

“I’ve been thinking about...what to do about commodities?”

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We all live on a finite bio-sphere with limited resources (commodities) yet we consume and assume these resources will last forever; unfortunately this is not the case. There is a direct correlation to population growth and resource consumption and a direct correlation to resource consumption and GDP growth. Each day we consume more resources than we did yesterday, effectively we have created a scenario I call “compound consumption”.

The commodities in particular that we need to consider going forward are food, energy and water. Recently we have witnessed what happens to a commodities value when demand exceeds supply, in the energy and base metal markets. Compound consumption is a major driver in the commodity markets which dictates supply and in turn price.

Commodities should be included in a well balanced portfolio because they behave differently from other asset classes and therefore offer diversification. However, just as importantly they offer a hedge against unexpected inflation, the cost of living, geo-political tensions and extreme weather patterns.

Because of the limited nature of this paper I have chosen to elaborate on the bigger issues that are beginning to impact on the commodities. Not only from an economic perspective but also a lifestyle perspective. Generally most of us take for granted that we can eat, drive, drink and discharge waste however we like. This attitude has to be re-shaped and will, when we understand the problems we face.

Consumption, production and storage are all factors affecting the value of commodities. World population growth together with changing social habits are increasing commodity demand. Traditional uses for commodities are also changing with the advent of biofuels. Current production methods are extracting maximum yields in commodities, yet climate change and the loss of arable land threaten yields (in agriculture). In all commodity sectors over the past two decades it was considered a cost to store commodities, so now we are left with inventories at record lows (in grains and base metals). The by-product of low or just in time inventory is increasing price volatility as any supply disruptions cannot be absorbed, as is the case when inventories are high.

I offer you the following statistics and scenarios not to cause concern (even though it may) but to highlight what is developing globally and will impact on the value of staple commodities, we all consume and take for granted.

Population continues to grow

The world’s population topped 6.4 billion in 2005, more than twice the number of people as populated Earth in 1950. The actual population growth rate has declined from a high of over 2 percent in the 1970s, to slightly above 1 percent currently. A sobering statistic however, is that in 2005, world population grew by an estimated 74 million people. Each year these 74 million people, as they age will want to drive cars, have electrical kitchen appliances, live in big homes,

while consuming food and water, as we do now. Bearing in mind the planets resources are limited.

Fossil fuel use continues to grow

World oil use increased by 1.3 percent in 2005, a significant slowdown after a record-breaking rise of 3.4 percent in 2004. The International Energy Agency estimates that oil demand reached 3.8 billion tons in 2005, or 83.3 million barrels a day.

The United States remained the world's largest consumer of oil, using 20.8 million barrels a day—nearly one fourth of the world total. The other major oil users were Europe (15.6 million barrels daily), China (6.6 million barrels) and Japan (5.4 million barrels). On a per capita basis, the United States uses two thirds more oil than Japan does and 13 times more than China. Fossil fuels are a finite commodity, we do not produce oil, we extract it and the wells are emptying quicker now, that at any time over the last 150 years.

Vehicle production continues to expand

Global passenger car production grew by 3.2 percent in 2005 to 45.6 million units, according to estimates by London-based Global Insight which sets a new record. In addition to traditional passenger cars, production of sports utility vehicles and other “light trucks” reached 18.5 million units, for a combined total of 64.1 million per annum.

According to Ward's Communications, there were 603 million passenger cars on the world's roads in 2004, plus another 223 million commercial vehicles. With a combined population of about 850 million, the United States, Canada, Japan, and Western Europe had 552 million vehicles. China and India, with 2.3 billion people, had just 39.2 million—only 5 percent of the global total. However, demand from these nations is growing rapidly and indeed China, so far this year, is second only to the US for new car registrations. Personal transport is a luxury that everyone desires, yet it is a huge consumer of oil.

Food versus fuel

In a world of rising oil costs, almost everything we grow to eat can be converted to fuel (biofuel). Corn can be made into cereal or distilled into ethanol. On any given day there are now two groups of buyers in world agricultural commodity markets, either food processors or biofuel producers.

As more countries move to convert food crops to biofuel crops, the world farm economy, already faced with the challenge of feeding 74 million more people each year, will come under even greater strain. Land that had been devoted exclusively to growing food for consumption is now being converted to biofuel.

According to a recent Goldman Sachs report, “Biofuels and food processors-Food Security vs. fuel security”, the “expansion of biofuels from today's usage of a little under 2% (of fuel transport needs) globally to 20%, if applied just to the E.U., would use up 61% of the E.U.'s current arable land resource. In the U.S., the IEA has suggested that just 10% biofuel replacement would use up 43% of arable land. While an immediate expansion of biofuels to a 20% mix seems unlikely, a move towards these levels could lead to a rise in crop prices in the near term and increasingly raise the question of fuel security over food security.”

