

China's Oil Import Strategies

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Introduction

China is the world's second largest consumer of primary commercial energy, accounting for 12% of the global total. Its demand in 2003 was equivalent to that of Japan, South Korea, India and Indonesia combined, or some 80% of the EU-15 states, and it increased by 14% in that year. In 2002 China overtook Japan to become the second largest consumer of oil. China's demand for oil rose by a further 11% in 2003, when it accounted for 7.5% of global oil consumption. The same year oil imports rose nearly 30% to 128 million barrels, some 5.5% of globally traded oil. Net oil imports were 108 million barrels, or 40% of China's total oil consumption.

In the twenty-five years of economic reforms since 1978 China's annual economic growth has averaged 8-10% and its consumption of both primary commercial energy and of oil has risen three-fold. Yet it was only in 2003 that the impact of this growth on international commodity markets started to significant across a wide range of materials, from steel to coal and from soy beans to crude oil.

Though China's rising demand has been only one of many factors driving up oil prices, it is likely to remain a major influence on global oil markets for the foreseeable future. China's impact on oil prices will depend not only on actual levels of demand but also on the perception by the markets of the government's policy for its oil sector.

This paper provides a brief review of trends in China's oil sector over recent years, before reviewing the countries strategy for oil imports and identifying some key issues to watch over the coming years.

Recent trends in China's oil supply and demand

During the 1980s China was a net exporter of about 20 million tonnes of oil per year. In the mid-1990s this situation changed. Demand for oil exceeded the domestic capacity to produce and China became a net importer of oil. The gap between domestic demand and supply grew to almost 110 million tonnes in 2003 (Fig.1). Despite expensive exploration

campaigns onshore and offshore, the domestic output of oil has been increasing at only 1-2% per year. As old, large fields go into decline, new discoveries are barely compensating. It is most unlikely that a sustained growth of supply will be achieved and total national oil production may reach a peak during the coming ten years.

The demand for oil has risen in all major sectors. But the share used by industry has shown a sustained decline as that used for transport has grown to 40% of total oil consumption. Oil use in other sectors and for non-energy applications has also grown (Fig.2). The number of registered vehicles grew eighteen-fold between 1980 and 2002 (Fig.3). Over the same period freight traffic rose by four times (Fig.4) and total passenger traffic by six times (Fig.5). Since 1990 the contribution of oil to energy use in transportation has risen from 65% to more than 90% as the role of coal has diminished.

During the 1990s China nearly doubled its total oil refining capacity to more than 5.5 million tonnes per day (Fig.6). The rate of increase then declined sharply, for two main reasons. First, the government was forcing the closure of a number of small, dirty and inefficient refineries and second major investment was being directed at upgrading existing refineries to take the sour crude from the Middle East. As demand for oil and as the country imports of crude oil continued to grow, capacity utilisation in China's refineries rose from about 70% in the mid 1990s to 90% or more in 2003.

In the early 1990s China imported equal quantities of crude oil and oil products and exported significant volumes of crude oil (Fig. 7). Once the country became a net importer of oil a number of new features appeared in its pattern of oil trade. Crude imports rose more rapidly than those for oil products, as China sought to maximise the amount of oil refined by the domestic industry. The exports of crude oil were gradually reduced, for the same reasons whilst those of oil products increased in order to sell excess gasoline produced by the domestic refineries.

The key elements of China's oil strategy

In 2003 China's oil supply-demand gap was about 110 million tonnes, this is set to grow to 250 to 350 million tonnes by 2015. China's current oil strategy builds on the nation's longstanding preference for self-reliance but has been adapted over the last few years to reflect the challenges the country faces in securing its oil supplies from both domestic and international markets. The approach is 'strategic' in nature in that the importance of government is emphasised and markets are relegated to a supporting role. Government directs the implementation of oil policy directly through control of investment and domestic oil prices as well as indirectly through state-owned oil companies and state banks.

The key elements of the domestic aspects of China's oil strategy are as follows:

- **Maximising the production of oil from domestic oilfields.** This is a major challenge as the old large oil fields in north and east China which have supported

the sector for the last thirty years are entering their decline. Discoveries continue to be made offshore and in the north-west of the country, but they are barely compensating for production. Production growth in the first few months of 2004 was only 1%. With few exceptions, most investment in oil exploration and development is through the three main state oil companies (PetroChina, Sinopec and CNOOC).

