

Supply and demand

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Lester Hicks examines past and future trends in the UK's production of minerals

UK mineral production and consumption has changed dramatically over the past 50 years. Domestic coal has almost disappeared, offshore oil and gas is now declining, leaving energy generation relying on imported coal and increasingly gas. Aggregates consumption sharply increased in the 1970s and 1980s before returning to early 1960s levels, and across most mineral sectors the UK now largely depends on imports.

Since the 1970s, UK public opinion has become increasingly aware of the environmental impacts of mineral extraction. As coalfields have closed, memories of minerals as the bedrock of the country's economy and prosperity have faded. Aggregates, quarrying in particular, has become the last widespread expression of heavy industry.

But most people think that extraction should happen somewhere else ? if it happens at all. This emerging environmental awareness combines with a natural local unwillingness to host high-impact new development. All this creates challenges for the minerals industries and their professional advisers.

In late 2012, the UK Minerals Forum therefore set up a working group to examine future scenarios, and their implications for maintaining supplies of essential minerals for the needs of the UK economy over the next 35 years, to 2050. The group presented its findings and recommendations to the CBI's [Living with Minerals 5](#) conference in November 2014.

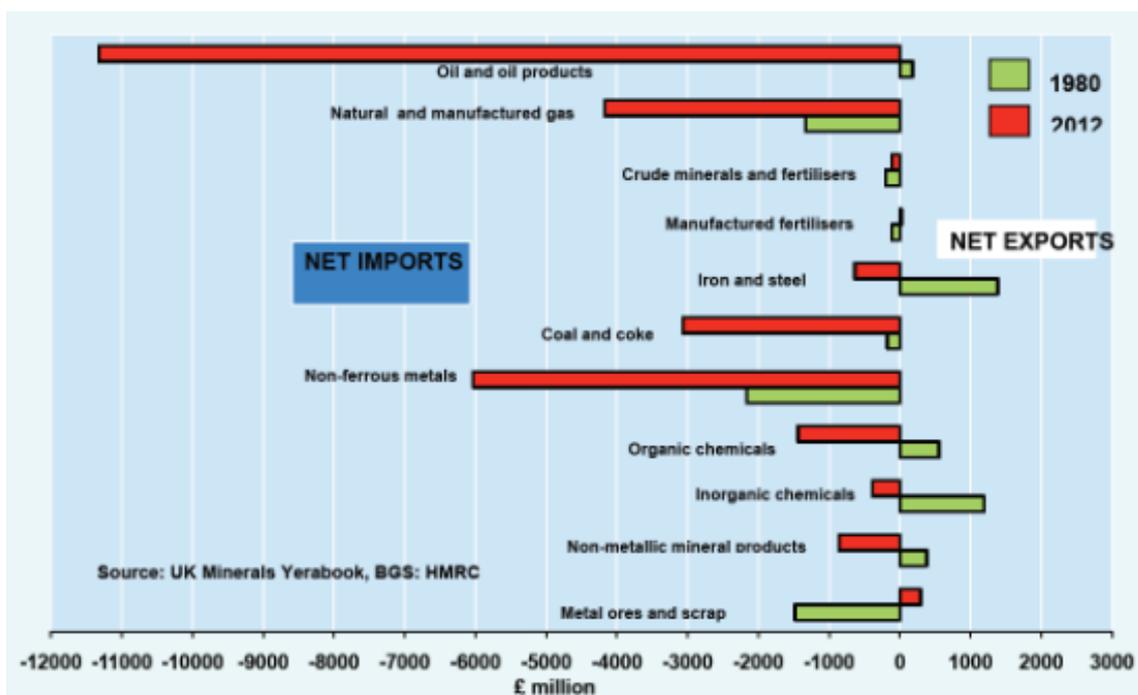


Figure 1: UK balance of trade in minerals and mineral-based products: 1980 and 2012 (at constant prices)

Studying the trends

Before considering future possibilities, the group first looked at trends since 1970. It found:

