30	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-24.334	150.628
Australia	Callide B	700	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-24.3449	150.6197
Australia	Callide C	840	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-24.3449	150.6182
Australia	Collie (Bluewaters)	416	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-33.331	116.229
Australia	Collie A	340	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-33.3422	116.2612
Australia	Collinsville	190	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-20.5447	147.8049
Australia	Energy Brix	195	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-38.2546	146.4137
Australia	Eraring	2880	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-33.0621	151.5206
Australia	Gladstone	1680	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-23.8508	151.2187
Australia	Hazelwood	1600	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-38.2731	146.3923
Australia	Kogan Creek	744	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-26.9177	150.7493
Australia	Kwinana A	240	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-32.198	115.7752
Australia	Kwinana C	184	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-32.1992	115.7747
Australia	Liddell	2200	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-32.3713	150.9776
Australia	Loy Yang A	2180	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-38.2536	146.5746
Australia	Loy Yang B	1000	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-38.2564	146.5864
Australia	Millmerran	856	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-27.9615	151.2789
Australia	Mt Piper	1400	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-33.3589	150.0313
Australia	Muja A	120	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-33.4467	116.3081
Australia	Muja B	120	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-33.4468	116.3087
Australia	Muja C	400	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-33.446	116.3062
Australia	Muja D	454	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-33.4464	116.3074
Australia	Munmorah	600	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-33.2117	151.5418
Australia	Northern	530	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-32.5433	137.7882
Australia	Redbank	150	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-32.5802	151.0719
Australia	Stanwell	1460	Coal				Australian Renewable Energy Mappi	http://services.ga	Australian Renewable Energy Mapping Infrastructure		-23.5097	150.3195

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at end 2019

Ordered based on the production				Ordered based on the production		
Region	Country	% Reserves		Region	Country	% Production
Asia Pacific	China	13.2		Asia Pacific	China	47.6
Asia Pacific	Indonesia	3.7		Asia Pacific	Indonesia	9
North America	US	23.3		North America	US	8.5
Asia Pacific	Australia	13.95		Asia Pacific	Australia	7.8
Asia Pacific	India	9.9		Asia Pacific	India	7.6
CIS	Russian Federation	15.2		CIS	Russian Federation	5.5
Middle East & Af	South Africa	0.9		Middle East & Af	South Africa	3.6
S. & Cent. America	Colombia	0.4		S. & Cent. America	Colombia	1.4
CIS	Kazakhstan	2.4		CIS	Kazakhstan	1.2
Europe	Poland	2.5		Europe	Poland	1.1
Europe	Germany	3.4		Europe	Germany	0.8
Asia Pacific	Other Asia Pacific	0.2		Asia Pacific	Other Asia Pacific	0.8
North America	Canada	0.6		North America	Canada	0.7
Asia Pacific	Mongolia	0.2		Asia Pacific	Mongolia	0.6
Asia Pacific	Vietnam	0.3		Asia Pacific	Vietnam	0.6
Europe	Turkey	1.1		Europe	Turkey	0.4
Europe	Other Europe	0.6		Europe	Other Europe	0.4
Europe	Czech Republic	0.3		Europe	Czech Republic	0.3
Europe	Ukraine	3.2		Europe	Ukraine	0.3
Middle East & Af	Other Africa	0.4		Middle East & Af	Other Africa	0.3
North America	Mexico	0.1		North America	Mexico	0.2
Europe	Serbia	0.7		Europe	Serbia	0.2
S. & Cent. America	Brazil	0.6		S. & Cent. America	Brazil	0.1
Europe	Bulgaria	0.2		Europe	Bulgaria	0.1
Europe	Greece	0.3		Europe	Greece	0.1
Europe	Romania	0.05		Europe	Romania	0.1

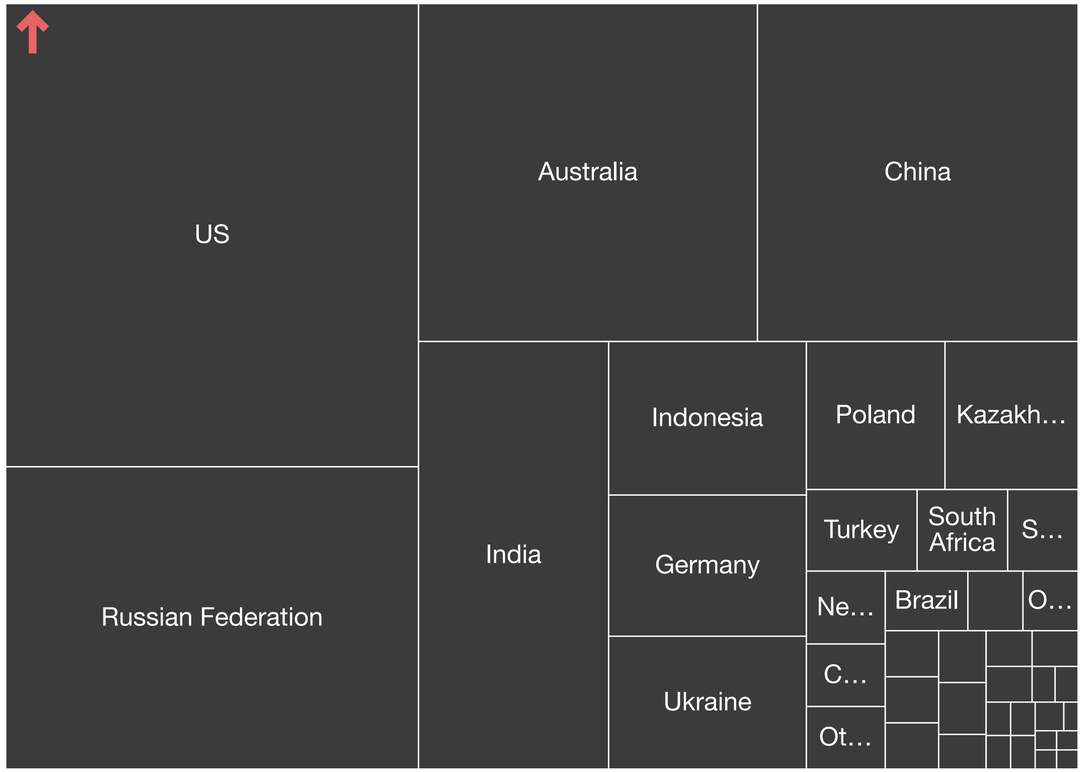
Step 01:
Pick a data related to my story:

Coal: Top World Producers at end 2019 (%)
Coal: Total Proved World Reserves at end 2019 (%)

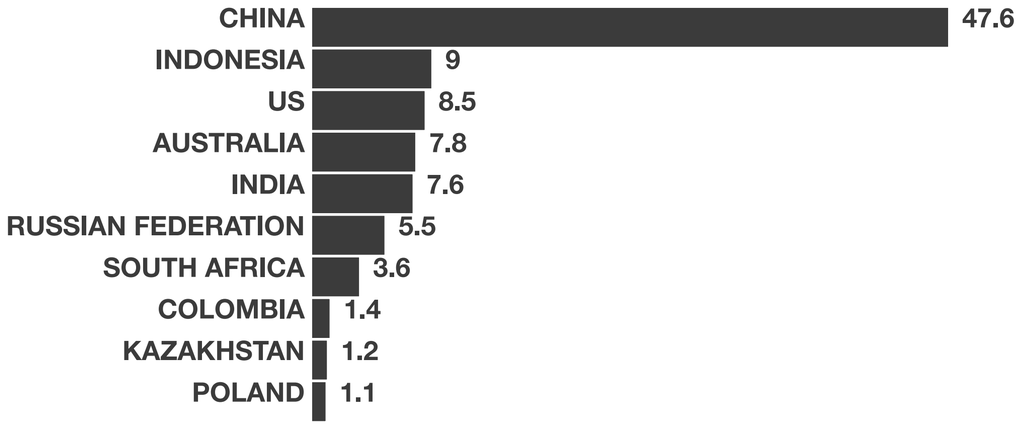
Step 02:

Visualise the datasets in raw graph and flourish and extract SVG shapes.

Coal: Total Proved World Reserves at end 2019 (%)

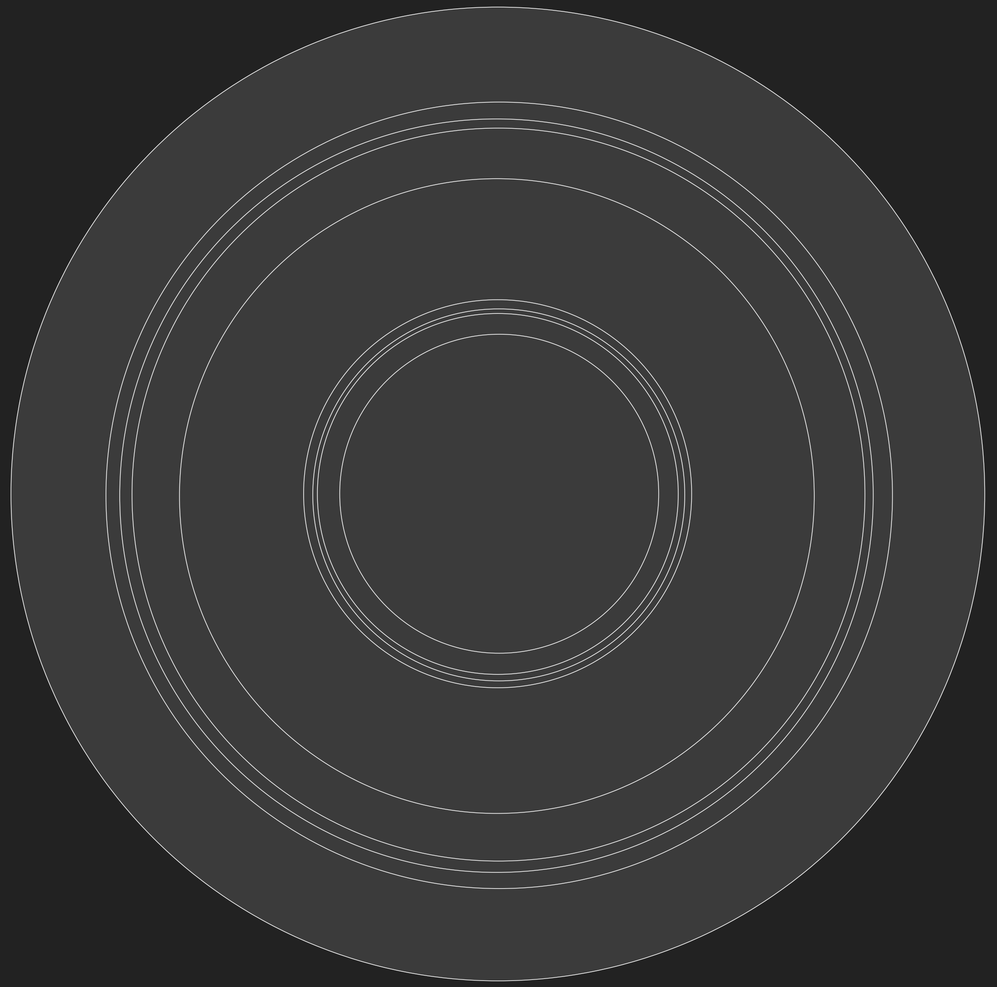


Coal: Top World Producers at end 2019 (%)

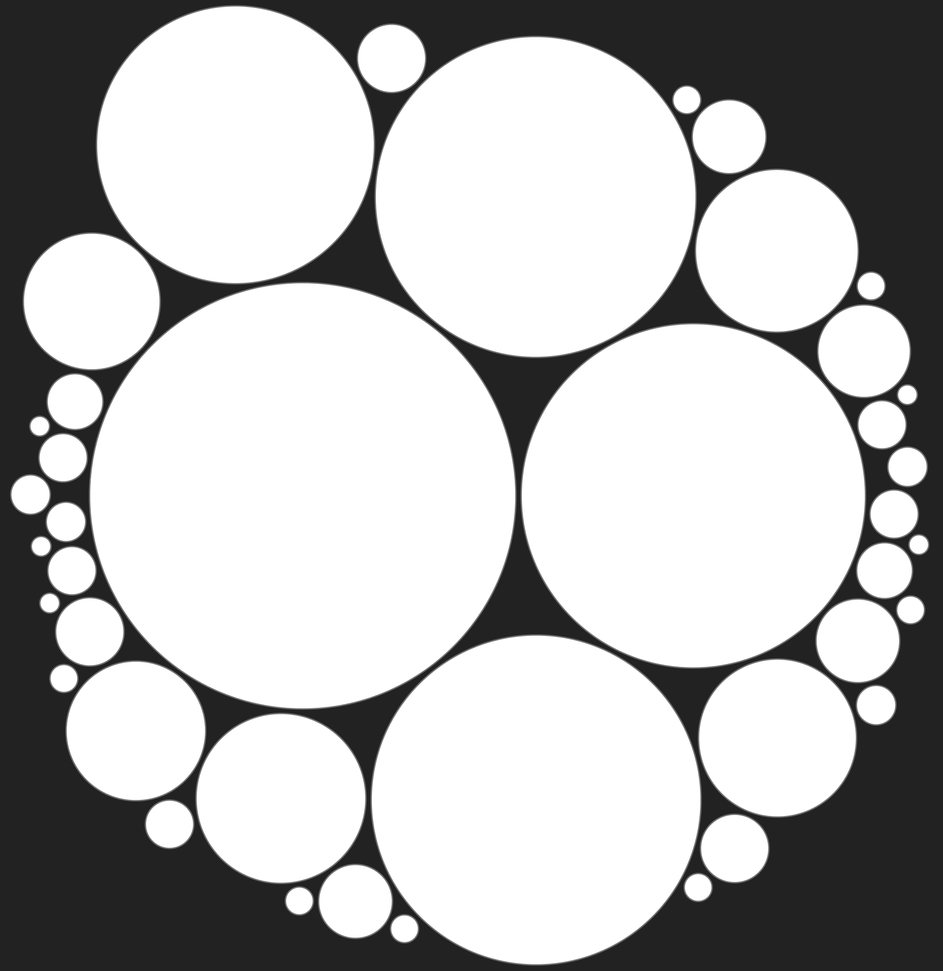


Step 03:
Be creative and follow my data-story and visual toolkits

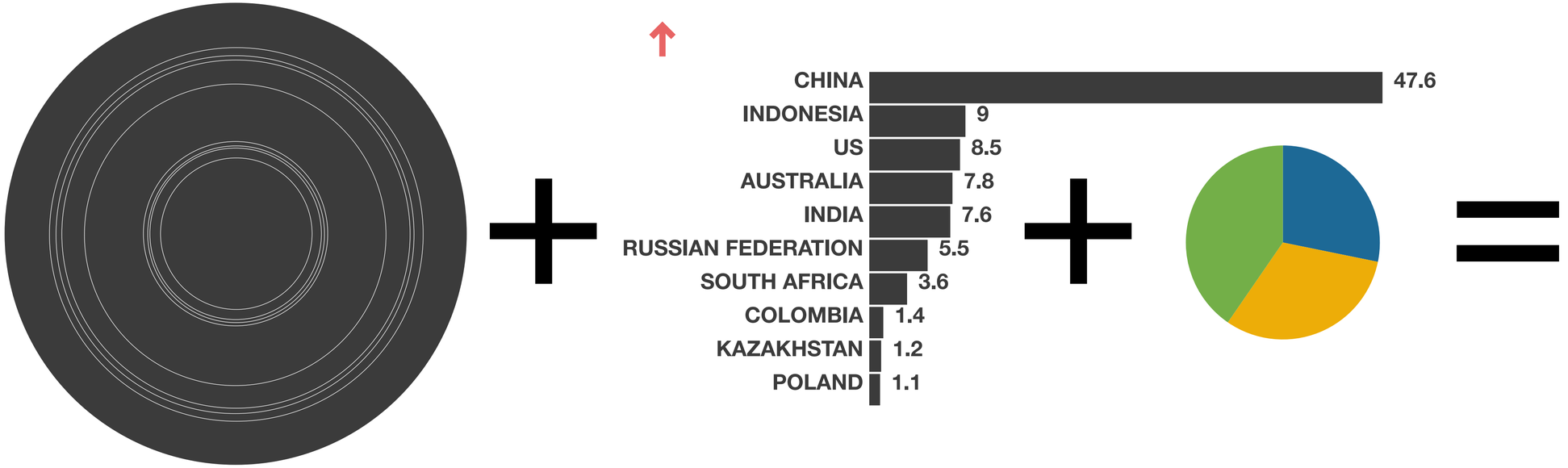
Coal: Total Proved World Reserves at end 2019 (%)