- **Maximising the throughput of the domestic refining industry.** For the last ten years the government have sought to maximise the import of crude oil and to constrain the import of products in order to maximise the opportunity for the oil to be refined in China and by Chinese companies. This strategy has been constrained by the need to upgrade the existing refineries to accept sour crude oil from the Middle East and by the product mix of the Chinese refineries which requires China to import significant quantities of LPG and heavy fuel oil. Foreign investment in China's refining industry (rather than petrochemicals) has moved very slowly.
- **Domestic pipelines, ports and shipping.** China's ability to import and distribute oil is constrained by a shortage of capacity on many fronts. Considerable steps have been taken to expand the domestic pipeline network for crude oil and for oil products, to construct additional port capacity to handle oil imports and to embark on a concerted drive to build a substantial Chinese oil tanker fleet. In the recent past Chinese tankers have carried less than 10% of the nation's oil imports. By 2005 this is intended to reach 50%.
- **Emergency storage.** After several years of debate and inaction, the government has at last announced a firm plan to construct emergency oil storage capability which is intended to exceed 20 million tonnes by 2010 and to reach 50-70 million tonnes by 2015. Construction of the tanks has is due to start in 2004.
- **Alternative fuels.** China has spent considerable effort investigating alternative transport fuels. The favoured option at present is coal-to-liquids drawing on China's abundant reserves of coal. Since the late 1990s the Shenhua Group has been charged with developing and bringing to market this technology, and initially concentrated its efforts on direct liquefaction. In the absence of quick success it was decided to license indirect liquefaction technology from Shell. The first plant will be in Inner Mongolia and should be in operation with an annual capacity of one million tonnes by 2007.

China's overseas strategy for oil required considerable investment of both financial and political capital. Key measures include:

- **Diversification of the sources of oil imports.** In the early 1990s, Asia Pacific, especially Indonesia and Malaysia for crude oil and other countries for refined products were the dominant sources of supply. It was already clear that they could not match the country's rising demand so China progressively increased the share of its imports from the Middle East (subject to its ability to refine the sour crude) and from other parts of the world (Fig.8). China now imports crude oil and oil products from more than thirty different countries.

- **Investment in overseas exploration and production.** China's government promotes overseas investment in oil and gas resources on two grounds: first to secure 'Chinese' reserves overseas which add to domestic supplies and second to assist in the internationalisation of the state oil companies. Since 1993 CNPC has built an overseas portfolio of some 43 oil and gas projects, mostly oil. If the projects of CNOOC and Sinopec are included, the number of projects exceeds fifty and these lie in more than 30 countries – from Cuba to Turkmenistan and from South Korea to Chad.
- **The development of political relations with oil exporters.** China's preference for state action rather than reliance on markets is demonstrated by its linking of oil imports with the development of political relationships at the highest level with the governments of oil exporting states. This typically takes the form of packages of political and economic measures, which will include long-term oil supply contracts and investment opportunities for Chinese companies.
- **Overland oil pipelines from Russia and Kazakhstan.** China is keenly aware that its seaborne oil imports are open to disruption in the notorious Malacca Straits as well as on the high seas of the South and East China Seas. In order to reduce this risk China has spent considerable efforts negotiating with the Russian and Kazakh governments to build oil pipelines to bring oil into China overland. To date all oil imports from these countries have been by rail. Whilst negotiations with the Russian's have stalled, China has pushed ahead to conclude a deal with Kazakhstan which should allow a pipeline to be completed by 2006 with an initial flow of 10 million tonnes.
- **Purchase and use of overseas refineries.** The year 2004 has seen a new component to China's overseas oil strategy. Sinopec has purchased an oil refinery in South Korea and Sinochem is reported to have leased refinery capacity in Japan. These moves are probably the result of the shortage of refining capacity in China.

All these measures, domestic and overseas are directed at the **supply** of oil. Systematic attempts to constrain the **demand** for oil have been few. Though the domestic prices of oil products have been raised in line with border prices, attempts to raise the level of tax on transport fuels have been repeatedly blocked. Rather than encourage cities to develop innovative approaches to public transport the national and city governments have preferred to bless private car ownership by building more roads (Beijing now has a sixth ring-road) and attracting increasing numbers of foreign car manufacturers. The only concession to the need to constrain oil consumption is that the new manufacturers will have to adhere to modern fuel efficiency standards.