- Overall, onshore mineral production has declined, led by falls in coal and aggregates, and the UK has become increasingly dependent on imported minerals and mineral products.
- While total production and consumption has fallen by tonnage, production value has increased by nearly 300% (mainly offshore oil and gas ? although this peaked in 1999-2000, and is now falling steadily).
- Domestic coal production has fallen by 90% ? exports of 3.3mt in 1970 had become imports of 44.3mt by 2012.
- Primary aggregates consumption is down by nearly 30%, and 50% below its 1989 peak.
- Other declining sectors include brick clay (down 78%), cement (down 63%), kaolin (down 48%) and salt (down 33%).
- On the positive side, ball clay production has increased by 27% (although still 15% below a 2000 peak). A new sector, potash, produced over 1mt in 2000 and still mined 770,000t in 2011; and tungsten mining near Plymouth is due to restart this year after more than 70 years.

Drivers of demand

The group found that although technology and society continue to change, in an increasingly competitive world the UK's future economy would still need access to extracted and imported minerals. Resource conservation, reduction and reuse helps, but cannot fully satisfy demand and quality.

Under any plausible future economic, social and environmental scenario, demand will be driven by:

- population and economic growth
- the security and cost of energy
- national investment in production, infrastructure and climate resilience
- evolving technology
- the balance between minerals' benefits and environmental impacts
- the resulting political and regulatory framework.

Future possibilities: A personal view

Before reaching its conclusions, the group also examined 3 broad future economic scenarios for minerals demand and supply until 2050:

- Green Britain: environmental protection and conservation predominate
- Britain Powering Growth: pro-development to boost GDP growth
- Insular Britain: emphasising self-sufficiency, less priority on trade

In practice, these mutually exclusive scenarios proved impracticable for generating credible predictions for specific mineral sectors. No one scenario could attract support from all the interests represented on the Forum.

However, I do not feel so constrained, on the understanding that the personal views expressed here are not necessarily those of the Forum.

Next 35 years

UK mined coal

- **expect a very limited future**, with ad hoc opencasting offsetting declining imports, as coal-fired generating plant is retired to meet EU/UK carbon reduction targets. Exit from the EU would not affect this, UNLESS
- **major geopolitical or energy supply shocks restrict UK access to imported gas and coal at acceptable cost. Then expect a short-term dash to opencast** to meet immediate fuel shortages, possibly permitted under emergency powers (analogous to the wartime IDOs of 1943-1948), perhaps with rapid development of carbon capture and storage, AND
- **extending into the medium-term, an intensive focus on coalbed methane and underground gasification**, again permitted under emergency powers if required, BUT
- **no return to deep mining** for steam-based power generation.

Shale gas and oil

- despite the previous coalition government's hype, and emerging strong support from its successor, **the prospects for large-scale shale extraction appear limited in the short-medium term:**
 - the PR battle with the public is already lost (fears of pollution, earthquakes, flaming taps)
 - the real world local impacts are not yet fully perceived ? getting large fracturing kit along narrow country lanes to perhaps hundreds of well pads, the large demand for water, and treating and moving the waste water
 - local opposition to shale fracturing will be a rolling media-rich gift to anti-mineral protesters
 - south of the Thames the shale resource is oil ? so not even a carbon benefit
- **recently refused Cuadrilla applications in Lancashire will be a benchmark**, as the stated intention to appeal is worked through
 - expect gravy for lawyers ? legal challenges and possibly direct action if permitted by ministers (who will surely recover any appeal from the inspector for final decision)
 - approval should boost activity elsewhere, but will the new government hold its pro-shale nerve in the face of opposition, especially from its own supporters, in contradiction to its hostile stance on onshore wind?
- **BUT, if major geopolitical or energy supply shocks directly affect UK access to imported gas and coal, then expect a ?dash to frack? (as with coal) using emergency powers if required**

Aggregates

- **expect steady demand** based on progress in construction as proxy for the economy
- but also **increasing problems in maintaining supply:**
 - shortages of sand and gravel, especially in the development hungry but aggregates-poor Greater South East, including London
 - increasing focus on an ageing fleet of hard-rock quarries for local as well as