Coal: Total Proved World Reserves at end 2019 (%)



I have combined these two charts into one unified data-viz

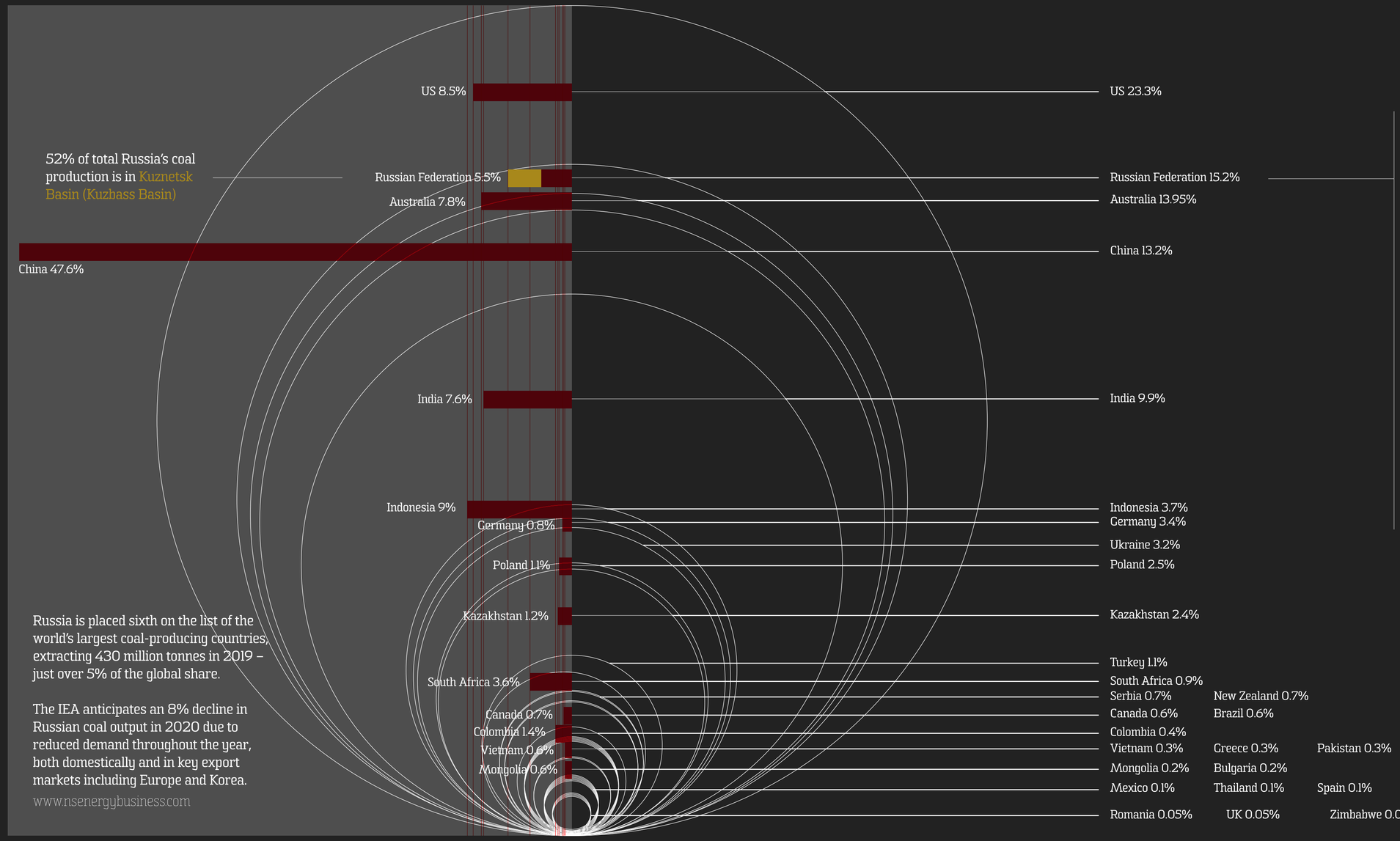


Coal: Total Proved World Reserves at end 2019 (%)

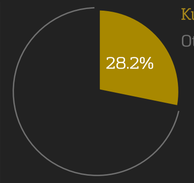
Coal: Top World Producers at end 2019 (%)

Coal: Top World Producers at end 2019 (%)

Coal: Total Proved World Reserves at End 2019 (%)



52% of total Russia's coal production is in Kuznetsk Basin (Kuzbass Basin)



Russia comes second on the list of countries with the world's largest coal reserves – calculated at 162 billion tonnes in 2019. That is equivalent to a 15% share of the overall global resource.

The Kansk-Achinsk coal basin, located in the Central Siberia holds accounts for around 40% of the country's coal reserves, while the Kuznetsk Basin in Western Siberia holds around 28% of the domestic total.

The Kuznetsk Basin (often abbreviated as Kuzbass or Kuzbas) is one of the largest coal mining areas in Russia. It possesses some of the most extensive coal deposits anywhere in the world; coal-bearing seams extend over an area of 10,309 square miles (26,700 km2) and reach a depth of 5,905 feet (1,800 m).

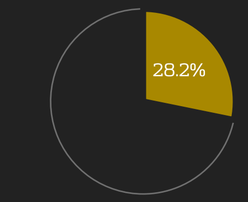
Russia is placed sixth on the list of the world's largest coal-producing countries, extracting 430 million tonnes in 2019 – just over 5% of the global share.

The IEA anticipates an 8% decline in Russian coal output in 2020 due to reduced demand throughout the year, both domestically and in key export markets including Europe and Korea.

www.nsenergybusiness.com

Source: Statistical Review of World Energy 2020 | 69th edition

Coal: Total Proved World Reserves at End 2019 (%)



Kuznetsk Basin coal reserves located in Kemerovo oblast

Other Russia's coal reserves

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US 23.3%

Russian Federation 15.2%

Australia 13.95%

China 13.2%

India 9.9%

Indonesia 3.7%

Germany 3.4%

Ukraine 3.2%

Poland 2.5%

Kazakhstan 2.4%

Turkey 1.1%

South Africa 0.9%

New Zealand 0.7%

Brazil 0.6%

Colombia 0.4%

Czech Republic 0.3%

Bulgaria 0.2%

Uzbekistan 0.1%

Romania 0.05%

UK 0.05%

Zimbabwe 0.05%

South Korea 0.05%

Middle East 0.1%

Venezuela 0.1%

Spain 0.1%

Thailand 0.1%

Mexico 0.1%

Hungary 0.3%

Pakistan 0.3%

Greece 0.3%

Vietnam 0.3%

Mongolia 0.2%

Canada 0.6%

Serbia 0.7%

Coal: Top World Producers at end 2019 (%)

US 8.5%

Russian Federation 5.5%

Australia 7.8%

China 47.6%

India 7.6%

Indonesia 9%

Germany 0.8%

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Kazakhstan 1.2%

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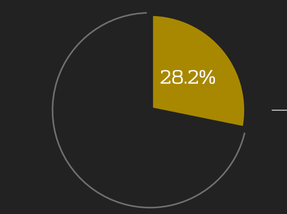
52% of total Russia's coal production is in Kuznetsk Basin (Kuzbass Basin) located in Kemerovo oblast

Source: Statistical Review of World Energy 2020 | 69th edition
www.nsenergybusiness.com

Coal: Total Proved World Reserves at End 2019 (%)



Kuznetsk Basin coal reserves located in Kemerovo oblast

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Uzbekistan 0.1%

UK 0.05%

Serbia 0.7%

Brazil 0.6%

Czech Republic 0.3% Hungary 0.3%

Pakistan 0.3% Greece 0.3%

Bulgaria 0.2%

Venezuela 0.1% Middle East 0.1% Mexico 0.1%

Thailand 0.1% Spain 0.1%

Romania 0.05% South Korea 0.05% Zimbabwe 0.05%

Coal: Top World Producers at end 2019 (%)

US 8.5%

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Russia is placed sixth on the list of the world's largest coal-producing countries, extracting 430 million tonnes in 2019 – just over 5% of the global share.

52% of total Russia's coal production is in Kuznetsk Basin (Kuzbass Basin) located in the Kemerovo oblast

The biggest producing area of export coal in Russia is the Kuzbass region located in Kemerovo oblast. In 2019, the Kuzbass mines produced all together about 251 MT of different types of coal, about 147.3 MT of which were exported by sea and rail.

The IEA anticipates an 8% decline in Russian coal output in 2020 due to reduced demand throughout the year, both domestically and in key export markets including Europe and Korea.

Source: Statistical Review of World Energy 2020 | 69th edition

www.nsenergybusiness.com

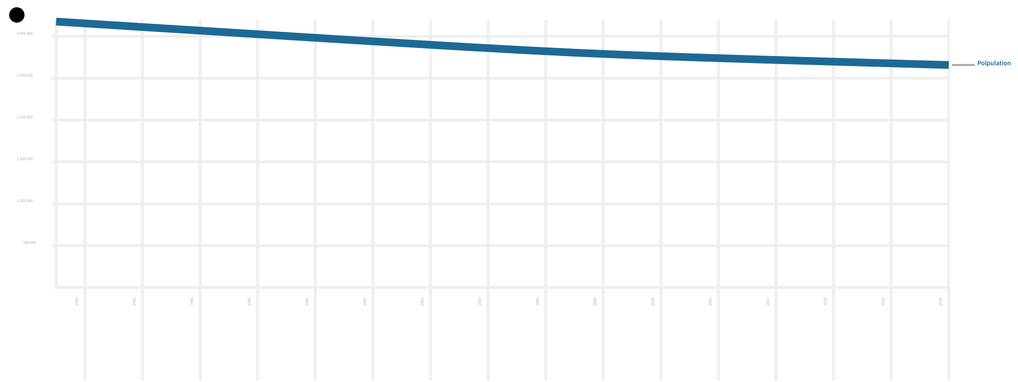
https://www.suekag.com/

Created by Amir Ghorbani 2021 | www.linkedin.com/in/amir-ghorbani-2020/

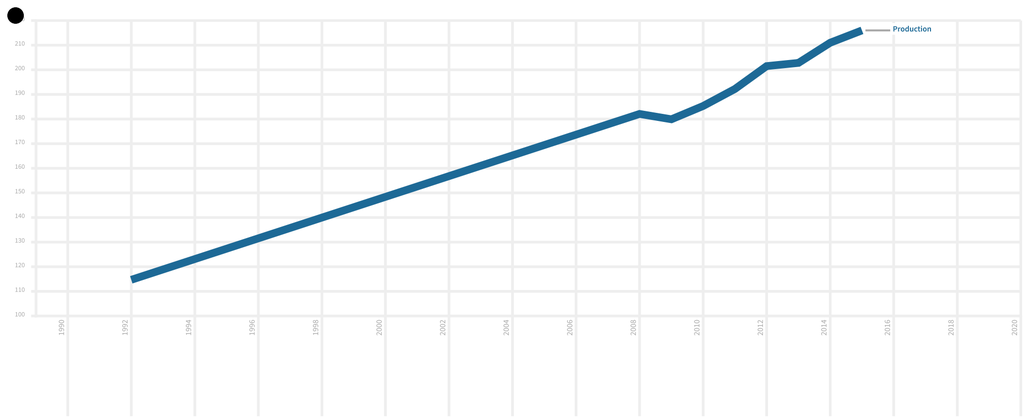
Part 02
Data-viz 2/3

There could be a correlation between the decreasing population of the region and increasing coal production.