Selected Issues

If we assume that China can do little about its domestic production of crude oil, the key questions facing other players in the international markets are how fast will China's

demand for oil continue to grow and how will the required imports be sourced. Key subordinate questions include:

- To what extent will demand for oil decouple from total demand for energy?
- What steps will government take to constrain demand for oil and how successful will they be?
- How fast will imports from Russia and Kazakhstan build up?
- How fast can China expand its refinery and import capacity?
- How well can the state oil companies manage their overseas assets?
- When and how fast will China start to fill its strategic storage?

To what extent will demand for oil decouple from total demand for energy?

What steps will government take to constrain demand for oil and how successful will they be?

These two questions can be addressed together. As China's government seeks to constrain economic growth and investment during 2004, the rate of increase of total primary energy consumption may be expected to decline. But it cannot be assumed that oil consumption will follow the same trend. Empirical data from the last ten years suggest that demand for oil in China has risen at a steady rate and has not been subject to the fluctuations seen in the total demand for primary energy (Fig. 9). The main fuel driving China's economy is coal. Investment in infrastructure and heavy industry tends to be highly dependent on government policy and such investments in turn stimulate consumption of coal and coal-fired electrical power.

Unless the government introduces special measures to constrain the use of oil, especially in the transport sector, it is likely that the rate of increase of demand for oil will diminish much less than that for total primary energy. However, the possibility of the government taking radical short-term administrative measures to constrain oil consumption cannot be discounted.

How fast will imports from Russia and Kazakhstan build up?

Discussions on oil import lines from Russia and Kazakhstan have been under discussion since 1997. Both have been dogged by a variety of political and economic problems. In the meantime oil has been moving by rail. From Kazakhstan imports reached about one million tonnes in 2003. Imports from Russia are building up more rapidly with four million tonnes in 2003, six million tonnes planned for 2004 and nine million tonnes for 2005. As of May 2004 it looks as if the pipeline from Kazakhstan is moving ahead. Completion is planned for 2006, with an initial flow of 10 million tonnes rising to 20 million tonnes. The pipeline from Russia has become entangled in a web of domestic Russian politics and international relations. When and if completed it could deliver 30 million tonnes per year to China.

The aggregate capacity of this import infrastructure amounts to some 60 million tonnes. This would be equivalent to some 20-30% of China's import requirement in 2010. The speed with which these investments go ahead has significant consequences for

international oil markets as the pipelines would be new export routes bringing 'new' oil to world markets. In the case of Russia, the alternative route to the Sea of Japan would provide a similar boost to world oil supply but would be accessible to a greater range of buyers than the route to China.

How fast can China expand its refinery and import capacity?

China faces two key constraints as its import of crude oil rises. Both ports and refineries are operating at full capacity. Bulk commodities have traditionally been handled by state-owned ports and investment in these facilities has lagged behind privately-owned container ports. The expansion of China's domestic refining capacity has slowed in recent years, as small-scale refineries have been closed and as investment has been directed at upgrading existing capacity. The marginal and unpredictable profitability of the refining industry in China as overseas may also have acted as a deterrent to new investment.

The first five months of 2004 saw a 38% increase in the imports of crude oil and a 59% rise for oil products. These figures suggest that port capacity is being expanded rapidly enough to cope but that the lack of spare refining capacity is driving up the proportion of products.

How well can the state oil companies manage their overseas assets?

The expansion of the overseas investments of China's state-owned oil companies has been prodigious. This raises two key questions. The first is whether the companies can meet the financial requirements of the committed investments. Given that the primary aim of the investments is to secure 'Chinese' oil and gas supplies, the normal option of farming-out the projects after a certain stage of development in order to keep the most profitable would not appear to be consistent with the national strategy. If they are to meet their commitments on development projects and if some of the exploration projects are successful, the Chinese state oil companies will need to invest many billions of US dollars over the next ten years. At US\$40 per barrel this may be affordable. At US\$25 or less, it may not be. As a result the companies may be obliged to sell at a low price assets bought at a high price.