- strategic supply
- longer haulage from hard rock areas to markets
- a growing need for new hard rock supply ? through new sites or extensions
- of 25 rock quarries producing over 3mta year. in 2008, nine now have permissions ending before 2031, five between 2031-2040, and 11 after 2040
- no new hard rock sites have been permitted for decades
- extensions more likely, especially if rail connected
- rail connections for sites not on existing lines almost impossible (cost and Network Rail bureaucracy)
- policy constraints on finding suitable sites in hard rock areas (National Parks, Areas of Outstanding Natural Beauty)
- potential result ?**relative cost/price increases as scarcity bites**
- **greater use of marine-dredged sand and gravel?** higher UK prices should repatriate some of the 4-5mt landed annually on the continent
- **weakness in the national Managed Aggregates Supply System** even before the 2015 election. Can the Department of Communities and Local Government as a ?non-protected department? continue funding and coordinating strategic aggregates supply? The local process is already patchy and increasingly politicised, and effective inter-regional aggregates supply planning is now questionable
- in the longer-term, **sustained UK supply shortages would force significant reliance on aggregates imports:**
 - bulk hard-rock landings previously limited (e.g. Glensanda to Isle of

Grain)

- aggregates cannot currently compete with high-value cargo (e.g. LNG) for limited berths
- but if coal imports fall, deep-water mineral berths and stockyards could be released (e.g. at Immingham and Portbury/Bristol) and new berths developed

Other minerals

- **UK supply more limited and local, but markets national/worldwide**
- **prospects depend on:**
 - quality and extent of resources
 - patterns of demand and supply constraints
 - energy costs in processing relative to competitors
- **areas of concern**
 - bricks and cement ? basic to construction but UK production and capacity has fallen and imports increased.
 - High EU/UK energy costs threaten competitiveness
 - kaolin and ball clay ? vulnerable to world prices and lower-cost competitors
 - salt ? closely tied to activity in the energy-dependent UK chemical industries
 - potash ? new and expanding, but depends on world trade and sustaining the recent further mine approval in the North Yorkshire National Park against the threatened High Court Challenge
 - fluorspar ? small but strategic, and sourced in a highly protected landscape

Where do we go from here?

The future supply of the minerals the UK needs, whether extracted here or imported, cannot be taken for granted. In October 2014 the former BIS Select Committee endorsed the UK Minerals Forum working group's call for a UK minerals strategy as part of a national minerals strategy. In reply the coalition government noted that the CBI Minerals Group was preparing a proposed strategy, and looked forward to discussing it in due course.

This was inevitable before an election. But the issue has not gone away. The CBI continues to work on its Minerals Strategy, and the issues identified by the Forum and this personal commentary on some of the hard-edged possibilities over the next 35 years, must be addressed. Minerals are basic to the things we use in our economy and society ? 'if you can't grow it, you have to mine it'.

Forum findings

The group concluded:

- **a secure and reliable supply of minerals is essential**, not an option
- **supply is threatened by global competition, geopolitical uncertainty and country monopolies in key sectors**, especially for rare minerals
- **uncertainty about continued EU membership could deter new investment** by now predominating foreign operators, impacting on prices and supply
- **the UK is not self-sufficient in key sectors** ? notably metals, and increasingly oil, gas and competitively-priced coal
- **the real-world potential of UK unconventional fuels**, notably shale gas, is uncertain and needs more study
- **the UK has adequate resources of many non-energy minerals**, especially for construction
- **conflicting energy and environmental policies threaten UK/EU investment in bricks and cement**, core construction minerals
- **the successful UK balance between minerals access and environmental regulation is crucial and must be maintained**
- **all minerals stakeholders** ? industry, government, analysts, regulators and environmentalists ? **should work towards a national minerals strategy**.

The group recommended:

- **a national long-term vision for minerals** within a national industrial strategy
- **effective monitoring and review of the vision by all parties** to ensure it responds to events
- **continuing collaboration between government and the industry** to deliver the vision
- **concerted action by the industry** to help politicians and the public understand the importance of extracting minerals
- **using the strategy to boost the resilience of the UK minerals industry.**

Lester Hicks is an environmental planning consultant and Chairman of the [UK Minerals Forum](#)

Further information

- Image ? UK Minerals Forum
- Related competencies include [Sustainability](#) and [Minerals management](#)
- This feature is taken from the RICS *Land journal* (October/November)