

**Risks to Global Trade and Implications for
South Africa's Economy and Policy**

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**Development Policy Research Unit
School of Economics
University of Cape Town
Upper Campus**

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Introduction

The past few decades have witnessed an unprecedented globalisation of trade in goods and services, driven mainly by technology and ideology but underpinned by the availability of relatively cheap energy. By extrapolating this trend one may expect further integration of world markets and increasingly unhindered international trade. However, there is mounting evidence of significant risks to the world economy in general, and to the globalisation of trade in particular.

Three main risks are considered in this policy document:

- an imminent **peak in world oil production**, which will have far-reaching economic and social consequences for both developing and industrial nations;
- **climate change**, and especially its effect on agricultural production, infrastructure, and financial risk; and
- **global monetary imbalances** and consequent financial instability, caused primarily by the United States' unsustainable trade and budget deficits.

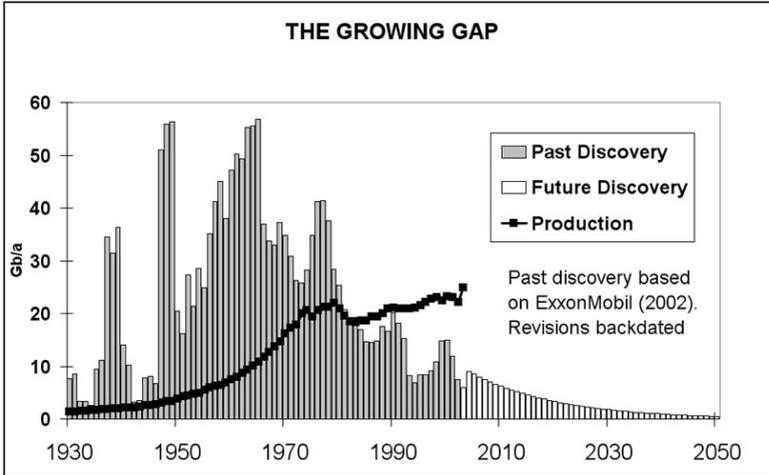
A preliminary assessment is made of the likely economic implications of these risks in general terms, and South Africa's specific strengths and vulnerabilities are highlighted. Suggestions are then offered for ways in which Government could manage these risks through adaptive and mitigating policy responses.

The End of Cheap Oil

A **steep rise in the price of oil** over the past few years has led to increasing concerns about the possible economic impact. While the oil price trend is usually blamed on short-term, politically-related supply disruptions or rising demand from the emerging Asian giants, China and India, the **depletion profile of this finite resource** poses a far more fundamental threat.

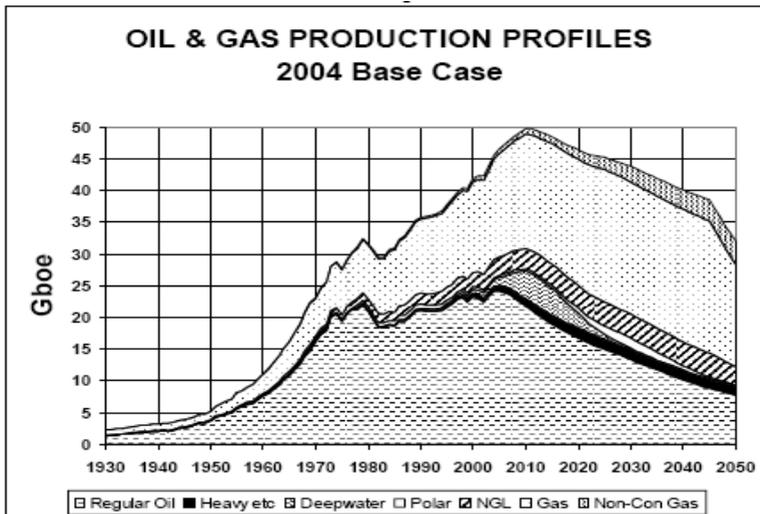
In the 1950s, a petroleum geologist named M. King Hubbert theorised that oil production in a given region would follow a rough bell curve, rising to a peak when approximately half of the total oil had been extracted and thereafter gradually falling toward zero. Hubbert correctly predicted the 1970 peak in oil production in the lower 48 United States. He hypothesised that world oil supply would follow a similar curve, mirroring the pattern of (earlier) oil discoveries, which peaked in the 1960s (see Figure 1). Annual oil production has exceeded new discoveries since 1981, and more than half of the 44 significant oil-producing nations have already passed their individual production peaks. Most of those using Hubbert's methodology predict a global peak some time between 2005 and 2016. The Association for the Study of Peak Oil & Gas (ASPO), an international network of leading scientists and scholars investigating the phenomenon, estimates that **regular oil peaked in 2005** and forecasts **all petroleum liquids plus gas to peak in 2010** (see Figure 2).