This opens a wider question of the ability of these state companies to manage such a large and diverse portfolio of investments. They may hire experienced foreigners to manage operations (though CNPC seems to be resisting this) there remains the more difficult question of managing the formulation and implementation of the wider strategy. All state companies or recently privatised companies face this challenge as they venture overseas, but these difficulties are compounded for the Chinese oil companies by the speed of their expansion, their slowness to appoint foreign managers and by the intertwining of corporate and government objectives.

A dramatic drop in oil prices and/or one or two notable project failures may result in a radical rethink of the overseas investment strategy. In addition, Chinese oil companies

have to prove to host governments that they are desirable investors in the long-term: that they stick to agreed investment plans, that they pay their taxes, and that they have an acceptable record on environmental and social issues.

When and how fast will China start to fill its strategic storage?

China plans currently envisage stocks of 10 million tonnes by 2006, 22 million tonnes by 2010, and 90 days of imports by 2015 (50-70 million tonnes). The construction will be carried out by state oil companies but when completed the stocks will be under government management and separate from commercial stockpiles.

Assuming that the filling of the storage is carried out in a steady and systematic manner, it might be expected to add 5-7 million tonnes per year to China's oil imports, or less than 5%. Though this is a relatively small quantity, it is probable that if any information on such stock-filling reaches the markets then oil prices will rise in the short term. In the longer term, once China has built up substantial stocks, the impact of these stocks on markets may be beneficial as the global capacity to withstanding oil shocks will have been increased. The key issue will be the nature and transparency of China's emergency response policy and procedures.

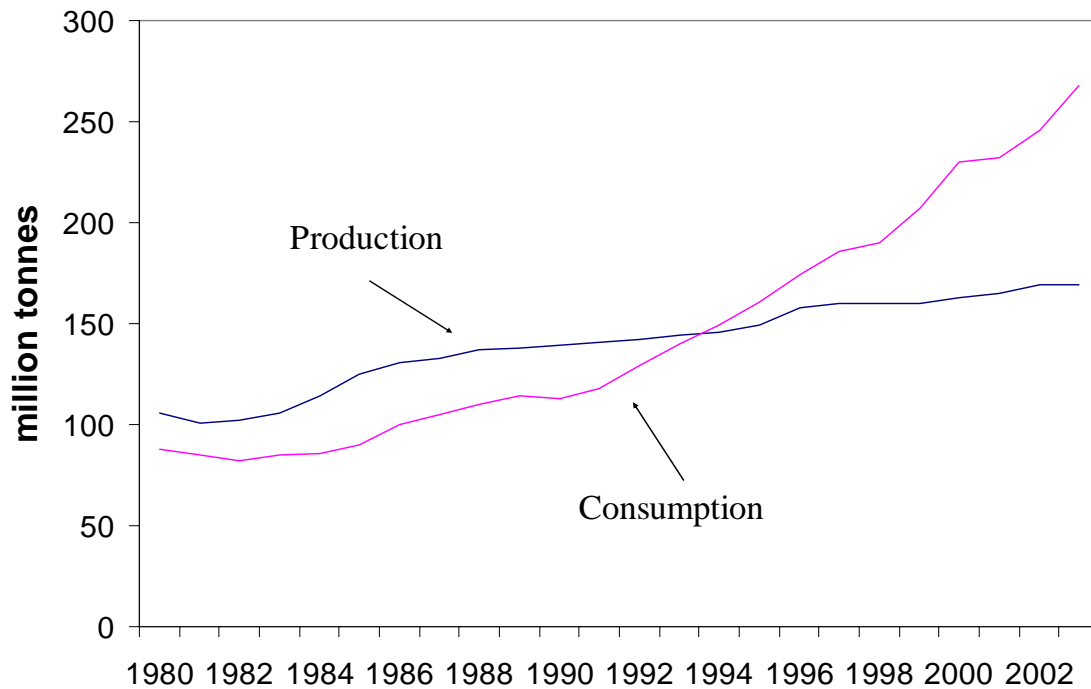


Fig.1 China's oil production and consumption, 1980-2003 (BP Statistical Review of World Energy)

