“YOU SEE GARBAGE…

…WE SEE ABOVE-GROUND MINES”

Why **Mike Biddle**, founder of MBA Polymers, sees resource depletion as a major investment opportunity, and why you should too

WORDS: **CRIS HEATON, PAUL TYRRELL**

PHOTOGRAPHY: **HARRY BORDEN**

Mike Biddle examines "shredder residue" – the waste material from which MBA Polymers extracts pure high-grade plastic (below right)

PHOTOGRAPHS: GETTY, SHUTTERSTOCK

MIKE BIDDLE recycles plastic. His job does not – as he freely admits – sound all that exciting. But his business model certainly is. Put simply, Biddle has found a way to extract plastics from waste that is cheaper than deriving them from oil. As a result, he has won numerous awards and the promise of big profits. He has also become the latest innovator, in a list dating back centuries, to turn resource depletion into a compelling investment opportunity.

"People think of plastics as throwaway materials, but actually they're several times more valuable than steel," Biddle says. The reasons why they have not been recycled in high volumes until now are many and various, but they boil down to cost. In recent years, the cost of oil has risen, the cost of making plastics the traditional way has risen (in both economic and environmental terms) and the cost of acquiring durable goods waste has fallen, as scrapped computers, household appliances and cars have piled up around the world.

Crucially, Biddle has also found a way to separate plastics from waste that is more efficient than other methods. "Metals have very different densities, very different electrical and magnetic properties and are often distinguishable just by colour, so it's very easy for people or machines to separate them," he explains. "Plastics, on the other hand, have overlapping densities over a very narrow range, and very similar or identical electrical and magnetic properties. And any plastic can be any colour. So, for plastics, the traditional ways of separating materials simply don't work."

Biddle's effort to solve this problem started 20 years ago in the garage of his home in California. Today, his company, MBA Polymers, has facilities in the US, China and Austria. It has also just opened a new plant – its largest, at 13 acres – in Worksop, Nottinghamshire. The location of this plant is significant because it is only a couple of hours' drive from the headquarters of European Metal Recycling (EMR), a company that shreds huge quantities of durable consumer goods such as scrapped vehicles.

MBA Polymers takes EMR's "shredder residue" (pictured above), separates most of the plastics from it using traditional techniques, then grinds the resulting matter down even further. Flakes of plastic are sorted by type, colour and grade using the company's more advanced proprietary techniques, then melted down. Once impurities have been removed, the final product is produced: pellets, each only a few millimetres across, ready to be melted down again, then remoulded into all kinds of new durable goods.

Traditional producers of "virgin" plastics create the same end product, but use 80 per cent more energy in the process.

Why resource depletion isn't the end of the world

The MBA Polymers story is an encouraging one when you consider the pressure now being placed on the Earth's resources by mankind. Having taken most of human history to reach the first billion people at the start of the 19th century, we have added around one billion more every 12 years since 1960. The next few decades will, according to the UN, see a slowing in the growth rate of the world's population. Even so, there will be nine billion people on the planet by 2050 – almost a third more than today.

Importantly, this pressure is not simply due to the increase in population: one billion more subsistence farmers create relatively little additional demand. The real difference comes from hundreds of millions joining an industrialised economy to live, work and consume in the same resource-intensive way as the developed world. For example, the combined population of Africa has risen by 26 per cent over the past decade, while the continent's oil consumption has risen by 33 per cent. On the other hand, China – which has seen far faster development – has seen oil consumption rise by 91 per cent, even though its population has risen by just six per cent.

Despite the speed at which Chinese oil demand has grown, its per-capita energy usage is still less than one quarter that of the US's. And, given that China's population is four times greater than that of the US, current resources would be unable to meet demand if its energy intensity rose to anything like Western levels.