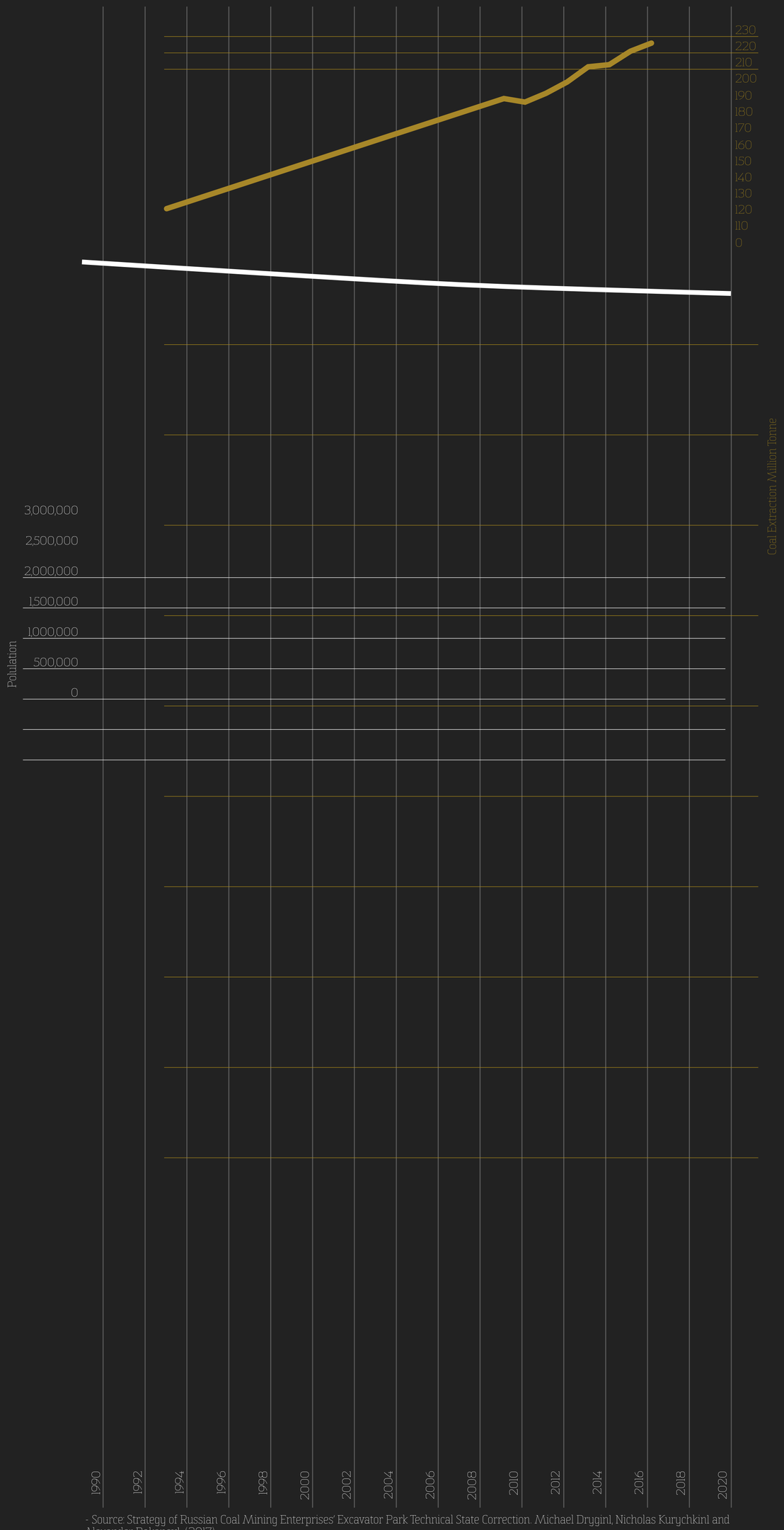
The Population of Kemerovo Oblast Province



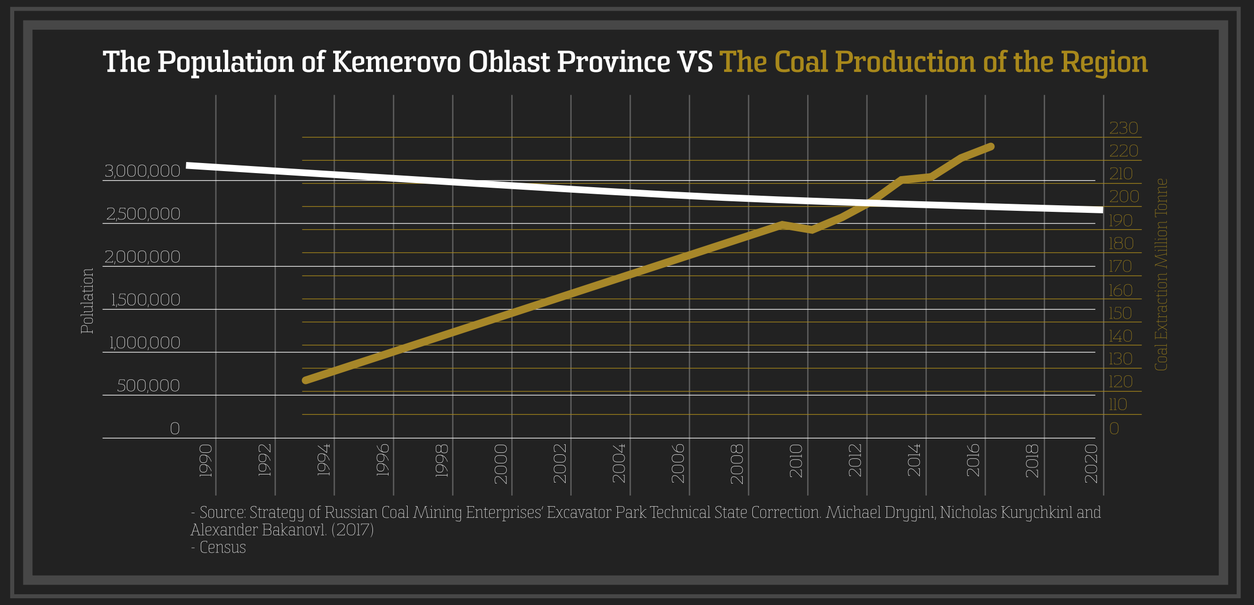
The Coal Production of the Region

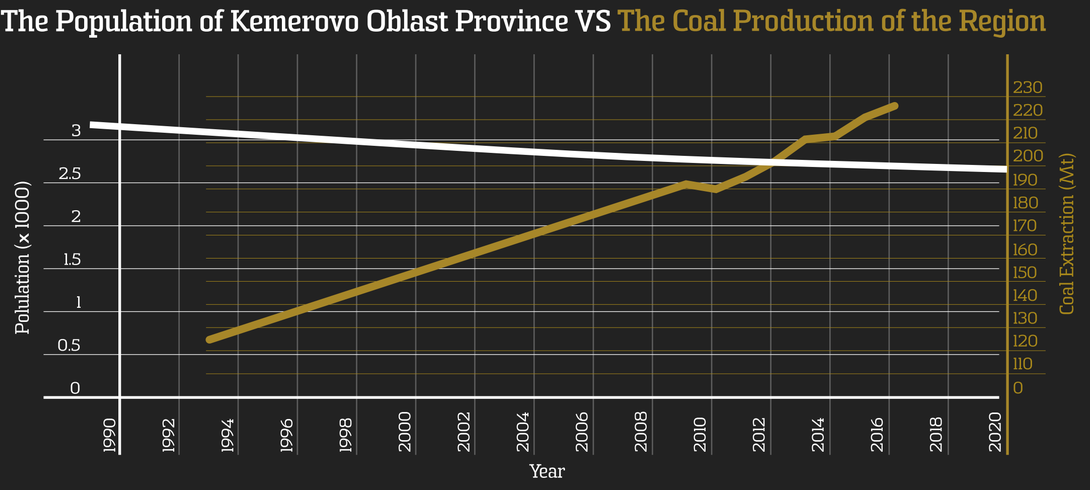


The Population of Kemerovo Oblast Province VS The Coal Production of the Region



- Source: Strategy of Russian Coal Mining Enterprises' Excavator Park Technical State Correction. Michael Dryginl, Nicholas Kurychkinl and Alexander Bakanovl. (2017)
- Census





Final design

Part 02
Data-viz 3/3

Tree Cover Loss in Kemerovo

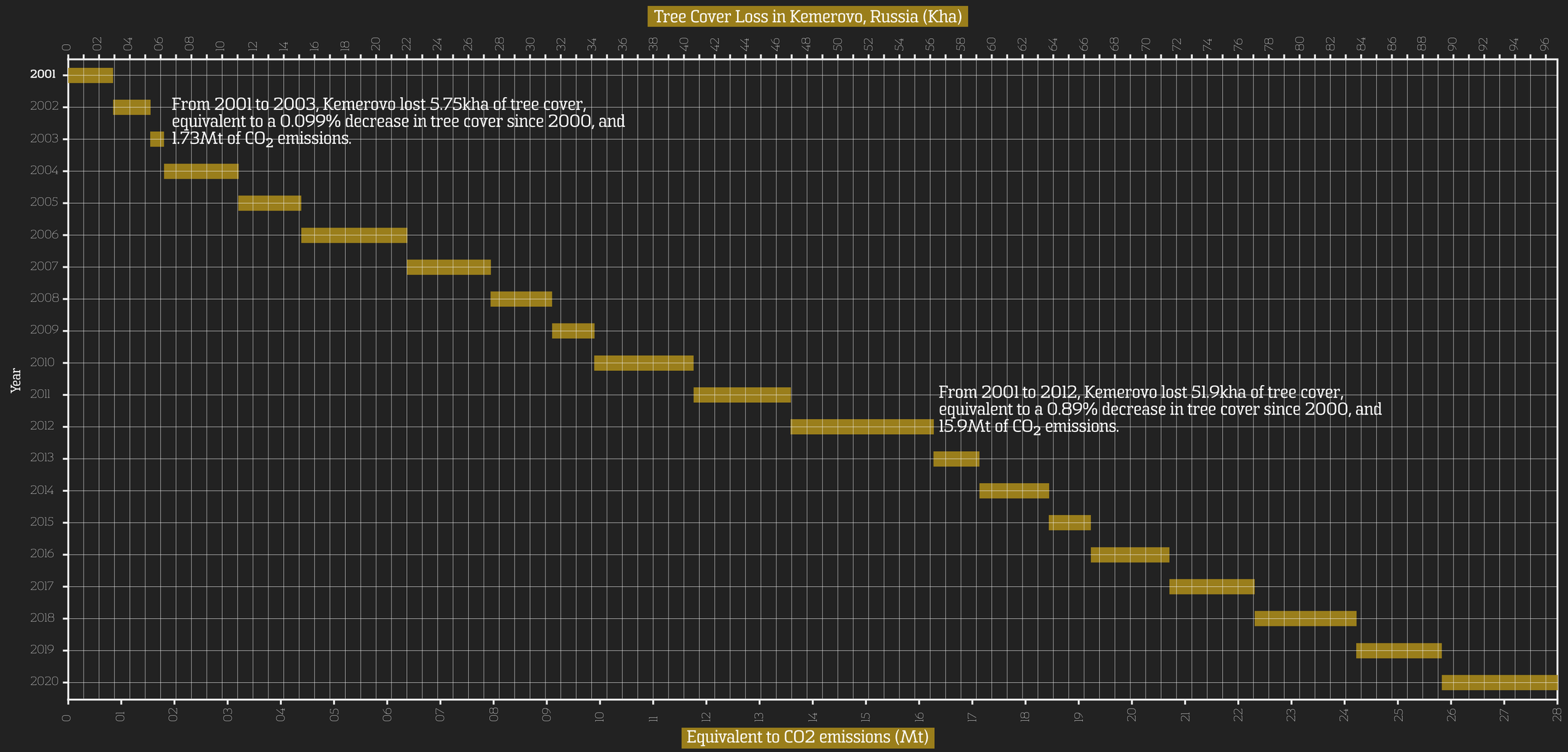
Source: www.globalforestwatch.org

umd_tree_cover_loss__year	umd_tree_cover_loss__ha
2001	2906.259225
2002	2431.837104
2003	890.011085
2004	4830.664159
2005	4081.609261
2006	6881.272849
2007	5432.55294
2008	3983.047774
2009	2740.013382
2010	6456.337153
2011	6298.705315
2012	9290.589962
2013	2981.512785
2014	4519.284931
2015	2720.036282
2016	5099.982698
2017	5535.872216
2018	6614.353234
2019	5550.50291
2020	7522.792849

Step 01:
Pick a data related to my story:

Tree Cover Loss in Kemerovo, Russia (Kha)
Equivalence to CO2 emissions (Mt)

Tree Cover Loss in Kemerovo, Russia



From 2001 to 2020, Kemerovo lost 96.8kha of tree cover, equivalent to a 1.4% decrease in tree cover since 2000, and 28.0Mt of CO_2 emissions.

Tree Cover Loss in Kemerovo, Russia

From 2001 to 2003,

Kemerovo lost 6.22kha of tree cover

equivalent to

0.099% decrease in tree cover since 2000,

and

1.73Mt of CO_2 emissions.

Russia has the largest area of tree cover in the world with 882 million hectares of forest, which amounts to about a fifth of the global forest area.
Between 2001 and 2016 Russia lost more forest than any other countries in the world.
Coal is the single biggest contributor to man-made climate change. Deforestation accounts for up to a tenth of current carbon dioxide emissions. So destroying forests to make way for coal mines in Kuzbass is a 'double whammy' in climate terms.

From 2001 to 2012,

Kemerovo lost 56.22kha of tree cover

equivalent to

0.89% decrease in tree cover since 2000,

and

16.34Mt of CO_2 emissions.

Russia increased coal production in 2017 by three per cent compared to the previous year, and is now the world's third largest coal exporter. The damage has been incalculable: to the climate, to forests and peoples.

From 2001 to 2020,

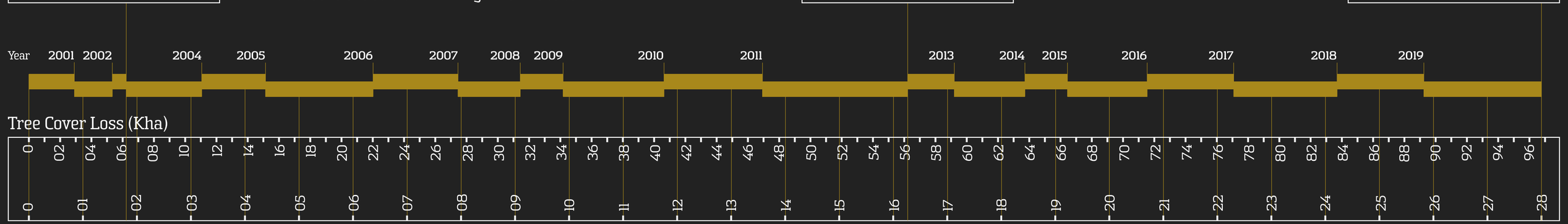
Kemerovo lost 96.8kha of tree cover

equivalent to

1.4% decrease in tree cover since 2000,

and

28.0Mt of CO_2 emissions.

