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OIL AS A DIPLOMATIC WEAPON:

THE STRATEGIES AND POLITICS OF BREAKING DEPENDENCY ON ENERGY NEEDS BY MIDDLE LEVEL DEVELOPING COUNTRIES WITH TECHNOLOGICAL CAPACITY.

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A dissertation submitted to the Faculty of Arts, University of the Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of Master of Arts.

Johannesburg, 1997.

ABSTRACT

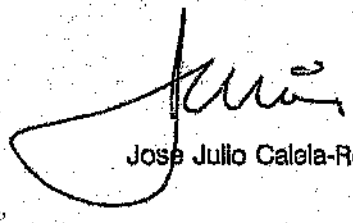
Faced with the potential threat of oil embargoes imposed by producer countries for political reasons, the consumer countries reacted by creating different alternatives which granted them some energy independence and security of supply by using alternative products and technologies available in their own countries.

Can a middle level developing country break out of the cycle of dependency in the area of energy?

This dissertation investigates the strategy developed and implemented by South Africa between 1973 and 1993, which invested heavily in the generation of fuel extracted from coal in order to rescue its country from crisis and support it through critical periods of history.

DECLARATION

I declare that this dissertation is my own unaided work. It is submitted for the degree of Master of Arts from the University of the Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination in any other University.



Jose Julio Calcia-Rodrigues

6th day of November 1997.

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INTRODUCTION

The future of the less developed countries is one of the most pressing issues of international politic economy in our era, and the resolution of this issue will probably affect the future of the planet. The intense desire of the majority of the human race to escape its debilitating poverty and join the developed world, is a determining feature of international politics. Yet in the final decades of the twentieth century, bitter controversy exists regarding the causes of and possible solutions to, this problem.[1]

The structuralist argument (or what became known as the Singer-Prebisch theory) is that the world economy is composed of a core or centre of highly industrialised countries and a large under-developed periphery[2]. Technical progress that leads to increasing productivity and economic development is the driving force in this system, but technical advance has different consequences for the industrialised centre of the non-industrialised periphery due to structural features of the less developed economies and to the international division of labour inherited from the past.

Samir Amin, a structuralist theorist, and former professor at the Dakar University and director of the Institute of African Economic Development and Planning, suggests that "today about 75 per cent of the under-developed countries' raw material exports come not from "traditional" low-productivity, but from "modern" high-productivity

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[1] Robert Gilpin. *The Political Economy of International Relations* Ch 7, p 263.
[2] See Paul Prebisch. *Towards a Dynamic Development Policy for Latin America.* New York, 1963

processes and sectors, as in mining, plantation agriculture, to say nothing of, in our day, petroleum. In this sense, the production of raw producers' goods need not *per se* be so different from that of industrial producers' goods"[3]. Moreover, the industrialising countries such as Britain and the United States also produced important amounts of raw materials and exported them - the former coal and the latter cotton and wheat - in the course of their development.

By the 1960's, liberal assumptions about the development prospects for many LDCs came under intense criticism from a number of scholars, especially in Latin America. These critics of the liberal model of development were primarily from the ECLA[4]. Among the earlier critiques is the work of Raul Prebisch, which provided a significant momentum for the dependency perspective and its interpretation of the development dilemma among LDCs, as dealt with in Chapter 1. *The Economic Survey of Latin America - 1949* by the Economic Commission for Latin America (ECLA) marked the birth of the ECLA perspective of political economy. Celso Furtado, a non-Marxist dependentist theorist, best represented it in Brazil, and it clearly delineated the specific problematics of peripheral capitalism. The *Survey*, coordinated by Raul Prebisch, developed from evidence that Latin American growth relied directly upon the export sector which furnished the foreign exchange necessary to import manufactures. This centre-periphery structure tended to perpetuate itself, in that its dynamics were controlled by decisions made in the centre and were accentuated by the deterioration of the terms of trade. In this context,

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[3] *L'accumulation a' l'echelle mondiale*. Paris, 1970, p.44

[4] ECLA, Economic Commission for Latin America, founded in 1949.

only national industrialisation would be capable of breaking the vicious cycle of under-development[5].

A promoter of UNCTAD[6] and its first secretary general, Prebisch argued that the development dilemma in Latin America was inextricably linked to factors outside of the region. Prebisch was especially critical of the existing international division of labour and free trade system. He and others (Andre G. Frank, Theotonio dos Santos, F. Henrique Cardoso) among Marxist and non-Marxist anti-imperialists, argued that the international trade system reinforced the LDCs' role as producers of primary products and raw materials, while the developed countries continued to prosper as producers of industrial products[7].

This term of trade pessimism, as dealt with in Chapter 1, has come to be known as the Prebisch-Singer thesis, after the two famous development economists who explored its implications in the 1950's[8]. They argued that there was and would continue to be a secular decline in the terms of trade of primary-commodity exporters due to a combination of low income and price elasticities of demand. This decline resulted in a long-term transfer of income from poor to rich countries that could be combated only by efforts to protect domestic manufacturing industries through a process that has come to be known as import substitution.

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[5] Bertha K Becker. *Brazil: A New Regional Power in the World-Economy*. Cambridge, 1992 p.10.

[6] UNCTAD is a body of the United Nations whose primary objective is to promote international trade and commerce with a principal focus on trade and balance of ment problems of developing nations.

oup of 77 countries at UNCTAD in 1964 formed a loose coalition - the Group ..? - to express and further their collective interests in the world economic system. Today there are more than 100 countries in that group.

[8] Michael P. Todaro. *Economic Development*. New York, 1997. p. 429

One dependency theorist in particular has focused a good deal of attention on the effects of imperialism in the Third World. Andre Gunder Frank, a Marxist dependentist theorist, rejected the Marxist notion that societies go through different stages or modes of production as they develop. However, he supported the imperialism thesis that connections between developed and developing regions of the world resulted in exploitation of peripheral regions by metropolitan capitalist countries.[9]

The structuralists, under the leadership of Raul Prebisch, believed that a reform of the international economy and a development strategy based on import substitution would be a solution to these problems[10]. Unfortunately for the developing countries, the number of commodities whose supplies can be effectively controlled is rather small[11].

Nevertheless, the resolution of the energy question is intimately related with the transformations carried out in the international economic sphere. Rapid transitions in the ever-greater search of energy resources by the international consumers caused a profound alteration in terms of dependencies, leading the world industrial economy to depend more on scarce sources of energy. A state is politically dependent when its power structure and institutions are controlled from outside, and economically dependent when exports and imports are necessary for its survival.

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[9] David N Balaan. *Introduction to International Political Economy*. New Jersey, 1996. p. 71.
[10] Robert Gilpin. Op. cit. p. 295
[11] W. Arthur Lewis. *The Evolution of the International Economic Order*. Ch.5. "Commodity Police" Princeton, 1978. p.27.

Energy has come to assume a dominant position within the broad eco-political agenda. It is not hard to see why, because energy, in its various forms, is synonymous with economic development and therefore with wealth. Consequently, access to and control of energy resources has become a central concern of governments as well as of those involved in the processes of industrial production. There is, moreover, one source of energy, which outstrips all the others in its importance - oil, as dealt with in Chapter 3. In 1984, oil accounted for 39 per cent of the total world primary energy demand. This fact would not in itself place oil on the international agenda since, were it the case that consumers of oil could satisfy their energy needs from their own resources, the likelihood is that oil would remain an issue of greater significance in domestic rather than in international terms. However, this is not the case. Oil has become an issue in world politics as a consequence of the imperatives of geology, geography and the patterns of global economic development which have created a situation whereby the producers of oil are not its major consumers.

In 1973, a number of Arab nations imposed an oil embargo on the United States and its allies in an attempt to influence US policy with respect to Israel[12]. The oil embargo of 1973 was a momentous event for the States of the Arabian Peninsula as well as for the world economy. Arab oil producers discovered that their petroleum could be used as a diplomatic and political weapon in the Arab-Israeli conflict as dealt with in Chapter 5, and oil consumers were brought to a sudden recognition of their growing dependence on Middle Eastern oil[13].

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[12] Alan Randall, *Resource Economics*, Chapter 16, "*The Energy Crisis of the 1970's*". New York. p. 13.

[13] William L Cleveland. *A History of the Modern Middle East*, Part 4. Chapter 19. *Conclusion*. Oxford, 1994 p.396.

Only the oil crisis of the 1970's headed by OPEC would lead the international players to re-orientate their energy policies from oil[14], to different energy resources. The coal[15] alternative does not solve all the problems faced by the dependent countries, since it does not compensate all the uses of oil as liquid fuel. South Africa, the unique case in the whole world, due its coal and technology availability, chose the coal alternative. Natural gas and nuclear energy do not present very optimistic perspectives. The first because of the establishment of strong dependence links between the producer and the consumer, and the second due to the difficulties it presents relating to the high costs of installation of technological infrastructures, enrichment of uranium and the need for a high initial investment associated with a reduced dimension of the national markets of less developed countries.

After 1973 and during the OPEC decade, the Western industrial countries sought to reduce their dependence on foreign suppliers of oil. For example, in February 1974, US President Richard Nixon proposed to "re-establish [US] capability for self-sufficiency" by 1980 and called for "an acceptable pattern of world trade in petroleum"; and the new conservation measures and a shift to alternative sources of energy (alongside an economic recession) did, in fact, combine to push down the demand for oil.

A shift to alternative energy sources contributed to the reduced reliance on OPEC oil. Coal, for example, again became a major source of US energy. Similarly, Japan increased its imports of coal to meet a growing proportion of its electrical generation and industrial

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[14] See Figure 12
[15] See Figure 17

needs, and China relied heavily on coal as its primary source of fossil fuel. Elsewhere, nuclear power became an alternative. The French, for example, increased their electrical generation through nuclear power more than seventeenfold between 1973 and 1986, to help reduce their dependence on imported oil. The German government encouraged a shift from oil to natural gas.

Faced with the threat of oil embargoes imposed by producer countries for political reasons, South Africa reacted by creating different alternatives which granted it some energy independence and security of supply by using alternative products and technologies available in its own country, as dealt with in Chapter 6. In December 1974, one year after the Arab oil embargo, the South African Minister of Economic Affairs announced the decision taken by the Cabinet to increase the oil-from-coal production[16]. The new plant would produce more than ten times the amount of petrol and petroleum products than the existing oil-from-coal plant, and would be one of the largest industrial projects ever undertaken in South Africa.

South Africa with a moderate aspiration to become a great world power with medium economical, technological, educational, and social levels, and having extensive territory, wanted to free itself from this form of economic imperialism -which was used by the oil cartel in 1973 - when the oil cartel intended to reach political aims acting in the supply continuity of strategic energy resources[17].

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[16] Petra Wessels, *Crescendo To Success*, SASOL 1975-1987, Cape Town, 1990 p.12.

[17] As Machiavelli wrote: "One should ask if a ruler has enough resources to be able, if necessary, to look after himself, or whether he will always be dependent on having alliances with other rulers". *Selected Political Writings*. Chapter Ten. p.34.

Whereas in 1986, the Middle East produced nearly 22 per cent of the world's oil, it consumed only 3,8 per cent. In contrast Japan, with scarcely any energy resources, produced less than 0,05 per cent of the world's oil and consumed 7,1 per cent. As a result of this, oil became a key commodity in international trade and, as consumers sought to established secure resources of supply, as South Africa had done, so the conditions were created under which "oil politics" could develop.

Indeed, it was against this backdrop that the politics of oil forced themselves to the top of the world's political agenda in the 1970's and 1980's. That they did so reflected a complex interweaving of trends and events in several centres and involved a variety of State and non-State actors. On the one hand, the large oil multinationals, for long the dominant influence in the oil industry, were confronted during the 1950's and 1960's with declining profits as the price of crude oil fell. At the same time, the rise of nationalism in the Third World[18] affected the attitudes of the oil producing States, which began to demand higher revenues from, and more control over, their oil resources. The main manifestation of this latter development was the enhanced role played by the oil producers association, the Organisation of Petroleum Exporting Countries (OPEC). Established in 1960, with an original membership comprising Venezuela, Kuwait, Iraq and Iran, OPEC was initially largely ignored by the oil companies and failed to act as a cohesive entity in promoting the often-divergent interests of its

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[18] The World Bank classified as Third World the present 145 developing countries of Asia, Africa, the Middle East and Latin America, mainly characterised by low levels of living, high rates of population growth, low income per capita and general economic and technological dependence on First World economies. It considered as First World the now economically advanced capitalist countries of Western Europe, North America, Australia, New Zealand and Japan. These were the first countries to experience sustained long-term economic growth.

members. By the beginning of the 1970's however, the map of world oil power was assuming a different shape. In part, this was due not only to a strengthening of the demand for oil but also to changing political attitudes among producers, mostly clearly indicated by the actions of the Qadhafi regime, which seized power in Libya in 1970 (ousting the pro-Western government of King Idris). Libya began to seek control over the supply and price of its oil which, since the closure of the Suez Canal in 1967, had become of major importance to the West[19]. Against this backdrop, and in the wake of decisions made at a meeting in Caracas in December 1970, OPEC demonstrated a capacity for collective action in exercising greater control over the price and supply of oil. Initially, the strengthening role of OPEC was not unwelcome either to the oil companies, who saw its actions as having a beneficial effect on the profitability of oil, or to the US government, for whom the prospect of enhanced energy costs for its economic rivals in Western Europe and Japan was not displeasing.

However, it was soon clear that OPEC could use its newly found strength through control over supply and price to threaten the economic security of the advanced industrialised States. The dramatic 400 per cent rise in the price of oil in the wake of the 1973 Arab-Israeli war and the embargo on oil exports imposed by the Organisation of Arab Petroleum Exporting Countries (OPEC), on selected countries regarded as pro-Israeli showed the potential effects of contrived[20] scarcity at a time when concern was being expressed about the naturally imposed scarcity of energy resources. In the long term, the

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[19] Ian Brownlie. *Principles of Public International Law*. Oxford. 1990 p.276.

[20] See Peter R. Odell *Oil and World Power : Background to the Oil Crisis*. Aylesbury, 1974.

capacity of OPEC to set the price of oil (which again rose dramatically in the late 1970's) was lessened by declining demand in the West and the growing tensions within the organisation itself - particularly those generated by the conflict between Iran and Iraq. At the present time, the slump in oil prices from over $29 per barrel to $9 in 1986 has only partly been reversed. However, the impact of OPEC policies on the Western economies has been and remains profound, constituting a threat which, as Odell suggests, possesses three dimensions:

(1) The challenge to the West's supply of oil threatened the survival of the economies and thereby the legitimacy of governments;
(2) Rapid oil price rises induced high levels of inflation which, because OPEC linked oil to the inflation rate in the West, became even more marked; and
(3) The large trading surpluses acquired by OPEC's oil sales threatened to reinforce the world recession and disrupt the monetary system.

Bearing this in mind, it is clear that the energy crisis exhibited all the features likely to force this issue to the top of the agenda. The essence of its urgency lay in the fact that for the reasons outlined above, the very survival of the Western economic system was brought into question. Moreover, despite the fact that in terms of location, affecting as it did the advanced industrialised States, the energy crisis touched, directly or indirectly, the majority of States in the international system, thus underscoring the extent of the problem. Finally, the impact of OPEC policies were highly visible as an issue at national level, affecting the motoring public and creating powerful domestic political pressures.

Twenty years after it burst into international politics with the 1973 crisis, oil remains a strategic commodity critical in the global balance of power, as dealt with in Chapter 4, but looking towards the 21st century, the perspective has changed radically since those days when it seemed that oil pow- 'ould engulf world politics.

Today, economics takes precedence over politics. Many exporting countries court the international oil companies that they once shunned. The door that was slammed shut in the 1970's is being reopened. In fact, with the prospect of the opening of the petroleum reserves in Russia and many other countries that up to now have been politically inaccessible, oil is truly a global business for the first time since the barricades went up with the Bolshevik Revolution.

In retrospect, the shocks of the 1970's can be seen as the high point of oil nationalism. It was the era when the world economy hung on the comments of oil ministers in the hall-ways of OPEC meetings and when the wrongs of colonialism were to be set right. It was to be the beginning of the "new international order", a zero-sum game that would see a wholesale redistribution of wealth from the North to the South and a diminution of the international stature of the United States and the other major industrial powers.

Much of that is now history. The oil exporters learned that they needed the importers as much as the importers needed them. The producers may have had oil to sell, but the consumers provided the markets. They could also provide, when needed, security. These developments led to new questions about the very meaning of security, and what durable relations were now possible between consumers and producers that would serve the long-term interests of both. The

Persian Gulf War illustrates both the critical position of oil in the global balance of power and the importance of interdependence between producers and industrial consumers. There is also the increasingly important question of how to reconcile energy use and environmental imperatives.

With the collapse of communism, the global security issues that were uppermost have receded. Regional security issues, however, remain. The world is now shifting back to oil dependence on the Middle East, where modernisation and Islamic revivalism are in conflict. Moreover, oil's traditional relationship to other global issues continue. It is intertwined with Russia's transition to free markets and Asia's economic growth. The United States is back on the track of higher oil imports, which means that its foreign policy will remain acutely sensitive to developments in oil-exporting countries.

In the years ahead, the global oil industry will require much higher levels of investment than in the recent past, to meet both energy needs and environmental requirements. Politics, which in the 1970's sundered economic links between producers and consumers, is now permitting the reconnection of those links, though on a different basis. Thus, a new dimension of security between exporting nations and oil companies will come from the interweaving of investment, trade and finance. This reconstruction will mobilise the investment necessary to develop supplies for the next century. As a result, producers will be able to tap into the capital, technology and skills of consuming countries while supplying their markets.

On the other hand, South Africa's government decided to support improvement in the production of the oil-from-coal produced by Sasol

in South Africa. The most notable element on the new technology drive at Sasol Synthetic Fuels is the launch of a programme to replace the original Synthol reactors at Secunda with a new-generation Sasol Advanced Synthol (SAS) reactor at a cost of R860 000 000.00. Synthol reactors converted coal-derived syntheses gas into liquid petroleum products and a variety of petro-chemical feedstock. The new SAS reactor would enhance the high-temperature Fischer-Tropsch process by reducing capital, operating and maintenance costs, increasing productivity and economies of scale and improving thermal efficiency[21].

Chapter 1 of my dissertation deals with economic imperialism and dependence and considering the world resources management and foreign political control, the negative impact of GATT in under-developed countries and its development strategies based on self-reliance and import-substitution as decided by South Africa when threatened by oil embargoes imposed by producer countries for political reasons. In Chapter 2 I analyzed the economic threats posed by the globe's scarce natural resources and the sovereignty over them, and what prompted the oil producer countries to use that important and strategic source of energy as an economic and diplomatic weapon over the dependent consumers. The importance thereof for industry and war is dealt with in Chapter 3. The Southern oil-exporting States acting together in a producer cartel which substituted the former one, as discussed in Chapter 4, formed a very successful new system which controlled the world oil supply, so powerful that it permitted the use thereof as an economic and diplomatic weapon, namely in oil embargoes imposed by Arab petroleum exporting countries in 1967 and 1973-1974 against Western States which directly aided Israel in its

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[21] SASOL, *Annual Report*, 1996. p.4

war with Arab adversaries, as discussed in Chapter 5.

Faced with the potential threat of oil embargoes imposed by producer countries for political reasons, the dependent consumer countries reacted by creating different alternatives which granted them some energy independence and security of supply. In Chapter 6, I deal with South Africa's option. Due to its substantial lack of crude-oil, its coal availability and its technical capacity, the South African government decided to invest heavily in the generation of fuel extracted from its own coal in order to rescue its country from crises and allow in the future, South Africa to more easily defend itself from political pressures and external embargoes.