As the London Financial Times recently reported, “The U.S. Department of Agriculture is expected to announce record low wheat inventories next year, which will come ahead of a sharp lift in wheat demand by the biofuel industry over the next two years as more ethanol plants using wheat as an ingredient open in Europe.”

World grain use will grow by 20 million tons in 2006, according to projections by the U.S. Department of Agriculture. Of this, 14 millions tons will be allocated to produce biofuel for cars, the remaining 6 millions tons will be used to satisfy increasing food demand.

We will soon see grain prices lift because of the development of biofuels competing with increasingly higher oil prices.

The industrialization of farming

In the 1950s and 1960s, agriculture underwent a drastic transformation commonly referred to as the Green Revolution. The Green Revolution resulted in the industrialization of agriculture. Part of the advance resulting from breeding programs has produced higher yielding crops. Between 1950 and 1984, as this industrialization transformed agriculture around the planet, world grain production, increased by an estimated 250%. This additional increase did not come from introducing agriculture to new land, even though Brazil is cutting down the Amazon rain forest at an alarming rate. The increase in production was provided largely through the use of fossil fuel, in the form of fertilizers (natural gas), pesticides (oil), and gasoline to drive machines to harvest and motorized pumps for irrigation.

Total fossil fuel use in the United States is estimated to have increased 20-fold in the last 4 decades. In the US, they consume 20 to 30 times more fossil fuel energy per capita than people in developing nations. Agriculture directly accounts for 17% of all the energy used in that country. Since 1990, the US has been consuming approximately 1,000 liters (6.41 barrels) of crude oil to produce food on one hectare of land.

Another reason for food prices to increase is the amount of oil that is used to produce it. At some point the increasing cost of energy will be passed onto the consumer.

Climate change impacts on farming

The average global temperature in 2005 was 14.6 degrees Celsius, making it the warmest year ever recorded on our planet, according to data from NASA’s Goddard Institute of Space Studies. The five warmest years since recordkeeping began in 1880 have all occurred since 1998. The average global temperature has risen nearly 1 degree Celsius in the past century. More than half of that warming—a rise of 0.6 degrees—has occurred in the past 30 years, meaning that this warming trend is accelerating.

Economic damages from weather-related disasters hit an unprecedented \$204 billion in 2005, nearly doubling the previous record of \$112 billion set in 1998 and reflecting the high number of disasters hitting built-up areas. Insured damages from weather-related disasters reached an estimated \$92 billion, eclipsing all previous tallies since 1980 and more than doubling the losses in 2004.

Hurricane Katrina, which alone caused an estimated \$125 billion in damages to New Orleans and other areas of the southeastern United States, was one in a line of devastating hurricanes to

hit Atlantic coasts in 2005—the most active hurricane season since 1851, the first year storms were tracked. Three of the 10 strongest hurricanes ever recorded occurred in 2005.

The U.S. Department of Agriculture (USDA) recently stated “that growing conditions for the U.S. spring wheat crop were the worst in 18 years because there was not enough moisture to germinate seeds. Faced with record temperatures, farmers in the Midwest and West have been particularly hard hit”.

After examining U.S. Department of Agriculture figures, the Earth Policy Institute, calculated that global grain reserves are at their lowest point since the early 1970s, roughly equivalent to having 57 days worth of grain supplies to meet global demand.

The Toronto Food Policy Council commenting on this figure, stated “To put the 57 days in historical perspective, the world price for wheat went up six-fold in 1973, the last time reserves were this low. Wheat prices ricocheted through the food supply chain in many ways, from higher prices for cereal and breads eaten directly by humans to the cost of milk and meat from livestock fed a grain based diet”.

“If such a chain reaction happens this year, wheat could fetch \$21 a bushel, about six times its current price. It might cost even more, given there are now two pressing demands for grains that were less forceful during the 70s. Those happy days predated modern fads such as using grains for ethanol, now touted as an alternative to petroleum fuel for cars, and predated the factory barns that bring grains to an animal’s stall, thereby eliminating grazing on pasture grasses.”

“Historians will also recall that 1970s food prices went up because of price hikes for oil, contributing to the runaway inflation that defined the decade’s economic challenge. That experience shows that seemingly small blips in food reserves and availability can lead to major shocks in the economy and society.”

In May this year, Canada’s National Union of Farmers issued a report on the world’s grain situation which stated “The world is now eating more food than farmers grow, pushing global grain stocks to their lowest levels in 30 years.”