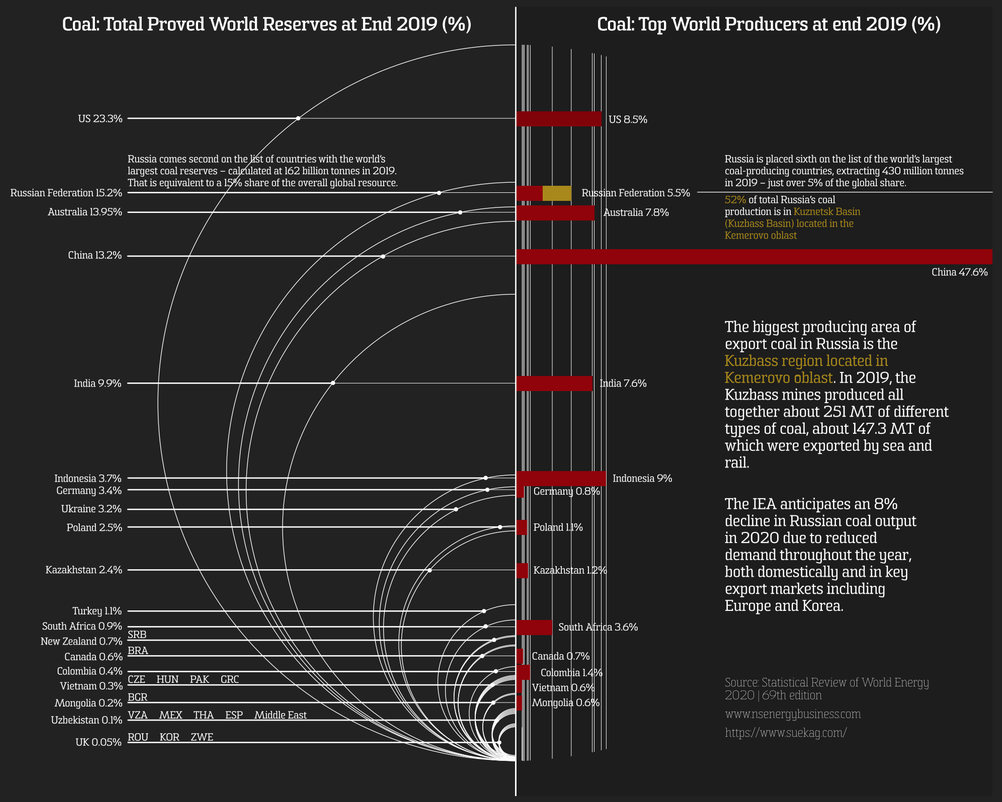


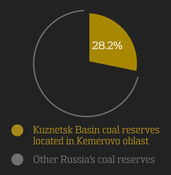
Source: Statistical Review of World Energy 2020 | 69th edition

Part 02
More Data-viz Ideas

More exploration:

I have explored different ideas for visualising the same data





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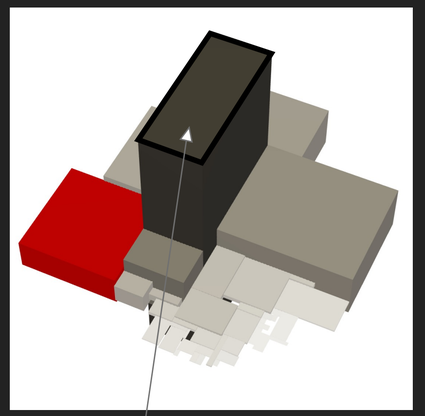
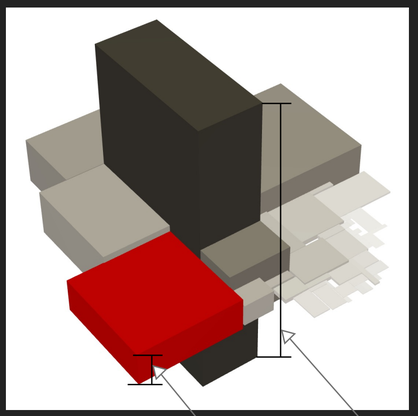
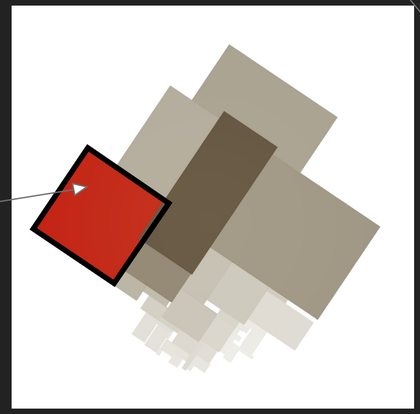


This is China's coal reserves (the rectangle)



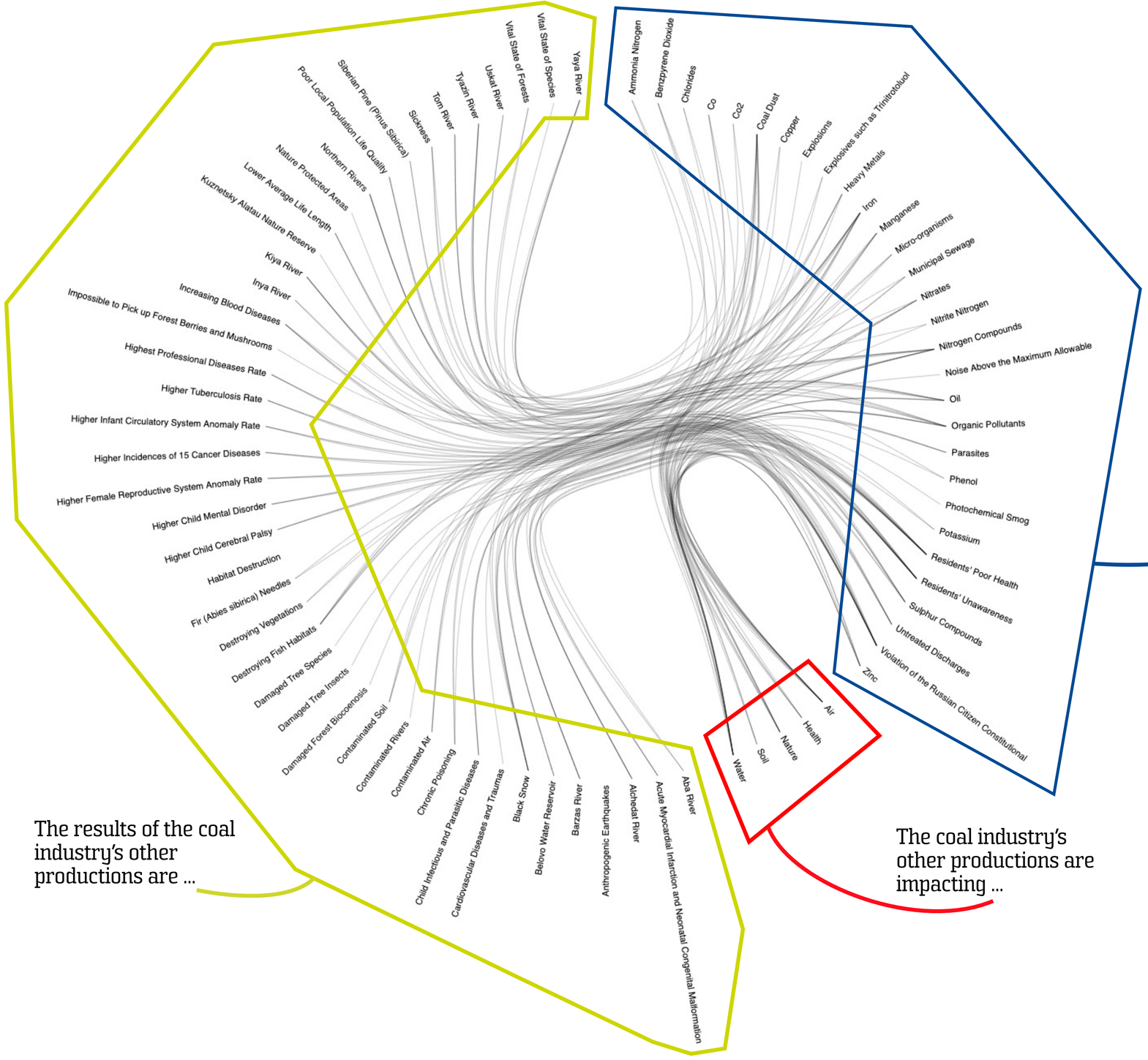
This is China with the highest production (the height)



This is Russia's reserve (the rectangle)

This is Russia's production (the height)

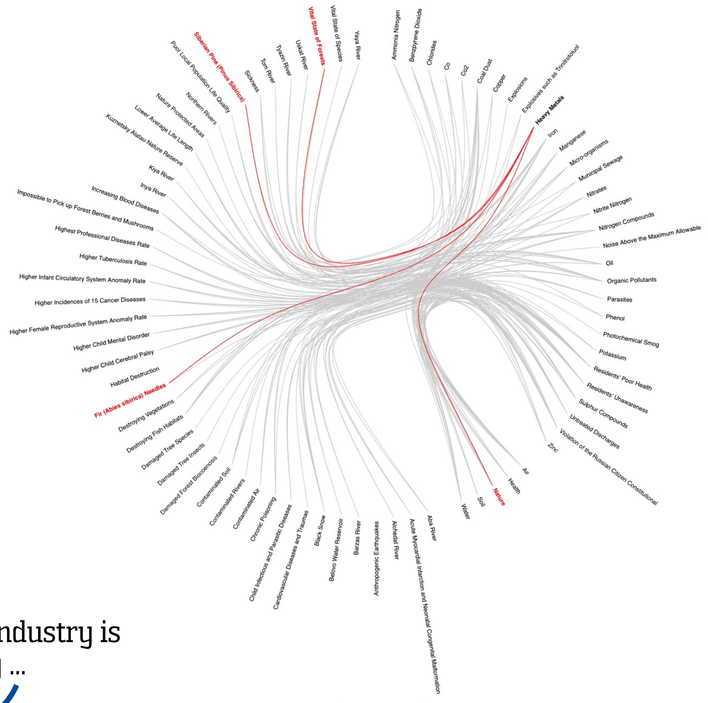
An interactive abstract depiction of total proved world coal reserves and production

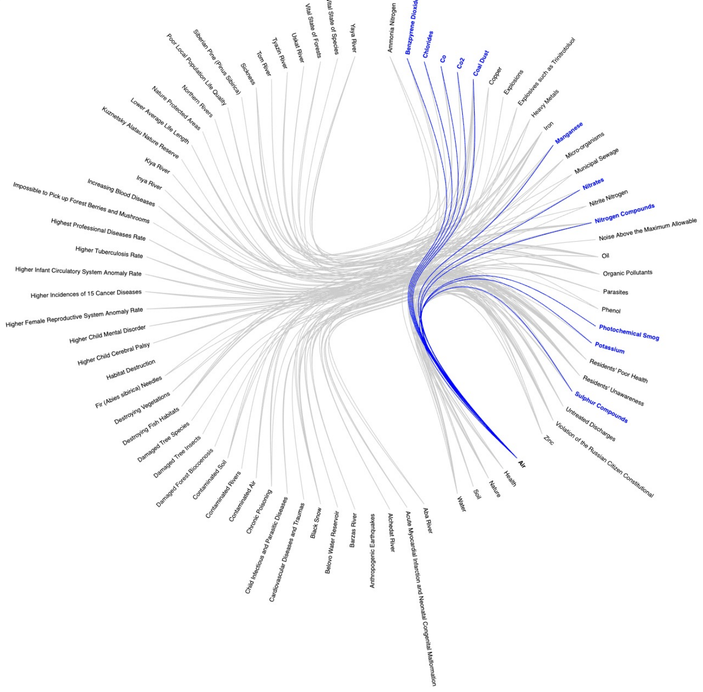


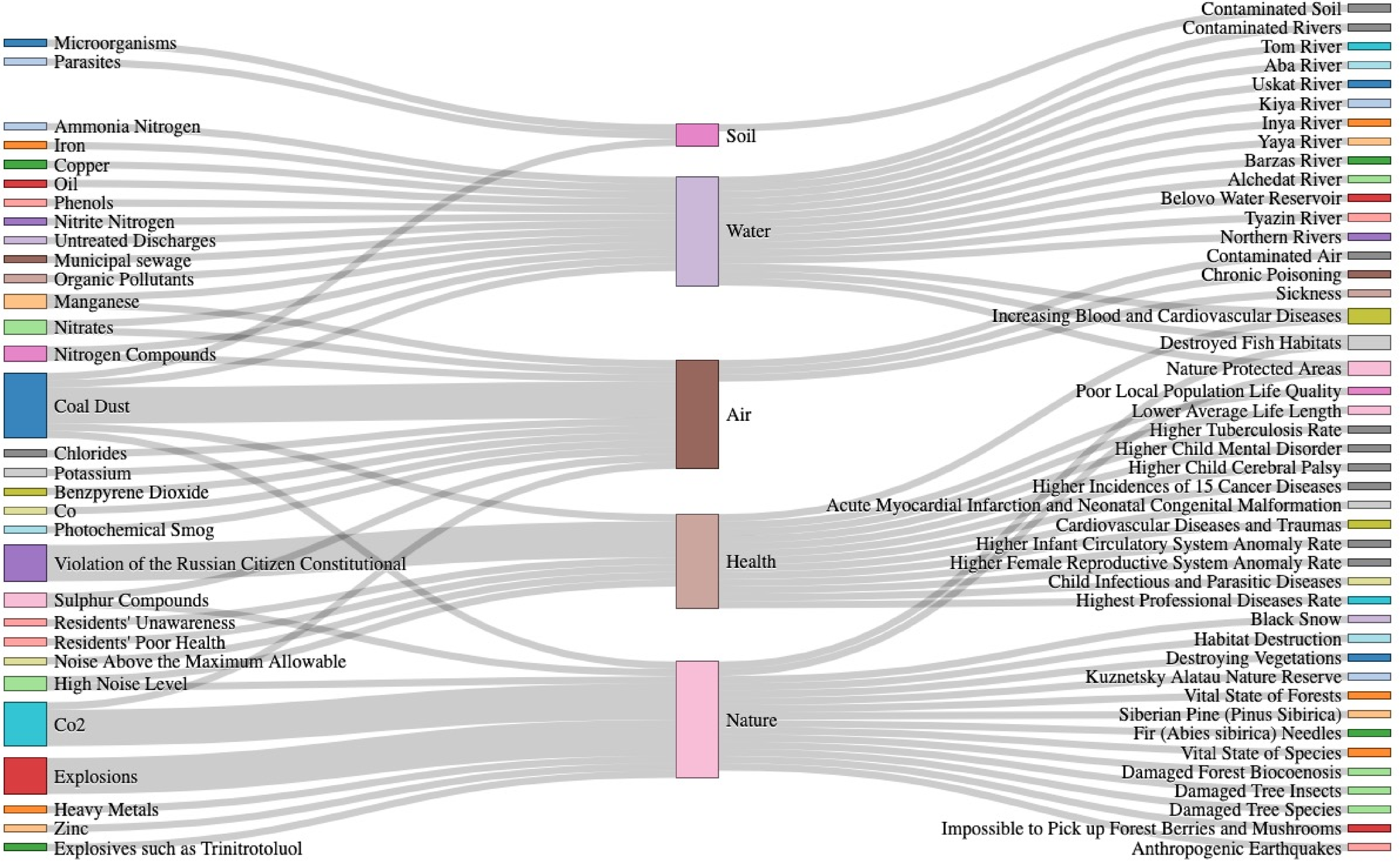
The results of the coal industry's other productions are ...

