

ENERGY SECURITY: PAST ACCOMPLISHMENTS, EMERGING CHALLENGES

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Summary

Secure energy supply is essential to economic growth. It is also a public good that may not be adequately supplied by the market alone. This bestows on governments an obligation to develop effective policies in that area. Energy security is driven largely by concerns over a secure supply of oil, which dominates the energy balances and which is heavily concentrated in producing regions away from the major consuming centres.

After a period of complacency since the mid-1980s, oil security is again becoming an important public issue amid concerns about high oil prices and predicted depletion of oil reserves. An assessment of the current state of oil security leads to a conclusion that the risks of supply disruption have not diminished.

Traditional security concerns persist and are complemented by new concerns such as the declining level of emergency stocks and the concentration of oil use in the transport sector. Overall, oil markets continue to be vulnerable to future oil supply disruptions, despite some positive changes in the oil markets and the global economy.

The oil market outlook for the next two decades suggests an even greater need for oil security protection. This is mainly because non-OPEC supply is expected to commence a long-term decline, thereby making the major consuming countries more and more dependent on oil imports from the Middle East and other OPEC countries.

Two other trends implying increasing security concerns are the continued dependence of the rapidly growing transport sector on oil-based fuels, and the greater share of developing countries in global oil use; these countries have no significant emergency oil reserves and are economically more dependent on oil than the developed countries.

These challenges call for continued efforts to maintain and improve the existing emergency response measures, with particular emphasis on the creation of emergency oil stocks in the expanding markets of Asian developing countries.

The economic vulnerability to oil supply disruptions can be reduced through long-term initiatives to: diversify supply sources; develop alternative transport fuels; improve cooperation between oil producing and consuming countries; and promote free trade and investment in the energy sector. Such measures cannot eliminate the threat of disruptions, but can substantially limit the resulting economic damage.

Another major challenge facing the energy industry will be to reconcile the objectives of economic growth and energy security with the need to preserve the environment. Some, but not all, measures to enhance oil and energy security also contribute to the achievement of sustainable development. These interactions need to be carefully considered in the formulation of future economic policies.

1. Introduction

Over the past few decades, energy security has been one of the main goals of public policy, co-existing and often competing with such other fundamental goals as economic development and environmental protection.

The issue is of paramount importance to the global economy because energy is one of the key inputs, along with capital, labour, and knowledge, into all economic processes. It is a source of power, heat, and mobility that is indispensable for the normal functioning of any modern society.

The energy sector is an important part of the developed economies, accounting for significant portions of their GDP and employment.

The need for strong and effective public policies in this area stems from the fact that, just like a healthy environment, energy security is a public good which is not properly valued by the market and the benefits of which are available to all whether they pay for it or not. Consequently, the market may tend to produce a level of energy security that is less than optimal from society's point of view.

Energy security is commonly defined as a reliable and adequate supply of energy at reasonable prices. The meaning of reliable and adequate supply is rather

straightforward: it simply means uninterrupted supply that fully meets the needs of the global economy. The interpretation of reasonable prices is somewhat less clear as it changes over time and is perceived differently by energy producers and consumers. In general, however, it means that prices are cost-based and determined by the market, based on the supply/demand balances.

Since these balances can swing in either direction, security concerns may equally relate to inadequate supply or demand. However, most public discussions, this article including, concentrate on the supply side and, particularly, on the external supply sources over which the consuming countries have much less control compared to their domestic supply sources. In this context, an oil crisis becomes tantamount to a disruption in oil supply on a scale that is large enough to significantly affect the international oil markets.

Furthermore, the concept may have many different dimensions. The political dimension principally means the freedom to pursue sovereign foreign or economic policies without being hostage to the interests of energy producing countries. From the military point of view, the issue revolves around ensuring sufficient supplies of jet fuel, fuel for marine bunkers, and other fuels for military purposes.

At the technical level, security concerns may relate to the capacity and reliability of power grids, or the integrity of oil and gas pipelines. For the economists, the concerns are primarily about the macroeconomic impacts of high energy prices, and the danger of economic losses resulting from potential shortfalls in energy supply. The latter dimension is the main focus of this article.

Energy security concerns are, and probably will remain for several decades, largely determined by oil security concerns. First, oil remains by far the largest source of primary energy, accounting for about 40% of energy consumption. Second, oil is by a large margin the most massively traded source of primary energy, accounting for two-thirds of energy trade. Third, oil reserves are less abundant and less evenly distributed than those of coal or natural gas.