The Food and Agriculture Organization (FAO) recently forecasted that world cereal demand will likely surpass supply in the coming 2006/07 marketing year, further reducing global inventories.

According to the latest issue of the FAO’s Crop Prospects and Food Situation report: “Amid political uncertainties and surging energy prices, agricultural markets over the past year have also had to confront abnormal incidences of natural disasters, ranging from devastating hurricanes to fast spreading animal disease.

“Based on current indications, several agricultural commodities are likely to experience still more unstable months ahead and in most instances, the fundamentals point to even further gains in prices.”

Farmland is deteriorating

Virtually all of the arable land on the planet today is being utilised by agriculture. What remains unused is either too steep, too wet, too dry or lacking in soil nutrients.

A substantial area of the world's farmland is degraded and this is increasing, particularly in the developing world. A recent analysis found that 10–20 percent of the world's 1.5 billion hectares of cropland—150–300 million hectares—suffers from some level of degradation. Moderate, severe, or extreme degradation affects 7–14 percent, or 105–210 million hectares. These estimates come from a re-analysis of data collected for the 1991 Global Assessment of the Status of Human-Induced Soil Degradation (GLASOD).

Degradation undercuts food production and farm income, as the land supports smaller harvests and costs more to maintain. Each year, some 5–8 million hectares of farmland go out of production as a result of degradation. Worldwide, land degradation has reduced cumulative food production by an estimated 13 percent on cropland and 4 percent for pasture over the last half-century.

Modern intensive agriculture cannot be sustained. It has created soil erosion, polluted and overdrawn groundwater and surface water, and even (largely due to increased pesticide use) caused serious public health and environmental problems. Soil erosion, overtaxed cropland and water resource overdraft in turn leads to even greater use of fossil fuels. More fertilizers must be applied, along with more pesticides, irrigation water requires more energy to pump and fossil fuels are used to process polluted water.

It is estimated that it takes 500 years to replace 1 inch of topsoil. In a natural environment, topsoil is built up by decaying plant matter and weathering rock, and it is protected from erosion by growing plants. Soil made susceptible by agriculture, erosion is reducing productivity up to 65% each year. Former prairie lands, which constitute the bread basket of the United States, have lost one half of their topsoil after farming for about 100 years. This soil is eroding 30 times faster than the natural formation rate.

Every year in the U.S., analysts estimate that 3 million acres of cropland are lost to erosion, salinization, urbanization, road building, and industry. Approximately three-quarters of the land area in the United States is devoted to agriculture and commercial forestry. This is caused by increasing human population growth, which requires land to live on and not live off.

Current agriculture practices also impacts on water resources. Agriculture consumes fully 85% of all U.S. freshwater resources. Overdraft is occurring from many surface water resources, especially in the west and south. A typical example is the Colorado River, which is diverted to a trickle by the time it reaches the Pacific. Yet surface water only supplies 60% of the water used in irrigation. The remainder, and in some places the majority of water for irrigation, comes from ground water aquifers. The Ogallala aquifer in the US, supplies agriculture, industry and home use in much of the southern and central plains states and has an estimated annual overdraft of up to 160% above its recharge rate. At some point the water will no longer be in the aquifer to draw upon. In Australia, we face the same issue with extracting water quicker than what it being replaced, in our Artesian aquifer.

To illustrate the demand that modern agriculture places on water resources, a good example is the production of corn. A corn crop that produces 118 bushels per acre, per year, requires more than 500,000 gallons per acre of water during the growing season. Unless lower consumption rates are achieved, modern agriculture will eventually send the major producing nations head long into a water crisis.

This scenario along with increasing temperatures, over time, will impact on agricultural commodity prices.

Summary

Commodities are the foundation of a society – if you have no food or energy you have no society. The scenarios I have highlighted in this paper will impact on commodity values, it's not a matter of if, but a matter of when! Therefore it is prudent to include, within a well balanced investment portfolio, commodities.

Commodities offer a hedge against the developing problems we all face and at times will outperform the traditional assets you currently hold, because of supply disruptions and compound consumption.

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Cost of water shortage: civil unrest, mass migration and economic collapse

Analysts see widespread conflicts by 2015 but pin hopes on technology and better management

John Vidal, environment editor
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Guardian

Cholera may return to London, the mass migration of Africans could cause civil unrest in Europe and China's economy could crash by 2015 as the supply of fresh water becomes critical to the global economy. That was the bleak assessment yesterday by forecasters from some of the world's leading corporate users of fresh water, 200 of the largest food, oil, water and chemical companies.

Analysts working for Shell, Coca-Cola, Procter & Gamble, Cargill and other companies which depend heavily on secure water supplies, yesterday suggested the next 20 years would be critical as countries became richer, making heavier demands on scarce water supplies.