The coal industry's other productions are impacting ...

The coal industry is producing ...






Microorganisms
Parasites
Ammonia Nitrogen
Iron
Copper
Oil
Phenols
Nitrite Nitrogen
Untreated Discharges
Municipal sewage
Organic Pollutants
Manganese
Nitrates
Nitrogen Compounds
Coal Dust
Chlorides
Potassium
Benzpyrene Dioxide
Co
Photochemical Smog
Violation of the Russian Citizen Constitutional
Sulphur Compounds
Residents' Unawareness
Residents' Poor Health
Noise Above the Maximum Allowable
High Noise Level
Co2
Explosions
Heavy Metals
Zinc
Explosives such as Trinitrotoluol
Soil
Water
Air
Health
Nature
Contaminated Soil
Contaminated Rivers
Tom River
Aba River
Uskat River
Kiya River
Inya River
Yaya River
Barzas River
Alchedat River
Belovo Water Reservoir
Tyazin River
Northern Rivers
Contaminated Air
Chronic Poisoning
Sickness
Increasing Blood and Cardiovascular Diseases
Destroyed Fish Habitats
Nature Protected Areas
Poor Local Population Life Quality
Lower Average Life Length
Higher Tuberculosis Rate
Higher Child Mental Disorder
Higher Child Cerebral Palsy
Higher Incidences of 15 Cancer Diseases
Acute Myocardial Infarction and Neonatal Congenital Malformation
Cardiovascular Diseases and Traumas
Higher Infant Circulatory System Anomaly Rate
Higher Female Reproductive System Anomaly Rate
Child Infectious and Parasitic Diseases
Highest Professional Diseases Rate
Black Snow
Habitat Destruction
Destroying Vegetations
Kuznetsky Alatau Nature Reserve
Vital State of Forests
Siberian Pine (Pinus Sibirica)
Fir (Abies sibirica) Needles
Vital State of Species
Damaged Forest Biocoenosis
Damaged Tree Insects
Damaged Tree Species
Impossible to Pick up Forest Berries and Mushrooms
Anthropogenic Earthquakes

Part 03
Pictograms

Designing pictograms:

For this projects, I have tried different ways to create my pictograms.

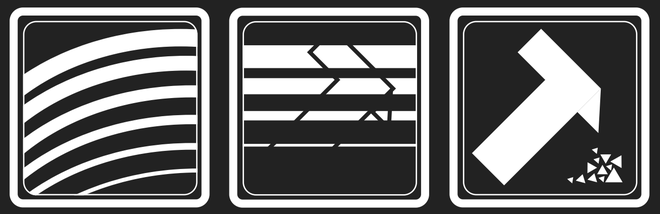
The image on the left shows an image-based grid line that I designed for further exploration.

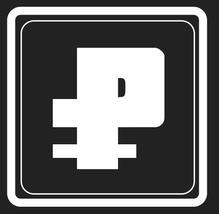
On the right, I have also created some icons with the help of a simple grid.

Also, I have googled similar pictographic for the coal industry

Designing pictograms:

Another approach to design is to use Cyrillic Fonts

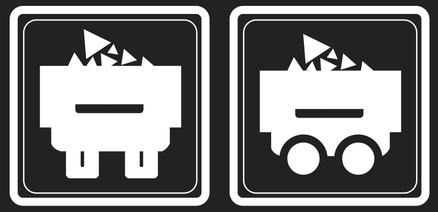
Coal Mine 

Precious 

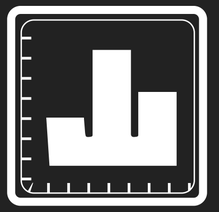
Miner 

Power Plants 

Deforestation 

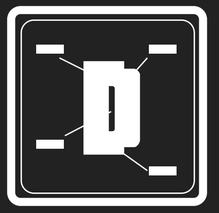
Coal 

Map 

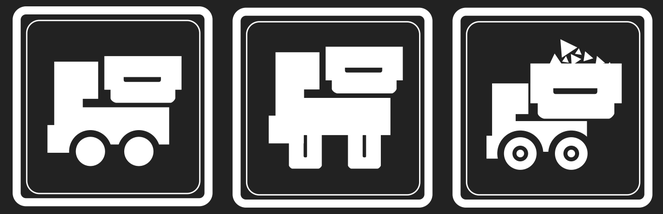
Data-viz 

Explosion 

Danger 

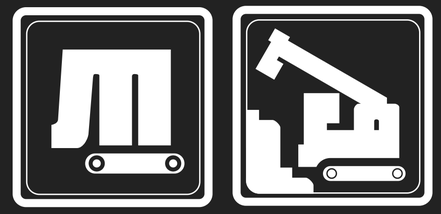
Diagram 

Mine Truck



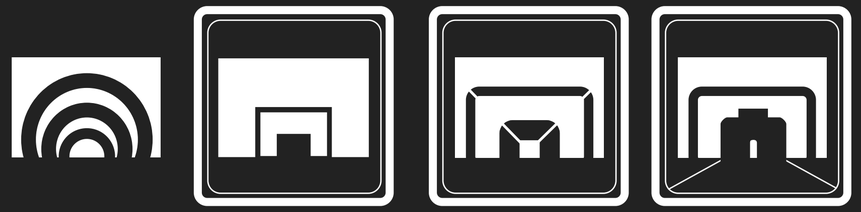
Bulldozer

Excavator

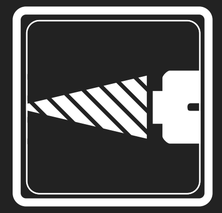


Pollution

Tunnel



Auger

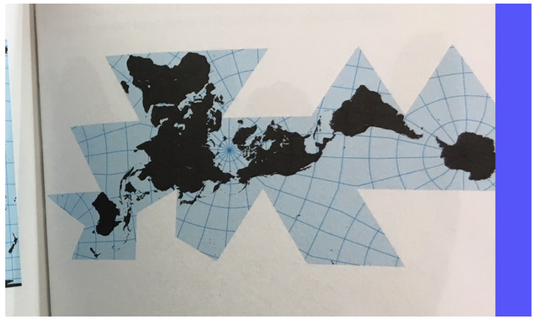


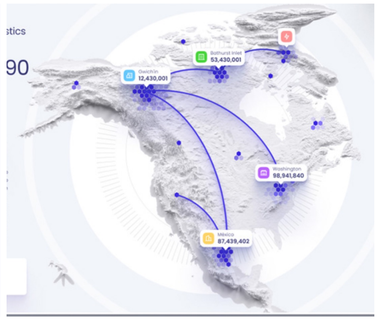
АД ВБ СС ÐD ЕЄ FF
GG НН II ЈЈ ЖК LL
ЛМ ЛЙ ФО ЧР ФҨ
RЯ SS ТТ VЦ VV
ШЩ ХЖ УУ ZZ

Part 03

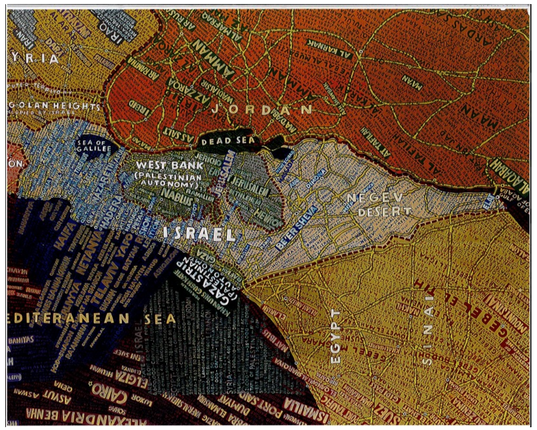
Maps

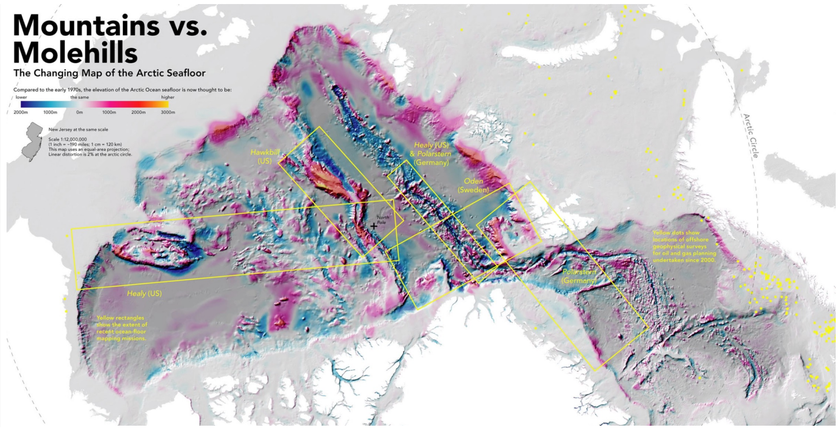
Searching for maps:

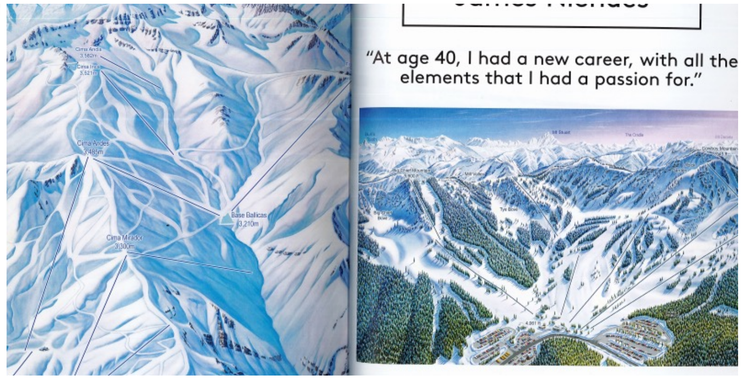




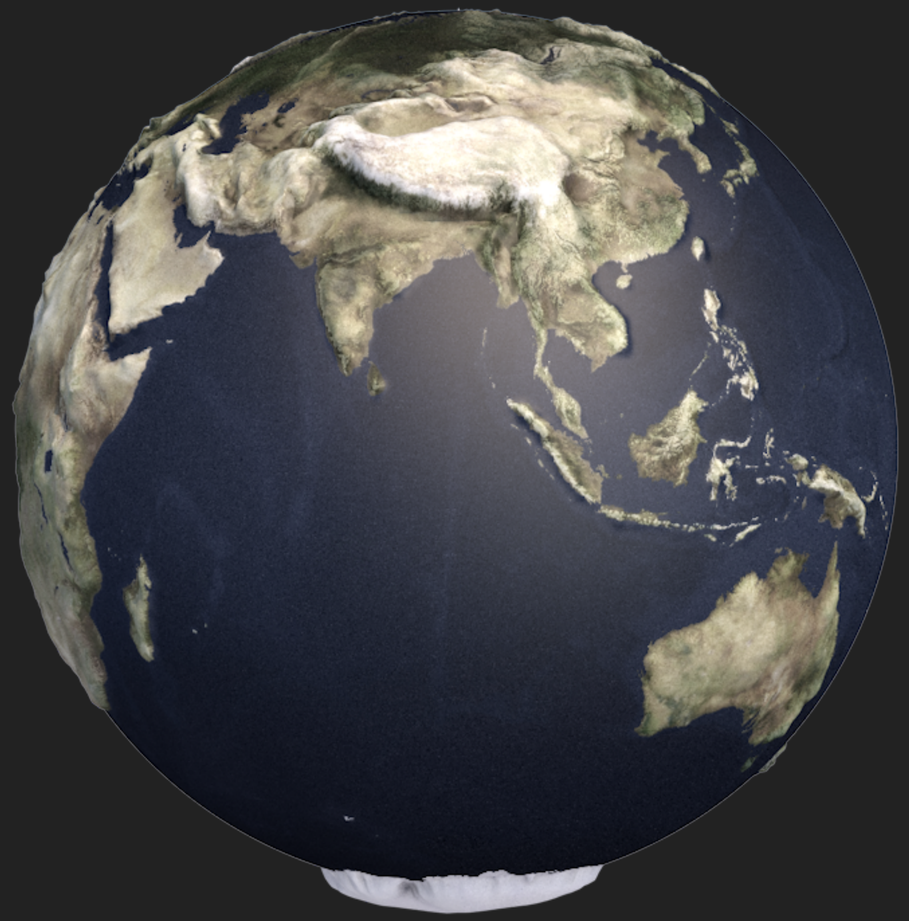
The map could be very detailed:
- Location of the mines
- Number of miners
- Coal power plants







I have designing 3d globe in C4D only to explore this great software and also create some data maps.



The ten biggest coal mines in the world

Two of the largest coal mines in the world by reserves are located in the Powder River Basin in Wyoming, US, while Australia and China host four and two of the biggest coal mines, respectively.

Mining Technology profiles the ten biggest operating coal mines in the world, based on recoverable coal reserves.

The Raspadskaya Coal Mine is a coal mine located in Mezhdurechensk, Kemerovo Oblast, Russia. It is the largest coal and the largest underground mine in Russia. The mine was opened in 1973 and its construction was completed in 1977.

