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## Introduction

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### Michael Wesley

Australian Institute of International Affairs,  
32 Thesiger Court, Deakin ACT 2600, Australia  
E-mail: M.Wesley@griffith.edu.au

**Abstract:** Oil prices have more than quadrupled since early 2004, yet this rise in prices differs from previous oil shocks in 1973–1975 and 1980–1981. This oil shock is a demand-driven rise in price, there is a recognition of the environmental impact, and no crisis behaviour has occurred. A trend towards market guidance of the energy supply provides for energy security through the absorption of disruption by the energy market, the convergence of the interests of suppliers and consumers and global economic interdependence.

**Keywords:** energy security; oil prices; global energy market; climate change.

**Biographical notes:** Wesley has his PhD in International Relations from the University of St. Andrews. His interests include Australian foreign policy, transnational security threats and state responses, Asia Pacific regional institutions and international security. He is currently Director of the Griffith Asia Institute at Griffith University, Chair of the Research Committee of the Australia Institute of International Affairs and Editor of the *Australian Journal of International Affairs*.

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### 1 Introduction: Australia's energy security

We are currently living through the third energy shock of the postwar era. Oil prices have more than quadrupled since early 2004 – a scale of increase similar to that of the first oil shock (1973–1975) and double that of the second oil shock (1980–1981). But there are three important differences between the current situation and the previous two oil shocks. Whereas the previous two were supply-side shocks, the main drivers of the current oil price hikes are on the demand side. The world's growing thirst for oil, particularly in rapidly developing China and India, has combined with cyclical under-investment in exploration and refining capacity to drive up the price of oil in ways that make a subsequent price decline, as occurred on the previous occasions, extremely unlikely. There are supply-side issues here too: disruptions to Iranian and Iraqi supplies, instability in Venezuela and Nigeria, and hurricanes in the Gulf of Mexico. But the demand-side pressures are unlikely to abate. China's oil consumption doubled over the past decade and India's increased by two-thirds; and given their rapid economic growth, the currently low energy consumption per capita (12% and 6.5% of the USA's and 56% and 30% of the world's average for China and India, respectively) will see an inexorable increase in their thirst for oil. The US Department of Energy estimates that China's consumption of oil will increase by 156% by 2025, and that India's oil consumption will rise by 152% over the same period. The proportion of oil and gas in the total energy mix of

Asia's developing economies is projected to rise, and most major economies in North, Southeast and South Asia will rely on imports of oil and gas. Given these demand-side pressures, even those unconvinced by the arguments over peak oil are concerned about energy security.

Another difference from the previous oil shocks is that there is now a near-total acceptance of the severe environmental consequences of fossil fuel use. In a very short space of time, the process of global warming and its consequences have come to be accepted as a fact by overwhelming majorities in most western and many non-western countries. At the same time, the carbon-trading schemes developed prior to the Kyoto Protocol have now revealed their shortcomings as a mechanism for curbing carbon emissions. Alternative sources of energy that produce fewer emissions have led to renewed interest in nuclear energy as a cheaper and cleaner (in carbon emissions) option. Japan, China, India, Indonesia, the USA and several European countries have signalled their intention to build new nuclear power plants in the coming decade. This has led to increasing demand for uranium, after over a decade of sagging demand and oversupply.

The third difference is that governmental and societal reactions to the current oil shock have been completely different from their reactions to the previous oil shocks. Demand for petrol has shown remarkable inelasticity to price: surveys suggest that consumers are concerned more with availability than price. As a consequence, the conservation urge has been muted, and we have witnessed none of the crisis behaviour seen during the previous oil shocks, such as queuing for petrol. Business has not responded as in the 1970s, with significant investment in energy conservation, new fuels or significant new investment in exploration and refining. Also, states have been supine relative to their reactions to the previous shocks. Thus far, no new international institutional responses have been championed, and no major national initiatives (apart from rhetoric and discussion) have been launched. Neither have there been any significant international tensions over energy supply and pricing.

Each of these aspects of the third oil shock brings important implications for Australia's energy security. As a modern economy, Australia is subject to what economists call the 'hysteresis effect': whereby modern economies have become so dependent on fossil fuels they are unable to do without them; and their ability to access them at an affordable price has come to be seen as an entitlement, and indeed as a facet of state security. Australia's economy has become so interdependent domestically and internationally that the disruption of energy supplies could lead to major economic damage and social dislocation. In such a situation, it is worth looking at how sensitive Australia would be to the disruption of energy supplies. The figures show that just under half of all energy consumed in Australia is petroleum and similar derivatives; the remainder is electricity (just under a quarter), gas, coal and biomass. Australia is currently about 80% self-sufficient in its consumption of petroleum and gas products. The other good news is that about two-thirds of its petroleum and gas imports are sourced from its Asia-Pacific neighbours, from comparatively stable countries such as Vietnam, Indonesia and Papua New Guinea. Worries over external supplies of oil and gas are therefore somewhat off. It is projected that Australia's dependence on petroleum and gas imports will rise as domestic production declines (by 6.65% over the next decade according to ABARE projections) and as domestic consumption rises. Also, as nearby stable producers such as Vietnam and Indonesia develop they will increasingly consume their own hydrocarbon production, necessitating Australia looking to less stable Middle Eastern suppliers for its oil and gas imports.

Australia, like most developed and rapidly developing economies, is unlikely to be able to reduce its growing dependence on fossil fuel imports to any meaningful response in the near future. Nor is it within Australia's power – just as it is not in any other hydrocarbon-importing country's power – to achieve absolute security of its hydrocarbon supplies by establishing complete control over sufficient hydrocarbon-producing assets and the intervening supply routes. Therefore Australia, like all other participants in the flow of global energy, has an absolute interest in promoting and sustaining the robustness of the global energy market.

