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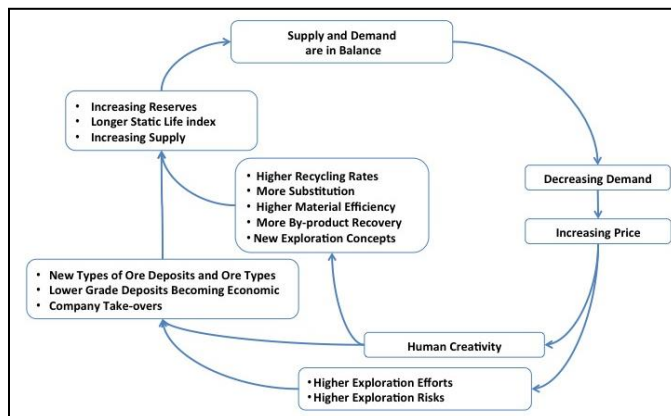
## Passing the Torch: Broad, but not shallow, teaching by senior geologists with a highly diversified career experience

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Maintaining a life-long successful career in the mining industry necessitates a great measure of endurance and flexibility, unlike careers in many other professional fields. Career endurance is tested by the strong cyclic behaviour of the mining industry resulting from interdependent global economic and political developments affecting the balance of mineral supply and demand. When an imbalance emerges, a feedback loop gains momentum, causing a change of market commodity prices and a subsequent series of reactions. Price decreases lead companies to minimize exploration expenditures, reducing mining and milling costs and often laying off technical staff.



Career flexibility is tested once again when commodity prices increase and rebalancing is accomplished by intensifying exploration efforts, mobilizing research into innovative exploration methods and defining new deposit types. Concomitantly, more efficient mining and milling processes are developed and rare raw materials substituted by less expensive substances, while more efficient recycling technologies are also pursued (Figure 1).

Figure 1: The Feedback Loop for the Supply of Mineral Raw Materials [1]

Ideally, graduating geologists should be familiar with all these phases and processes to achieve career flexibility that enhances the likelihood of getting hired and being kept on in a variety of positions and functions to meet new and challenging market conditions.

A week-long university course titled *Exploration and Mine Development for MSc Students*, was taught for more than a decade at a European mining university by a 40-year plus mining veteran. The course demonstrated how state-of-the-art geoscientific and field methods applied to exploration and mine development, as well as QA/QC and reporting requirements, can be combined with (a) inter-cultural competence, and (b) the know-how of legal, environmental and economic issues and other non-technical areas, and most prominently, interaction in public forums.

A beneficial side effect of such a broad-brush teaching approach is the increased capability of graduates to communicate effectively with mining and milling engineers, environmental specialists, regulatory

agencies, lawyers and economists, as well as the public. This teaching also facilitates the successful integration of younger geologists into various teams, each designated for specialized technical or managerial tasks at discreet stages of mining projects, ranging from grassroots exploration to mine site rehabilitation.

*References:*

[1] Adapted from BGR (2012),

[http://www.bgr.bund.de/EN/Themen/Min\\_rohstoffe/Bilder/rohstoffwirtschaft-regelkreis\\_g\\_en.html](http://www.bgr.bund.de/EN/Themen/Min_rohstoffe/Bilder/rohstoffwirtschaft-regelkreis_g_en.html)