Moreover, oil demand is concentrated in the developed countries, whereas production is concentrated in a small number of developing countries. This makes the oil market much more amenable to cartel control compared to most other commodity markets. Indeed, OPEC has substantial market power thanks to its 40% share in global oil production and an 80% share in proven oil reserves.

Concerns over oil security probably reached their peak during the 1970s when the world economy struggled to overcome the damaging effects of the oil crises of 1973–74 and 1979–80. These effects included higher inflation, substantial GDP losses, and higher unemployment.

The issue has recently returned to the public eye on the heels of dramatically higher oil prices and new predictions of imminent depletion of oil reserves. Is this renewed public concern over energy security a fleeting phenomenon that is likely to disappear with OPEC's waning production discipline? Or is this the beginning of a new era marked by

consistently higher prices, and growing vulnerability of consuming countries to future oil supply disruptions? Is the current state of oil security adequate and if not, how can it be improved?

It has been 40 years since the creation of the Organisation of Petroleum Exporting Countries (OPEC) and just over 25 years since the first major oil crisis that ravaged the global economy and led to the establishment of the International Energy Agency (IEA) as a global security watchdog. Oil prices are again above US\$30/bbl for the first time in a decade, and there are warnings from some geologists who are predicting that we are soon to run out of oil.

This article first reviews the evolution of oil markets and its implications for oil security. It then attempts to assess the current state of oil security by examining changes in the geopolitical situation and in emergency response potential. Furthermore, it examines the oil market outlook and its implications for existing and emerging security challenges. The final two sections discuss key strategic initiatives to meet these challenges, and the effects of these initiatives on sustainable development.

2. Evolution of the Oil Markets

The recent history of the global oil markets can be broken down into three distinct periods.

2.1 The Period of 1960–1973

The first period from 1960 to the oil crisis of late 1973 was characterized by low and stable oil prices, burgeoning oil demand due to robust economic growth, oil supply controlled by a handful of multinational companies, and little concern for security of oil supply.

During that period, world oil demand tripled from 20 million barrels per day (Mb/d) to almost 60 Mb/d, of which OECD demand accounted for two thirds. With most OECD countries lacking domestic production, and North American oil production stagnating, OECD countries became heavily dependent on imports from the Middle Eastern OPEC countries.

2.2 The Period of 1973–1986

The first major oil crisis of 1973–74 crisis had profoundly damaging effects on the global economy, ending earlier rapid growth and triggering a period of turbulence and structural adjustments. This second period lasted until the mid-1980s, and was characterized by the nationalization of oil industries in most major Middle East oil-producing countries, rapidly rising oil prices, and ensuing economic slowdown.

These developments have given rise to strong concerns not only about oil security but also about the general depletion of natural resources that was so forcefully expressed in the declaration of the Club of Rome.

Against this background, the US Secretary of State, Henry Kissinger, called together the Washington Energy Conference of February 1974, which led to the setting up the IEA in November 1974. The IEA countries undertook to reduce their dependence on oil through increased domestic oil production, substitution away from oil, and improved energy efficiency.

New oil fields came on stream in Alaska and the North Sea, nuclear energy and coal replaced much oil in electricity generation, and energy saving measures were steadily introduced. As a result, OECD net oil imports were reduced from a peak of some 27 Mb/d in the mid-1970s to 16 Mb/d in the mid-1980s. The supply security of IEA countries was also improved with the building of emergency stocks, the development of demand restraint, and other emergency measures.

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Biographical Sketch

Janusz Bielecki is a Polish-born Canadian, with Masters degrees in International Law (University of Warsaw, 1983) and Energy Economics (University of Calgary, 1987). After graduation, he worked for five years as Analyst and Senior Analyst at the Alberta Petroleum Marketing Commission in Calgary. Subsequently he worked as Supply Economist for the Canadian National Energy Board in Calgary, and since December 1995 has been employed as Principal Administrator at the International Energy Agency (IEA) in Paris. At the IEA he was responsible for testing and improving emergency response measures, analysis of the oil market situation, and the implications for security of oil supply. In 2001 he joined the Energy Charter Secretariat in Brussels as Transit Expert. This involves support for ongoing negotiations on the Transit Protocol and advice on issues related to energy transit and trade.