The long-term trend over several decades has been to move away from exclusive, long-term statist arrangements for energy supply towards open global energy markets. The historical movement has been towards the market, in which it is market presence and position, and the ability to secure contracts, rather than territorial access or state-to-state deals that delivers energy security. Cartels have lost their ability to manipulate prices after the 'reverse oil shock' of the 1980s, a loss of market power due to a combination of conservation efforts, the development of alternative energy sources and the discovery of new oil fields. Prices are no longer determined by deals between producers and distributors, but rather by spot markets and futures contracts negotiated openly and competitively.

The increasingly free market in energy, when backed up by measures such as strategic petroleum reserves and regional crisis-sharing arrangements, provides security for importing economies in three ways. First, the energy market diversifies risk and provides the capacity to absorb disruptions through the price effect. Fossil fuels are a fungible commodity, and in the conditions of an open market, all consumers absorb an equal part of a supply disruption through paying the same, increased price. The recent track record of the global energy economy in providing such security is impressive. Since 2002, the market has absorbed the effects of three major supply disruptions due to instability in Venezuela and Nigeria and the war in Iraq, with some help from demand weakness and restraint in major importers and a willingness of Saudi Arabia to boost capacity.

Second, the experience of the 'reverse oil shock' and the dependence of most oil exporters on socially determined target incomes from energy exports has led to a significant convergence of interests between producers and consumers in maintaining affordability and stability in global energy markets, and in the ongoing affordability of production and consumption. Energy exporters, while happy to enjoy the increased rents of temporary price spikes, worry about the effect of long-term price rises on the diversification of energy sources and demand restraint. This convergence of producer and consumer incentives complements the risk-spreading mechanism of the global energy market, making major producers such as Saudi Arabia more willing to return to the traditional role of 'swing producer' to flatten price fluctuations.

The third security mechanism provided by the global energy market derives from the growing interdependence among national economies, and between the energy market and global trade in other commodities and services. In other words, economies in Asia require energy to fuel their export-led development, which in the main is provided by growing trade intensities with European, North American and other Asian economies. An energy embargo against any of these major economies would cause it to stall, with inevitable knock-on effects for other major economies. Thus, under current conditions of economic interdependence, it is impossible for any major economy to energy embargo another without itself suffering major economic losses.

The papers collected in this special issue examine different aspects of the issue of energy security from an Australian perspective. They were first discussed at a Symposium on Australia's energy security hosted by the Australian Institute of International Affairs and the Australian Homeland Security Centre in Canberra in October 2006. The commentaries by Australian Foreign Minister Alexander Downer, Opposition Spokesman Martin Ferguson, US Embassy official Matt Matthews and energy industry professional Stephen Brophy provide an immediate insight into the policy issues affecting Australia's energy security, as seen by the practitioners. Four refereed articles then look at energy security from a number of angles. Richard Leaver examines the role of energy in Australia's foreign, defence and trade policies. He uses an historical survey of Australia's energy production and exports to demonstrate that Australia's energy resources have repeatedly placed it in a distinctive relationship to major developments in the global energy security picture. The discovery of Australia's oil and gas reserves and its coal reserves have occurred at fortunate times, suggests Leaver, a development that has fostered a certain policy somnolence within the Australian government and society. He suggests that Australia's energy market liberalism may need to be revised considerably in a global energy market that could succumb in the near future to market failure.

Barry Naughten explores the broad patterns of complex energy interdependence among East and South Asia's rapidly growing energy consumption and Greater West Asia's increasingly dominant hydrocarbon supplies. The desire of the former for supply security, and the latter for demand security, has led, and will continue to lead over time to growing energy linkages within the Asian land mass, a development that will inevitably bring with it parallel economic, political and social linkages. As Naughten demonstrates, a range of USA's interests and perceptions are implicated in these developments, as well as the rising concern over rising Asian powers' contributions to global warming. Naturally, Australia has major interests in averting a confrontation between China and the USA, such as that which could be instigated or exacerbated by energy and environmental security issues.

Xu Yi-chong provides a detailed snapshot of the energy needs and energy policy determinants of a key country – perhaps the key country – affecting Australia's energy security, China. China's demand for energy is already affecting the global energy market and the energy security of all its participants. As Xu points out, this fact is not lost in China, as Beijing strives to enact its 'peaceful development' policy – the rise to wealth and power without triggering a self-defeating aggressive counter-reaction from its neighbours or other powers. The stakes for China are high. And yet, Xu shows, there are serious impediments to Beijing's ability to forge a coherent strategy for managing China's energy needs.

Andrew O'Neil explores what will arguably be the next great resources boom for Australia: the increased mining and export, and perhaps enrichment and waste storage, of uranium for civil nuclear power. Australia possesses the world's largest recoverable deposits of uranium, and thus stands to gain substantial export earnings from rising uranium demand. For any energy exporter, the ability to make dependable profits from those energy exports entails locking in demand security for that resource. The civil nuclear industry enjoys the advantage of being the cheapest and most reliable alternative to fossil fuels as a generator of base-load power, but still struggles with a legacy of safety and environmental concerns. Australia and other uranium producers have a small window of opportunity to promote civil nuclear energy's current advantage over other

nonfossil fuel sources, before other options are developed and become commercially viable. O'Neil argues that Australia's emerging market imperatives imply a conflict with its long-standing commitment to nuclear nonproliferation, particularly in the light of USA's moves to redefine aspects of the nuclear supply regime and its recent civil nuclear deal with India.