Figure 1: Oil Discovery And Production



Source: Association for the Study of Peak Oil & Gas (ASPO), July 2006

Figure 2: Oil And Gas Depletion Scenario



Source: Association for the Study of Peak Oil & Gas (ASPO), July 2006

While there is considerable scope for **increasing energy efficiency** and **reducing consumption**, both have limits, especially given current energy and transport infrastructure. Furthermore, no alternative energy source is fully substitutable for oil, considering its versatility as both a fuel (especially for transport) and an input in the petrochemical industry, as well as its high energy density.

- **Coal** is highly polluting, not least in terms of carbon dioxide emissions, and while current reserves are very large, they are finite.
- **Natural gas** production is itself expected to peak within a couple of decades.
- **Nuclear energy** is costly and potentially dangerous, and as yet no long-term solution has been found for radioactive waste storage; and in any case it cannot substitute perfectly for liquid fuels.
- **Biofuels** are a promising renewable alternative experiencing rapid growth, but the danger is the effect on food prices and the poor as staples such as corn, sugar and soya are burned in vehicles.
- Switching to an economy based on **renewable solar and wind energy**, and possibly **hydrogen** fuel cells, will require massive and costly investment, and take several years to begin making an appreciable difference.

The crux of the matter is whether new, sustainable energy and transport investments can be undertaken on a massive scale before the peak of oil production is reached. After the peak, economic conditions will be far less conducive to such investment, as we discuss below.

Likely Consequences of 'Peak Oil'

Clearly, the world has never before experienced an absolute peak in oil production. However, the oil shocks of the 1970s and the experiences of some individual countries unable to import sufficient oil (e.g. Cuba after 1991 and Zimbabwe since 2000) provide some pointers as to likely outcomes in the **short to medium term**:

- Most fundamentally, the peaking of production implies the **end of cheaply available oil**, arguably the most important commodity in the industrial economy.
- The world faces an **endless sequence of supply-side oil shocks**, and demand will consequently have to adjust downward via higher prices.
- The oil price is likely to be highly **volatile**, raising uncertainty and masking the underlying upward trend in the short term.
- A rising oil price will continue to fuel producer and consumer **inflation**.
- Rising inflation will induce central banks to **raise interest rates**, which in turn will put a brake on global economic growth and possibly trigger an international **recession**.
- Intensifying competition over dwindling energy and food supplies will raise **geopolitical tensions** and may precipitate an increased prevalence of resource wars and terrorism, especially considering that over half of the world's known oil and gas reserves lie in the Middle East. Such conflict would have serious consequences for the global economy and financial markets by raising risk aversion, reducing consumption and investment, and curbing trade.

- When a critical mass of investors wake up to the inevitability of 'peak oil', it could spark wide-spread **panic in financial markets**, with potentially devastating effects on the global economy, as experienced in the Great Depression.

Certain **sectors** are particularly susceptible to a dwindling supply and higher price of oil:

- **Transport** costs will rise dramatically, hampering inter- and intra-national trade. The commercial aviation industry will be hardest hit, but road and sea transport will also suffer.
- **Tourism** will be knocked by rising transport costs, uncertainty and geopolitical tensions.
- Modern **agriculture** is highly dependent on oil for machinery and transportation, as well as petroleum-based chemical fertilisers and pesticides, while the marine **fishing** fleet relies on oil for fuel. We can thus expect falling agricultural production and rising food prices after oil peaks, which carries food security implications for food-importing countries and the landless poor in particular.
- **Manufacturing** costs will rise virtually across the board (since the sector is relatively energy-intensive), and especially in the petrochemical, plastic and pharmaceutical sectors, which use oil as a feedstock.