CHAPTER 1 : ECONOMIC IMPERIALISM AND DEPENDENCE

Latin Americanists representing various branches of the social sciences have produced some of the more provocative work in the globalist tradition. They have come to be known collectively as dependency theorists, and they now include North American and European scholars as well as Latin Americans. Several of these writers were associated in the 1930's with the Economic Commission on Latin America (ECLA) and the United Nations Conference on Trade and Development (UNCTAD). They were concerned with the important problem of explaining why Latin America and other Third World regions were not developing as anticipated[22].

Dependency theory was a popular radical critique of Western capitalist nations in their relations with the Third World during the 1960's and 1970's, and still has its advocates today. The basic idea is that major powers exercised enormous political control over Latin America, Africa and Asia. However, they do this now by the use of economic pressure and by exploiting their superior market positions to extract unfair advantage to international trade.

Beyond the historical studies that are concerned with accumulation and theories of development and under-development, it would seem reasonable to concentrate inquiry on international political economy around theories of imperialism and dependency. The following discussion, summarises the major lines of thought on imperialism and dependency.

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[22] Paul R. Viotti, International Relations Theory. New York, 1993. p.455.

1.1 Economic Imperialism

The common characteristic of the policies we call economic imperialism is their tendency, on the one hand, to overthrow the *status quo* by changing the power relations between the imperialist nation and others and, on the other hand, to do so not through the conquest of territory but by way of economic control[23]. If a nation cannot or will not conquer the territory for the purpose of establishing its mastery over other nations, it can try to achieve the same end by establishing its control over those who control the territory[24].

As Carl von Clausewitz wrote: "War is thus an act of force to compel our enemy to do our will. Force - that is, physical force, ... - is thus the means of war, to impose our will on the enemy is its object[25]".

The nature of economic imperialism as an unobtrusive, indirect, but fairly effective method of gaining and maintaining domination over other nations, is particularly striking where two rival imperialists compete with economic means for control over the same government.

Structuralism argues that a liberal capitalist world economy tends to preserve or actually increase inequalities between developed and le s developed economies. Whereas trade was indeed an engine of growth

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[23] As Sun-tzu said: "... attaining one hundred victories in one hundred battles is not the pinnacle of excellence. Subjugating the enemy's army without fighting is the true pinnacle of excellence". *The Art of War*. Book 3, "Planning Offensives". beginning p.177

[24] Hans J. Morgenthau. *Op. cit.* p.72

[25] *On War*, Chapter One. p.75

in the nineteenth century[26], structuralists argue that it cannot continue to perform this role because of the combined effects of free trade and the economical, sociological and demographical conditions (structures) prevalent among less developed economies in the twentieth century.

The heart of the argument is that the nature of technical advance, cyclical price movements and differences in demand for industrial goods and primary products cause a secular deterioration in the terms of trade[27] for commodity exporters, that is, deterioration of the price the LDCs receive for their commodity exports relative to the prices of the manufactured goods they import from developed countries. In the industrial core, technical progress is ... to arise from the spontaneous operations of the economy and to diffuse throughout the whole economy so that employment displaced by increasing efficiency can be absorbed by investment in other expending industrial sectors. Without large-scale unemployment and with the pressures of powerful labour unions, there is an increase in real wages. Further, monopolistic corporations can maintain the price level despite productivity increases and the decreasing cost of production. The fruits of technical progress and increased production are thus retained in the core economy and are absorbed by a sizeable fraction of the society.

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[26] Bernard Hoekman. The Political Economy of the World Trading System. p.10: "Although trade flows between developing countries regions of the world are much smaller than those involving high-income regions, the volume and growth rate of global trade flows are important because international trade is an engine of growth."

[27] By terms of trade is considered the ratio of a country's average export price to its average import price; also known as the commodity terms of trade. A country's terms of trade are said to improve when this ratio increases and to worsen when it decreases, that is, when import prices rise at a relatively faster rate than export prices (the experience of most LDCs in recent decades). See Michael P Todaro. *Economic Development*. 6th ed. New York, 1997 p.723.

Economic imperialism is less obtrusive and also generally less effective than the military variety and is, as a rational method of gaining power, a product of modern times. As such, it is a concomitant of the age of mercantilism and capitalist expansion[28]. British supremacy[29] in the Arab world was the result of economic policies for which the term "oil diplomacy" is not misplaced. Similarly, the Arab discovery of the political uses of oil has given the oil-producing Arab nations unprecedented power over the industrial nations importing Arab Oil[30]. The agreement of 1979 between the oil producers to raise oil prices is a return to the pre-war mode. The consumers are not a party to the agreement, and are not consulted[31].

The renewed outbreak of war between Israel and the Arab States in October 1973 and the latter's decision to use oil as an economic and political weapon in their struggle, provided the motivation for the accentuation and acceleration of this process[32]. It was a situation in which two of the major industrialised regions of the world - Western Europe and Japan - had not only allowed themselves to become almost entirely dependent on OPEC oil for sustaining their economic systems, but had also failed to take any effective counteraction, even

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[28] Andre Gunder Frank, *Dependent Accumulation and Under-development*. London, 1978, p. XI, distinguished three main stages or periods in this world embracing process of capital accumulation and capitalist development mercantilism (1500-1770), industrial capitalist (1770-1870), and imperialist (1870-1930).

[29] Richard Nixon. *The Real War*. London. 1980. p.75.
"The British first moved into the Gulf in the early 1800's in order to prevent pirates from disrupting their trade. From then until the early 1970's British military power kept order, provided protection and settled disputes in the various sheikdoms dotting the Gulf's coastline"

[30] Hans J Morgenthau. *Politics among Nations*. Part Two, Ch. 5, "*Economic Imperialism*". New York. 1985, p.72.

[31] W. Arthur Lewis. *The Evolution of the International Economic Order*. Princeton, 1978, 26.

[32] Peter R Odell. *Oil and World Power*. 3rd ed. Middlesex, 1974, p.200.

in the light of the deteriorating outlook for the viability of their cheap-energy policies as a result of the changed post-1970 oil situation. Western Europe failed even to take a serious look at the option of an indigenous energy policy opened up by the prospects for North Sea oil and gas production on a very large scale indeed.

The State's power is a function of its dependence on the outside world, at the same time as of its resources and degree of mobilisation. An industry, or an army, can be paralysed by the lack of a raw material or of a particular product.

States rely on each other for resources and commodities that enable them to develop and sustain their economies and the well being of their peoples. This reliance is central to the ideas of leverage and vulnerability. Those who possess them to influence those who do not, can manipulate economic resources.

Nothing in the international system is equally distributed. This, of course, applies to economic resources as well as to the economic requirements of various States; States that possess a surplus (or a monopoly) of resources may achieve greater economic influence; States that lack the resources and commodities they require are more vulnerable to economic influence[33]. The economic resources of States can be used across the whole range of influence mechanisms. The manipulation of economic resources takes many forms. States can use trade, monetary policy, or international organisations to acquire more economic resources or to deny them to their adversaries. These

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[33] Bruce Russett. *World Politics: The Menu for Choice*. 5th ed. New York, 1996. p.151.

resources can then be used to generate additional economic and military resources[34]. The central use of economic techniques for international influence is the exploitation of the vulnerability of other States. Few States can even attempt a policy of autarky, because in one way or another, all States have economic needs they cannot satisfy. Thus they are vulnerable to the influence of States that have leverage of some kind - what they need.

1.2 The word resources management

The challenge to humankind is to manage effectively the resources of the planet so as to maximise the satisfaction derived from them. The challenge has a time dimension that is absolutely critical. If humankind were willing to accept the extinction or demise of civilisation within a few generations, resource extraction could proceed without restraint, and the harvest of renewable resources could exceed equilibrium rates and thus bring about the demise of those resources. The resources of immediate concern are components of highly complex systems. The earth's resource system is a vast, complex, dynamic, interactive system. Attempts to modify individual components of that system will result in changes elsewhere in the system. Yet human understanding of this system is very, very limited and so the consequences of manipulating components of the system are not easy to predict. Often these consequences manifest themselves in unexpected ways and are observed some considerable time after the initial stimulus. Cause and effect are difficult to link. The effects of new actions are difficult to predict, this is a major source of concern in a time of rapid

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[34] Idem, p.152

technological progress. Another may see as adverse what is seen as beneficial to one individual. Any decision will influence many people whose well being will be affected differently and whose power to participate in decision-making will vary widely. Thus, there are few resource-related decisions that are truly private, in the sense that all their impacts are confined to the individuals who voluntarily agreed upon the decisions.

1.3 Public interest

It is perhaps only a minor exaggeration to claim that today's major disagreements about the limits of government power to coerce individuals in the attempt to pursue the public good are essentially replays of much earlier debates among social contract theorists. Today's clashes between the individualists and defenders of "the public interest" are foreshadowed in the arguments of social contractarians John Locke[35] and Jean-Jacques Rousseau[36]. As England was emerging from feudalism, the old patterns of authority were breaking down, and the relationships among the church, the monarchy, the aristocracy, and everyone else needed redefinition. Thomas Hobbes[37] constructed a social theory rooted in individualism. The individual, not society, was considered the fundamental entity, and the only truly fundamental right was that of the individual to preserve him or her and to choose the means of self-preservation. Thus, governmental authority is derived from individuals, who voluntarily delegate to it some

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[35] See *Two Treatises of Government*. Cambridge University Press, 1988.
[36] See *Social Contract*
[37] See *Leviathan*. Everyman's Library, London. 1987.

rights that are fundamentally theirs[38].

There are many arenas in which conflicts may be resolved. These include the legislature, the executive branch, the judiciary, and the market-place.

Public decisions are often not final. That is, they can often be reserved at some tolerable cost (notable exceptions, of course, include the irreversible destruction of natural systems). So those disappointed by a decision will often continue to battle, seeking its reversal in the same or different arenas. Given the multiplicity of conflict-resolution arenas, the open process in which agendas are set and conflicts are assigned among arenas, the lack of finality in many decisions, and the wide range of self-interested participants in the process, the notion of "the public-policy decision maker" loses its credibility.

The problem of power forbids the sacrifice of any vital piece of the machinery of production. The negative impact of the energy crises on the welfare of ordinary consumers were to be minimised, and redistribution from citizens to domestic oil producers was to be limited to politically acceptable levels. Obviously, the foreign and domestic political objectives were in direct conflict. If the government wishes to reduce the quantity of energy demanded as a means of reducing imports, it is counter-productive to protect the ultimate consumers of energy from large price increases[39].

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[38] See Andre Vincent. *Modern Political Ideologies*. Ch. "Individualist". Oxford. Blackwell, 2nd ed. 1995.

[39] Raymond Aron. *Peace and War*. Ch. 9 "On Resources", p.255. Malabar, Florida, 1966.

1.4 Political control exercised by major powers

Oil may have once been a matter for exploitation and political control by the First World; it is now clearly a weapon of considerable power in the hands of the oil States against their former exploiters.

Nevertheless, the theory, by pointing out how irrelevant formal political control may be, does help to show how long-lasting are the chains of empire as they were cast during the great development of colonial economic exploitations by the European powers in the 19th century. Combined with the spread of multinational companies outside the control of any Western governments, companies that frequently do control the raw resources of poor countries, the general notion of economic dependency cannot be ignored.

Poor countries are dependent on rich countries when the two-way aspects of interdependence are minimal. They are unequally vulnerable; there is only a very lopsided interdependence[40]. Acts by the government of developed centre countries or by MNCs based in those countries affect what happens in peripheral[41] countries much more than almost any action in the peripheral country (especially a small, poor one) can affect what happens in a rich industrialised country. Poor countries are dependent, penetrated, vulnerable - hardly the unitary independent actors of some realist theorists. Nearly all developing countries are now deeply penetrated by and in important ways dependent on, the industrial world and especially the world economy. Penetration can occur in a variety of economical, political,

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[40] Bruce Russett. Op. cit. p. 364

[41] Centre in dependence theory, the First World, the economic developed world. Periphery in dependence theory, the Third World.

and cultural modes and at different periods in a country's development.

The main problem of the unequal North-South system of relations among the developed market economies and the Third World - the less developed economies of Africa, Asia and Latin America - is dependence[42]. Dependence usually takes one or more forms. First, it can be trade dependence. A second form of dependence is in the area of investment. A third form of dependence is financial. Usually, these economic dependencies - trade, investment, finance - are reinforced by other types of relationships with the North: cultural ties, alliances and treaties, more informal political ties, and military links ranging from military aid to military intervention. In political terms, the dependent Southern country is subjected to the political decisions made by institutions in which it has little say.

Article (13) of the United Nations Charter declares that one of the purposes of the United Nations is "to achieve international co-operation in solving international problems of an economic .. character", and the poorer States in the world have often used meetings of the United Nations organs as an occasion for urging the richer States to help the poorer States to develop their economies. On such questions United Nations organs have no power to take decisions which are binding on member-States; they can only make recommendations; for instance, the British government spends more than 14 2/3 times as much on defence as it spends on overseas aid[43]. However, the fact that it has

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[42] Joan E Spero. *The Politics of International Economic Relations*, London, 1990 p.13.

[43] Michael Akehurst. *A Modern Introduction to International Law*. 6th ed. London, 1987 p 236.

become standard practice for richer States to give aid to poorer States is quite a remarkable development, when one remembers that before the Second World War no government provided aid to help the economic development of other States on a continuing basis (as opposed to temporary relief after earthquakes, famines and similar disasters). The quadrupling of the price of oil in late 1973 aggravated the economic problems of most of the poorer States, but it strengthened their political positions because the newly rich oil-exporting States supported the demands of the poorer States against the richer industrialised States.

As Jan Tinbergen wrote: " .... But there should also be redistribution at the international level through development co-operation. How much should the industrial nations make available to the developing countries? In 1970, the UN General Assembly decided that 0.7% was needed. By 1991, the actual average for the OECD countries was only 0.33% but the UN target figure is itself too low. In the 1970's and 1980's, the gap between the developing and industrial countries widened. To prevent this would have required aid equivalent to 1.3% of GDP. As the world economy becomes increasingly integrated, so the redistribution of world income should become similar to that within well-governed nations[44]".

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[44] *Human Development Report 1994*, United Nations Development Programme, New York, 1994, p. 88

1.5 Dependence theory

The dependency theory arose in the mid-1960's, partially as a response to the apparent failure of the structuralist analysis and prescriptions. Dependence theorists argue that the import-substitution industrialisation strategy of the structuralists failed to produce sustained economic growth in the less developed countries because the traditional social and economic conditions of the LDCs remained intact; indeed the neo-colonialist alliance of indigenous feudal elite with international capitalism had been an increased maldistribution of income, domestic demand too weak to sustain continued industrialisation, and ever-greater dependence on those multinational corporations of developed economies that took advantage of the import-substitution policies. Less developed countries had lost control over their domestic economies as a consequence and had become more and more dependent on international capitalism.
The major component in dependence theory included analysis of:

(1) the nature and dynamics of the capitalism world system,

(2) the relationship or linkage between the advanced capitalist countries and the less developed countries, and

(3) the internal characteristics of the dependent countries themselves.

All dependency theorists maintain that underdevelopment is due primarily to external forces of the world capitalist system and is not due to the policies of the LDCs themselves. Both LDC under-development and capitalist development are the product of the expansion of

international capitalism[46]. The historical situation has not fundamentally changed; the international balance of economic and political power continues to be distorted in favour of the developed capitalist economies. Although the dependent less developed economy may advance in absolute terms, it will always be backward in relative terms.

The third major component of dependency theory is a quasi-Marxist analysis of the dependent economy; it is this aspect of dependency theory that best distinguishes it from what its adherents regard as the reformist, bourgeoisie tion of the structuralists.

A central proposition in dependency theory is that the relationship between the advanced capitalist societies and those at the periphery of the world political economy is exploitative. From this view point, under-development is not a stalled stage of linear development, a question of pre-capitalism, retarded or backward development, but rather a structural position in a hierarchical world division of labour. The very term "dependency" highlights the extent to which the movement of economics and politics in poor countries is conditioned by a global economy dominated by others. Hence dependency theorists aver that we need only to look to contemporary relations with other societies to explain under-development[46].

Samir Amin[47] has shown the two tendencies of capitalism. In surveying changes in the international division of labour, Amin argued that South

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[45] Robert Gilpin. Op. cit. p.236
[46] Ibid, p.137
[47] *The Future of South Africa*. Journal of Southern African Affairs. 11.3.1977.

Africa represented a backward form of capitalism. It depicted "the hideous picture of what the world imperialist system would increasingly be if continued to develop according to its logic". According to Amin, the division of the world imperialist system between dominant imperialist centres and dominated peripheries had led to the over-development of the tertiary sector of the world economy and its concentration at the centres of the system. This was made possible by super exploitation in the periphery of the primary sector. For Amin, therefore, South African capital had largely been forced by the political hegemony of the local bourgeoisie to establish an integrated auto-centred structure, and not an externally orientated structure as in the Third World. Capital investment in the South African formation has been a fact running through the world historical phase of capitalist development up to the time when United States finance capital abounds[48]. The South African economy ranges from the affluence and sophistication of gleaming shopping malls and an advanced financial services industry to levels of poverty associated with developing countries. South Africa has one of the most unequalled distributions of income in the world. The dominant source of economic activity is centred on minerals and energy[49].

The first major stream, called the neo-colonial dependence model, is an indirect outgrowth of Marxist thinking. It attributes the existence and continuance of Third World under-development primarily to the

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[48] Derrick Chitala, *SADCC: Prospects for Disengagement and Development in Southern Africa*. London, 1987. p.15

[49] The Economist Intelligence Unit. *South Africa: Country Profile*, 1996-1997. London, 1977

historical evolution of a highly unequal international capitalist system of rich country/poor country relationships[50]. Whether because rich nations are intentionally exploitative or unintentionally neglectful, the co-existence of rich and poor nations in an international system dominated by such unequal power relationships between the centre (the developed countries) and the periphery (the LDCs) renders attempts by poor nations to be self-reliant and independent difficult and sometimes even impossible[51].

In contrast with the "stages of growth" theory that developing States would attain autonomous self-sustaining growth as they mature, the "development of under-development" to the historical expansion of capitalist systems that "effectively and entirely penetrated even the apparently most isolated sections of the under-developed world". *Dependentistas*, as they were frequently called, viewed the penetration process as fuelled by capitalism's need for external sources of demand and profitable investment outlets[52].

Dependency theorists, proceeding in most instances from a Marxist[53] perspective, argue that "class" is a much better unit of analysis than

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[50] Fernando Henrique Cardoso and Enzo Faletto (1979) contended with the idea that capitalism promotes under-development. To the contrary, they argued that capitalist development can occur in dependent situations. They believed that dependent capitalist development has become a new form of monopolistic expansion in the Third World. Development thus takes place within the new dependency.

[51] Michael P. Todaro, *Economic Development*, p.81, 1994.

[52] Ibid., p.137

[53] Dependency theory builds on Lenin's theory of imperialism, but it goes beyond Lenin by specifying the nature of imperialism more completely and by accounting for changes that have occurred since Lenin wrote his treatise at the beginning of the century. (Charles W. Kegley, *World Politics*, New York, 1995, p.136)

"state". They believe that international relations divide the world horizontally (into nation-states) while the reality of political and economic life can be better understood in vertical terms by depicting the capitalist class and their domination of the working classes[64].

Specifically, dependency theory asserts that the dependent country is fastened to the world economy by a transnational class linkage.

The structure of the global political economy essentially enslaves the less developed countries of the "South" by making them dependent on the nations of the capitalist core of the "North". Theotonio dos Santos, one of the Marxist dependentist theorist, pointed out:-

> "... By dependence we mean a situation in which the economy of certain countries is conditioned by the development and expansion of another economy to which the former is subjected. The relation of interdependence between two or more economics, and between these and world trade, assumes the form of independence when some countries (the dominant ones) can expand and can be self-sustaining, while others (the dependent ones) can do this only as a reflection of that expansion, which can have either a positive or a negative effect on their immediate development."