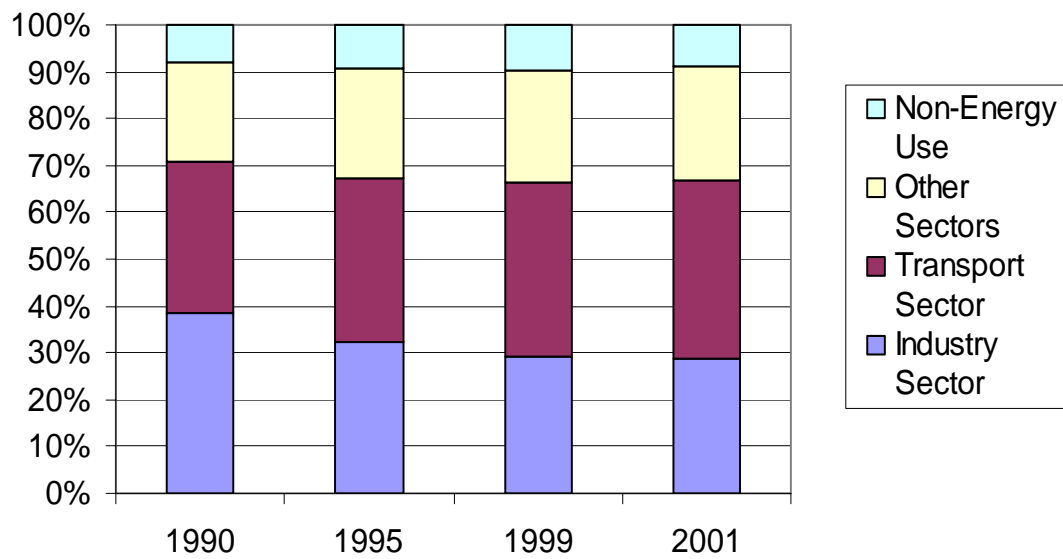


Fig.2 Final consumption of oil products by sector, 1990-2001 (International Energy Agency)

Vehicle numbers

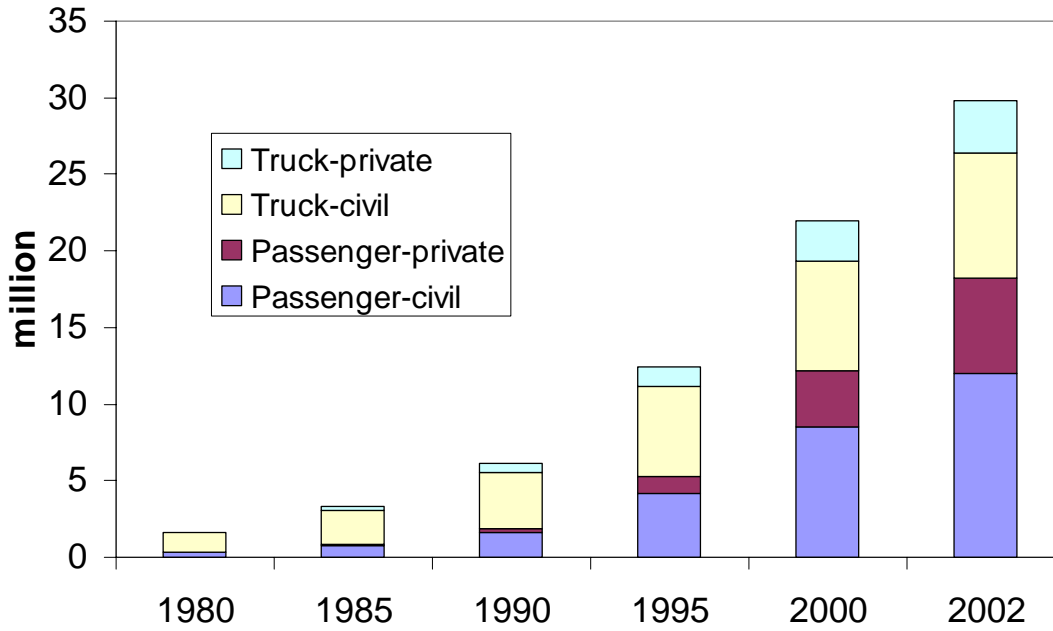


Fig.3 Total number of registered vehicles by vehicle type and ownership, 1980-2002 (China Statistical Yearbook)