North Antelope Rochelle Coal Mine
Country: **US**
Coal reserve as of 2018: **1.7 billion tonnes**

Haerwusu Coal Mine
Country: **China**
Coal reserve as of 2018: **1.6 billion tonnes**

Hei Dai Gou Coal Mine
Country: **China**
Coal reserve as of 2018: **1.5 billion tonnes**

Raspadskaya Coal Mine
Country: **Russia**
Coal reserve as of 2018: **1.34 billion tonnes**

Moatize Coal Mine
Country: **Mozambique**
Coal reserve as of 2018: **985.7 million tonnes**

Black Thunder Coal Mine
Country: **US**
Coal reserve as of 2018: **816.5 million tonnes**

Peak Downs Coal Mine
Country: **Australia**
Coal reserve as of 2018: **718 million tonnes**

Mt Arthur Coal Mine
Country: **Australia**
Coal reserve as of 2018: **591 million tonnes**

Goonyella Riverside Coal Mine
Country: **Australia**
Coal reserve as of 2018: **549 million tonnes**

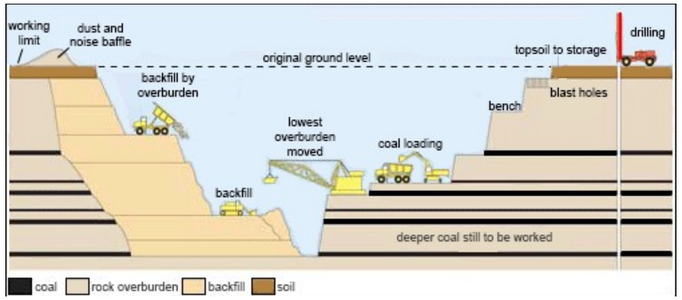
Saraji Coal Mine
Country: **Australia**
Coal reserve as of 2018: **502 million tonnes**

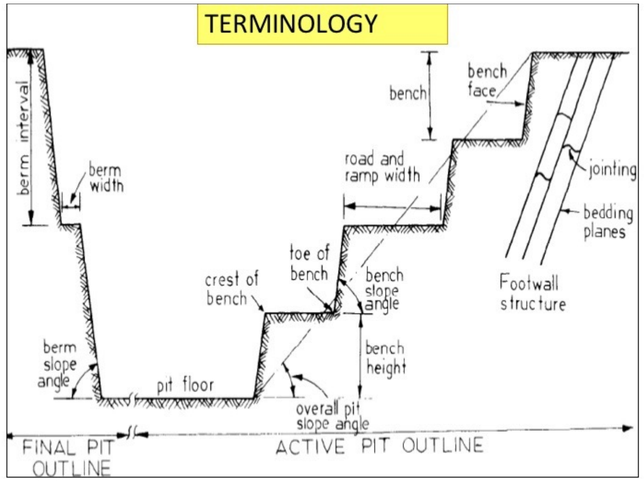
Part 04
Diagrams

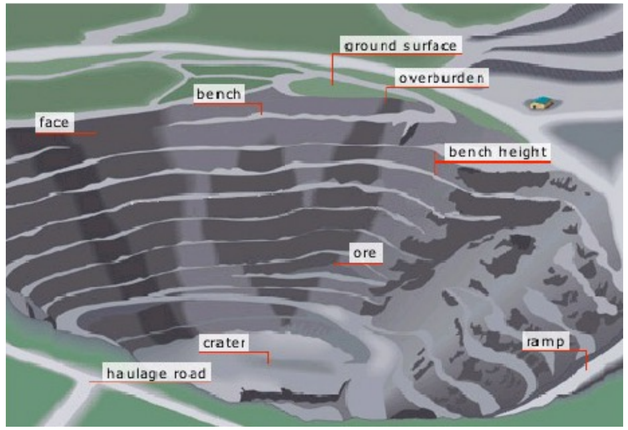
Designing my diagram:

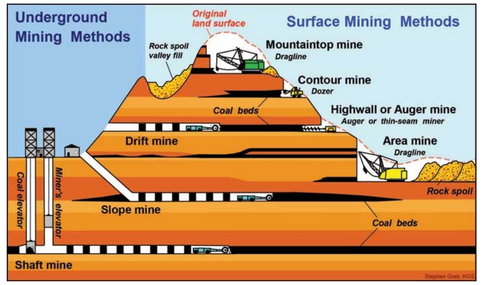
From the beginning of this project, I wanted to explore 3d software ,C4D , and use it to design some elements in this project.

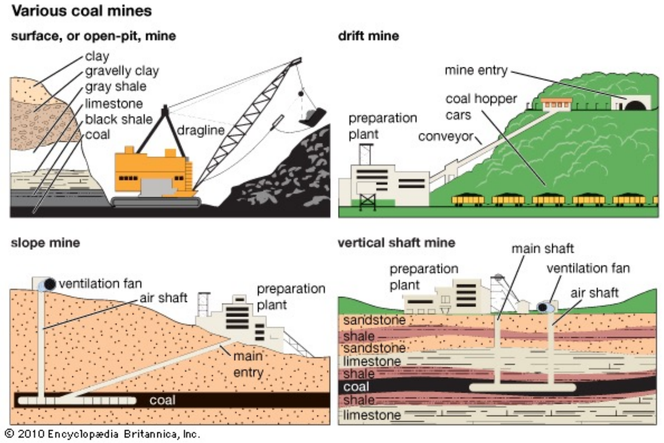
Diagram inspirations:

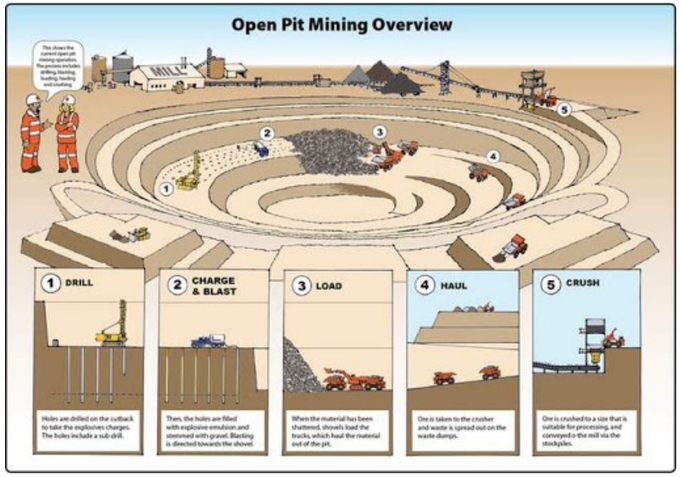


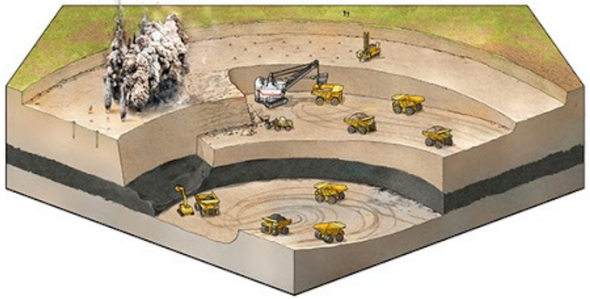




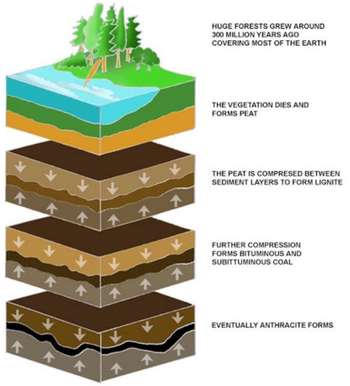


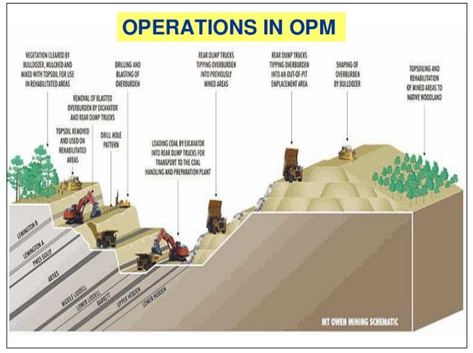






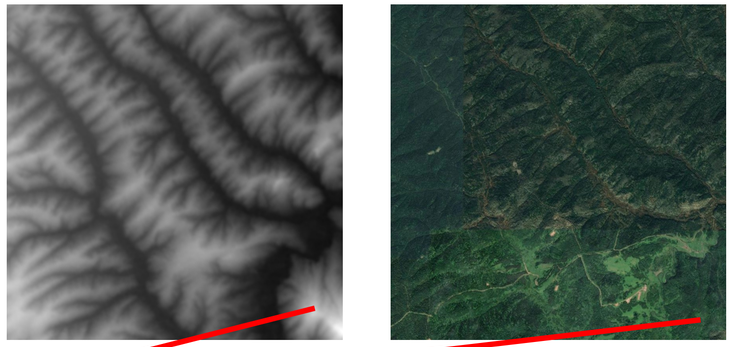
Coal Formation

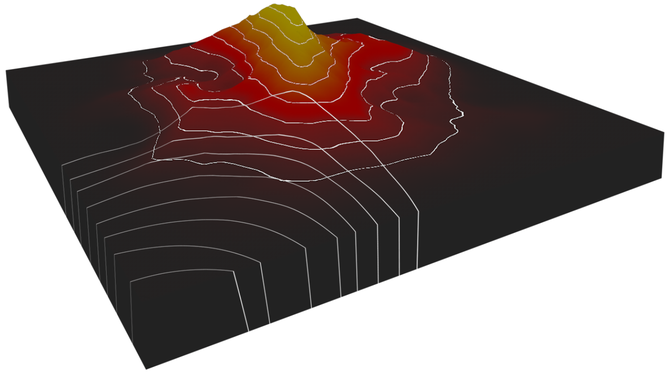


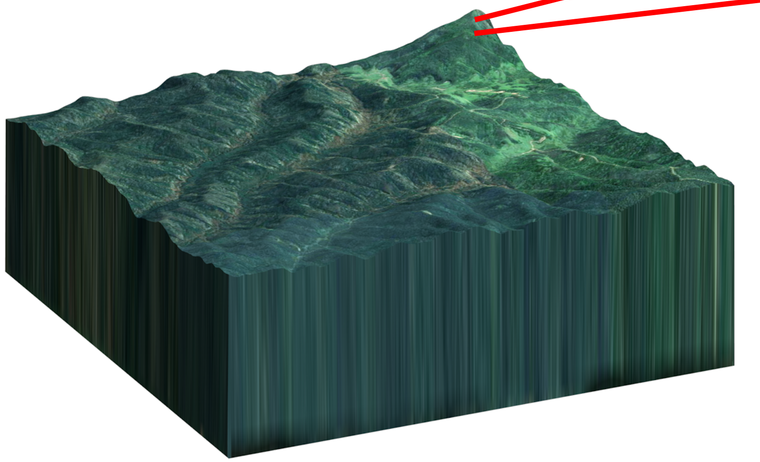


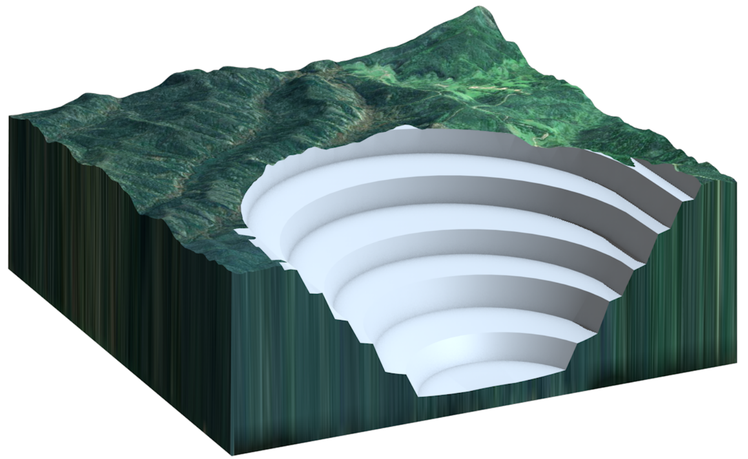
My diagram elements:

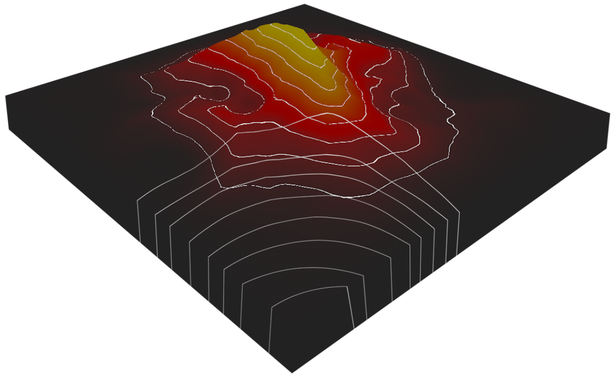
The cross-section has been made from real land located in Kuzbass

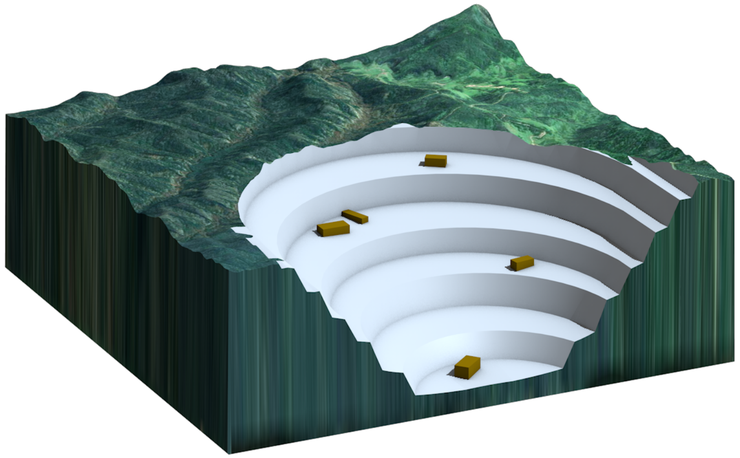


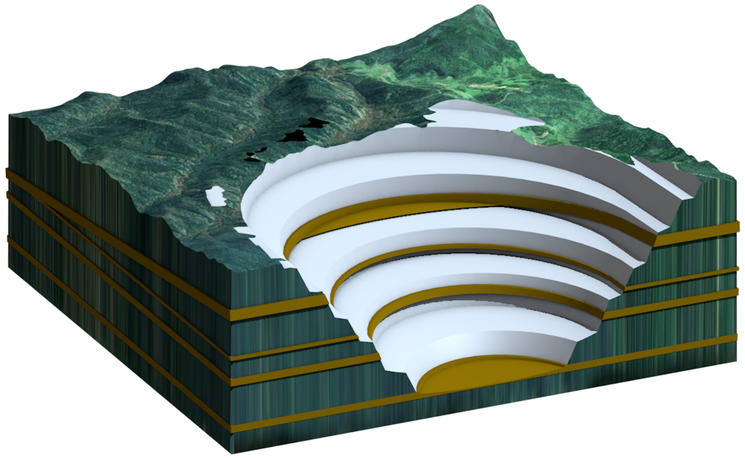












The Anatomy of Surface Coal Mine

When is this used?

Surface mining is used when the coal seam is near the surface. It recovers a higher proportion of the coal deposit than underground mining as all coal seams are exploited – 90% or more of the coal can be recovered.