Dos Santos sees three eras of dependence in modern history: colonial dependence (during the eighteenth and nineteenth centuries), financial-industrial dependence (during the nineteenth and early twentieth

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[64] Theodore A. Couloumbis. *Introduction to International Relations*. 1990. p.27.

centuries) and a structure of dependence today based on the post-war multinational corporations[55].

Contemporary perspectives of dependency reveal the contrasting forms of dominance and dependence among the nations of the capitalist world. Capitalism may be either progressive or regressive. Dependent nations may develop as a reflection of the expansion of dominant nations or under-developed as a consequence of their subjective relationships[56].

Those who employ dependency in the analysis of development and under-development[57] often focus on the problem of foreign penetration into the political economies of the Third World. Outside economical and political influences affect local development and reinforce ruling classes at the expense of the marginal classes.

Chilean economist Osvaldo Sunkel, one of the non-Marxist dependentist theorists, elaborated on this interpretation:-

> "Foreign factors are seen not as intrinsic to the system, with manifold and sometimes hidden or subtle political, financial, economic, technical and cultural effects inside the under-developed country ... Thus the concept of "dependencia" links the post-war evolution of capitalism internationally to the discriminatory nature of the local process of development, as

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[55] David N Balaam. *Introduction to International Political Economy*. p.73. 1996

[56] Ronald H Chilcote. *Theories of Comparative Politics*. Oxford. 1994, p.236.

[57] Fernando Henrique Cardoso argued that dependent capitalist development was evident in the under-developed world. Cardoso and other also began to link their theories of dependency to Lenin's theory of imperialism.

> we know it. Access to the means and benefits of development is selective; rather than spreading them, the process tends to ensure a self-reinforcing accumulation of privilege for special groups as well as continued existence of a marginal class."[58]

Marxists[59] as well as non-Marxists[60] might find that these definitions depict the world today. At some time, it is clear that there is no consensus about a theory of dependency. Indeed no common theory exists; the literature on dependency moves in many directions, and critics set forth a multitude of positions. Some critics attack the nationalist inclinations of some advocates of dependency who oppose outside influence. Many argue that attention to external considerations of dependency avoids considerations of the external class struggle, and others believe that dependency obscures the analysis of imperialism.

The non-Marxist theories are based on several positions. One position advocates turning inward to develop by promoting national autonomy through State control and planning of the political economy under the direction of petit-bourgeois intelligentsia and the industrial bourgeoisie. Under the modernising State, the bourgeoisie will become a progressive influence and support national interests as capitalist development diffuses itself into rural areas and as economic and political policies restrict the influence of foreign interests. A dual society, one advanced and modern and the other backward and

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[58] Osvaldo Sunkel, *"Big Business and 'Dependencia'"*, Foreign Affairs, 50 April 1972.

[59] The branch of the Marxist dependentist theorists includes mainly: Paul Baran, Sweezy, Ruy Mauro Marini, Andre Gunder Frank, Walter Rodney and Theotonio dos Santos.

[60] The branch of non-Marxist dependentist theorists includes mainly Paul Prebisch, Celso Furtado, Osvaldo Sunkel, Pablo Gonzalez Casanova and Manuel Correia de Andrada.

feudal, characterises the developing nations, which in turn represent a primary producing periphery whose resources tend to be appropriated by the industrial centre[61].

Celso Furtado developed this position by examining inequalities in Brazil throughout historical periods and tracing the shift of major economic activity and production from the North-East to the Centre-South region where Sao Paulo is located. He believed that the State should intervene to rectify this imbalance and to move capitalist development along its future course[62].

Dependence theory was a popular radical critique of Western capitalist nations in their relations with the Third World during the 1960's and 1970's and still has its advocates today. It derives from a theory of economic imperialism, and is also used as a critique of foreign aid programs. The basic idea is that major capitalist powers like the USA and leading members of the European Communities have not really given up their powers of colonialism[63], but in fact exercise enormous political control over Latin America, Africa and Asia. However, they do this now by the use of economic pressure and by exploiting their superior market position to extract unfair advantages in international trade. The theory holds that as most of the finance for industrial and agricultural development in the Third World has to come from the

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[61] Ronald H Chilcote. *Theories of Comparative Politics*. 2nd ed. Oxford. 1994. p.358

[62] See *Economic Growth of Brazil: A Survey from Colonial to Modern Times*. Berkeley, 1963.

[63] Gilpin pointed out that the external transfer of wealth from colonies to colonial powers couldn't explain the distribution of wealth and power in the contemporary world.
Moreover, international economic relations have existed primarily among the more advanced countries themselves. Robert Gilpin, op. cit.

money markets in the developed capitalist States, that development is tied to the economic interests of the West.

J. Samuel and Arturo Valenzuela criticised the "modernisation perspective" that economists, anthropolo ts, sociologists and political scientists had developed in the post-war period to explain the failure of "new nations" to reach the "economic take-off" point with an infusion of Western foreign aid. Such a perspective, in their view, was an outgrowth of the tradition-modernity dichotomy of nineteenth century European sociology that saw culture itself, resistant to change, as the main obstacle to economic modernisation. Dependency theorists, note the Valenzuelas, reject the modernisationist assumption that genuine development can result only through an appropriate response to stimuli from exogenous sources according to the uniquely successful Western model, as if development and Westernisation were identical processes. They also reject the notion that the national society is the proper unit of analysis in this context. The Valenzuelas argue that different levels in the transition from tradition to modernity cannot explain differences in levels of economic growth achievement. Nations and regions can be analyzed only by reference to their locus in the world political-economic system whether they are closer to the core or to the periphery[64].

Although capitalist economies possess a powerful incentive to expand, it does not follow that this expansion must take the form of colonial

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[64] James E Dougherty. *Contending Theories of International Relations.* New York, 1990, p.250.

imperialism. Economic expansion through the market mechanism is also possible; there is a wide range of economic and non-economic factors that are of significance in affecting the type of expansion. Furthermore, capitalist expansion by itself is not necessarily responsible for war; it may aggravate relations among States and even lead to minor conflicts, but major wars are due to the clash of more fundamental strategic and vital national interests.

The argument that capitalist economies have a powerful incentive to expand through the mechanisms of trade and investment does not support the position of some contemporary dependency theorists that capitalistic imperialism has purposely underdeveloped the so-called Third World[65].

A State is politically dependent when its power structure and institutions are controlled from outside, economically dependent when exports and imports are necessary for its survival[66]. The degree to which a country is dependent on foreign economic, social and political forces is related to its size, resource endowment, and political history. For most Third World countries, this dependence is substantial. In some cases, it touches almost every facet of life. Most small nations are highly dependent on foreign trade with the developed world. Almost all small nations are dependent on the importation of foreign and often inappropriate technologies of production. This fact alone exerts an extraordinary influence on the character of the growth process in these dependent nations[67].

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[65] Robert Gilpin. Op. cit. p.283.
[66] See C. Lewis. *An Essay on the Government of Dependencies.*
[67] Michael P. Todaro. *Economic Development.* 6th ed. New York, 1997, p.35

The theory is even taken by some to the point that outright foreign aid gifts are suspect because the funding is simply used to develop Third World economies in such a way that they remain totally dependent on markets in the First World. While it is clear that economic power is vital, and that the Western investors will try to maximise their advantage, it is far from clear that poor and over-populated countries have any alternative, at least in the short term, to exploit their primary products for the Western markets.

There is, after all, nothing fixed about the terms of trade in primary goods.

Theorists focused on the Third World in order to work out a theory of under-development. The idea that the diffusion of capitalism promotes under-development and not development in many parts of the world was embodied in Andre Gunder Frank's *Capitalism and Under-development in Latin America* (1967), Walter Rodney's *How Europe Under-developed Africa* (1972), and Malcolm Caldwell's *The Wealth of Some Nations* (1979). Theotonio dos Santos formulated the idea of the "new dependency" to explain the traditional relationship of nations in these areas to the advanced capitalist countries, especially the United States; this form of dependency was especially characteristic of the multinational firms in the period after the Second World War. A variation of this theme appeared in Ruy Mauro Marini's notion of "subimperialism", a situation in which some Third World countries could serve as intermediaries for imperialist nations in the exploitation of other countries. Finally, Fernando Henrique Cardoso advocated the idea of associated dependent development, whereby some capitalist growth was possible in dependent countries. These ideas appeared as radical alternatives to the North American literature

on development, but they eventually became absorbed into the mainstream of political science, despite the objections of Gabriel Almond, Samuel Huntington and some other comparativists who responded to the criticism that largely discredited their earlier theories[68].

The financial dependence of the developing countries on the developed is not due to their poverty, since even the richest countries have been borrowers[69]. The developing countries' dependence for finance derives ultimately from their high rate of population growth and intermediately from their high rate of growth of urbanisation - around 5 per cent per annum or more - to which this population growth gives rise. Arthur Lewis considers two disadvantages of financial dependence that were already evident before the First World War. The first of these disadvantages is the vulnerability of debtors to international recession and the second is the speed with which the debt charges mount. Exporters of primary products are vulnerable to international recession, whether they borrow or not, because the price of their exports swing very widely over the course of the trade cycle.

In the non-industrial periphery, however, technical progress is introduced from the outside and is restricted primarily to the production of commodities and raw materials that are exported to the core. Inflexible structures and immobile facts of production make adaptation to price changes impossible. Increased productivity in the primary sector, a shortage of capital due to a low rate of savings and a elite consumption pattern imitative of advanced countries all combine to

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[68] Ronald H. Chilcote. Op. cit. p. 11.
[69] W. Arthur Lewis. Op. cit. p.43.

increase the level of national unemployment. With surplus labour in primary occupations and the absence of strong trade unions, the real wage in the periphery economy then declines, transferring the fruits of technical advance in the periphery economy to the core economies via depressed prices for commodity exports.

As Samir Amin argued, the under-development was not a backward phase of development but a modern phenomenon of world-wide capitalist expansion responsible at the time for the development of the centres and the under-development of the peripheries. He borrowed the terms "centre" and "periphery" from the early writings of Prebisch but gave them a new content. Samir Amin argued from the outset that under-development was produced by the structural adjustment of societies that were not in at the beginning of the qualitative leap represented by the constitution of the national bourgeois State and an autocratic capitalist economy on the basis. The societies were subjected to the external expansion of the bourgeois States. He stressed the fundamental distinction to be made between peripheries and new centres. They have a different social dynamics[70].

Dependency theorists differ from orthodox analysts in the industrialised Western States most fundamentally on two points. First, orthodox analysts of economic and political developments who considered the problems of newly independent nations after the Second World War tended to assume that the path to economic and political success for those countries was essentially the same path followed by rich, industrialised countries in the North. The rich countries had started down that path earlier, so naturally they were more advanced than

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[70] *Re-Reading the Postwar Period.* New York, 1994. p.63.

newly independent countries. The way for the latecomers to catch up was to emulate the early birds. They had been democratic, so less developed countries should strive to be. So-called heavy industries had been leading sections of their economies decades earlier, so less developed countries should focus their efforts on such industries. They had developed under capitalist, market-oriented systems, so that was the type of system best suited to the needs of the less developed. If, briefly, less developed States would adopt development strategies as similar as possible to those tried-and-tested strategies devised by Great Britain, the United States, and the other rich countries, before too long they would progress down the same path blazed earlier by those countries, reach a take-off stage, and enjoy the fruits of modern prosperity.

Globalists and dependentists

An alliance of convenience and common interest exists between the centres of international capitalism and the clientele class that wields power in the dependent economy[71]. This parasitic or feudal-capitalist alliance is composed of agrarian interests, the military, and the indigenous managers of the multinational corporations, who have a vested interest in maintaining the linkage with international capitalism and in preventing the development of an independent and powerful industrial economy through social and political reforms. Dependency theorists argue that this co-opt elite resists the loss of its privileges and is kept in power by the forces of world capitalism and also that the strategy of import-substitution supported by the structuralists merely

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[71] Robert Gilpin. Op. cit. p. 286.

increases the foreign hold over the economy.

Once those that are under-developed have been penetrated by the advanced capitalist States, continues the dependency argument, the inherently exploitative linkages that bind them together are sustained by the local elites within the penetrated societies. The fortunes of these privileged aristocrats is tied to the dominant powers; therefore, they are co-opted by their desire to maintain their privileged positions in their own societies. Third World local elites perpetuate their countries' domination and dependence by acting domestically in ways that favour their international connections. They put personal welfare over that of their country.

Dependency theorists also reject dualism as a description of Third World countries' economic and social systems. Instead of a division into "modern" and "traditional" sectors, they maintain that in fact there is only a single international capitalist economy that determines social, economical, and political outcomes throughout the global economy.

Globalists assume that it is not only useful but also imperative to view international relations from a historical perspective[72]. It is only through an examination of history that one can understand the current environment within which world politics take place. For many globalists, Marxists as well as non-Marxists, the defining characteristic of the international system is that it is capitalist. Some States and societies benefit from this capitalist system, others do not. Furthermore, the evolution of the world capitalist system supposedly accounts for the creation of States, not just their behaviour. While

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[72] Paul R Viotti. op. cit. p. 9

realists and pluralists tend to see States as a given, utilising them as independent variables, some globalists view States as dependent variables.

Although globalists recognise the importance of State-as-actors international organisations, and transnational actors and coalitions particular focus of their analysis is on how these and other factors as mechanisms of domination by which some States, classes, or manage to benefit from the capitalist system at the expense of others[73]. More specifically, globalists are typically concerned with the development and maintenance of dependency relations among northern, industrialised States (in North America, Europe, Japan) and the poor, under-developed, or industrially backward Third World or less developed countries (LDCs) of Latin America, Africa and Asia. The basic argument is that these latter States and societies are under-developed not because they have failed to develop a capitalist economic system or because they are poorly integrated into the world capitalist system. On the contrary, it is not a matter of too little capitalism but too much. Far from being placed outside the mainstream of the world capitalist system, LDCs have become an integral part of it. The structure of the global political economy has developed in such a manner - intentionally and unintentionally - as to keep the Third World countries under-developed and dependent on the rich Northern States. As part of the world capitalist system, LDCs cannot choose their own path towards economic and political development. Autonomous development in these circumstances is impossible.

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[73] Idem p.9

1.6 Development strategy based on self-reliance

Both structuralists and dependency theorists have advocated a development strategy based on national self-reliance. For structuralists, this has meant an emphasis on import-substitution strategy, rapid industrialisation behind high tariff walls, and a reform of international institutions. Dependency theories go further and argue that autonomous self-reliant development requires a social transition from a feudal capitalist society to a socialist one. Domestic equity can be achieved, they argue, only by lessening or actually breaking the links with the world capitalist economies.

The world looks quite different from the view point of dependency theorists. True, industrialised countries started down a path to wealth before the Third World countries. But dependency theorists believe that less developed States must follow a different path just because richer countries got that head start. Less developed countries must now compete in a system dominated economically, politically, and militarily by States that have already become relatively rich and powerful. This different situation, according to the dependency theorists, calls for quite different strategies from those used in earlier days by States such as Great Britain and the United States. In fact, to use development strategies of the capitalist variety espoused by Great Britain and the United States is to play right into the hands of capitalists in the richer, industrialised countries and to ensure less developed States a subordinate and (according to some dependency theorists) relatively impoverished status in the world economy[74].

[74] James Lee Ray. *Global Politics*, 6th ed. Princeton, 1995. p.283

Dependency theorists believe that such a strategy would perpetuate a process that orthodox economists and historians in the North tend to overlook when they analyze the historical experience of the currently wealthy industrialised States. That process transfers wealth from poorer regions and countries to wealthier countries. Such a redistribution of wealth, in the view of most dependency theorists, is a more or less natural consequence of capitalism. Orthodox economists and historians in the developed States must acknowledge that colonialism and imperialism existed, but they understate the extent to which economic progress in the rich Northern countries were based on exploitation of the currently under-developed regions. In brief, dependency theorists assert that rich countries got rich, to an important extent, by making poor countries poor. Here again, of course, is a factor pointing in the direction of development strategies quite different from t[illegible]sed in earlier epochs. Currently less developed States have no relatively defenceless, untouched areas available for exploitation - the key to success for capitalist States.

The second fundamental disagreement between orthodox scholars from developed countries and dependency theorists (in addition to the one regarding the relevance of development strategies used by First World countries for currently poor countries) involves starkly different estimates of the relative impact of external and internal factors on the process of development. The former asserted after the Second World War that the changes necessary to bring economic progress to less developed countries was largely "internal" to these countries, and most orthodox analysts still believe this to be true. In brief, internal, domestic, political and economic changes are the key to political and economic progress. Dependency theorists do not deny that internal changes are necessary, but from their viewpoint First World analysts

seriously under-estimate the extent to which the problems of less developed countries are caused by factors "external" to those countries and the impact of the international economic and political environment on them.

1.7 Terms of trade and GATT

Economists have of course long recognised that a country, especially a large one, could improve its terms of trade and national welfare through the imposition of a so-called effective tariff or an optimum tariff. The manipulation of tariff schedules on different types of products (commodities, semi-processed and finished goods) or the exploitation of a monopoly position with respect to a particular product or market can enable an economy to improve its terms of trade, as OPEC proved in the 1970's. Large economies can manipulate their commercial and other policies in order to improve their terms of trade, and the less developed countries undoubtedly have suffered from tariffs that discriminate against their exports of semi-processed products. Nevertheless, the costs of resulting constructions on total trade and of foreign retaliation are sufficient to make their overall effects minimal and temporary.

Dependency theorists also argue that the terms of trade involving the primary products on which developing countries depend have deteriorated steadily. This is, the amount of a given raw material they must export to get a manufactured product in return keeps growing[78].

[78] Robert Gilpin concludes "The structuralist idea that the terms of trade for commodity exporters have deteriorated over the long term and that this is the reason for their economic plight is not supported by evidence". Op. cit. Ch.7 p.200

Also, the prices of raw materials and commodities fluctuate in a notorious fashion. Occasionally, the prices of exports from developing countries, such as copper, coffee, or sugar, have been very high, and the producers have experienced temporary windfalls. However, in the next year, the prices of those same products will drop precipitously, and the developing countries that export them suffer grievous balance-of-trade deficits and other painful dislocations in their highly vulnerable economies.

The inadequacy of International arrangements to deal with the economic difficulties of the transition from war to peace was partly offset by attempts to combine special temporary assistance for this purpose with some of the measures for reconstructing a permanent international system[76]. The UK subscribed to the American government's proposal for liberalising world trade through the creation of an International Trade Organisation (ITO) of the United Nations. Since one of the obligations of the members of this body was to agree to abide by the exchange principles laid down at Bretton Woods, its sponsors as one of the key institutions of the new system envisaged the ITO. As long as it was merely a question of devising administrative machinery and preparing a statement of principles, steady progress was made, but when it came to making the scheme a working reality, very little happened. What little was achieved to reduce trade restrictions, was done separately by means of a large number of commercial agreements.

The first important action of this kind after the war took place at

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[76] William Ashworth. *A Short History of The International Economy*. 1880-1950. London, 1952. p.234

Geneva in 1947. While discussions about the formation of the ITO went on there, the representatives of 23 countries conducted tariff negotiations among themselves. The outcome was 123 bilateral agreements which were all embodied in a General Agreement on Tariffs and Trade (GATT)[77]

The most obvious example of exclusion from management of the under-developed countries has been in the major economic institutions of the North -the International Monetary Fund, the International Bank for Reconstruction and Development and the General Agreement on Tariffs and Trade - institutions that were created by the developed countries and reflected their dominant power[78]. This political structure also means that the management decisions made by the North reflect the interests, desires and goals of the North, not those of the South. This adds another dimension to dependency - the feeling among the under-developed countries that not only do they not share in the management of the system but also they do not share in the resources and the benefits of the system, and the system exists to perpetuate the South's dependent status. The impact of dependence is seen as the perpetuation of dependency and under-development.