In the **long term**, declining oil production may **halt or even reverse the globalisation of goods trade** as local production and consumption become more relatively more competitive. On the plus side, although sacrificing economic efficiency, increasing localisation could bring **socio-economic benefits to poorer and peripheral regions**. For example, by encouraging labour-intensive local production it could help to reduce unemployment, inequality and poverty. Localisation will also help to **reduce environmental damage**, including the effects of global warming, which we consider next.

Climate Change

The vast majority of leading climate scientists, working within the Intergovernmental Panel on Climate Change, agree that the Earth's atmosphere and oceans are warming dangerously partly as a result of the burning of fossil fuels.

Climate change is already manifesting in:

- an increasing prevalence and severity of **extreme weather conditions**, such as heat waves, droughts, floods and storms;
- **rising sea levels**, owing to the melting of icecaps and glaciers as well as thermal expansion of the oceans.

The potential **economic impacts** of climate change are complex and wide-ranging. Three areas are especially vulnerable:

- **Agricultural production** is expected to decline on average as droughts and floods become more frequent and the melting of glaciers threatens stable water supplies in some areas. Rising greenhouse gas concentrations also threaten fish stocks by damaging coral reefs and raising the acidity level of the oceans. Climate change thus poses a threat to water and food security in many regions, which in turn raises the risk of social upheaval, conflict over resources, and consequent disruptions to economic activity.
- **Infrastructure** is threatened in the short term by the increasingly destructive power of storms, such as the hurricanes that swept the southern US last year. Later this century, rising sea levels may inundate entire coastal settlements, forcing mass evacuations to higher-lying areas.

- **Losses to the insurance industry** from natural disasters, many related to global warming, have been growing by about 10 per cent per annum since the 1970s. Mounting losses – or a particularly severe catastrophe – could potentially bankrupt the insurance industry and spark systemic capital market collapse.

While oil and gas depletion raises the question of whether concerns about future carbon emissions are overstated, the problem is the likelihood that large countries such as the US, China and India will use coal as a substitute. Since coal produces more CO₂ per energy unit than oil and gas, this could mean increasing net emissions in the future and faster planetary warming. In any event, given recent evidence pointing towards feedback effects and ‘**tipping points**’ in the climate change process, some experts argue that we cannot afford to burn all of the remaining oil, let alone gas and coal reserves.

Global Monetary Imbalances

The current global trading and financial system is inherently **unstable**:

- The US is running persistent, high and growing **fiscal and trade deficits**, and faces enormous and mounting levels of **private and national debt**, a negative private savings rate, and signs of a **housing market bubble**. These conditions are exacerbated by rising oil prices and the costs of natural disasters linked to global warming.
- Much of the US's external deficit is financed by the **accumulation of dollar reserves and US Treasury bills by many of the world's central banks**. In a dangerously unsustainable dance, China, Japan and other Asian countries effectively peg their currencies to the US dollar so that they can continue to export large volumes of goods to the US. Meanwhile, oil producing nations are stockpiling dollars received from their windfall exports, and Europe – via financial flows to the US – is helping to prop up the dollar so as not to lose too many jobs.
- The system of **interest-bearing, debt-based money** creation used by virtually all nations requires persistent economic growth as collateral. But 'peak oil' threatens the basis of this growth and therefore the integrity of the financial system.

A sharp **adjustment** in these imbalances could be triggered by one of several factors:

- If **US interest rates** continue to rise – which seems likely given the inflationary pressures of climbing oil prices – at some point the property bubble might burst, causing a debt crunch for consumers and a substantial drop in demand.
- Even if the US economy manages to keep on growing for several years, it

will eventually encounter the effects of **Peak Oil**, which is likely to be the final straw for both consumers and the government, given the nation's extreme dependency on oil.

- There may be a **collapse in confidence in the dollar** as international reserve currency. Asian countries may decide that the exposure risks of continuing to support the dollar outweigh the benefits in terms of boosting their exports. Moreover, certain significant oil producing nations (including Iran and Russia) have recently mooted the possibility of switching the denomination of their oil exports to Euros. Such a move could potentially pull the rug out from under the dollar, whose value since the end of the Bretton Woods agreement in 1971 has been underpinned by the global trade in petroleum (denominated exclusively in US dollars).