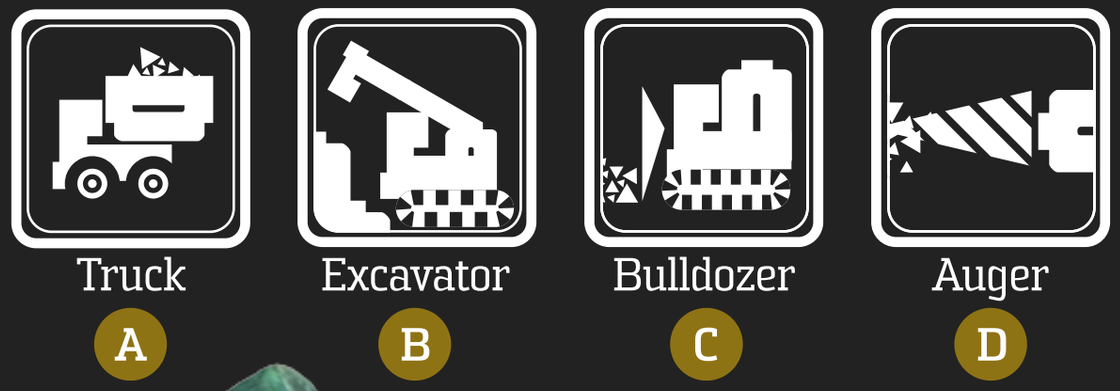
How does it work?

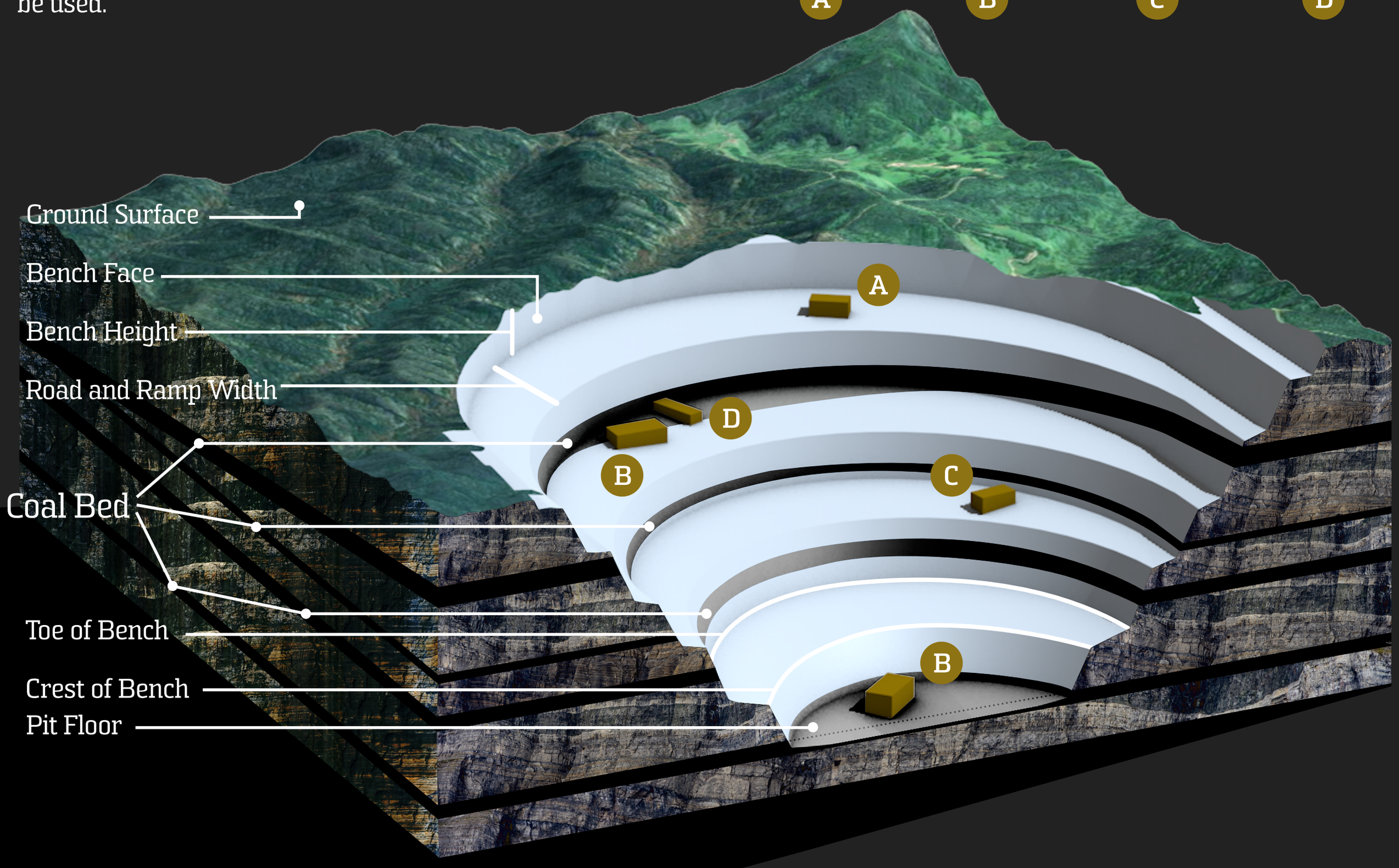
The overburden of soil and rock is first broken up by explosives; it is then removed by draglines or by shovel and bulldozer. Once the coal seam is exposed, it is drilled, fractured and systematically mined in strips. The coal is loaded onto large trucks or conveyors for transport to either the coal preparation plant or direct to where it will be used.

Large opencast mines can cover an area of many square kilometres and use very large pieces of equipment, such as draglines, power shovels, large trucks, bucket wheel excavators and conveyors.

What is the impact on the land?

Coal mining is only a temporary use of land, so it is vital that mine rehabilitation takes place once operations have stopped. Detailed rehabilitation or reclamation plans are designed and approved, covering the period from the start of operations until well after mining has finished.





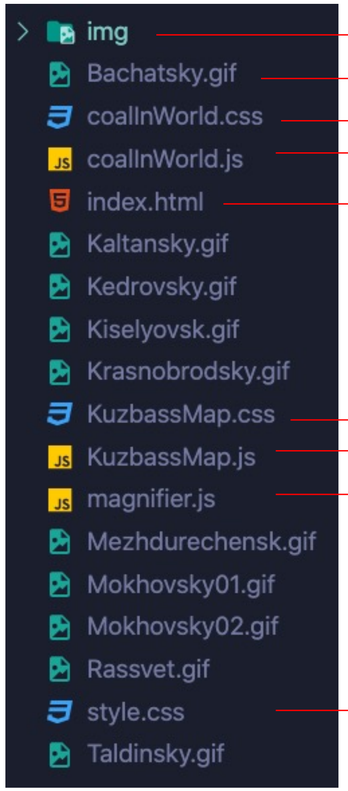
Source: www.worldcoal.org

Part 05

Code

Files:

I have used flex box to style the elements on my website.



All the images including SVG and PNG files.

Gif files for the map of deforestation

CSS: Power plants map (map box)

JS: Power plants map (map box)

HTML: Main file

CSS: Deforestation map (map box)

JS: Deforestation map (map box)

JS: Magnifier - Source: W3 School
I have not used this file on my final website.

CSS: Main file

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <!-- Search engine optimization (SEO) -->
    <title>Coal-mining | Southwestern Siberia</title>
    <meta name="description" content="Coal-mining | Southwestern Siberia">
    <meta name="robots" content="index,follow">
    <!-- MapBox -->
    <link href="https://fonts.googleapis.com/css?family=Open+Sans" rel="stylesheet">
    <script src='https://api.tiles.mapbox.com/mapbox-gl-js/v2.2.0/mapbox-gl.js'></script>
    <link href='https://api.tiles.mapbox.com/mapbox-gl-js/v2.2.0/mapbox-gl.css' rel='stylesheet' />
    <link href="https://api.mapbox.com/mapbox-gl-js/v2.2.0/mapbox-gl.css" rel="stylesheet">
    <script src="https://api.mapbox.com/mapbox-gl-js/v2.2.0/mapbox-gl.js"></script>
    <!-- Icon -->
    <link rel="icon" href="./img/Russia_29758.ico">
    <!-- CSS -->
    <link rel="stylesheet" href="./style.css">
    <link rel="stylesheet" href="./KuzbassMap.css">
    <link rel="stylesheet" href="./coalInWorld.css">
</head>
```

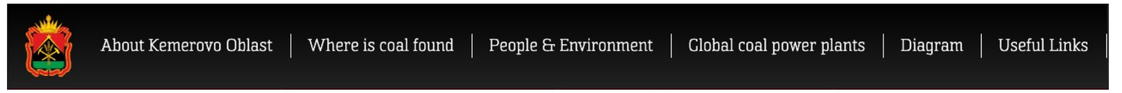
HTML Head Tag

HTML Body Tag

```
<!-- BG //////////////////-->
<div id="bg" class="container">
    <div id="bg01"></div>
    <div id="bg02"></div>
    <div id="bg03"></div>
    <div id="bg04"></div>
</div>
```

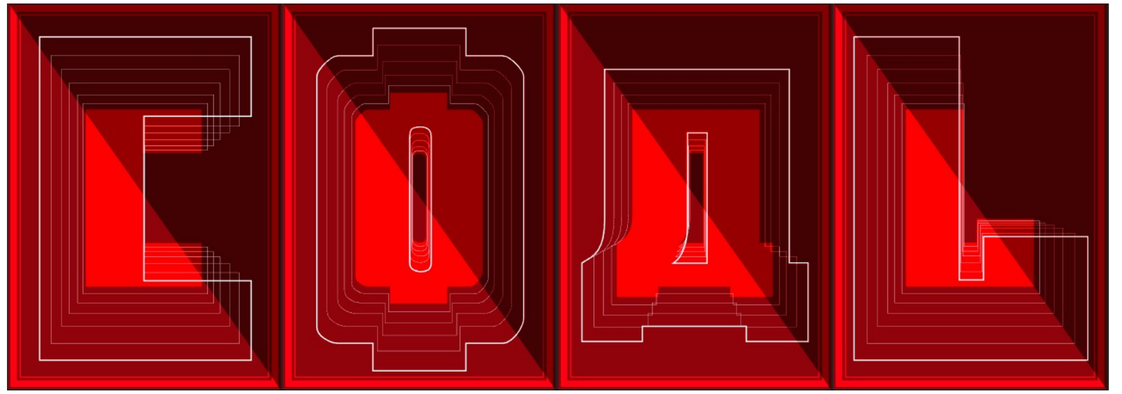
2 red lines on
website back-ground

```
<!-- Navbar ////////////////////////// -->
<div class="navbar container">
    <img class="child01-navbar" id="logo" src="./img/flag.svg" alt="">
    <navs class="child02-navbar">
        <ul class="child01-child02-navbar">
            <li><a href="#">About Kemerovo Oblast</a></li>
            <li><a href="#Where-is-coal-found">Where is coal found</a></li>
            <li><a href="#People-&-Environment">People & Environment</a></li>
            <li><a href="#Global-coal-power-plants">Global coal power plants</a></li>
            <li><a href="#Diagram">Diagram</a></li>
            <li><a href="#Links">Useful Links</a></li>
        </ul>
    </navs>
</div>
```



Navigation bar

```
<!-- Typography ////////////////////////-->
<section class="typo container" id="About-Kemerovo-Oblast">
    <div class="child01-typo">
        <img src="./img/c – 1.svg">
        <img src="./img/o – 1.svg">
        <img src="./img/a – 1.svg">
        <img src="./img/l – 1.svg">
    </div>
</section>
```



```
<!-- Head ////////////////////////////// -->
<section class="head container">
    <div class="child01-head">
        <h1>The Precious Polluting Industry</h1>
        <h2>How coal dependency is devastating Kemerovo oblast’s environment and indigenous people.<
        <section class="child01-child01-head">
            <p><b class="first-letter">C</b>oal deposits in the area were first discovered in 1721.
                    Under Joseph Stalin’s first five-year plan, the Ural-Kuznetsk industrial combine
            <p>It became a centre for the production of iron and steel, zinc, aluminium, machinery a
                    The Kuznetsk Basin (often abbreviated as Kuzbass or Kuzbas) is one of the larges
                    It possesses some of the most extensive coal deposits</p>
            <p>anywhere in the world; coal-bearing seams extend over an area of 10,309 square miles
        </section>
    </div>
</section>
```

The Precious Polluting Industry

How coal dependency is devastating Kemerovo oblast’s environment and indigenous people.

Coal deposits in the area were first discovered in 1721. The late 19th-century industrialisation of Russia prompted rapid growth in the area’s industries, which was further boosted by the completion of the Trans-Siberian Railway. Under Joseph Stalin’s first five-year plan, the Ural-Kuznetsk industrial combine was formed in the early 1930s.

It became a centre for the production of iron and steel, zinc, aluminium, machinery and chemicals, with raw materials and finished products being shipped to and from sites in the Kuzbass and Urals.
The Kuznetsk Basin (often abbreviated as Kuzbass or Kuzbas) is one of the largest coal mining areas in Russia. It possesses some of the most extensive coal deposits

anywhere in the world; coal-bearing seams extend over an area of 10,309 square miles (26,700 km2) and reach a depth of 5,905 feet (1,800 m). The region’s other industries are based on coal mining. The Kuzbass now extracts ca. 60 percent of Russia’s total coal production and is the main fuel and energy base for eastern Russia.