Freight ton-km

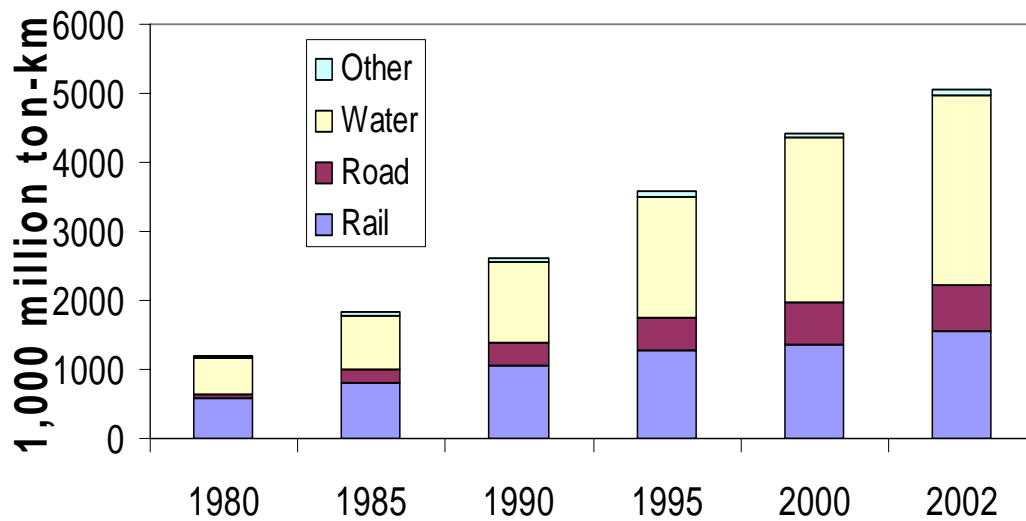


Fig.4 Total freight traffic in ton-kilometres, by transport type 1980-2002 ((China Statistical Yearbook)

Passenger Traffic

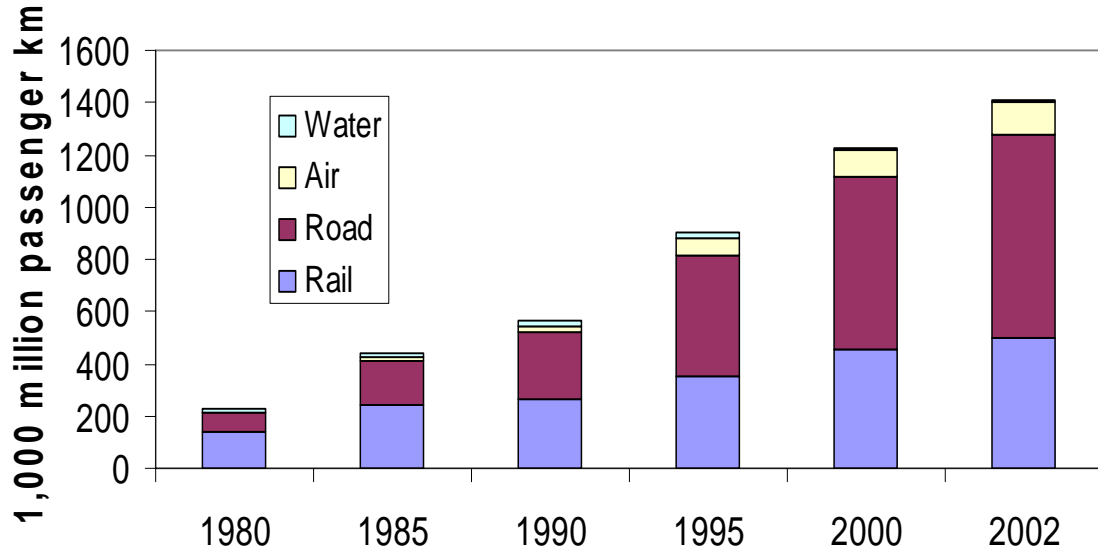


Fig.5 Total passenger traffic in passenger-kilometres, by transport type, 1980-2002 (China Statistical Yearbook)