So, unless we can persuade all those currently living in the developing world that they should settle for a lower ➔

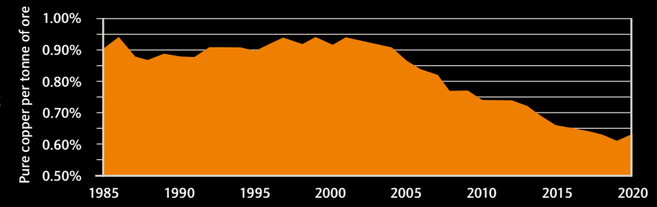
SMART GLOSSARY: CARRYING CAPACITY
The Earth's carrying capacity for humans is the maximum population that it can sustain indefinitely. This is not an absolute figure, since it depends on our ecological footprint – our demand on the resources and the ecosystem. United Nations' estimates suggest our current population and lifestyle is already outstripping what can be sustained by 50 per cent.

COMMODITIES WORTH WATCHING

The scarcity of certain commodities may bring opportunities for investors. Here are five to follow

COPPER

Industrial metals such as aluminium, lead, tin and zinc soared in price in the mid-2000s, thanks to rising demand from emerging markets and years of under-investment in new production. Today, however, most are well below their 2007-08 peaks. Copper has fared better. Untapped high-grade deposits are scarce and, while a supply crisis isn't imminent, prices must remain high to make new projects viable. Aluminium or plastics can be substituted in some applications but copper remains the best choice for many. Prices will be volatile but even now they are well above mining costs for almost all miners. Quality producers such as Antofagasta should do very well in the years ahead.



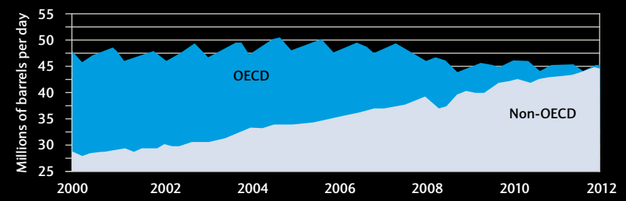
The average "head grade" of copper mines has fallen sharply in recent years. The term refers to the amount of metal that can be extracted from a tonne of ore – the lower the head grade, the more difficult and expensive it becomes to produce pure copper. With a shortage of new high-grade mines in development, this trend looks set to continue. Data source: Codelco, Antofagasta Chile

OIL

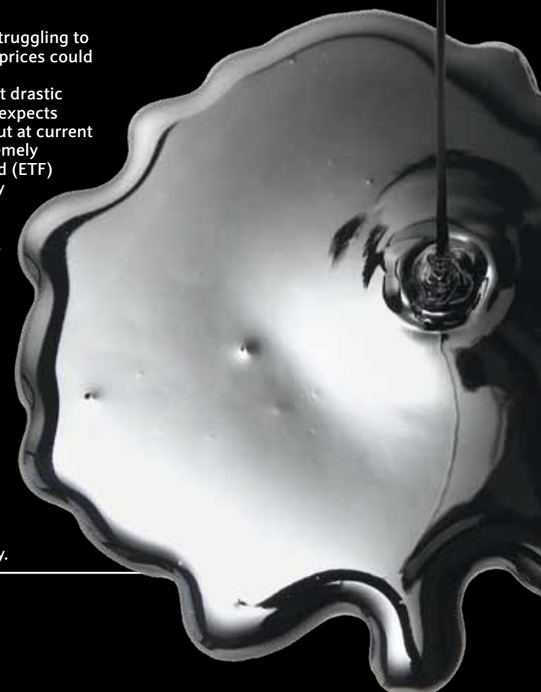
New technologies such as renewable energy may ultimately make oil almost redundant, but there is no sign of it happening any time soon. For now, we remain utterly dependent on the black stuff to power the world. This cheap and compact source of energy underwrote our growth over the last century, but with new supplies becoming ever more costly to pump, a hydrocarbon addiction will become a headwind in the decades ahead.

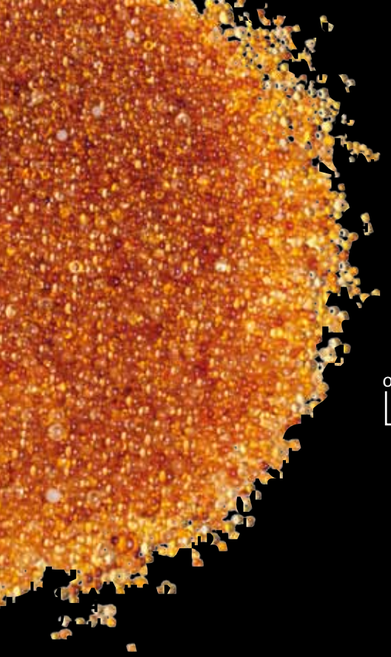
The International Energy Agency projects oil demand will rise to 99 million barrels per day by 2035, mostly due to growing car ownership in emerging markets, with supply struggling to keep pace. As a result, it forecasts, prices could top US$200 per barrel by that time.

