

THE DEPLETION OF THE GREAT MINE EARTH

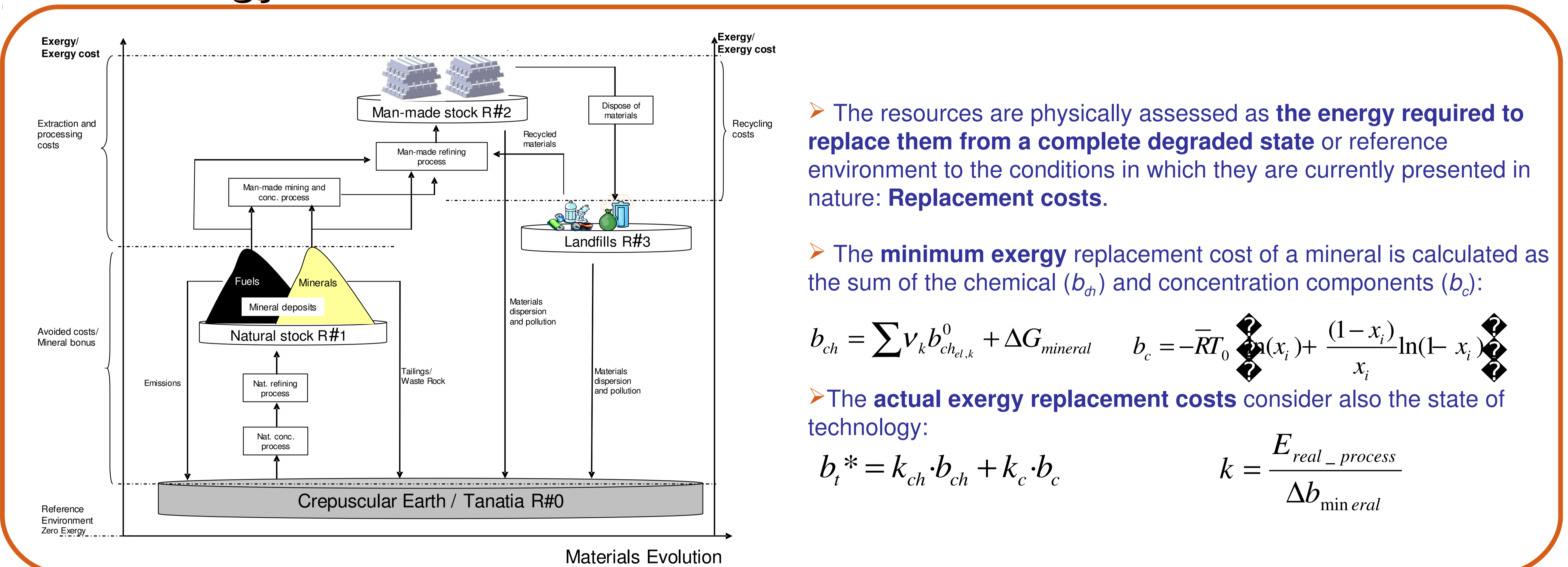
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Introduction