In three future scenarios, the businesses foresee growing civil unrest, boom and bust economic cycles in Asia and mass migrations to Europe. But they also say scarcity will encourage the development of new water-saving technologies and better management of water by business.

The study of future water availability, which the corporations have taken three years to compile, suggests water conflicts are likely to become common in many countries, according to the World Business Council on Sustainable Development, which brought the industrial groups together.

Lloyd Timberlake, spokesman for the council, said: "The growing demand for water in China can potentially lead to over-exploitation and a decline in availability for domestic, agricultural, industry and energy production use. This inevitably leads to loss of production, both industrial and agricultural, and can also affect public health - all of which in turn will ultimately lead to an economic downturn. The question is how can business address these challenges and still make a profit."

The corporations were yesterday joined by the conservation group WWF and the International Water Management Institute, the world's leading body on fresh water management, which said water scarcity was increasing faster than expected. In China, authorities had begun trucking in water to millions of people after wells and rivers ran dry in the east of the country.

"Globally, water usage has increased by six times in the past 100 years and will double again by 2050, driven mainly by irrigation and demands of agriculture. Some countries have already run out of water to produce their own food. Without improvements ... the consequences will be even more widespread water scarcity and rapidly increasing water prices," said Frank Rijsberman, director of the institute.

The institute, funded by government research organisations, will report next week that a third of the world's population, more than 2 billion people, is living in places where water is overused - leading to falling underground water levels and drying rivers - or cannot be accessed.

Mr Rijsberman said rising living standards in India and China could lead to increased demand for better food, which would in turn need more water to produce. He expected the price of water to increase everywhere to meet an expected 50% increase in the amount of food the world will need in the next 20 years.

According to the institute's assessment, Egypt imports more than half of its food because it does not have enough water to grow it domestically and Australia is faced with water scarcity in the Murray-Darling Basin as a result of diverting large quantities of water for use in agriculture. The Aral Sea in central Asia is another example of massive diversion of water for agriculture in the Soviet era causing widespread water scarcity, and one of the world's worst environmental disasters.

Researchers say it is possible to reduce water scarcity, feed people and address poverty, but the key trade-off is with the environment. "People and their governments will face some tough decisions on how to allocate and manage water," says the institute's report.

In a further paper, WWF said yesterday that water crises, long seen as a problem of only the poorest, are affecting the wealthiest nations. "In Europe, countries along the Atlantic are suffering recurring droughts, while water-intensive tourism and irrigated agriculture are endangering water resources in the Mediterranean. In Australia, salinity is a major threat to a large proportion of its key agricultural areas", said Jamie Pittock, director of WWF's freshwater programme.

In the United States, Mr Pittock said, large areas are already using substantially more water than can be naturally replenished. "This situation will only be exacerbated as climate change is predicted to bring lower rainfall, increased evaporation and changed patterns of snow melting."

Three visions of the future

1. Misery and shortages in the megacities and drought in Africa

By 2010, 22 megacities with populations larger than 10 million face major water and sewerage problems. The situation is gravest in China, where 550 of the country's 600 largest cities are running short. Growing demand for water by industry leads to serious over-exploitation with less and less water available for consumers and farmers. This leads to a fall in Chinese food production, which in turn leads to more imports and impacts on other countries. Friction and unrest grow worldwide as the middle classes struggle to pay bills. Businesses are exposed to charges of moral culpability and litigation over water use. Waves of immigrants flood in to Europe from increasingly drought-torn Africa

2. China leads recycling rush as world moves to a new hydro economy

By 2010, the water shortage in many developing countries is recognised as one of the most serious political and social issues of the time. Lack of water is stopping development and in many countries the rural poor suffer as their water and other needs take second place to those of swelling cities and industry. Local government worldwide is increasingly distrusted over water allocation, and historical divides between rich and poor are exacerbated by water shortages. However, by 2025 a worldwide hydro economy is developing, led by China. Vast new investments are made in recycling water and the cost of desalination is greatly reduced. Innovative small-scale water treatment processes become the norm

3. Water is the means of social control as floods and disease devastate world

Water becomes a key symbol of protest around the world and is seen as the most serious social and political issue of the generation. By 2015, multinational companies are accused regularly of taking too much water in developing countries, cholera breaks out in London, and governments start to use water as a form of social control, subsidising some sectors and rationing it to others. Great floods follow each other in quick succession. Deforestation leads to massive mudslides in Asia and increasing flooding affects Europe, damaging industry. A second New Orleans flood destroys the city again. Global focus grows on the "export" of water via crops such as wheat and fruits.