```
<!-- Quote01 ////////////////////-->
<div class="quote container" id="Where-is-coal-found">
    <div class="quote-img"><img src="./img/Putin@2x.png"  alt=""></div>
    <p>“We must be able both to maintain and to significantly extend our presence in the market”</p>
    <p>Vladimir Putin<br />2018<br />Source: fern</p>
</div>
```

“We must be able both to maintain and to significantly extend our presence in the market”

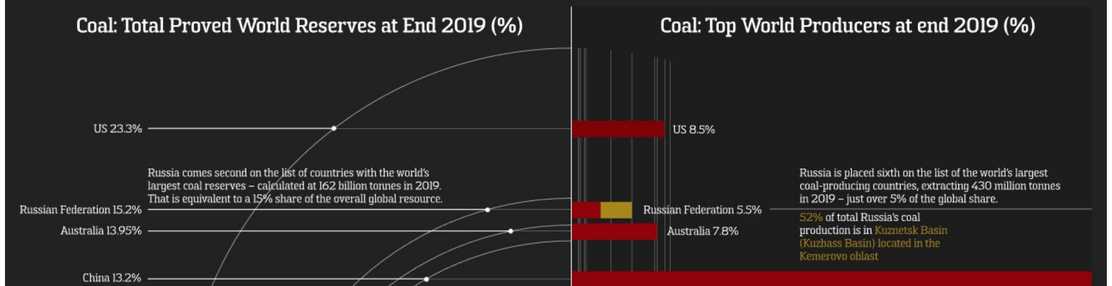
Vladimir Putin
2018
Source: fern

```
<!-- Coal ////////////////////////////// -->
<section class="coal container">
    <div class="child01-coal">
        <h2>Where is coal found</h2>
        <section class="child01-child01-coal">
            <p><b class="first-letter">C</b>oal is abundant – there’s over 1.06 trillion tonnes of p
        </section>
    </div>
</section>

<div class="img-magnifier-container container">
    <div>
        <img id="coal-data" class="child01-coal" src="./img/Data-Viz/Coal-final.svg" alt="">
    </div>
</div>
```

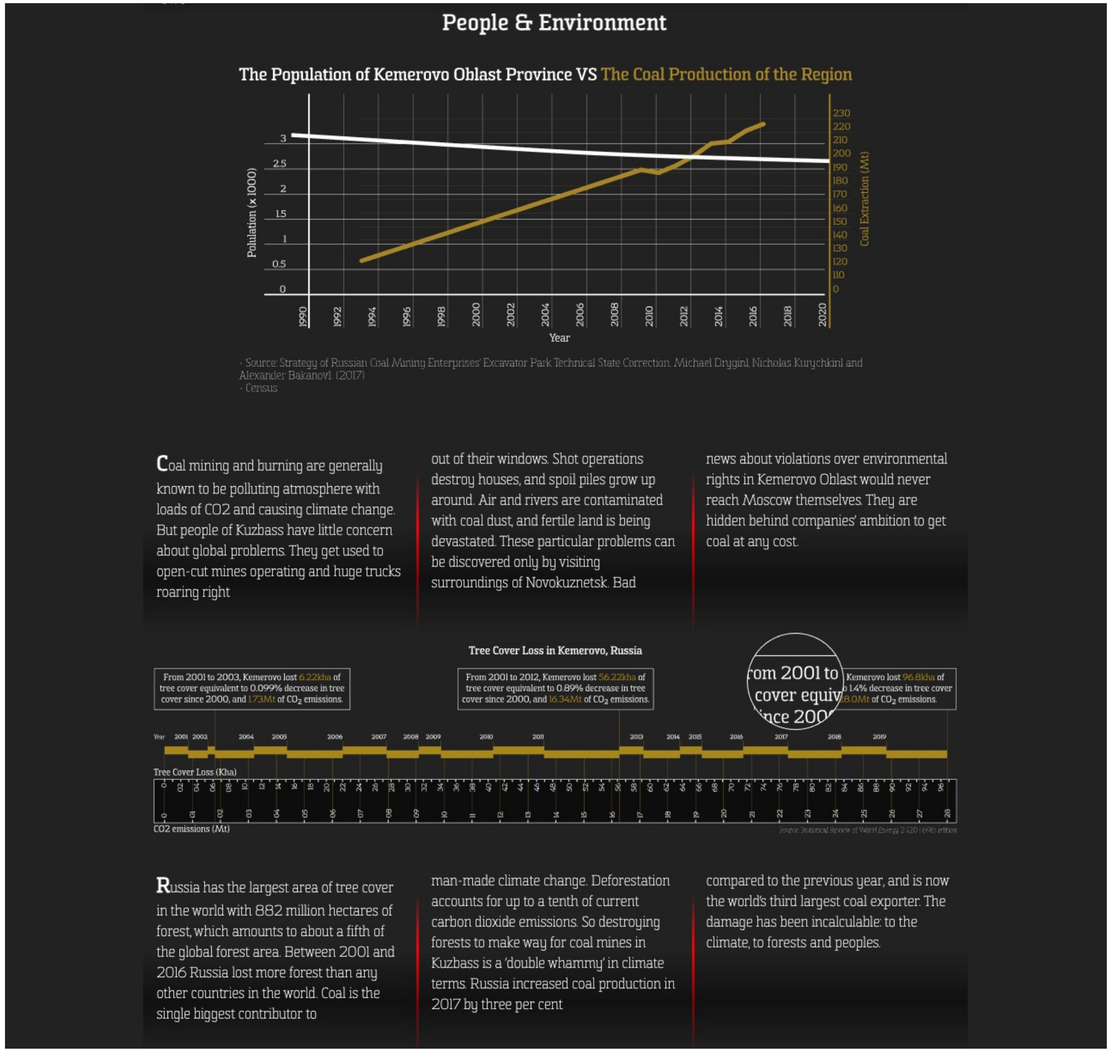
Where is coal found

Coal is abundant – there’s over 1.06 trillion tonnes of proven coal reserves worldwide. This means that at current rates of production, there is enough coal to last us around 132 years. The biggest reserves are in the USA, Russia, China, Australia and India.



```html
<!-- Population ////////////////////////////// -->
<section class="pop container">
    <h2>People & Environment</h2>
</section>
<section>
    <div class="pop-data container">
        <img id="pop-data" src="./img/Data-Viz/Pop.svg" alt="">
    </div>
</section>
<!-- Forest ////////////////////////////// -->
<section class="threeC container">
    <div class="child01-threeC">
        <section class="child01-child01-threeC">
            <p><b class="first-letter">C</b>oal mining and burning are generally known to be polluti
                loads of CO2 and causing climate change. But people of Kuzbass have little concern a
            <p>out of their windows. Shot operations destroy houses, and spoil piles grow up around.
            <p>news about violations over environmental rights in Kemerovo Oblast would never reach
        </section>
    </div>
</section>

<div class="img-magnifier-container forest container">
    <img id="forest" class="child01-forest" src="./img/Data-Viz/deforestation.svg" alt="">
</div>
<script src="./magnifier.js"></script>
<section class="threeC container">
    <div class="child01-threeC">
        <section class="child01-child01-threeC">
            <p><b class="first-letter">R</b>ussia has the largest area of tree cover in the world wi
            <p> man-made climate change. Deforestation accounts for up to a tenth of current carbon
            <p>compared to the previous year, and is now the world’s third largest coal exporter. Th
        </section>
    </div>
</section>
```

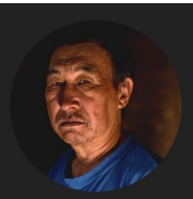


```
<!-- Mapbox: Deforestation ////////////////////////////////////////////////////////////////////////// -->
<div class="container">
    <div id='map01' ></div>
</div>
<div class="legend container">
    <img src="./img/Legend01.svg" alt="">
</div>
```

```
<!-- Mapbox: Power plants ////////////////////////////////////////////////////////////////////////////// -->
<section class="title container">
    <h2>Global coal power plants</h2>
</section>
<div class="container">
    <div id='map'></div>
</div>
<div class="legend container">
    <img src="./img/Legend02.svg" alt="">
</div>
```

```
<!-- Diagram ////////////////////////////////////////////////////////////////////////////////////////// -->
<section class="title container">
    <h2>Anatomy of surface coal mine</h2>
</section>

<section>
    <div class="diagram container">
        <img id="diagram" src="./img/diagram@2x.png" alt="">
    </div>
</section>
```



"All the forests have been cut down... Animals can leave but people can't"

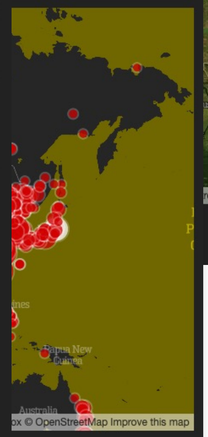
Alexander Myzhakov
Photo: Sally Low
Source: fern

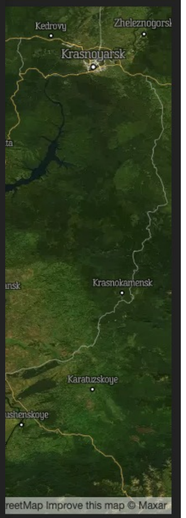
"It feels like these souls have turned their backs on me"

Valentina Boriskina
Photo: Sally Low
Source: fern

"No tree can survive without roots. If they destroy Chuvashka, what is our reason to live?"

Larissa Mizhakova, Chuvashka
Photo: Sally Low
Source: fern





Anatomy of surface coal mine

The Anatomy of Surface Coal Mine

When is this used?

Surface mining is used when the coal seam is near the surface. It recovers a higher proportion of the coal deposit than underground mining as all coal seams are exploited – 90% or more of the coal can be recovered.

How does it work?

The overburden of soil and rock is first broken up by explosives; it is then removed by draglines or by shovel and bulldozer. Once the coal seam is exposed, it is drilled, fractured and systematically mined in strips. The coal is loaded onto large trucks or conveyors for transport to either the coal preparation plant or direct to where it will be used.

Large opencast mines can cover an area of many square kilometres and use very large pieces of equipment, such as draglines, power shovels, large trucks, bucket wheel excavators and conveyors.

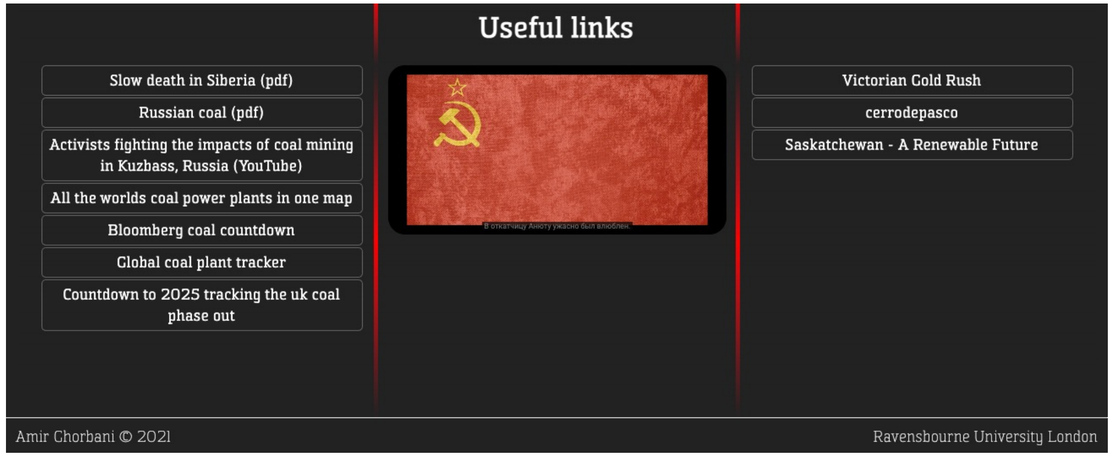
What is the impact on the land?

Coal mining is only a temporary use of land, so it is vital that mine rehabilitation takes place once operations have stopped. Detailed rehabilitation or reclamation plans are designed and approved, covering the period from the start of operations until well after mining has finished.

```
<!-- Links ////////////////////////////////////////////////////////////////////////////////-->
<section class="title-links container" id="Links">
    <h2>Useful links</h2>
</section>
<section class="links container">
    <div class="child01-links">
        <section class="c  [Follow link](https://www.fern.org/fileadmin/uploads/fern/Documents/Slow Death in
            <ul id="links  Siberia_1.pdf) (cmd + click)
                <a href="https://www.fern.org/fileadmin/uploads/fern/Documents/Slow%20Death%20in%20Siberia_1.pdf" target="_
                <a href="https://ecdru.files.wordpress.com/2015/12/russian-coal.pdf" target="_blank"><li>Russian coal (pdf)
                <a href="https://www.youtube.com/watch?v=2Lj3LfvgqGs" target="_blank"><li>Activists fighting the impacts of
                <a href="https://www.visualcapitalist.com/all-the-worlds-coal-power-plants-in-one-map/" target="_blank"><li
                <a href="https://bloombergcoalcountdown.com/" target="_blank"><li>Bloomberg coal countdown</li></a>
                <a href="https://globalenergymonitor.org/projects/global-coal-plant-tracker/" target="_blank"><li>Global co
                <a href="https://www.carbonbrief.org/countdown-to-2025-tracking-the-uk-coal-phase-out" target="_blank"><li>
            </ul>
            <div id="video">
                <iframe width="560" height="315" src="https://www.youtube.com/embed/L8rRT9lHvhI" title="YouTube video playe
            </div>
            <ul id="links">
                <a href="http://encyclopedia.ravensbournegraphicdesign.com/places2021/victoriangoldrush/" target="_blank"><
                <a href="http://encyclopedia.ravensbournegraphicdesign.com/places2021/cerrodepasco/" target="_blank"><li>ce
                <a href="http://encyclopedia.ravensbournegraphicdesign.com/places2021/saskatchewan/" target="_blank"><li>Sa
            </ul>
        </section>
    </div>
</section>
```

```
<!-- Footer ////////////////////////////////////////////////////////////////////////////// -->
<footer class="footer">
    <div class="child01-footer container">
        <!-- <img src="./img/Fav.png" alt=""> -->
        <p>Amir Ghorbani &copy 2021</p>
        <p>Ravensbourne University London</p>
    </div>
</footer>
```

```
<!-- JS: Mapbox, Magnifire ////////////////////////////////////////////////////////////////////////////////-->
<script src="./KuzbassMap.js"></script>
<script src="coalInWorld.js"></script>
<!-- <script src="magnifier.js"></script> -->
<script>
    /* Initiate Magnify Function with the id of the image, and the strength of the magnifier glass:*/
    // magnify("forest", 1.5);
    // magnify("coal-data", 3);
</script>
</body>
</html>
```



```css
/* Navigation ////////////////////////////// */
#logo {
    width: 55px;
    margin-left: 20px;
}
.navbar {
    height: 100px;
    background: linear-gradient(black,rgba(0,0,0,0));
    display: flex;
    justify-content: space-between;
    position: fixed;
    top: 0;
    left: 0;
    right: 0;
    z-index: 20;
}
.child01-child02-navbar {
    display: flex;
}
.child01-child02-navbar li {
    margin: 0 15px;
    padding:0 20px;
    border-right: solid white 1px;
    font-size: 1.2rem;
    font-weight:300;
    letter-spacing: 0.03rem;
    margin: 0;
}
.child01-child02-navbar li:hover {
    /* border-bottom: solid white 1px; */
    background-color: #a8871b38;
}
```

CSS

I have found it challenging to code most sections and parts of the website from scratch. I have familiarised myself with bootstrap, but I decided to used the flex-box method to style HTML tags. Same results at the end.