In a highly interdependent world composed of powerful illiberal economies, the GATT principles of non-discrimination, National Treatment, and Most Favoured Nation may no longer be appropriate[79]. If a greater harmonisation among national economic practices and

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[77] Idem p. 237

[78] Joan E Spero. *The Politics of International Economic Relations*. London, 1990. p.14.

[79] Robert Gilpin. Op. cit. p. 393.

domestic societies does not occur, liberal societies may be forced in their own defence to adopt industrial and other countervailing practices. The question of whether statist societies should become more liberal, or liberal societies more statist, or, as most economists aver, domestic structures do not really matter, has become central to an evaluation of the problem posed by the inherent conflict between domestic autonomy and international norms.

Developing countries were strongly involved in shaping the WTO[80] agreements. They had a significant impact on issues such as GATS[81], textiles and clothing, agriculture, tropical products, TRIMs[82], and dispute settlement. This influence was already manifested at the 1986 ministerial meeting in Punta del Este, where a group of smaller developing and developed economies (the Swiss-Colombian coalition) played a mediating role between the United States, the European Union and large developing countries such as Brazil and India. This marked a sea change: developing countries could no longer be regarded as a bloc. Instead, they pursued their self-interest in a much more open way than in the past[83].

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[80] The World Trade Organisation (WTO) is an international organisation, established in 1995. It is responsible for administering multilateral trade agreements negotiated by its members, particularly the General Agreement on Tariffs and Trade (GATT), the General Agreement on Trade in Services (GATS) and the Agreement on Trade-Related Intellectual Property Rights (TRIPs). Total world trade in goods, services and intellectual property stood at US$ 5 trillion in 1995, of which services and intellectual property accounted for over $ 1 trillion. The WTO's rules and principles establish a set of disciplines regarding the regulatory framework in which the exchange takes place.

[81] General Agreement on Trade in Services.

[82] Trade-related Investment Measure.

[83] Bernard M. Hoekman. *The Political Economy of the World Trading System : From GATT to WTO*. New York. 1995. p. 241.

Although the initial premiss underlying GATT[84] was essentially parity of obligations between rich and poor trading nations, the concept of giving preferential treatment to developing countries existed from the start. It gained prominence in the mid-1950's when a large number of colonies approached independence. Two types of preferential treatment can be distinguished. The first consists of a request for preferential access to rich-country markets through tariff preferences. Such preferences were already in effect, largely reflecting economic relationships built up by France and the UK with their colonies. A second form of preferential treatment consisted of exemptions from GATT rules and mechanisms. Preferences were justified in various ways. One argument was the so-called export pessimism. The fear was that if developing countries relied upon exports for growth, their supply of commodities would exceed what could be absorbed by the world. The resulting predicted decline in the terms of trade were considered to justify trade restrictions by developing countries - in effect, they had to impose an optimal tariff to improve their terms of trade.

Given their reliance on exports of commodities, export pessimism was complemented by the view - persuasively argued by Prebisch - that developing countries needed protection to achieve industrialisation and economic development, and that a new world trade order was required to break the "vicious circle of under-development"[85]. Developing

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[84] Bernard Hoekman, op. cit. p. 52.
"GATT and UNCTAD were frequently treated as rival organisations, as the two entities have similar areas of interest, but differed greatly in terms of their functions, operations and underlying ideology. Interestingly, they co-operate through a joint venture, in International Trade Centre (ITC) which provides export promotion and marketing assistance and related training and consulting services to developing countries".

[85] Bernard Hoekman, Op. cit. p.237.

countries, it was argued, suffered from foreign-exchange shortages requiring protectionist policies to protect their balance of payments. Some as an instrument of exploitation and self-sufficiency also saw international trade as beneficial. More generally, it was argued that development strategies required freedom to pursue import-substitution policies.

The institutional expression of this line of thinking was embodied in the creation of UNCTAD in 1964, and the formation of a political bloc of developing countries in the United Nations called the "Group of 77". One year later, in 1965, developing country demands for special status in the multilateral trading system led to the adoption of a new Part IV of the GATT. Part IV defined non-reciprocity for developing countries. To a large extent the inclusion of Part IV can be seen as a reaction of the GATT contracting parties to the creation of UNCTAD.

These analytical reflections provide a framework for discussing in the next Chapter the economic threats posed by the globe's scarce natural resources and the sovereignty over them, which permitted the oil producer countries to use it as an economic and diplomatic weapon over the dependent consumers of that so important and strategic source of energy.

CHAPTER 2 : ECONOMIC THREATS

Economic threats are without doubt the trickiest and most difficult ones to handle within the framework of national security. If the State is taken as the referent object, then economic security becomes part of the national security agenda. Applying the idea of economic security to the State raises many similar questions to those arising if the referent object is the individual. The simplest view is to equate security with the economic conditions necessary for survival. If the economic criteria for security are raised beyond that, then complex issues arise about the impact of reduced vulnerability on economic efficiency, and thus in the long term about the State's ability to improve, or even to hold, its position in the international system.

2.1 Conflict over the globe's scarce resources

The central problem with the idea of economic security is that the normal condition of actors in a market economy is one of risk, aggressive competition and uncertainty. With the vital collapse of the centrally planned economies as an alternative to market-based ones, the market stands as the dominant model for sound economic practice. The national security is in one sense part of the physical base of the State[86]. If one cannot determine the normal condition of something, and does not know exactly what measures help or hinder it, then it is hard to calculate what actions might pose threats to it.

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[86] Barry Buzan. *People, States and Fear.* New York, 1991. p.126

What might seem a threat in the short term, like oil embargoes or inflated prices, might turn out to be a boom in stimulating more rational energy-pricing policies and more energy-efficient technological developments over the long run.

Even if modern science and technology have given mankind a new consciousness of share values and common problems, this situation is no guarantee of common interest or of a willingness to subordinate selfish concerns to the larger good. On the contrary, modern science and technology may intensify the conflict with the globe's scarce resources.

The maximisation of efforts to attain economic and welfare goals entails the diversion of resources from national security. In a world of scarce resources, where every benefit entails a cost, societies seldom, if ever, choose guns or butter, at least over the long run[87].

It is however more important to inquire whether or not a unified humanity really exists. Unfortunately, it does not. The modern "unified world" has been a creation of the West which has sought to impose its values and way of life on a recalcitrant set of diverse cultures. The unity was shattered economically and ideologically by the Bolshevik Revolution in Russia and by the triumph there (and, after World War II, elsewhere) of a radically different mode of political and economic organisation. The modern revival of Islam and the revolt of other non-western cultures against Western values may point to an even greater schism ahead[88].

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[87] Robert Gilpin. *War and Change in World Politics*. p.19. Cambridge. 1981.
[88] Robert Gilpin. Op. cit.

Within the economic sector, then, economic threats fall very largely within the boundaries of normal conduct, and cannot easily or clearly be linked to the logic of national security. However when the consequences of economic threat reach beyond the strictly economic sector into the military and political spheres, then three somewhat clearer national security issues emerge:-

(1) the link between economic and military capability,

(2) the link between economy and the overall power of the State within the international system, and

(3) the economic threat to domestic stability.The linkages involved are between economic capability on the one hand, and military capability, power and socio-political stability on the other.

The link between economic and military capability is quite specific and well understood. A State's military capability rests not only on the supply of key strategic materials like fuel and energy resources, but also on possession of an industrial base capable of supporting the armed forces. When strategic materials must be obtained outside the State, threats to security of supply can be classified as a national security issue. Threats to such filter quite quickly through into military capability, and can thus almost be seen in the same light as military threats[89].

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[89] William J. Perry, USA Secretary of Defence. *Defence in an Age of Hope.* Foreign Affairs. USA, 1996 : "In the post-Cold War security environment, US strategy for managing conflict rests on three basic lines of defence. The first line of defence is to prevent threats from emerging; the second is to deter threats that do emerge; and the third, if prevention and deterrence fail, is to defeat the threat using military force.".

In a crude, direct way, such vulnerabilities give rise to fears of extortion where States use their economic advantages to extract political concessions. The oil politics of the 1970's raised fears of this type of threat to considerable heights. However, such fears are generally offset by the abundant mechanisms of competitive supply that exist in a global market. South Africa's option was the use of alternative products and technologies available in its own country.

Except in rare cases, the diversity of the system tends to offer alternative suppliers and markets an opportunity to undercut attempts to use economic levers for specific political purposes. Even the rather well placed and well organised oil cartel was defeated quite quickly in this way. Nevertheless, the risk of such vulnerabilities may create a national security rationale for avoiding excessive or asymmetrical dependencies that might offer political opportunities for the use of economic pressure.

Economic threats do resemble an attack on the State, in the sense that conscious external actions by others result in material loss, strain on various institutions of the State, and even substantial damage to the health and longevity of the population. The parallel with a military attack cannot be sustained, however, because while a military attack crosses a clear boundary between peaceful and aggressive behaviour, an economic "attack" does not. Aggressive behaviour is normal in economic affairs, and risk of losses are part of the price that has to be paid to gain access to opportunity for gain. From this perspective, economic threats are self inflicted in as much as a choice is made to participate in a pattern of production and exchange in which such risks are endemic, though there is no escape here from the point that many countries have precious little choice about whether to participate or not

Nevertheless, developments which have recently occurred have had a major impact on the way policy makers are required to interpret a State's security concerns. In other words, contemporary forces have tended to ensure that the military dimension of security is, in many cases, submerged by other, non-military factors, which impinge on the survival of political communities. This, it should be noted, is a very different proposition from that which implies that because "military security" may be relating relatively less significantly, the concern with "national security" itself is diminishing. Rather, a far more complex security environment in which the military dimension is jostled by a range of other factors confronts policy makers. Of course, given the diversity of actors in the international system, it is dangerous to generalise because each is likely to have its own specific circumstances producing a distinctive security agenda. However, even where the military dimension remains very significant (as it does for many States in the Middle East, for example) other non-military elements in the security equation cannot be ignored[90]. There are two key elements in the processes surrounding the redefinition of security: the nature of the issues involved and the means by which security is sought. The security implications of the two issues are indicative of the broadening security agenda. Clearly, the threat to the West's oil supplies produced by the OPEC price rises of the 1970's elevated security of oil supplies to the top of national concerns Unlike the more traditional military aspects of security, which focus on external threats, many current issues touching on national security emphasise

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[90] Brian Hocking. Op. cit. p. 137.

the growing linkages between the domestic and international realms. Enhanced economic expectations on the part of national populations that frequently cannot be met from within a State's own resources may create demands on governments which, if not satisfied, can produce internal instability, and thus increase insecurity[91].

In the non-military sphere, problems relating to management of the Earth's resources and to environmental pollution can only be dealt with on a collective basis. This does not mean that collective initiatives will be forthcoming and that individual action by government is irrelevant to the management of the contemporary agenda. What it does mean, is that the pattern of interactions between the actors influencing and influenced by that agenda, is more varied than in earlier periods.

2.2 Sovereignty over natural resources

The economic order created at the end of the Second World War[92] had been built on the principles of equal and non-discriminatory treatment of all countries in matters of trade and economic relations. Here too, experience was to show that "no matter how valid the principle of the most-favoured nation may be in the trade relations among equals, it is not an acceptable and adequate concept for trade among countries with highly unequal economic power"[93].

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[91] Ibid. p. 139

[92] W. Arthur Lewis. *The Evolution of the International Economic Order.* Princeton, 1978. p.27

[93] Raul Prebisch. *Preferential Treatment : A New Standard for International Economic Relations.*Harvard, 1977.

The principle of permanent sovereignty over natural resources was asserted in the early fifties in order to justify abrogation, or alteration of terms of concessions, secured by foreign companies, by which they were granted extensive rights to extract petroleum or minerals underlying the territories of host States. These concessions were perceived to be "inequitable" as being markedly more advantageous to the foreign concessionaire than to the host State, or as having been granted as a result of duress or undue influence.

The principle of permanent sovereignty over natural resources emerged in the early fifties as the process of decolonisation got under-way, and newly independent States felt it necessary to re-appraise and alter "inequitable" legal arrangements, in the form of concessions, inherited from the colonial period under which foreign investors (mostly transnational corporations with their headquarters in the metropolitan country) were exploiting their natural resources. While permanent sovereignty over natural resources is now recognised as a fundamental principle of international law, the definition of its precise scope and implications remain a juristic task of some importance. This is not only because it is a principle that is undergoing progressive development, but also because it continues to be a seminal source from which rules can be derived to safeguard the interests of developing countries in relation to the utilisation of their natural resources.

A nation with unusually abundant natural resources for its size, as South Africa in this case, however, can enjoy high national income despite a position in the factor-driven stage, though it is not likely to be sustainable indefinitely. Good examples would be Kuwait and Saudi Arabia, which may enjoy high income per capita for decades because of an abundance of oil. Eventually, however, dependence of natural

resources will leave a nation vulnerable to depletion, new foreign sources, or technological changes that reduce or eliminate resource needs. Abundant natural resources also create more subtle problems[84].

Around 25 per cent of world trade involve the import and export of primary products. Many of the world's poorest countries are heavily dependent upon such exports for their foreign exchange earnings. However, the export of natural resources often involves environmental and, sometimes, social costs which do not figure in the national accounting systems[85].

The principle of permanent sovereignty over natural resources has been enunciated and reaffirmed in a series of resolutions of the United Nations General Assembly, culminating in its incorporation in the Charter of Economic Rights and Duties of States (adopted by the United Nations General Assembly resolution 3281 in December 1974). As early as 1952, it was recognised in the United Nations General Assembly resolution 626 of 21 December 1952 that "the right of the peoples to use and exploit their natural wealth and resources is inherent in their sovereignty". The draft Human Rights Covenants proposed by the Human Rights Commission in January 1955 affirmed, in paragraph 3 of Article 1, that "The right of peoples to self-determination shall also include permanent sovereignty over their natural wealth and resources. In no case may a people be deprived of its own means of subsistence on the grounds of any right that may be claimed by other States".

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[84] Michael E Porter. *The Competitive Advantage of Nations*. London, 1990, p. 664.
[85] Kevin Watkins. *The Oxfam Poverty Report*. Oxford, 1995. p. 118.

The text proposed by the Human Rights Commission was modified by the Third Co . ittees of the United Nations General Assembly, so that a "right" was incorporated in the first Article of the United Nations Covenants on Human Rights in the following terms: "The peoples may, for their own ends, freely dispose of their natural wealth and resources without prejudice to any obligations arising out of international economic co-operation based up to the principle of mutual benefit and international law. In no case may a people be deprived of its own means of subsistence."[96]

For developing countries the principle of permanent sovereignty was important because it provided a basis on which they could claim to alter "inequitable" legal arrangements under which foreign investors enjoyed rights to exploit natural resources found within their territories. Such alteration could be effected through an exercise of :

(a) the right to nationalise, that is, to acquire the rights enjoyed by the foreign investor, or

(b) the right to alter certain terms of the arrangements (or to repudiate an agreement entered into with the foreign investor).

The Declaration also provided guidelines on the basis of which developing countries proceeded to establish new legal frameworks for natural resources' development, which are a manifest improvement on the old framework of traditional concessions. Under the traditional concessions, the State was a mere tax-collector receiving certain modest financial payments, while the ownership of the minerals or

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[96] Kamal Hossain. *Legal Aspects of the New International Economic Order.* London, 1980.

other resources stood vested in the foreign investor as did control over operations; thus, all critical decisions, such as those relating to the place and extent of exploration and development and policies relating to production, pricing and marketing were left to be determined by the concessionaire.

The new frameworks have not only ensured more substantial financial payments, but have reserved for the State, ownership of the resources, and incorporated mechanisms which are aimed at developing national capabilities and securing effective control over operations.

For the developed countries and transnational corporations engaged in natural resources development, the new developments are seen as reducing their freedom of action (that is freedom from control by host governments over their operations) and as threatening the stability of contractual arrangements. They retain a preference for arrangements in which host governments seek to maximise financial returns rather than control over operations. They also assert the importance of maintaining stability of contractual relations and in case of nationalisation, of paying to the affected party prompt, adequate and effective compensation.

The principle of permanent sovereignty over natural resources as elaborated in the 1962 Declaration, contains certain guidelines on the basis of which new types of arrangements for development of natural resources have been developed. Paragraph 6 of this Declaration provides that international co-operation for development of natural resources in developing countries, whether in the form of public or private capital foreign investment, should be such as to further their independent national development and should be based upon respect

for permanent sovereignty over their natural resources.

It is to be recalled that the heated controversy arising out of the sudden, major increase in the price of crude oil announced by the oil exporters late in 1973 and the mounting spirit of confrontation that followed, manifested, for example, in the Washington meeting of the big oil consumers in March 1974, and was the immediate cause of the call for the Sixth Special Session of the United Nations General Assembly on raw materials and development. The primary aim of that Special Session held in April 1974 was, of course, to air the collective grievances of the developing countries and to put forward their own counterclaims. Another aim was to defuse the tension and put an end to mutual recriminations with a view to introducing a new and more balanced formula for future international economic co-operation, generally acceptable to the various components of the world community[97].

The Sixth Session did contribute significantly towards the subsequent relaxation of tension and the subsidence of mounting confrontation. Unfortunately, neither that Session nor any of the international meetings which have been convened in its wake, notably the Conference on International Economic Co-operation (CIEC) - the so-called North-South Conference - have been successful in forging conclusively a concrete and mutually acceptable formula for future economic co-operation.

One important aspect of that global debate has been the question of State sovereignty over natural resources. This was logical enough.

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[97] Kamal Hossain. Op. cit. p. 208.

After all, it was petroleum, the natural resource par excellence, which kindled the big controversy in the first place. Thus both the Declaration of the Establishment of a New International Economic Order (resolution 3201) and the Programme of Action thereon (resolution 3202) reaffirm the crucial place of natural resources, and the manner in which they ought to be developed and disposed of both for the benefit of the producing countries and in the interests of the world community at large.

The battle for economic self-determination and permanent sovereignty over natural resources was fought simultaneously in the post-World War II era on two fronts: Concrete political and economic action by some of the developing nations individually or collectively, and the theoretical refinement of the underlying legal concepts and principles within the United Nations system.

Without going as far as ascribing to the United Nations resolutions on sovereignty over natural resources a "cause and effect" impact on subsequent major events in the developing countries, such as the major oil exporters, it is not to be denied that these resolutions were for them a rich source of inspiration, self-confidence and moral support[98].

Unfortunately most, if not all, of these countries are not able to meet the enormous costs of petroleum exploration on their own. Consequently, the task has been, and will have to continue to be, carried out with outside assistance. This assistance can be sought

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[98] Kamal Hossain. Op. cit. p. 210.

either from the international private sector, the international public sector, bilateral arrangements with other countries or a combination of two or more of the above.

2.3 Collective Security System

In recent years, theorists of international relations have tended to stress the moderating and stabilising influences of contemporary developments on the behaviour of States, especially the increasing economic interdependence among nations and the destructiveness of modern weapons. These important developments have encouraged many individuals to believe that peaceful evolution has replaced military conflict as the principle means of adjusting relations among nation-states in the contemporary world. This assumption has been accompanied by a belief that economic and welfare goals have triumphed over the traditional power and security objectives of States. Thus, many believe that the opportunity for peaceful economic intercourse and the constraints imposed by modern destructive warfare has served to decrease the probability of a major war[99].