Refineries

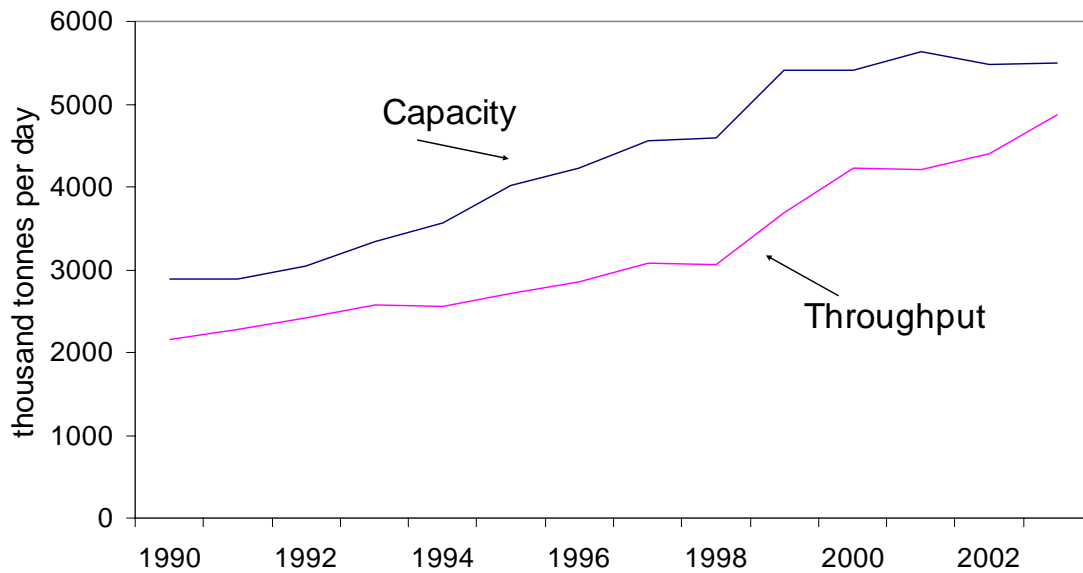


Fig.6 Total capacity and throughput of China's oil refineries, 1990-2003 (BP Statistical Review of World Energy)

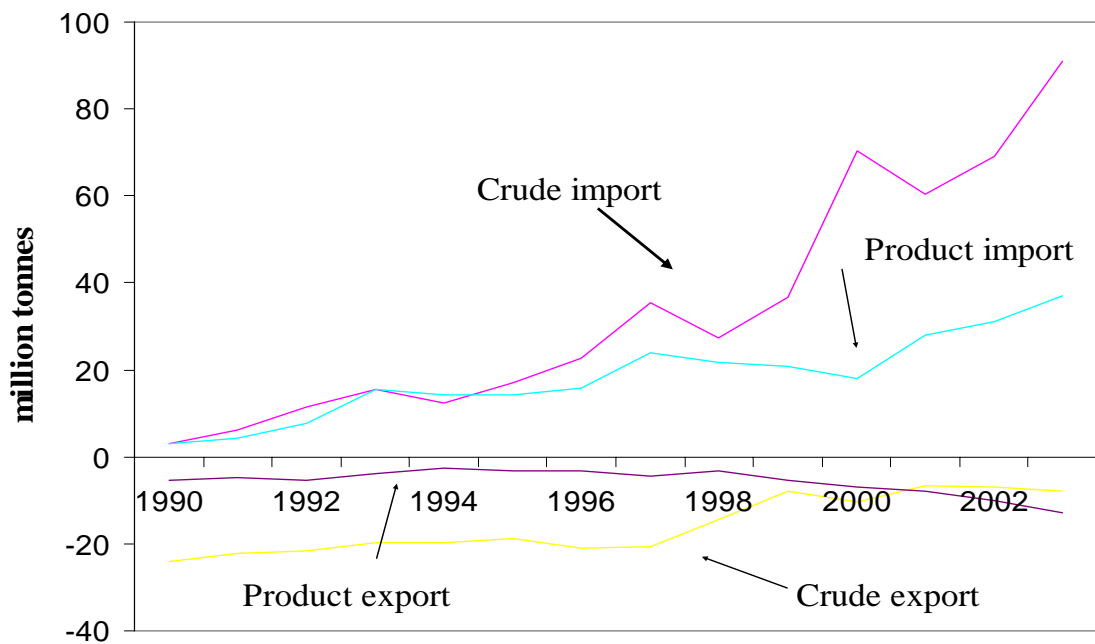


Fig. 7 China's oil imports and exports 1990-2003 (BP Statistical Review of World Energy)