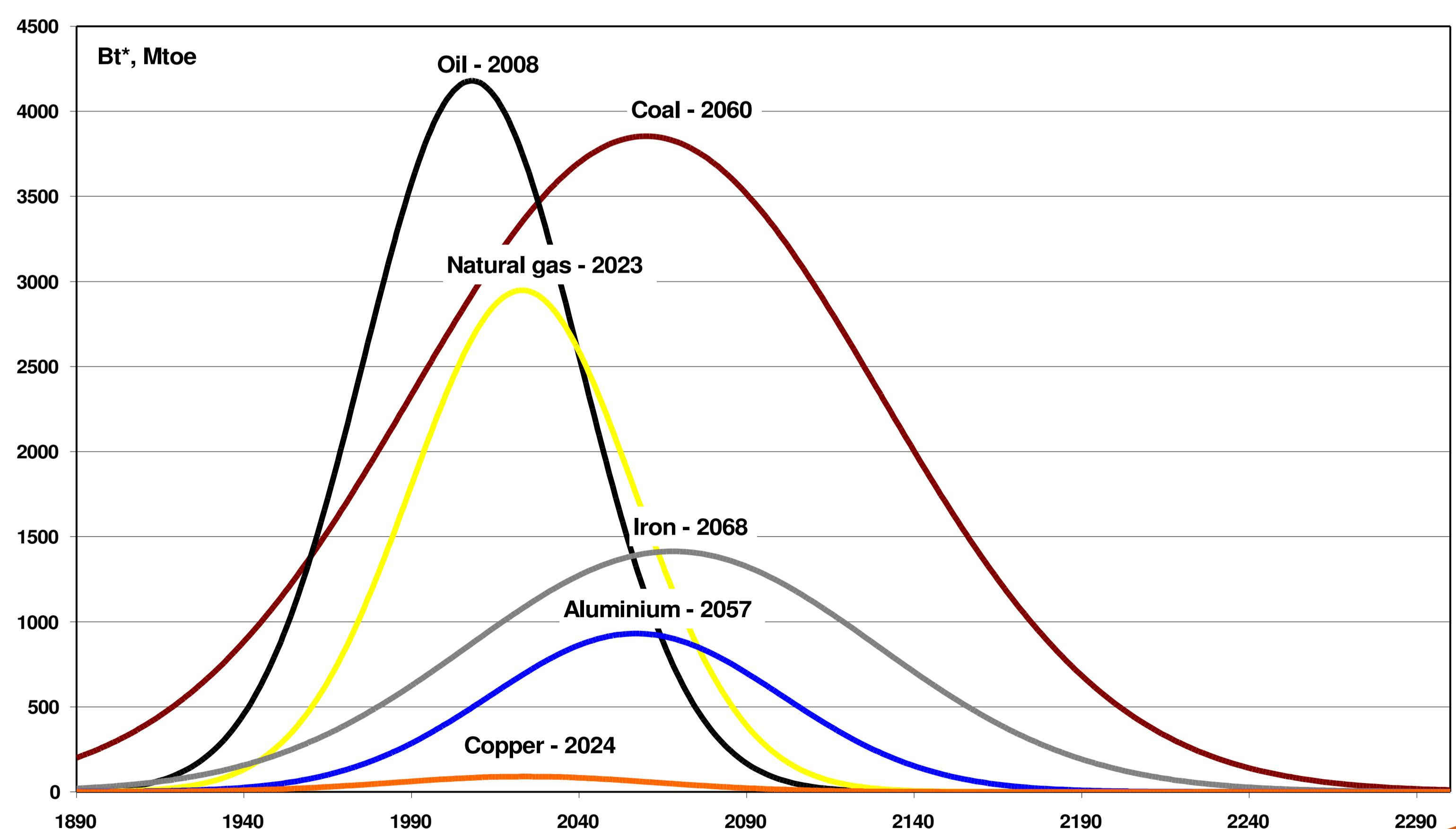
- The **exergy analysis** is the root of the physical cost and thus it connects Thermodynamics with Economics. It allows the assessment of **all physical properties** of natural resources, such as composition, grade or quantity, with a single unit of measure (the exergy costs) and in an objective way far removed from market distortions or currency speculation.
- In this paper the **exergy degradation of the main minerals** extracted in the world has been studied and their **peak of production** has been assessed.

Methodology



Results

- Using **exergy**, mineral extraction behaves similar to the well known **Hubbert's peak** for fossil fuel resources.
- The **exergy countdown** of the planet allows visualizing and monitoring the **exergy evolution of mineral resources** of the Earth and estimating when each resource will reach the **maximum rate of extraction**.
- With historical data compiled by the USGS and BGS, and the equations presented above, we have obtained the **exergy countdown of conventional fossil fuels plus iron, aluminium and copper**.
- **The results are striking**: at the actual rates of extraction, **most of the strategic metal resources will reach the peak before this century**.



Conclusions

- Physical Geonomics is proposed as an accounting tool based on the exergy analysis for the management of the mineral's wealth of the crust.

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