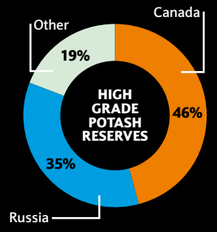
Few analysts expect anything that drastic in the near future. Barclays Capital expects around US$115 a barrel this year, but at current levels, oil firms should remain extremely profitable. An exchange traded fund (ETF) such as the iShares S&P Commodity Producers Oil and Gas gives broad exposure to firms that concentrate on production, rather than refining, which has more volatile margins.

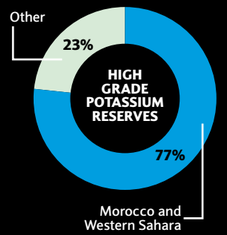


Most oil is now being consumed by developing economies such as China and India, according to new data from the International Energy Agency, an intergovernmental body.









FERTILISER

Potash and phosphorus may not look like a pressing problem of resource scarcity, with known mineable deposits totalling more than 250 and 350 years respectively. But that ignores two issues: first, these deposits are concentrated in very few countries (see pie charts above); and, second, there are no known substitutes. Modern, fertiliser-intensive agriculture techniques look set to put a major strain on supplies. One possible way to invest in this theme is with an ETF such as the Van Eck Global Market Vectors Agribusiness. As well as holding fertiliser producers such as Mosaic and Agrium, this fund also holds many other firms whose products and services will play a key role in the problem of getting more food from less land.

Data source: GMO, US Geological Survey

WATER

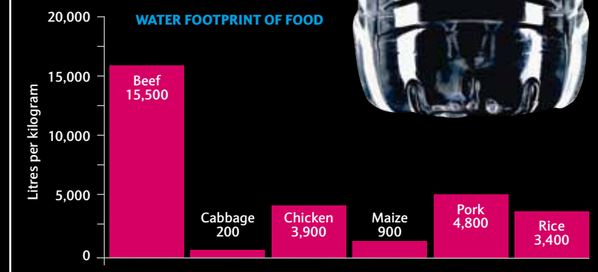
Essential for life and impossible to substitute, our water resources are coming under increasing strain.

Many of the world's most populous regions already have severe shortages. India and Pakistan, for example, have just one-fifth that of the global average, per capita – and both are downstream from resource-hungry China, whose situation is not much better.

Increased meat consumption is also creating problems, as it takes many times more water to grow livestock than arable crops. The average Chinese ate more than twice as much meat in 2002 as they did in 1990, according the World Resources Institute, a think tank.

So, companies that offer solutions for better water management – such as improved efficiency, recycling and desalination technologies – seem likely to do well in the years ahead. Possible investments include Pictet Water, the largest managed fund in the sector, and a sector tracker fund such the PowerShares Global Water Portfolio ETF.

Data source: AY Hoekstra, Twente Water Centre, University of Twente



RARE EARTHS

The hottest resource scarcity story of 2011 was the shortage of rare earth elements. These 17 metals are, at present, crucial to the production of electronics, communications and defence technology.

The vast majority of global output comes from China, which has led recently to concerns about supply security – especially after China seemingly clamped down on exports last year, causing the prices of rare earths and rare earth miners to rocket. Yet most rare earths aren't actually that scarce and new supplies could be brought into production relatively quickly. When those facts sunk in, the bubble burst.

Nevertheless, a few rare earths such as dysprosium are much scarcer and their supply picture looks much tighter in the years ahead. We may be able to substitute these eventually, but miners such as Ucore Rare Metals and Quest Rare Minerals, which have high-grade deposits of these specific rare earths, could make for interesting if very high-risk speculative investments.

standard of living, there is no doubt that we are facing a major gap between what the world can supply and what we will demand in the years ahead.