Sources of oil imports

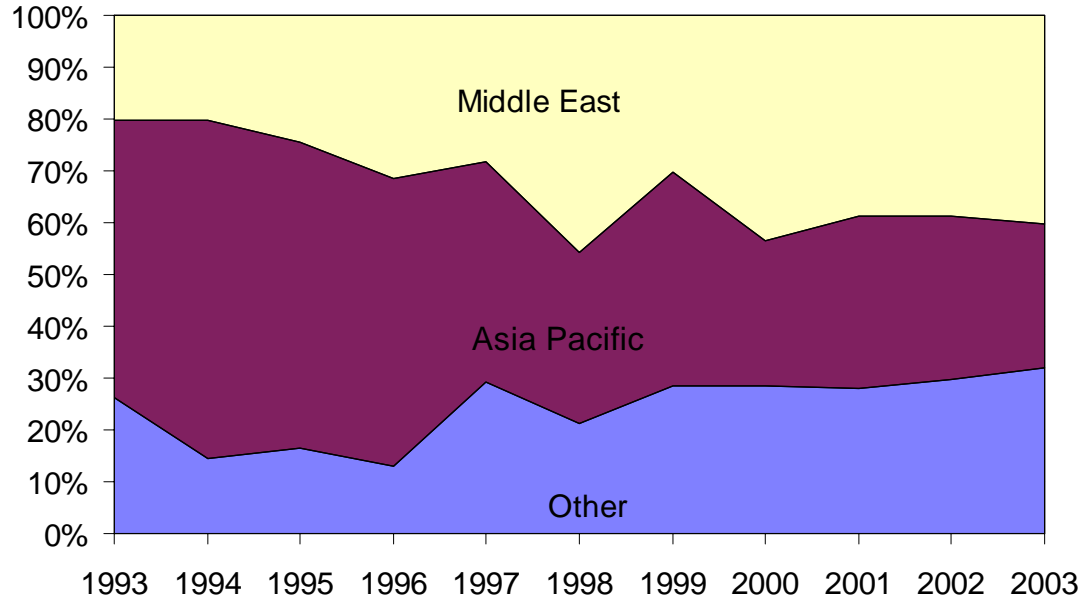


Fig. 8 Sources of China's oil imports, 1993-2003 (BP Statistical Review of World Energy)

Primary energy consumption

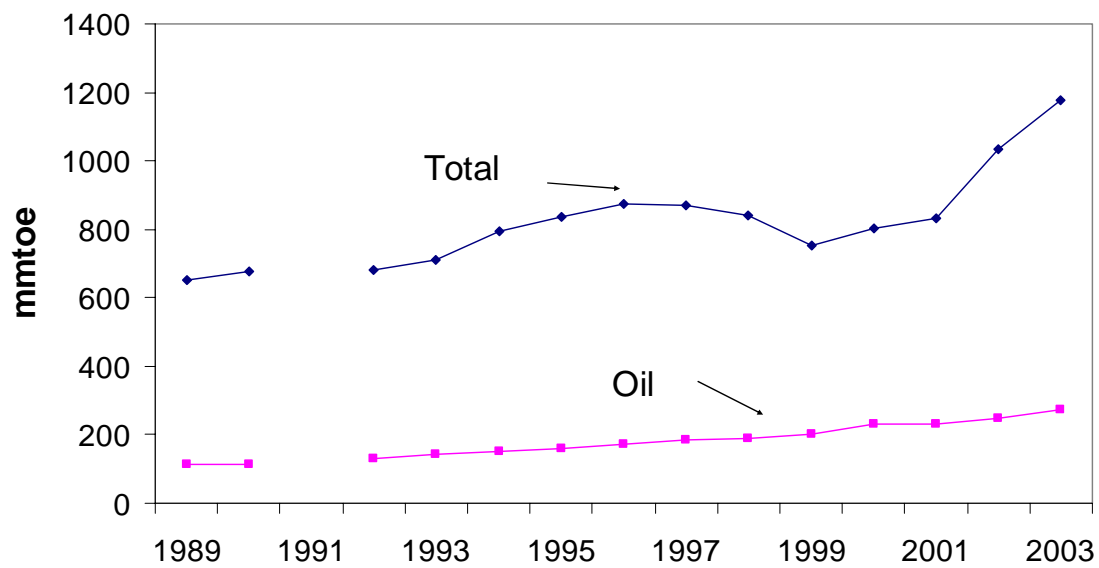


Fig. 9 Demand for primary energy and for oil, 1989-2003 (BP Statistical Review of World Energy)