On 31 January 1992, the United Nations' Security Council met for the first time at the level of heads of State of Government. The "cold war" had ended. It was a time of hope and change and of rising expectations for - and of - the United Nations. The members of the Council asked the Secretary General to prepare an "analysis and recommendations on ways of strengthening and making more efficient within the framework and provisions of the Charter, the capacity of the

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[99] Robert Gilpin. Op. cit. p.6

United Nations for preventive diplomacy, for peacemaking and for peace-keeping"[100]. Five months later, in June 1992, the Secretary General submitted his report entitled "*An Agenda for Peace*"[101]. It dealt with the three problems the Council had requested the Secretary General to consider, to which he added the related concept of post-conflict peace building. It also touched on peace enforcement.

In submitting their recommendations on how to improve the Organisation's capacity to maintain peace and security, he said that the search for improved mechanisms and techniques would be of little significance unless the new spirit of commonality that had emerged, of which the Summit was such a clear manifestation, was "propelled by the will to take the hard decisions demanded by this time of opportunity"[102].

Then, the United Nations developed a range of instruments for controlling and resolving conflicts between and within States. The most important of these are preventive diplomacy and peacemaking; peace-keeping; peace building; disarmament; sanctions; and peace enforcement. The first three can be employed only with the consent of the parties to the conflict. Sanctions and enforcement, on the other hand, are coercive measures and thus, by definition, do not require the consent of the party concerned. Disarmament can take place on an agreed basis or in the context of coercive action under Chapter VII of the United Nations Charter[103].

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[100] United Nations documents S/23 500: p.115
United Nations documents A/47/277-S/24111: p.39
[101] Boutros Boutros-Ghali. *An Agenda for Peace*. Para. 6, 1995.
[102] Ibid. p.12

The validity of the concept of post-conflict peace building has received wide recognition. The measures it can use - and there are many - can also support preventive diplomacy. Demilitarisation, the control of small arms, institutional reform, improved police and judicial systems, the monitoring of human rights, electoral reform and social and economic development can be as valuable in preventing conflict as in healing the wounds after conflict has occurred.

At the conclusion of the 3046th meeting of the Security Council, held at the level of Heads of State and Government on 31 January 1992 in connection with the item entitled "The responsibility of the Security Council in the maintenance of international peace and security", the President of the Security Council issued his statement on behalf of the members of the Council. He stated that "the absence of war and military conflicts amongst States does not in itself ensure international peace and security. The non-military sources of instability in the economic, social, humanitarian and ecological fields have become threats to peace and security. The United States membership as a whole, working through the appropriate bodies, needs to give the highest priority to the solution of these matters"[104].

The members of the Council reaffirmed their commitment to the "collective security system" of the Charter to deal with threats to peace and to reverse acts of aggression[105].

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[104] United Nations documents S/23500, 31 January 1997.
[105] Boutros Boutros-Ghali. Op. cit. p.117.

Another source of instability arises from changes in States' capabilities that have little to do with the acquisition of new territories or allies (which may be opposed by other members of the system). Scholars concerned with the rise and decline of system leaders and their challengers have focused on the differential growth of power among the great powers, as dealt with in Chapter 1.4. This means there can be system changes without great wars as occurred with the collapse of the Soviet Union and the movement from bipolarity to the present system. The differential growth of power can come from "imperial over-stretch" to use Paul Kennedy's term, or from a variety of domestic conditions affecting economic growth and/or internal stability. High levels of civil conflict, or even revolution, can seriously weaken a State. Rapid economic growth can increase a State's capability even without a conscious decision by its leaders to increase the State's power in the international system. Technological innovation may occur faster in one State that in another - affecting production, creating new means of exploiting resources, or producing a potent new weapon. Thus, economic and military capabilities may shift significantly. A variety of economic, technological or socio-cultural changes may lead to the breakdown of one system and the emergence of another.

Another kind of risk stems directly from both the differential growth of power and the frequent trials of strength that test new power relationships.

Such conflicts are an integral part of the balance-of-power system, as dealt with in Chapter 4. When a major power is eliminated, it may be very hard to find another State capable of filling the gap. Some big States will continue to grow despite the efforts of others to restrain them. Thus there are elements in any system that tend to eliminate

some major powers and to strengthen others, making precarious the maintenance of the sensitive balance required in the long run[106].

The growing dependence of energy still led to the implementation of conservation policies, offering incentives for the development of energy alternatives, in an attempt to reduce the demand and stimulate production.

However, the success of these measures depends largely on the opportunity of its implementation and on the availability of energy resources in the country.

The access to determined resources such as oil, imposed new and important obligations on the external and defence policies. However if the industrialised countries depend on the exporting countries, they determine two fundamental logistic requirements: the transport and refining of oil. Regarding production, it is controlled by the policies of OPEC countries, but not in an absolute manner. The transportation is controlled by the developed countries taking into account that the majority of the oil wells are found in the interior of the United States, Canada, Europe and Russia, and which are not controlled by the OPEC members.

The principal energy consumer countries' capacity of processing is sufficient to supply their energy needs. In regard to the markets, these are concentrated in the industrialised countries. The maintaining of freedom of sea traffic constitutes a bigger imperative to all the maritime

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[106] Bruce Russett. Op. cit. p. 108.

countries, especially Iran and Iraq, whose supply of oil to Europe is compromised by the implementation of a power in the area of the Ormuz strait.

As the relations of dependence increase between producer and consumer countries, the relationship between security and energy policies of the consumer countries worsen.

This worsening occurs mainly from the growing energy needs of the industrialised countries and the increase of political instability in the producing countries. Any energy policy has connecting links with the reasons and dimensions of objectives to be achieved by the producing countries, as well as with the threats that are faced by the depending countries. In the same way, one needs to consider the available defence to face the crisis created by the provision zones, mainly in relation to their military and economic capacity in relation to the international balance-of-power.

2.4 OPEC and the "*Petro-Jihad*"

Until the mid-1980's, the objectives of the dependent Eastern countries joined for the creation of a new peace zone in the Middle East, in an attempt to create a co-operation space as free as possible of external influences, although receptive to the constructive participation of the Western powers. In the creation of a peace zone, or in the construction of a co-operation space, they aimed to support a political zone of regional security with the intention of maintaining the constant flow of oil to meet the energy needs of the United States and its allies.

As Richard Nixon wrote:-

> "The United States has become increasingly dependent on oil as a source of energy, and increasingly dependent on imports as a source of oil. Oil now supplies nearly 50 per cent of our energy, and while we depended on imports for a third of our oil in 1973, we now import half of it. Further, Canada was one of our leading suppliers in 1973; five years later the OPEC provided more than 80 per cent of our imports. The United States, once the world's principal supplier of oil, has become the largest purchaser from OPEC, taking a fifth of its oil"[107].

The construction and maintaining of security policies depends not only on the definition of objectives that must be kept, but also on the type of threats that relate to the objectives.

The utilisation of the economic weapon as a form of pressure against industrialised countries, combined with threats originating by terrorism and subversion, could act in a destabilising manner in the economies and energy policies of the dependent countries.

However, the strategic changes that occurred in the last years were promising since the USSR did not constitute an alternative to the West's political and economic support to the radical countries of the Middle East.

What relates to the countries of radical tendencies (Iran and Iraq) were expansionist policies and the war having consumed a great part of the

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[107] *The Real War*. London, 1980. p.74

GNP, showing budget constraints that limited their acquisition of sophisticated and distracting materials, able to threaten in a direct conflict, the territorial European and American space.

If that factor is favourable to the industrialised powers dependent and military present in the Gulf, the same cannot be said about the guarantee of stability of the regimes that support that presence at the moment. The existence barely consolidated in power, of some royal families of the Middle East, united with a climate of social agitation and rebellion towards what it considered to be the perpetuation of the colonial European presence and the intervening presence of North America, to which one can add the effects that the economic boycott starts producing, will in the near future weaken the stability of the r gimes of the oil producing countries which would compromise and hamper the normal supply of provisions to the industrialised countries, in an energy crisis situation.

However even in the realm of the peaceful uses of atomic energy, the nuclear age is potentially a disservice to Islam. It is oil rather than uranium ore which has recently given Islam a new economic leverage in the world system. OPEC is primarily a Muslim organisation in composition and Arab-led. The world has sometimes witnessed a kind of "petro-jihad" - as during the Arab oil embargo in 1973[108]. However, will the world witness nuclearised "jihad" in the near future? In the short term, the prospects are fraught with difficulties. The producing countries will try to intensify its production together with an insertion in the oil industry transport sector, assuring the acquisition of the whole

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[108] Ali A Mazrui. *The Political Culture of War and Nuclear Proliferation: A Third World Perspective*, Hugh C Dyer, *The Study of International Relations: The State of the Art*. London, 1989. p.167

logical system of supply, necessary to a more efficient and profitable control of its exports. Even though some areas have been demarcated, the Middle East would remain as the preferential area of supply. The developed countries will try to reduce their levels of dependency on Eastern oil, searching for alternative sources of energy such as natural gas, coal and nuclear energy out of the OPEC sphere, as done by South Africa by increasing the production of its oil-from-coal and launching new technologies developed by its own know-how, as dealt with in Chapter 6. The defence of alternative routes, ports and terminals are still aspects to be considered within the geopolitical sphere and energy resources.

In the political and strategic domain, the economic weapon and the religious factor is ethnic, seeming to confirm its efficiency and impact, characterising the majority of the actual conflicts to a regional level, mainly in the midst of less developed countries, but who possess resources of highly economic and strategic value for the industrialised countries in today's world.

In the next chapter, I continue my analysis on the importance of natural resources mainly oil, and which represents an important and strategic source of energy, of more and more importance whether for industry or for national security.

CHAPTER 3 : WHY OIL?

Despite the enormous importance of technology in the modern world, any attempt to examine it tends to be obfuscated by the sheer complexity of the subject. One of the most important changes of this century was the discovery, exploitation and use of petroleum. Oil fuels not only increased the versatility and convenience of the internal combustion engine, they also made it mobile because a supply of petrol (gasoline), paraffine (kerosene) or diesel oil could be easily carried in a tank to supply the engine. Everywhere the reasons for the shift to oil were the same. Energy derived from oil was cleaner and less expensive than coal. The result was an astonishing expansion in the production of this prime mover, which has deeply affected modern technological civilisation and its permanent search for new sources of liquid fuels, and increased the struggle for oil. In the light of its major importance and manifold uses, petroleum has acquired great geopolitical significance. Petroleum deposits are widely scattered throughout the world, but most production comes from a relatively small number of geographical areas. Ironically, Europe although abundantly endowed with coal, has the smallest petroleum reserves of any major land mass. The United States, Russia and possibly China, on the other hand, have plentiful resources of both coal and petroleum. The countries of the Middle East surrounding the Persian Gulf are now collectively, the largest source of supply for the world markets.

3.1 The increasing needs of energy sources

The idea of technological revolution helps to define and explain one of

the most important phenomena of modern life. This is the fact that we in the twentieth century, live in a process of profound and continuing change, which is different from the cyclical change of the seasons or the natural processes of ageing. It is rather, a change in the conditions of life; life has become a process of permanent transmutation, and this makes it increasingly difficult to understand what life was like at times - most of the past experience of humankind - when such change was not endemic. This process of change has been driven by innovations in sources of power, in manufacturing techniques and in the means of transport and communications - in a word, by technology. To be sure, the process of technological change has been going on for a very long time, since the first man and woman struggled to take advantage of their environment, and has acquired growing momentum over many millennia. However, in the last three centuries, it has accelerated in an unprecedented manner, and the consequent changes in social and human conditions have been so far-reaching that the world process justly deserves to be regarded as one of technological revolution.

It was not easy in the nineteenth century to understand how a steam engine worked, and however dextrous contemporary secretaries may be in handling their personal computers, few of them have much comprehension of how they operate. The proprieties of electricity, nuclear energy and complicated chemical reactions have been brought under human control, but even scientists familiar with these concepts find it difficult to express them in terms, which the lay person can understand.

In the nineteenth century, new machines began to appear everywhere in large numbers. Though they became more and more complicated

than earlier ones, they often seemed easier to use. They were to be seen everywhere in Europe and North America, on the streets of major cities (cars, trams and bicycles) in factories (looms, lathes, drills) in offices and shops (cash registers, typewriters). They transformed life in many ways. First and most obvious, they enormously increased the value of labour: with their aid a worker could produce much more quickly. This was an essential contribution to the huge growth in the output of wealth of the age. The results could even be seen in the countryside. Soon after the nineteenth century began, English agricultural machinery was being shown at European fairs, and by the middle of the century steam was being used to drive machinery and drag ploughs. 20 000 mechanical reapers on German farms in 1980 had become over 300 000 by 1907. Many similar figures can be cited. By 1910, the petrol-driven tractor had made its appearance.

Even more obvious than agricultural improvement, manufacturing rested on the coming of better, cheaper, more ingenious machines. They directly provided the tools needed to make things - lathes and other machine-tools, drop-hammers, blast-furnaces, boot-making machinery and a thousand and one other examples can be cited - which saved labour in other ways less directly connected with manufacturing itself. The electric trams and underground trains, for example, which were by 1914 taking millions of people in many cities to work, were conserving energy that would have been used fifty years earlier in walking long distances, as well as helping to shorten the time that had to be spent earning a living.

Even in the home the effects of machines were very great. The supply of gas for cooking (from local gasworks) enormously reduced the trouble and expense involved in getting fuel into and around the house.

Piped water (from central waterworks) was available in millions of homes by 1914 and the effect of this can easily be grasped by anyone who has seen the procession of village women in parts of Southern Europe to the local stream or well to draw what they needed for their domestic tasks (in Asia or Africa, of course, the sight is even more common). The sewing machine actually changed the production of goods in the home, but in the houses of the American and European rich, other household machinery were to be found - the first "vacuum" cleaners, electric "lifts", washing machines and at all levels of society that find old standby which had taken so much effort out of drying and pressing clothes, the mangle.

Just as it is hard to list chronologically the most important mechanical innovations of the century because the interrelation between them all is so complicated and rapid, so it is difficult to trace the overall effects of the coming of the machines, on the way work was organised and how occupations were shaped though it can be done (at some length) for any particular trade. A whole range of new tasks appeared. "Engineer" was an old word, but its meaning was extended much further in the nineteenth century. Specialisation appeared within engineering, in construction, in electrical work, in ships and chemicals. Institutions of technical education had appeared in many countries to give advanced instruction in engineering and award qualifications widely regarded as the equivalent of university degrees; some universities began to teach the subjects. Engineers regarded themselves as a profession and were usually organised into professional bodies which looked after their concerns.

"Mechanic" was another word which came to have a new meaning: a craftsman specialising in the handling of machinery. The number of

such skilled workers grew at a hugh rate in industrialised countries. Mechanics too, were becoming specialised by the end of this period and their trade qualifications were increasingly defined by standards set by apprenticeship rules and national certificates. However, "mechanic" is a very vague term - as is "machinist", another which reflected the technical change of the era - and new applications of the word were emerging all the time. Boiler-makers, artificers, tool-makers, jig-setters, mechanical draughtsman, were all needed in greater and greater numbers and all of them did more and more speciallsed jobs as time passed. It is not true then to say that industrialisation and mechanisation decreased the variety and individuality of trades; it killed off many handicrafts but increased the number of special skills needed in many ways. On the other hand, it also required large numbers of unskilled workers who were at best, machine-tenders and whose work was very dull and unstimulating.

Changes on this scale were bound to affect ideas and outlooks. Not only did many more people begin to believe that machines might be made to do almost anything, given sufficient time and trouble (and this meant that the universe looked much less mysterious and unmanageable), but many people saw technical progress as proof that European civilisation was on the right track and moving in the right direction. A few men did not think so and said so loudly and often. However, most people before 1914 found the evidence of their own eyes convincing. Visibly, tasks that had once been enormously laborious had come to be carried out much more easily. Goods, which had once been luxuries, had become common-place. Outside the rich world, the social benefits of technology appeared as railways pushed into Africa and Asia, taking with them other benefits - better pumps, wells, communications and medicines. Somehow, the world's

leading civilisation had at last come to take machines for granted and to treat them as an indispensable part of progress. This was an enormous change in humanity's outlook.

The railways and the steamships could not, however, create new industrial entities such as Germany, Russia and the United States, without creating new industrial rivalries and therefore as a result of the railway era, there is an increased struggle among nations to control the raw material producing areas and the markets of the world. There was a new stimulus to acquire colonies and spheres of influence[109].

New machines required new power. The consumption of energy rose after 1801 at unprecedented rates. Eighteenth-century improvements to the steam engine made it possible for most of the new power needed in the nineteenth century to be found from steam. Although railways in some parts of the world were wood-fired, they increased the [illegible] for coal, too. A world output already of 800 million tons a [illegible] 1900 went up to more than 1300 million by 1913 (nine-tenths [illegible] came from Europe and the United States). Other sources of [illegible] had also become available. With the discovery that electricity [illegible] be generated - the principle of the dynamo was discovered by Faraday in 1831 - the demand for coal (to run generators) was to rise again, but a new way of tapping running water in "hydra-electric" schemes was also made available, and with it a further extension of energy resources.

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[109] L.C.A Knowles. *The Industrial and Commercial Revolutions in Great Britain during the Nineteenth Century*. London. 1933. p.197.

Vegetable and animal oils had long been used for lighting when the refining of petroleum (first commercially produced in Pennsylvania in 1859) opened the way to the use of mineral oils for, first lighting (in the form of paraffin lamps) and then for fuel. Oil and petrol in turn made possible the internal combustion engine - one in which the energy from the fuel is not utilised by turning water into steam to drive a piston, but in which the explosion of the fuel inside a cylinder itself drives a piston. From this was to stem not only the motor-car but small, portable engines for all kinds of work, oil turbines for use in ships at sea and in power generation, and eventually engines powerful and light enough to be used in aircrafts. With this increase, world oil production - most of it in the United States - jumped from 5.75 million barrels in 1871 to 407.5 million in 1914. This implied not merely building of new wells, but a huge refining industry and the necessary transport arrangements for moving oil to where it was needed. Rapid increases in energy usage in general and petroleum in particular, are primary post-World War II phenomena. In 1950, when world population stood roughly at 2,5 billion people, world energy consumption was 2,5 billion tons of coal-equivalent energy. Population increased rapidly during the next quarter-century, but energy use increased almost twice as fast. By 1979 the world's 4,4 billion people were consuming 8,7 billion tons of coal-equivalent energy. This increase was closely tied to the unprecedented level of economic growth that the world experienced. From 1950 to 1973, the world economy expanded at a rate of 4 per cent annually, spurred by the 7 per cent growth in world oil output during this period, on a per-capita basis, this meant that the amount of oil available increased from an average of 1,5 barrels per person in 1950 to over 5,3 barrels in 1973. Rapidly rising population made oil the world's principal source of commercial energy.

Little more than a century ago, fuel-wood was the principal energy source. As the mechanical revolution altered the nature of transportation, work, and leisure, coal began to replace fuel-wood. Early in the twentieth century, coal became the dominant source of energy throughout the world. By 1913 it accounted for 75 per cent of global energy consumption.

New technological developments, particularly the internal combustion engine, spurred the shift from coal to oil and, somewhat less so, natural gas. The United States, well endowed with petroleum resources, led the development of oil-based technologies, above all in the automotive and petrochemical industries. Although oil accounted for less than a third of world energy production in 1950, by 1965 it equalled coal production. In the next decade it rapidly outpaced coal as the main energy source.

Everywhere the reasons for the shift to oil were the same. Energy derived from coal (and gas) was cleaner and less expensive than coal. (The cost of once inexpensive coal also rose in response to labour demands for higher wages, rules to protect the environment and more costly safety standards). The unprecedented growth of population in the twentieth century, as well as the growing affluence of at least a part of the world, resulted in an unprecedented demand on the world resources. The most important development in terms of resources in the twentieth century has been a change in the nature and sources of primary energy. In the nineteenth century coal became the most important source of energy in industrialising nations, largely replacing wood, charcoal, wind and water power. In the twentieth century coal has been largely, though not wholly, displaced by new energy sources, especially petroleum and natural gas. Although petroleum was first

commercially produced in the nineteenth century, it was then used mainly for illumination and secondly as a lubricant. The development of internal combustion engines at the end of the nineteenth century greatly extended its possibilities, and it also competed with coal and water-power in the production of electricity and with the former for space heating. In the second half of the twentieth century, it acquired new importance as a raw material for the production of synthetics and plastics.