However, optimists dismiss these concerns altogether. They point out that such bleak scenarios have been predicted many times before. From Thomas Malthus in the 18th Century to Paul Ehrlich in the 1960s, people have argued persuasively that food supplies will not keep pace with the growing population and that widespread starvation is imminent. Each time, they have been proved wrong.

Track a basket of commodities over the last two centuries and you will see plenty of supply shortages and price spikes. However, these were short-lived, with the broad trend for prices heading steadily lower in real terms. On this record, many analysts argue that making long-term investments in commodities is unlikely to pay off, regardless of how constrained the supply-and-demand picture might look in the short term.

"When you buy commodities, you are selling human ingenuity," as Dylan Grice, an analyst in the global strategy team at Société Générale, puts it. And the problem with this as an investment strategy is that, while past performance is no guarantee of future results, "human ingenuity has a good track record of overcoming nature's constraints so far."

The pitfalls of scarcity investing

When a resource becomes scarce, it becomes more expensive. This does not necessarily mean, however, that hoarding such a resource or controlling its supply are good investment strategies. The old cliché that, in a gold rush, it is better to sell shovels than dig for gold is a little simplistic, but there are industries where this is likely to hold true. For example, the handful of large companies that sell seeds, fertilisers and herbicides and that process agricultural commodities are likely to extract more value from high agricultural commodity prices than the farmers themselves.

More importantly, the laws of supply and demand will automatically lead innovators to find alternatives. The quickest method is often substitution, which means we swap use of the scarce, expensive resource for something less scarce and cheaper. Aluminium, for example, is a poorer conductor than copper and using it in power infrastructure results in lower energy efficiency and higher costs. So, all else being equal, you would always prefer copper. But when the gap between copper and aluminium prices grows too large, it becomes cost-effective to use aluminium instead.

High prices also encourage us to increase supply by investing in new production. In some cases, this can be relatively rapid. High prices for agricultural commodities encourage farmers to try to boost yields and bring marginal land into cultivation, often resulting in higher yields as soon as the next harvest.

Where we cannot substitute or grow our way out of the shortage, we will have to innovate. This can span a whole range of measures. At its most immediate, we may need to focus on improving efficiency. In the 1970s, high oil prices provided a huge incentive for oil importers to make their economies less energy-intensive. Japan, which has almost no natural energy resources of its own, was especially keen to make progress and, from 1979 to 2009, improved its energy efficiency by almost 40 per cent. As the MBA Polymers story illustrates, materials recycling will also play its part.

Mike Biddle, president of MBA Polymers: "Traditional mining companies are finding it harder and harder to find rich seams to dig, but we're finding it easier and easier to find rich sources of value in waste."

Beyond this, major technological breakthroughs will be necessary to keep us going indefinitely. We will clearly need to find alternative sources of energy before our reserves of hydrocarbons are largely burned. We will need to find ways of extracting metals from low-concentration deposits on land or from the ocean bed. And we will probably need developments in materials sciences that let us manufacture direct substitutes for rare metals that are irreplaceable today, unless we are lucky enough to find substitutes.

As a result, even for those who are optimistic about our ability to deal with such huge challenges, it seems realistic to assume that "the days of abundant resources and falling prices are over forever", as Jeremy Grantham of investment manager GMO recently put it. Known for his interest in investment manias and how to avoid being caught up in them, Grantham believes that despite the soaring prices we have seen in recent years, commodities do not represent a bubble.

Instead, our long history of resource depletion, combined with the surge in demand from emerging economies, means two centuries of falling commodity prices have reached a bottom. From now on, we face a new world of sustained higher prices for many commodities. This will create major challenges as the world's developing economies attempt to create for themselves a Western standard of living. However, given mankind's record of innovating his way out of trouble, these challenges should not be insurmountable. And, as companies such as MBA Polymers are proving, they are certain to create many opportunities too. ■

PHOTOGRAPHS: GETTY, CORBIS, TED MORRISON

How to invest in commodities

For information on any of the funds mentioned in this feature, plus the latest data from the commodities markets, please visit our website at:

BarclaysStockbrokers.co.uk