The greater the imbalances become, the higher the likelihood of a '**sudden disorderly adjustment**'. A sharp depreciation of the dollar would cause a fall in US imports, hurting many exporting countries and possibly causing an international recession. Moreover, if the adjustment triggers a collapse of property and equity prices in the US, this will spill over to other countries, especially emerging markets such as South Africa.

Socio-Economic Implications for South Africa

South Africa would be adversely affected by many of the global factors described above. However, this country has a unique set of conditions that foster certain strengths and vulnerabilities.

South Africa's strengths:

- SA possesses abundant **coal reserves** and an advanced **synthetic fuels industry**, which allow some degree of energy autonomy.
- **Gold and other mineral exports** will help to counter-balance rising oil import costs and stabilise the Rand.
- Reduced international trade owing to higher transport costs implies **import substitution opportunities**, although there may be a capital goods constraint.
- SA is at present a net **exporter of agricultural products**.

South Africa's vulnerabilities:

- The considerable distance from our major trading partners will raise the share of **transport costs** in our traded goods and tourism disproportionately.
- SA's **transport sector** is highly dependent on liquid fuels.
- Much of SA's industry is highly **energy-intensive**.
- Coal-based energy carries high **environmental and health costs**.

- SA is especially susceptible to the effects of **climate change** (droughts in the west, floods in the east), which is likely to compromise agricultural production.
- The high incidence of **poverty, inequality and HIV/AIDS** make at least half the country's population extremely vulnerable to rising food and energy costs, thereby increasing the risk of social instability.
- Our neighbouring countries are less well resourced, and therefore SA may experience a rising flood of **refugees**.
- The highly liquid financial sector is very exposed to '**emerging market contagion**'.
- **Household debt** is at historical highs, raising the prospect of recession if interest rates rise quickly in response to soaring energy prices.

On balance, it seems clear that the risks present serious socio-economic challenges to South Africa. We thus turn to policy recommendations.

Policy Response Options

An appropriate response is crucial if South Africa is to meet its long-term sustainable development goals. Successful management of the risks arguably will require both **mitigation** and **adaptation** strategies, involving a mix of **market signals** and **government intervention**.

Broadly speaking, three strategies are available to the authorities:

- the use of **economic incentives** such as taxes and subsidies;
- **regulatory measures** prescribing and proscribing certain kinds of activities; and
- **raising public awareness** and understanding of the issues.

All three of these options should be utilised in a co-ordinated manner for maximum effect.

Specific policy recommendations include the following:

- Motivate for and join an international **Oil Depletion Protocol** whereby all oil importing nations reduce their annual consumption proportional to the depletion rate.
- Promote **energy efficiency** and **conservation** through awareness campaigns and demand side management.
- Accelerate investments in **clean, renewable energy** sources.
- Build **sustainable, efficient public transport systems**.

- Encourage **localisation** – minimising distances between producers and consumers – before oil peaks.
- **Protect the poor** from rising energy, food and transport costs, e.g. with subsidies or if necessary, rationing.
- **Trade policy** should aim for greater **self-sufficiency**, and in particular avoid the destruction of local productive capacity.
- **Monetary policy** should be more **flexible** than the current inflation targeting framework permits, allowing higher energy prices to work through the system without the addition of punitive interest rates.
- **Exchange rate policy** should avoid excessive volatility and speculation, e.g. through selective exchange controls on portfolio flows or a Tobin tax on currency transactions.
- The Reserve Bank should **diversify foreign exchange** holdings away from US dollars.

Crucially, delaying appropriate responses in the short to medium term will merely compound the problems in the long run.

Conclusions

Each of the three risk factors could in its own right have substantial negative consequences for economies and societies. Moreover, they are connected by several complex **feedback loops** (see Figure 3), which raise the probability and magnitude of adverse outcomes. If this web of risks is not managed appropriately – in an integrated manner – there is a significant likelihood of a downward spiral of economic depression, conflict and suffering.

The role of **technological change** has always been central to economic development, and it will no doubt play a key role in the future as humanity grapples with these challenges. Indeed, many of the requisite technologies are already available. However, their potential depends on political will and the wisdom with which they are employed.

Seen in a different light, these challenges represent opportunities to shift to more **democratic, egalitarian and ecologically sound global and local economic systems**. Whether these prospects can be realised will depend on the active participation of and **co-operation** among all sectors and levels of society. Let us hope the South African Government leads the way.