3.2 South African searching for petroleum

South Africa does not produce crude oil but refines imported crude oil, locally produced gas and synthetic oil from coal[110].

The first oil company was established in Cape Town in 1884 to import refined oil products. Today the country processes close to 20 million tons of crude annually and uses 23 million tons of liquid fuels, 45 per cent of which is petrol and 26 per cent diesel. As a result of South Africa's abundant resources of cheap coal, liquid fuels provide only about 21 per cent of the country's energy requirements.

South Africa is a world leader in synthetic fuel technology. Liquid hydrocarbons have been synthesised from coal since 1955. Past decisions of the Government to invest in synfuel projects were largely based on strategic considerations. Synthetic oil is refined to hydrocarbon fuels at three Sasol refineries, with a total capacity of 4,5 million tons annually.

South Africa's search for petroleum began a long time ago. Small oil

occurrences in the Karoo System, mainly associated with igneous rocks, has often been mentioned in literature from as early as 1889. Oil-impregnated sand-stones of the Middle Ecca Stage were encountered in coal prospecting boreholes in the Dannhauser area prior to 1925. These early discoveries led to sporadic prospecting by local syndicates since the beginning of the century. Some of their activities included a deep borehole (1 548m) at Dubbelde Viel, Carnarvon District, a 690m hole on Doornkraal near Elandslaagte and a number of shallow holes in the Dannhauser area. The Cretaceous System was tested by drilling a 1 036m hole at Swartkops, Port Elizabeth, in 1908. In 1914, Cunningham Craig carried out the first general evaluation to establish South Africa's potential for oil and suggested the exploration of the northern flank of the Cape Folded Belt. Following his recommendations, the area was mapped in 1917, and all the available data on oil in South Africa was summarised in 1921. Several of the oil occurrences around Lesotho were investigated in 1935 as well as the potential for oil around Bethlehem and Kestell, north of Lesotho in 1937. The first fairly extensive oil exploration programme was embarked upon by the Geological Survey in 1940. The northern flank of the Cape Folded Belt was mapped, seven deep holes were drilled in that area and a number of shallow ones at Barkly East and in the Orange Free State.

The oil discovered in mine workings and coal exploration holes in the Dannhauser area was investigated by the Geological Survey by means of 19 holes from 1953 to 1957 and 1964 to 1967.

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[110] See Figure 1

A systematic investigation of South Africa' oil potential both on-shore and off-short commenced in 1965, with the creation of the Southern Oil Exploration Corporation, a private but state-financed company, later named Soekor[11]. Concessions on-shore were granted to various companies, which did a small amount of exploration work. The most systematic exploration on-shore was carried out by Soekor itself, by the Soekor E and P (formerly Zululand Oil Exploration Co.) and by the Geological Survey. Off-shore areas were sub-leased by Soekor to international oil exploration companies.

Prospecting by these concerns were carried out in accordance with modern scientific principles and techniques of oil exploration. Drilling was preceded by the measurements of stratigraphic profiles, structural mapping and geophysical work to locate the best structures in the most favourable parts of the Karoo, Cape and Cretaceous basins.

The results obtained in the Karoo by drilling were disappointing. The degree of diagenesis proved to be too high for oil to be present even in rocks of the Karoo System. Sand-stones had very poor reservoir properties. The high diagenesis is confirmed by the presence of pseudocoal which is generally considered to be a metamorphic end product of oil.

Oil was found in four boreholes north of Utrecht while prospecting for

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[11] Soekor is a 100 per cent subsidiary of the Central Energy Fund (CEF). The main business of Soekor and its subsidiary Soekor E and P is the co-ordination, promotion and undertaking of oil and gas exploration activities in the Republic of South Africa and to exploit a ny oil and gas field:s which are discovered. Before 1 April 1988 Soekor was financed by means of grants and thereafter all activities of the company have been financed by means of loans. *CEF and the Central Energy Fund*. Annual Financial Statements for 1994-95 p. 59.

coal during the period 1952 to 1958. In three of the holes, the oil-bearing sand-stones had a thickness less than 1,0m; in the fourth, parts of a 27m thick sand-stone bed were found to be oil-impregnated.The oil occurs at different strategic levels and is not structurally controlled. A somewhat more promising occurrence was reported from a hole drilled on Jakhalsdraai. Here, about 24m of sand-stone was fairly well saturated with oil, with an additional 10m exhibiting traces of oil. The oil-bearing sand-stone, with good porosity and fair permeability, lies in the upper part of a closed structure. Pressure, however, is low and consequently oil production will be difficult, if not impossible.

Oil was discovered in two boreholes in tight sand-stones in the Algoa Basin, a short distance above the Colchester Member and in fractures in this member. The gray marine shales of the Sundays River Formation were considered poor source rocks for oil and were probably immature at least in their upper sections, while the dark gray shales of the Colchester Member seemed to be the obvious source of the oil basin.

Altogether, 8 holes had been drilled to test the Mesozoic rocks of Zululand after a fairly extensive geophysical exploration programme. Sand-stones with good reservoir properties occurred but were not abundant. The shales in most of the boreholes were rather poor source rocks and appeared to be immature, except in the deepest part of the basin.

By the end of 1972, sufficient exploration work and drilling had been done to indicate that only a few areas, namely Port Elizabeth, Northern Kwazulu Natal and the north-eastern Free State, held any promise.

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By the end of 1972, sufficient exploration work and drilling had been done to indicate that only a few areas, namely Port Elizabeth, Northern Kwazulu Natal and the north-eastern Free State, held any promise.

Intensive exploration of these areas followed. A few discoveries were made, and by the end of 1978, however, it was evident that in each case there would be technical difficulties involved in production, and that reserves were insufficient. It was, accordingly, decided that further exploration on land was not warranted and Soekor then focused its attention on the off-shore areas. Since then, a number of mainly locally-based private operators have secured exploration concessions on land and continued the search in the Karoo and Cretaceous basins.

With reference to the off-shore exploration during the early stages, exploration was conducted by foreign companies who had obtained off-shore sub-leases from Soekor. The first well in South African waters, drilled in 1969 by the Superior Group, discovered gas off Plettenberg Bay. A major gas discovery was made in 1974 by the Chevron Group off the mouth of the Orange River, in Namibian waters. The extent of the gas at Plettenberg Bay was considered too small to warrant exploitation at that time, whilst the evaluation of the Orange River occurrence was hampered by political developments in Namibia.

Soekor drilled its first off-shore well in 1973 and has been responsible for all off-shore drilling since 1976. In 1978, a well in the Mossel Bay area provided the first real proof of the presence of oil off the South African coast, and by the end of 1980 several oil and gas deposits had been encountered off both the south and west costs. Drilling was thus concentrated in these promising areas, but in particular, off the south coast. Initially, however, the lack of adequate porosity and permeability in the sand-stone reservoirs remained a barrier to major discoveries.

In December 1980, one other well yielded the best results up to that date: 56 million cubic feet of gas and 1200 barrels of condensate per

day. This well, approximately 90 km south of Mossel Bay, subsequently proved to be the discovery well for the Mossel Bay gas-field and was later to be complemented by the discovery of another, 30 km to the west of the first gas-field discovered. A third, discovered approximately 65 km south west of the first gas-field discovered, has reserves of 13,4 to 19 million barrels. These fields were to form the nucleus of the reserves for the Mossel Bay Gas Project.

3.3 International searching for liquid fuels

The principal objection to oil was its cost - anywhere from four to twelve times that of coal in Britain around 1900. Yet the price of petroleum products fell rapidly as new sources of supply were opened up and the industry perfected its methods of refining and techniques of distribution[112].

The earliest commercially practical oil engines were probably those used in Russia from the 1870's to burn *ostatki* waste from distillation of Baku crude in the manufacture of kerosene and lamp oil. Practically all the steam power in Russia, both for factories and navigation of the inland seas and rivers, was being raised c.1910 from *ostatki* fuel. In the West however, in spite of widespread and successful experimentation with oil engines, petroleum did not really catch on until the opening of the Borneo (1898) and Texas fields (Spindletop Well,

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[112] David S. Landes. *The Unbound Prometheus*. Cambridge, 1969. p. 281

1901) made available oil especially suited by chemical composition to serve as fuel. Shortly thereafter (1902) the Hamburg-American Line adopted petroleum in place of coal on its new liners and was followed by one after another of the great steamship companies. At the same time, the navies of the great European powers began the process of conversion: Italy installed an oil burner as early as 1890; Britain began in 1903 with vessels operating in waters near sources of petroleum - the Far East particularly - but within a decade built a world-wide storage network that permitted the use of liquid fuel through the fleet[113].

Gas engines were able to compete successfully with steam power for many small and medium duties in the closing decades of the nineteenth century because of the widespread availability of coal gas and the practical advantage of not needing the elaborate boiler plant for raising steam which was indispensable to the steam engine. There was, however, no realistic possibility of competing with steam for locomotive purposes because of the fixed nature of the gas supply. This situation was revolutionised by the introduction of an alternative fuel for the internal combustion engine - oil and its derivatives.

Natural bitumen and other oils from vegetables and animals had long been exploited for the illuminating properties in lamps, but the development of the internal combustion engine opened up a vast new market for them, and the systematic exploitation of oil reserves, with a giant industry devoted to refining the products of the oil wells, became essential features of twentieth century industrialisation.

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[113] Op. cit. p. 282

One of the most important changes in the area was the discovery, exploitation, and use of petroleum. The process began in the Russian-ruled parts of the Middle East, where the first drilling for oil took place in the Apsheron Peninsula as far back as 1842. The development of the oil industry in Russia Azerbaijan was roughly contemporary with American development in Pennsylvania. The first refinery was built in Baku in 1863, and a pipeline constructed from the Apsheron oil fields to Baku in 1877-78. By the eve of the Russian Revolution, the Baku oil fields were providing 95 per cent of all Russia's oil. Further South, in the still independent Iranian and Ottoman lands, European and American businessmen were making the first attempts to obtain concessions. At the beginning of the twentieth century (1901) the first major concession was granted by the Shah of Iran Muzzafir al-Din to a British businessman called William Knox D'Arcy.

The D'Arcy concession granted him oil rights in the entire country except for five Northern Provinces. In exchange, the Iranian government was to receive 16 per cent of the company's annual profits. This proved to be a costly surrender of Iran's resources. Oil was discovered in commercial quantities in 1908, and in 1914 the British government became the major shareholder in the company holding the concession. Iran's vast oil reserves were placed at the disposal of Britain, and the preservation of British control over Iran oil became a central factor in Britain's Middle Eastern policy. The D'Arcy concession was acquired by the subsequently created Anglo-Persian (later renamed Anglo-Iranian) Oil Company. This was the first of a series of similar arrangements whereby concessionary companies, most of them British, French, Dutch and American, exploited the oil of the Middle East under royalty agreements with Middle Eastern

governments. First in Iran, then in Iraq, later in Arabia and elsewhere, great new oil fields were opened up, and the Middle East became one of the major oil-producing areas of the world[114].

As the former British Chancellor of the Exchequer Harold Macmillan has written:-

> "In the Middle East, Britain was still a great power. In Iraq, as in Libya, we maintain considerable forces and hold important air bases. Our influence was supreme in Transjordan. In Egypt, by the treaty of 1936, we controlled the Canal zone. The Sudan was still under our authority. The Americans showed no jealousy of our strength and prestige through the area. On the contrary, they were ready enough to leave Britain to look after this part of the world"[115].

And further :

> "In March 1951, the Prime Minister of Iran was assassinated, and in May the new government announced the nationalisation of the Anglo-Iranian Oil Company, which supplied about 25 per cent of British oil, and the seizure of the Abadan, the biggest refinery in the world. In July King Abdullah of Jordan was assassinated and a year later came the overthrow of King Farouk of Egypt, with all that it was to entail for the future of the

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[114] Bernard Lewis. *The Middle East*. London, 1995. p. 352
[115] *Tides of Fortune* : 1945-1955. London. 1969. p.140

> Suez Canal. If the troubles of the Middle East were to prove a source of persistent difficulty and even danger during this period, in the Far East our problems were relatively less acute"[116].

On the eve of World War I, the Majlis remained suspended, and Iran was governed by a conservative group of ministers whose actions were closely monitored by Britain and Russia. In addition, the Northern and Southern halves of the country were under foreign military occupation. The occupying powers dealt with tribal leaders and local merchants in their spheres of influence without any consideration for the government in Tehran. Iran had gained a constitution and eliminated the authority of the Qajar Shahs, but in the process it had become divided against itself. Not only did the coalition of bazaaris, ulama, and reformers break down under the pressures of governing, but the objective that had brought them together in the first place - the reduction of foreign presence in Iran - had been thwarted. The casting aside of traditional institutions, no matter how desirable it might appear, was a painful process that did not always produce the intended results.

Iran, which had not undergone as intense a transformation as the Ottoman Empire, nevertheless experienced a constitutional revolution that had the same larger objective as the Young Turk revolt : to preserve the State from internal collapse and external aggression. However, within Iran, the forces favouring a constitution had very different ideas about what the constitution was supposed to achieve in

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[116] Op. cit. p. 150

terms of the domestic social and political order. For the ulaman and the bazaaris, the new regime was to reduce European economic activity and preserve their customary position in the social hierarchy but the European-inspired reformers hoped for a more thorough transformation that would lead to the introduction of secular laws and a strong legislative assembly.

Once the constitution was proclaimed, the differences among the coalition members burst into the open and made effective governance impossible. Moreover, the central State and the armed forces were so weak and the treasury so depleted that neither a royal regime nor a constitutional one could exert authority within the country. As the situation in Iran deteriorated, Britain and Russia attempted to keep order in their zones of influence by occupying them. This was the first of several twentieth century violations of Iran's sovereignty by outside powers, and it contributed to the growth of the intense Iranian resentment against foreign intervention.

In general, Reza Shah's efforts to free Iran from the economic bondage in which the Qajars had placed it were successful. However, being one foreign enterprise he was unable to control the Anglo-Iranian Oil Company (AIOC) which functioned as a virtual State within a State in the Persian Gulf Province of Khuzistan. The company's influence was made all the greater because it was by far the largest industrial employer in the country, with over 30 000 Iranian workers on its payroll. The Shah endeavoured to renegotiate the famous D'Arcy concession of 1901, but the company showed no inclination to offer major revisions. After four years of embittered discussions, the parties signed a new agreement in 1933 that provided Iran with a modest

increase in the annual royalty payments (from 16 per cent to 20 per cent of the company's world-wide profits) and the guarantee of a minimum annual payment of 750 000 Pounds. In return, Iran agreed to extend the concession from 1961, when it was originally due to expire, to 1993. This agreement did little to improve Iran's economic gain from its oil resources or to advance its claims to sovereignty over them; it was to become the source of acrimonious disputes between Iran and Britain in the years after World War II[117].

3.4 The struggle for oil by great powers

Britain's continued dominance in the oil-producing region and her ongoing influence in the South were sources of annoyance to Reza Shah, and he tried to counter them by cultivating diplomatic and commercial ties with Germany. During the late 1930's Germany became Iran's largest trading partner, and German technicians and agents were active throughout the country. When World War II began, Iran proclaimed its neutrality, but Reza Shah's known pro-German sympathies caused the Soviet Union and Britain to view Iran with suspicion. With the German invasion of the USSR in June 1941, Iran once again became a pawn in the hostilities between outside powers. In order to keep a supply corridor open to the Soviet Union, the British

[117] The exploration of mineral resources in particular of petroleum has been the target of many agreements. In the case of patroleum, multiple intergovernmental agreements can be found, in which the States share petroleum exploration rights in determined territories. In its many times mentioned the San Remo agreement of 29th April 1920, between Great Britain and France for the splitting of Middle East petroleum. The agreement for the splitting of petroleum resources in the Middle East between the United States and Great Britain of 8th August 1944, and the changed on 24th September 1945, has not been ratified.

and the Soviets invaded Iran in August. The pampered Iranian army quickly collapsed, the government surrendered on the day after the invasion, and on September 16, 1941, Reza Shah made a desperate attempt to preserve the Pahlavi dynasty by abdicating in favour of his son, Muhammad Reza. The former Shah then left Iran under British supervision, eventually settling in South Africa, where he died in 1944. Iran entered World War II just as it had World War I - partitioned and occupied by outside powers.

As the war of 1939 approached, the British had to suppress a full-scale Arab rising, but in dealing with it they put an absolute limit on the number of Jews to be allowed into Palestine in future. British relations with Arab States were more and more important to the British who now also had a new interest: the flow of oil from Iraq, delivered by pipeline across Transjordan and Palestine to Haifa. Attempts to be even-handed were doomed to failure.

In the 1930's, war became an increasing possibility. All powers were aware of the danger of war and continuously increased armament expenditure on the one hand, and developed diplomatic measures to avoid conflict on the other. Recourse to the discredited policy of appeasement by Britain and France, was an elaborate exercise to avoid fighting. Although it cannot be claimed that the war had simply economic causes, there is little doubt that the unstable international economic environment, the economic rivalry of the 1930's, contributed to the coming conflict[118]. Imports of vital raw materials reduced the capacity to import consumer goods, expenditures had to be paid for

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[118] Roger Munting. *Crisis, Recovery and War.* New York, 1991.

through taxation or loans and they were very expensive.

Appeasement was thus an understandable policy, though one discredited by history. In the 1930's Britain and France could not negotiate from a position of strength, though it later became clear that they had greatly over-estimated German military power. It is evident that before 1939 there was a real and growing fear of war and of German military might in Europe. To what extent there was an economic cause of war is a contentious issue, but there is no doubt that there were some economic factors behind German expansion and, ultimately, war. With the collapse of the already fragile international economy in the 1930's all European nations were faced with economic difficulties. There was a desperate need to secure markets and sources of supply. While there was a rational mutual interest in international trade there was a widespread political pursuit of trade minimisation. Yet no nation could be perfectly self-sufficient. Britain needed to import a large proportion of foodstuffs and raw materials, even France was a net food importer and virtually dependent on imported energy. Germany and Italy, despite their efforts, remained dependent on a margin of food imports. High-grade iron ore, bauxite, copper, tungsten, as well as oil, mineral fertilisers and a host of other vital ingredients of a modern economy were imported from beyond Europe. In the inter-war years, Britain and France between them "controlled" almost a third of the world. Imperial possession and allies became increasingly important as trading partners in the 1930's. There were specific and particular areas of conflict over resources such as oil. German and Italy, were particularly vulnerable in this respect[119].

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[119] See Figure 4

Britain and France had the most influence in the Middle East; there was a fear that German expansion might cut off British and French supplies from that quarter. For Germany, trading deals with Europe (especially the Balkans and the USSR) were essential to provide foodstuffs, raw materials and oil (from Romania and the USSR). This was also consistent with the revival of the *Mitteleurope* concept, newly manifested in Hitler's imperial aims[120].

War brought a crisis. The British government was not the only one restricting the entry of Jews who fled from the German extermination programme but it was the government ruling Palestine, the place where many of them wanted to go, and to which it was easy for other countries to say they should go. Zionist terrorism was now added to Arab violence. American pressure mounted, because Jewish votes were important to American politicians. Victory made things worse. The Russians took up the Zionist cause, seeing in it a way of making trouble for a Cold War opponent, and of extending their influence in the area.

The British took the matter to the United Nations, which agreed on a plan of partition (both the United States and Russia voted for it); the Arabs would not accept. Violence mounted. Finally, the British announced that they would give up Palestine. They left on 15 May 1948, the day after a new nation State, Israel, had been proclaimed by the Jews. Almost at once, Egypt attacked it and its Arab neighbours, who claimed to protect Palestinian Arabs. Israel survived and won.

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[120] Roger Munting. Op. cit. p.230.

Yet victory left her surrounded by defeated but revengeful enemies, who now had the additional grievance - of which they made much useful propaganda - an exodus of 700 000 Palestinian Arabs who fled from Israel rather than live under Jewish rule. The Jews appeared to be persecutors in their turn, though many Palestinian Arabs returned to Israel in 1949.

In the next few years, three big upheavals changed the Arab position in almost every respect except its continuing hostility to Israel. One was the worsening of the Cold War. Russia had long been dabbling in the politics of the area; now the United States joined in. The second was a dramatic rise in the consumption of oil by the major industrial nations and in its production (largely from vast new oil fields discovered in the Persian Gulf, Arabia and Libya). The third great change was a more complicated and drawn-out political upheaval, which removed colonial domination from the Islamic world and replaced many traditionalist Islamic monarchs with more radical and revolutionary regimes.

During and after the Second World War, Britain was the victim of a self-evaluation, which incited her enemies and depressed her own people. Her lumbering and flailing in distress were those of a "troubled giant". There were genuine problems for a country of limited manpower defending a vast and vulnerable empire, for "the first industrial nation" to keep up with the need to innovate and for a commercial world-leader adjusting from absolute supremacy to relative superiority. Early industrialisation had bequeathed upriver shipyards, with steelyards over expiring ones. Commitment to heavy industries of the "heroic age" could not easily be reversed nor the extemporised working practices

of an experimental era revised. Weakness in key fields of relatively late development, like electrical engineering and chemicals, were only slowly and imperfectly overcome. Oil - an increasingly important source of energy - was in short supply from dangerously exposed sources. Yet British industry's recuperative and adaptive powers were amply demonstrated in the crisis of the 1930's and retreat was not the result of a long decline - except in self-system - but the sudden consequence of the peculiar circumstances of the Second World War, which over-taxed the resources of a still-mighty power[121].

The 1950's was a revolutionary decade. The French had to give up independence of Morocco and Tunisia. The Egyptian king was overthrown in 1952. In 1954 a full-scale rebellion began against the European settlers of French Algeria - of whom there were over a million. The British had already withdrawn their garrison from Suez when a "strong man" who had emerged in Egypt, Gamel Abdel Nasser, seemed to be the anti-imperialist, reforming leader for whom the Arabs had waited. The British, French and Israelis conspired to overthrow him in the 1956 Suez adventure, the last fling of old-style imperialism. It failed (though the Egyptians suffered a disastrous defeat) and his prestige rose even higher[122].

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[121] Felipe Fernandez-Armesto. *Millennium.* London, 1995. p. 509

[122] Harold Macmillan. *Tides of Fortune:* 1945-1955. London, 1969. p. 659. Nasser was subsequently to claim that the failure of this negotiation was one of the reasons for the seizure of the Canal. This allegation was manifestly false. Unhappily, as in the case of the arms deal, he fell to the wiles of Soviet diplomacy, which encouraged him in his ambitious and dangerous dream of Arab imperialism. Certainly both British and American governments used all their efforts to conclude this agreement on reasonable and even generous terms. Nasser's was a political and not a financial decision.

Algeria finally became independent in 1962, after dreadful suffering; Libya (already independent and rid of its king) began jockeying with Syria, Egypt and Saudi Arabia for leadership of the Arab world. By way of redressing the balance, the Egyptian and Jordanian governments got ready to attack Israel. However, in 1967, the Israelis struck first, inflicting a third major defeat on Arab armies. Victory gave them more easily defended frontiers, which they announced they would keep and so make a fourth war almost inevitable. It came in 1973. This time Israel's enemies struck at a time disadvantageous to Israel; the industrial world was having to take more account of the most powerful of the Arab States, the small but immensely rich oil-producers, whose decision to raise the prices of their oil created an international economic crisis almost overnight. As the world began to fear an economic slump like that of the 1930's, it looked as if Israel might not forever be able to rely on the guilt felt in Europe and the United States about Hitler's treatment of European Jews.

Meanwhile, in the Far East, Japan had in 1940 used the embarrassments of Great Britain and France to occupy Indo-China and obtain a closure of the Burma Road along which supplies had been sent to the Chinese.

Nothing in Japanese history is adequately explained as imitation and there were plenty of reasons impelling imperialism from within Japan. The country had the resources at home to start industrialising, but not to continue it indefinitely. Mainland Asia had, among other attractions, coal and iron to replace Japan's dwindling supplies. Oil was the object of the fateful decision to invade Indonesia and therefore to take on the United States in the Second World War. Imperialism was a route of

escape from poverty and vulnerability - the poverty of the Japanese hinterland, vulnerability to the embargoes of enemies[123].

The United States regarded this extension of Axis power into South East Asia as intolerable, and put severe economic pressure on Japan, whose trade and supplies depended entirely on maritime communications. It was this conflict that led to war between the two countries[124]. The drastic application of economic sanctions in July 1941 brought to a head the internal crisis in Japanese politics. Conservative elements were shocked and the moderate leaders scared. The domestic prestige of the Japanese Army as a constitutional factor in shaping Japanese policy was already involved. However, the embargoes which the United States, Great Britain and Holland had enforced cut off all supplies of oil to Japan on which the Navy, and indeed the whole war-power of Japan, depended. The Japanese Navy was at once forced to live on its reserves, and at the outbreak of the Pacific war, had in fact consumed four out of eighteen months' supply[125]. There was much sympathy for China in the USA, and soon American citizens were forbidden to supply goods of strategic importance - oil, above all - to Japan. The American Pacific fleet was moved from its Californian base to Pearl Harbour, Hawaii. Opinion in Tokyo, was long divided about what to do. Finally, in the autumn of 1941, the Japanese government decided to go to war with the United States. Intelligence intercepts meant that by the end of November, Roosevelt knew that war was coming.

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[123] Felipe Fernandez-Armesto. *Millennium*. London. 1995. p. 595.
[124] Eric Hobsbawm. *Age of Extremes*. London, 1994. p. 40.
[125] Winston Churchill. *The Second World War* Vol III. London, 1950. p. 521.

On the other side, throughout the late 1940's, Iranian Mosaddiq's impassioned campaign against continued foreign interference in Iran and his warning about the dangers of abandoning democracy for royal dictatorship attracted widespread support. In 1949, several political parties and interested groups, joined together under Mosaddiq's leadership by elements from both the traditional and the modern middle classes that were united in their opposition to foreign influence and to an increase in the powers of the monarchy. The diversity of the National Front - it contained ulama who advocated a greater roll for the *shariah* and Western educated professionals who pushed for new measures of secularisation - made it difficult for Mosaddiq to satisfy the demands of one faction of the coalition without offending the other. However, on the question of national sovereignty, the members of the organisation agreed.

The issue that propelled Mosaddiq and the National Front to political prominence was the control of the Iranian oil industry by the British dominated Anglo-Iranian Oil Company. By the late 1940's the AIOC had built up such a massive presence throughout the country that it was practically a State within a State. Not only did the AIOC build its own company town at Abadan, site of the world's largest oil refinery, but it also supplied its own municipal services, built its own roads and airport, and negotiated its own security arrangements with neighbouring tribes. Management and clerical positions were in the hands of foreigners, and Iranians were employed only as labourers. Although the AIOC was a private enterprise, the British government owned the majority of its stock. Iranians viewed the company as just another manifestation of British influence in the country.

The Iranian government was displeased with the terms of the concession Reza Shah signed with the AIOC in 1933 and in the late 1940's negotiated revisions. In 1950, the revisions were submitted to the Majlis, where they met with the determined opposition of Mosaddiq and the National Front deputies. Branding the AIOC as an arm of the British government, Mosaddiq called for the cancellation of the concession and the nationalisation of the Iranian Oil industry. Over the course of the next several months, Mosaddiq and his allies organised demonstrations and gave speeches to win public opinion to their side. One of the ulama members of the National Front equated the oil issue with the very essence of Iran's being, urging "serious Muslims and patriotic citizens to fight against the enemies of Islam and Iran by joining the nationalisation struggle". In 1951, amidst the wave of popular enthusiasm generated by the National Front's campaign, the Majlis took two dramatic steps: It passed legislation nationalising the oil industry, and it invited Mosaddiq to become Prime Minister. Although Mosaddiq was asked to assume prime ministership because of his stance on the nationalisation of oil, his tumultuous term in office (May 1951 - August 1953) was devoted to much more than the dispute between Iran and the AIOC; it was also devoted to a struggle for the political future of Iran.

In response to the passage of the oil nationalisation law, the AIOC called for a world-wide boycott of Iranian oil. The British government quickly became a party to the crisis by endorsing the boycott, reinforcing its naval forces in the Persian Gulf, and imposing economic sanctions on Iran. When the United States joined the boycott in 1952, Iran was effectively prevented from selling its oil on the international market, and the country was plunged into a financial crisis by the

almost total loss of oil revenues. Despite the economic hardships created by the embargo, Mosaddiq refused to compromise on the nationalisation issue, and in October 1952, Iran's confrontation with the AIOC and Britain produced a domestic as well as an international crisis.

During the period 1951 to 19[illegible] ilised Iranian society in an attempt to recover national [illegible] tablish an alternative to royal autocracy. His over[illegible] th of the forces to which he was opposed. The coup [illegible] about the return of royal dictatorship and an intensification [illegible] States interference in the domestic affairs of Iran.

The oil dispute, which had given Mosaddiq his political platform, was quickly settled by an arrangement that gave Iran a 50 per cent share of the profits from petroleum. Iranian oil rapidly recovered its place in the international market and provided the government with ever-increasing revenues. The Shah also undertook to improve Iran's standing with the Western powers. Diplomatic relations with Britain were restored in 1954, and the Shah proclaimed his commitment to the Western alliance and to a program of economic development on the Western model. Such diplomatic loyalty and economic emulation would, he hoped, result in substantial [illegible]ions of United States aid. The Shah was not disappointed on that score; between 1953 and 1963, the United Nations provided Iran with $500 million in military aid.

As Harold Macmillan wrote: "After the change of government in the United States at the beginning of 1953, when it became clear that the new Republican administration was not prepared to underwrite the

Iranian economy. Mosaddiq's prestige began to wane. Although his tenacious grip of power was sufficient to drive the Shah into temporary exile in August 1953, he was arrested by the army before the month was out, and his successors negotiated an agreement with the British oil interests, in which the Americans were closely involved"[120].

The total control that Western-owned companies maintained over the production, marketing and pricing of Middle Eastern oil was a constant reminder of the region's continuing dependence on the West and a constant irritant to Arab nationalists. In Iraq each of the regimes that ruled after the revolution in 1958 attempted to acquire control of the country's petroleum resources from the foreign-owned Iraq Petroleum Company (IPC). IPC was a consortium of several Western companies, Britain having the largest share; it completely dominated all aspects of the Iraqi petroleum industry in the years after World War II and showed little inclination to relinquish its power. However, in 1972, the Ba'th regime, frustrated with IPC's unyielding stance, proclaimed the nationalisation of the company. This was an event of major political and economic importance. For one thing, it was far and away the most popular measure that the regime had taken and contributed substantially to its acceptance. From an economical perspective, the nationalisation of IPC brought benefits to Iraq that could not have been foreseen at the time. The government gained control of Iraq's oil resources on the eve of the momentous price revolution that accompanied the 1973 Arab-Israeli war. For example, Iraq's 1968 oil revenues amounted to $476 million; in 1980 the figure was $26 billion[127].

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[120] Op. cit. p. 350.
[127] William L. Cleveland. Op. cit.

The long-term stability of world oil prices is striking. During World Wars I and II, each produced small increments in the price of oil, but essentially it remained stable. As the price of other commodities as well as manufactured goods increased, oil became relatively cheaper. It therefore made good economic sense to use it in large quantities. As a result, the peak year of world oil consumption since the first well was drilled in the middle of the nineteenth century; 1979 over 31 000 galloons of petroleum every second. The United Nations alone consumed more than a fourth of this amount[128]. Not until the onset of the first OPEC oil shock was this upward consumption trend interrupted.

In the mid-1970's, the EU wrestled with serious problems brought about by the Arab use of the "oil weapon" and a prolonged recession. Europe depends on Middle East for about 60 per cent of its oil, and when the Arab countries slowed down oil production and picked the Netherlands as a target for a complete boycott, significant centrifugal pressures were put on the EU. Each member State scrambled in a rather unseemly fashion to make separate deals with the Arabs, and the EU took no effective steps, at least officially, to help Holland in its time of need. The recession exacerbated several already serious problems and, combined with the energy crisis, scuttled entirely (or so it seemed) the plans the EU had to launch a monetary union, based on a common currency for all members by 1980. These problems were so grave, that it seemed possible that the community might be faced with total dissolution.

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[128] See Figure 6

As the world's largest energy consumer[128], the United States must have been highly sensitive to the vulnerability caused by its growing import dependence on foreign oil supplies. The United States used almost as much oil as it did in 1973, but imported 46,6 per cent of it, up from 37,2 per cent in 1973. At the time of the embargo, 5.3 per cent of the oil used in the United States came from Arab members of the OPEC; in 1993 it reached 11,6 per cent.

Growing dependence on oil imports from the politically volatile Middle East is cause for special US concern for several reasons:-

(1) Greater reliance on oil from foreign sources magnifies the potential impacts of import curtailments on US oil supplies and the economy;

(2) oil imports contribute to US balance-of-payments deficits, and as oil imports (and/or prices) rise, more US export earnings must be allocated to paying for oil rather than devoted to domestic consumption. In 1990, the bill for oil imports amounted to $65 billion, more than half of the US' $101 billion balance-of-payments deficit;

(3) the threat of potential economic and social dislocations that could accompany major oil supply or price disruptions could constrain US policy-makers in foreign affairs, national security and military matters where oil supplies might be affected; and

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[128] See Figure 2

(4) the ready availability of cheap imported oil in the United States is a powerful financial disincentive for oil-saving investments in efficiency and alternative energy sources or the development of high-cost domestic oil.

Unlike Japan and most Western European countries that are highly dependent on oil imports and where oil is heavily taxed, US oil prices are comparatively low and do not fully reflect many of the external costs of oil use. Among the most notable of these externalities are, for example, the environmental damage from production, oil spills, and emissions from refining and combustion, and the costs of maintaining and deploying military forces to protect supplies. The defence costs in particular have applied disproportionately to the United States relative to European countries and Japan.

In light of these considerations, it is not surprising that the United States has seen a strong link between oil and national security. This is, in an economically interdependent global marketplace, a global issue.

The United States produces most of the minerals used by its industry, but the Department of State has noted that industry "depends on foreign suppliers to meet some or all of its needs for more than 20 of the 80 strategic and critical (non-fuel) minerals included in national defence stockpiles". Many of those minerals are located in the Third World, and the United States imports large quantities of oil from some Third World countries[130]. Could this need be the explanation for

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[130] See Figure 3

neo-imperialistic policies? Perhaps, but there is room for doubt. Consider first the relationship between the United States and Third World suppliers of the most critical natural resource, oil, in the 1970's. Despite some efforts to stem the tide, the United States became increasingly reliant on Middle Eastern oil throughout most of the 1970's. Yet the United States did not abandon Israel, attack any Middle Eastern country, or (as far as we know) destabilise or arrange the overthrow of any Middle Eastern government. In fact, the experience of the 1970's would suggest that increased reliance by the United States on Third World resources for raw materials will not strengthen the neo-imperialist tendencies of the former but, rather will improve the bargaining power and relative economic standing of the latter.

It is true though, that the Persian Gulf War in 1990-91 gave this particular controversy contemporary significance. That war may be plausibly interpreted as an imperialistic war to ensure secure supplies of oil. But it is difficult to argue that the war was really about "cheap gas" and a war fought in the interests of the oil companies at one and the same time. The oil companies do not have an interest in cheap gas. In fact, chances are that if Saddam Hussein had established control over a large percentage of the oil reserves in the world and had succeeded in hiking the price of oil significantly, most of the oil companies of the world would have benefited.

In the second quarter of 1990, according to estimates of the International Energy Agency, world production exceeded demand by as much as 2,8 MBD. In other words, there was a massive build-up of stockpiles; those held by the United States government and the

governments of other major industrialised countries, as well as those held by private companies, were at an all-time high[131]. In June 1990, prices were back to the low levels of 1388[132].

At this stage it was seen in London and Washington as a show of force to influence the OPEC meeting assembling in Geneva on 26 July 1990 with Iraq demanding a price rise from $18 to $25 a barrel. British Foreign Secretary Douglas Hurd put down a mild diplomatic marker: "We would deplore any threat or use of force". President Bush's spokesman, Martin Fitzwater, chimed in with: "All disputes should be handled through peaceful means". There was no emphatic warning to make it clear to Saddam Hussein that the West would not tolerate any aggression against Kuwait. Neither that nor the offer at the OPEC meeting of a price rise to $21 a barrel was enough to satisfy Saddam Hussein. The last chance of a settlement ended with Iraq walking out of talks with Kuwait in Jeddah on 1 August[133].

Then, in August, the Iraqi invasion of Kuwait triggered an oil crisis. By October 1990, crude oil prices had risen from about $18 to between $35 and $40 a barrel. The cut-off of Iraqi and Kuwait oil shipments removed some 4 MBD from world exports, and the resulting rise in prices was aggravated by speculative buying which, according to one estimate, added about 2 MBD to demand[134]. In response to the rising prices, Saudi Arabia, the United Arab Emirates, Venezuela, and others announced that they were stepping up production to full capacity. The

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131 *Oil and Gas Journal*, pp. 41-43 ; *Petroleum Economist*, May 1989, p. 143.
132 *Petroleum Economist*, April 1990, pp. 130-131.
133 John Dickie. *Inside the Foreign Office*. London, 1992. p. 183
134 *The New York Times*, August 12, 1990.

motivation was economic: to eliminate budgetary and balance of payment deficits , ;ibly even pile up some surpluses); and, at the same time, to pu. a damper on price escalation, which some producers fear will repeat the 1980's scenario of a boom followed by a severe bust[135].

The surplus problem is linked to the objective of increasing and stabilising the flow of capital and aid to the Third World, and avoiding the re-emergenc type of debt problems that were experienced in the 1980's with the consequent series of write-offs and rescheduling. Leaving the OPEC surpluses to be recycled to developing countries by the banking system turned out to be a major disaster, aggravated by the subsequent rise in interest rates (which was itself a consequence of the inflationary effects of the oil price boom)[136]. The balance of payment surpluses of the OPEC countries became a major factor in the world economy, and higher interest rates accentuated developing countries' debt problems.

As it happened, when the United States and its allies launched an air attack against Iraq, and Hussein proved he could not disable Saudi oil wells, the international price of oil dropped $10 in one day, the largest single drop on record.

In any case, while oil is certainly an important exception to this rule, the United States and the entire industrialised world have become dramatically less dependent on raw materials from the Third World in recent years. By 1986, raw material prices were at their lowest levels,

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[135] Eliyahu Kanovsky. *Why the Oil Crisis Won't Last.* p. 88; Orbis. Winter 1991.
[136] Jonathan Michie. *Managing the Global Economy.* Oxford, 1995. p. 293.

relative to the prices of manufactured goods and services, in history. The main reason for this fall was quite clear. Production of food, raw materials, and oil increased rapidly in the 1980's, so it is fairly safe to say that foodstuffs and raw materials are in permanent over-supply. This over-supply has brought about an "uncoupling" of industrial economies and industrial growth from the suppliers of raw materials. Industrial production is steadily switching away from heavily material-intensive products and processes. In brief, even if reliance on primary products from developing countries has been an important factor shaping neo-imperialistic policies since the Second World War (and the fate of oil producers in the 1970's, at least, casts some doubt on this notion), that reliance has apparently decreased substantially, and its impact on the foreign policies of the United States and other industrialised countries can reasonably be expected to decrease accordingly.

In the next Chapter, I analyze how the transfer of supplying control to the countries of the Middle East surrounding the Persian Gulf occurred in so big a manner that allowed them to use that power as a economic and diplomatic weapon over the dependent consumer countries.

CHAPTER 4 : BALANCE OF POWER : FROM THE "SEVEN SISTERS" TO OPEC

Abundant, low-cost oil was the energy source that fuelled the post-war recovery of Europe and Japan and assured the economic prominence of the United States[137]. With the rise of gasoline-fuelled automobiles and diesel-powered trains and the mounting use of oil to supply energy for industry, economies that had previously been based on coal became dependent on oil. This transformation was based on the assumption that oil would always be readily available and moderately priced. During the late 1960's and early 1970's, the assumption was born out as the industrial States enjoyed a period of rapid economic growth made possible by an ever-increasing supply of cheap oil. However, the industrial world's avid consumption of oil made it more dependent on Middle Eastern countries' petroleum producers. The most successful effort of these countries to alter their dependent relationship with the North was the common action of OPEC (Organisation of Petroleum Exporting Countries) in seizing control over the world's oil markets[138]. By acting together in a producer cartel, the Southern oil-exporting States were able to increase not only their economic rewards but also their political power.

4.1 The oligopoly of the "seven sisters" cartel

For most of the twentieth century, the international oil system has been controlled by a producer cartel. Until 1973, that cartel consisted of an

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[137] See Figure 6

[138] Morris A. Adelman. *The World Market* Baltimore, 1972.

oligopoly of international oil companies[139]. The "seven sisters" - five American (Standard Oil of New Jersey, now known as Exxon; Standard Oil of California, now known as Chevron; Gulf, now part of Chevron; Mobil; and Texaco), one British (British Petroleum) and one Anglo-Dutch (Royal Dutch-Shell) - further gained control of their domestic oil industries through vertical integration, that is, by controlling all supply, transportation, refining and marketing operations as well as by controlling the technology for exploration and refining.

In the late nineteenth century, the oil companies then in existence began to move abroad and obtain control of foreign supplies on extremely favourable terms. After World War I, the seven formed joint ventures to explore for foreign oil field, and eventually in the 1920's began to divide up sources of supply by explicit agreements. They were thus able to divide markets, fix world prices and discriminate against outsiders.

Northern political dominance of the oil-producing regions, the Middle East, Indonesia and Latin America, facilitated the activities of the oil companies. Governments provided a favourable political and military environment and actively supported the oil companies owned by their nationals.

In bargaining with the oil companies, the less-developed countries were confronted by an oil oligopoly supported by powerful northern governments as well as by uncertainty about the success of oil

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[139] Anthony Sampson. *The Seven Sisters: The Great Oil Companies and the World they made*. New York. 1975.

exploration and the availability of alternative sources of supply. It is not surprising that the "seven sisters" obtained concession agreements that gave them control over the production and sale of much of the world's oil in return for the payment of a small fixed royalty to their host governments[140].

Beginning in the late 1920's and continuing through the years of the great depression in the 1930's, oil prices tumbled despite the efforts of the "seven sisters" to stabilise markets. At that time, the United States was the largest producer in the world and exported oil to Europe and elsewhere. Efforts at government level (including not only the US Federal Government but also more significantly, the largest producer State, Texas) succeeded where the "seven sisters" had not in regulating production in order to create a price floor. As a result, the Texas Railroad Commission emerged as the single most significant political force in the international oil industry.

Changes in this system began to emerge in the decade following World War II. In the 1950"s, relatively inexpensive imported oil became the primary source of energy for the developed world. Western Europe and Japan, with no oil supplies of their own, became significant importers of oil. In 1950, US oil consumption out-distanced its vast domestic production, and the United States became a net importer of oil. In the host countries, growing nationalism combined with the great success of oil exploration, led to dissatisfaction with concession agreements and to more aggressive policies. During this time, the host governments succeeded in revising concession agreements

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[140] Franklin Tugwell. *The Politics of Oil in Venezuela*. Stanford. 1975.

negotiated before the War. They redefined the basis for royalty payments and imposed an income tax on foreign oil operations.

They also established what at the time was considered a revolutionary principle: the new royalties and taxes combined would yield a fifty-fifty division of profits between the companies and their respective host governments. As a result, profits accruing to host governments increased significantly. The per-barrel payment to Saudi Arabia for example, rose from $0,17 in 1946 to $0,80 in 1956-1967.

Nonetheless, the "seven sisters" also known as the majors, continued to dominate the system. By controlling almost all the world's oil reserves outside the Communist States (eg. production at the well-head, refining and transportation and marketing) they were able to manage the price of oil.

The "seven sisters" maintained control, in part, by preventing incursions by competitors. The majors blocked other companies from entering upstream operations outside North America, that is, crude oil exploration and production, by locking in concession agreements with many oil-rich areas and by the long lead times required for finding and developing oil in territory unclaimed by the majors. Outsiders were also deterred from competing with the "seven sisters" downstream, that is, in refining, transportation and marketing operations. Not having their own crude oil supplies, independent refiners had to purchase oil from the majors, who were also their competitors. However, the majors deliberately took their profits at the less-competitive and lower-taxed upstream level by charging a high price for crude oil as compared with the final product. The small profits for downstream

operations discouraged new entrants.

The management of the price of oil was facilitated by the highly inelastic demand for oil. As there are no readily available substitutes and because it is difficult to decrease consumption, an increase in the price does not greatly decrease the demand for oil in the short term. Thus, if companies could maintain a higher price for oil, they would not lose sale volumes and so would reap high profits.

Thus, in the 1950's and 1960's, the "seven sisters" controlled supply by keeping out competitors and by a series of co-operative ventures: joint production and refining arrangements, long-term purchase and supply agreements, joint ownership of pipelines, and some joint marketing outside the United States. They also refrained from price competition. Price management by the majors was designed to keep the price of oil economically attractive but also low enough to discourage competing forms of energy like nuclear energy. Developed countries' governments did not oppose this price management. The Europeans added a tax on petroleum in order to protect their domestic coal industry, because lower oil priced would have increased oil consumption at the expense of the politically powerful coal companies and coal miners. In the United States, higher oil prices were supported by the domestic oil industry which needed protection from lower international prices to survive and, as we shall discuss, eventually obtained that protection.

Finally, the dominance of the "seven sisters" was backed by political intervention. One extreme example occurred in the early 1950's when the government of Iran sought a new agreement with the Anglo-Iranian

Oil Company, a predecessor of British Petroleum, and nationalised the company's assets in Iran, as analyzed in Chapter 3. The British government became actively involved in the negotiations, imposed an economic embargo on Iran, and threatened military intervention. After trying unsuccessfully to mediate between Britain and Iran, the United States worked with opposition parties and the Shah to over-throw the Iranian government. A new concession was soon negotiated under which the US companies replaced Anglo-Iranian.

However, as OPEC would later discover, it is difficult to maintain a producer cartel in the long term. Over time, changes in the international oil industry, the oil-producing States, and the oil-consuming developed countries, undermined the dominance of the "seven sisters". The entrance of new players weakened the oligopolistic structure of the international oil industry. Competition increased both upstream, as new players sought concessions to explore for and produce crude oil, and downstream, as more refineries were built and competition grew in markets for refined oil. Staring in the mid-1950's, companies previously not active internationally, obtained and successfully developed concessions in existing and new oil-producing regions such as Algeria, Libya and Nigeria. In 1952, the seven majors produced 90 per cent of crude oil outside North America and the Communist countries, and by 1968 they still produced 75 per cent.

As new production by new producers came on line, the "seven sisters" were no longer able to restrict supply and maintain the price of oil at the old level. By the end of the 1950's, production increases out-distanced the growth in consumption. United States quotas on the

import of foreign oil aggravated the problem. Quotes were imposed in 1958 ostensibly for national security reasons: to protect US market from lower-priced foreign oil in order to ensure domestic production and national self-sufficiency. In fact, quotas also helped domestic US producers that could not have survived without protection. The quotas effectively cut off the US market for the absorption of the new supplies produced abroad. As a result, in 1959 and 1960, the international oil companies lowered the posted price of oil, the office price used to calculate taxes. This act was to be a key catalyst for producer government action against the oil companies.

4.2 Oil concessions governed by international or municipal law

It has sometimes been suggested that individuals (or companies) can acquire rights under international law by making agreements with States (or international organisations) containing a provision that the agreement should be governed by international law. This suggestion has given rise to considerable controversy, especially in connection with oil concessions. Since the quadrupling of the price of oil in 1973, oil producing States have been in a strong bargaining position, and oil concessions granted since 1973 are generally governed by the law of the State granting the concession. However, before 1973, the oil companies were in a stronger bargaining position, and were often reluctant to allow their oil concessions to be governed by the law of the State granting the concession. On the other hand, the State granting the concession might have felt humiliated if it had allowed the concession to be governed by the law of a foreign country. The obvious answer was for the State and the company to agree that the

concession be governed by international law or (more commonly) by general principles of law. General principles of law are a source of international law, but some writers have suggested that general principles of law also constitute a legal system in their own right, distinct from municipal law and from international law[141].

4.3 The rise of OPEC

Changes in the oil-producing States also weakened the power of the oil company cartel. In addition to changing elite attitudes, improved skills and less uncertainty, the emergence of new competitors was vitally important in increasing the bargaining power of the host governments. In negotiations with the oil companies, producer States obtained larger percentages of earnings and provisions for relinquishing unexploited parts of concessions. As a result, the oil-producing governments, especially large producers such as Libya and Saudi Arabia, increased their earnings and began to accumulate significant foreign exchange reserves. Monetary reserves strengthened the hand of the oil producers by enabling them to absorb any short-term loss of earnings from an embargo or production reduction designed to increase the price of oil or to obtain other concessions.

At the same time, host governments began to co-operate with each other. Infuriated by the price cuts of 1959 and 1960[142] that reduced their tax receipts, five of the major petroleum-exporting countries - Iran,

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[141] Michael Akehurst. Op. cit. p. 74
[142] See Figure 6

Iraq, Kuwait, Saudi Arabia and Venezuela - met in 1960 to discuss unilateral action by the oil companies. At that meeting, the five decided to found the Organisation of Petroleum Exporting Countries (OPEC) to protect the price of oil and the revenues of their governments[143]. A parallel group, the Organisation of Arab Petroleum Exporting Countries (OAPEC) composed solely of Arab oil exporters, was created in 1968. The impulse behind the formation of the two organisations was a desire on the part of the member States to assert control of the most valuable natural resource. For the Middle Eastern States in particular, the issue was independence. OPEC was founded in the Nasser era, and one of the principal goals of Nasserism was to break out of the constraints of post-war neo-colonialism that found the Western powers still manipulating the diplomatic and economic affairs of the Arab world. OPEC's immediate objective was to utilise the collective-bargaining power of its member States to pressure the Western oil companies to increase oil prices. However, as long as the world's supply of oil was plentiful, OPEC had limited success in its efforts to change the policies and attitudes of the oil companies.

In its first decade, OPEC expanded from five to thirteen members, who accounted for 85 per cent of the world's oil exports. Initially, the new organisation had little success. OPEC's influence depended on the ability of its members to co-operate to reduce production and thus force a price increase. Although OPEC tried, it was unable to agree on production reduction schemes. Nevertheless, the individual oil-producing States succeeded in increasing their revenues. The posted price of oil was never again lowered and the oil-producing States

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[143] Zuhayr Mikdashi. *The Community of Oil Exporting Countries : A Study in Government Co-operation*, New York, 1972.

gradually expanded their experience in co-operation. However, it was not until the 1970's when other conditions became favourable, that OPEC became an effective tool of the producer States.

OPEC, formed in 1960, has evolved over the last 35 years with a number of successes and setbacks. By choosing to establish much higher prices in the 1970's, OPEC producers had to trade-off significant volumes of future production. Prior to 1973, world oil demand had been growing by 7.5 per cent per annum for more than two decades and OPEC production was increasing at a rate of around 10 per cent per annum. Plans were in place for OPEC countries to significantly expand capacity and production during the 1970's, but OPEC's decision to quadruple oil prices in 1973/74, greatly reduced the growth in demand for its oil, and hence the necessity for capacity expansion. The first set of price increases were absorbed relatively easily by the market - notwithstanding disruptions and recession - and by the late 1970's it appeared that OPEC oil production might be growing again. OPEC production in 1979 was only slightly above the 1973 level, as growth in demand of some 4 per cent per annum was nearly all being met by increases in non-OPEC supply[144]. The second set of price increases in 1979/80 were much more severe than the first and led to OPEC's output being cut in half by 1985. OPEC (and others) thought demand and supply to be more inelastic than in fact proved to be the case. In addition to the impact from the second price shock, many of the adjustments induced by the first price shock had not yet been completed when prices rose again in 1979[145]. As history

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[144] See Figure - World Crude Oil Production 1950-1994

[145] Michael Rauscher. *OPEC and the Price of Petroleum.* Berlin, 1987.

has shown, the price levels were far too high for OPEC to sustain, although at the time most market participants and observers thought that not only would prices be maintained, but they would "forever" rise to astonishing heights[146].

Since the second major oil price increase, OPEC production has been well below its former peak and its 1995 quota is still 20 per cent below this level. OPEC has been adjusting to its 1979/90 strategy for 15 years and the process will continue for some years to come. World oil demand on average has grown by less than 1 per cent per annum since the first price shock, down substantially from pre-1973 rates of growth. Much of the lost demand is permanent and will not be reversed by lower prices[147]. High oil prices have also resulted in greater volumes of competing supplies - both oil and non-oil fuels. Even if one contends that at some point the lost OPEC production will be required, it is deferred so far into the future that the present value is essentially zero[148].

OPEC is a diverse group of countries with large differences in population, per capita income, current accounts, debts, culture, etc. Within the Gulf there have been two wars between certain OPEC members in the last 15 years[149]. Often there are conflicting differences among countries on price objectives. While all countries desire higher revenues, those with limited oil reserves desire higher price presently, while large reserve holders (which also desire higher revenues) have

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[146] The World Bank *Review and Outlook for the World Oil Market*. Washington, 1995 p.60
[147] Dermot Gately. *Energy Journal*. Vol. 14. No. 4. 1993
[148] The World Bank. Op. cit. p.61
[149] The World Bank. Op. cit. p.63

an interest in preserving a longer term market for their major resource, i.e to maintain and hopefully expand market share. Countries with large populations and budgetary difficulties have a tendency to favour higher prices at the expense of present and future volumes. The conflicting objectives make it next to impossible for the cartel to maximise long term revenues for the group - even if such optimal path were known. Thus OPEC should not be thought of as a joint profit maximisation monopolist.

Often OPEC is portrayed as having several sub-groups, eg., revenue maximisers, out-put maximisers, and a cartel core. In the past, the cartel core has included Saudi Arabia, Kuwait, United Arab Emirates, Qatar and Libya. These countries were grouped because of their common characteristics of large reserves, low populations and barren desert topography. This same group has also been labelled the "low absorbers" when grouping countries according to expenditure requirements. Sometimes OPEC is broken into Gulf and non-Gulf[150] countries. Increasingly, the future cartel core is depicted as the large reserve-holders - Saudi Arabia, Iran, Iraq, Kuwait, the United Arab Emirates and Venezuela. The other OPEC countries have smaller reserves and are thought to have less potential to significantly raise their exports because of a number of economic and political factors. However, the African member countries (with the exception perhaps of Gabon) have the potential to significantly raise productive capacity, as they are all geologically rich oil bearing regions. Peak production for these three countries (not at the same point in time) was 6.8 mb/d versus 4.2 mb/d in 1994.

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[150] See Figure 7

At first glance, the six reserve-rich OPEC countries seem less cohesive on a number of economic, political and social grounds than the first described cartel core. Nevertheless, these six countries account for nearly two-thirds of the wold's reserves[151], have high reserve-to-production rations, and all except for Iran, have relatively low populations. With the immense reserves of this cartel core, it would appear that they could have formidable power over the oil markets. Only with surplus capacity can it engineer a large price decline, but it could restrict out-put at any time and send prices considerably higher, as previous actions have shown in 1973/74, 1979/80 and to a degree in 1990[152].

Today, the dominant player in OPEC is Saudi Arabia and many observers feel that the future of oil pricing developments will depend on how the Saudi Arabian government plays its "oil cards". Only Saudi Arabia has significant spare capacity at present and thus it is able to exert considerable authority within OPEC[153]. It was the cartel's swing producer for more than three years but abandoned that role in 1985 and has stated that it will no longer unilaterally defend the price of oil. Since the collapse in oil prices, the Saudi share of OPEC out-put has risen to near 1/3rd from about 15 per centum in mid-1985, although a portion of the gain was due to the United Nations embargo against Iraqi exports. Saudi Arabia also maintains some 2 mb/d of surplus capacity and is the only country with a sizeable surplus outside of Iraq. Because of its surplus capacity and dominant position within the group, it can expert considerable influence on OPEC's oil production

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[151] See Figure 8

[152] M.A. Adelman. The Energy Journal. Vol. 11. No. 4. 1990.

[153] See Figure 9

policies. Power within OPEC has shifted over the years depending on relative levels of production and other factors. The five largest OPEC members all had similar levels of out-put in 1970 - Saudi Arabia, Iran, Venezuela, Libya and Kuwait - thus all had considerable influence on OPEC pricing decisions in the early 1970's[154]. Saudi Arabia was "only" among the largest OPEC producers in 1970 with a 16 per cent share of the groups' out-put. During the 1970's, the Saudis established themselves as the dominant producer with its share of OPEC production reaching 37 per cent in 1980. It was clearly the key player during the 1980's both in sustaining high oil prices through 1985 as swing producer, and then by increasing market share and contributing to the price collapse when the former policy failed. While it had become the dominant producer today, a variety of unforeseen developments could shift the balance of power over time.

OPEC countries are expected to continue to have significant influence over the level of oil prices into the foreseeable future. The organisation may change membership or structure, or may even dissolve and later reunite, but there is great economic incentive to maintain the group (or something similar) to secure higher oil revenues. The primary objective of the organisation is wealth maximisation, which is achieved by restricting out-put to maintain prices well above the long run competitive costs of production. However, the optimal price path is elusive and often short-term gains outweigh long-term considerations[155].

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[154] Pe. . ; Odell *Oil and World Power*. New York, 1986.
[155] Op. cit. p. 60.

4.4 OPEC begins to its oil weapon

Finally, the Western consuming countries became vulnerable to the treat of supply interruption or reduction. As oil became the primary source of energy and as US supplies diminished[156], the developed-market economies became increasingly dependent on foreign oil, especially from the Middle East and North Africa. By 1972, Western Europe derived almost 60 per cent of its energy from oil, almost all of which was imported. Oil from abroad supplied 73 per cent of Japan's energy needs and 46 per cent of US energy came from oil, almost one-third of which was imported. By 1972, 80 per cent of Western European and Japanese oil imports came from the Middle East and North Africa. By 1972, even the United States relied on the Middle East and North Africa for 15 per cent of its oil imports. This economic vulnerability was accentuated by declining political influence in the oil-producing regions and by the absence of individual or joint energy policies to counter any manipulation of supply.

In order to understand the extent to which the oil embargo and the oil price increases of 1973 changed the world's economy and catapulted Saudi Arabia into prominence as a global financial power[157], we must

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[156] See Figure 10

[157] As Henry Kissinger, in his book *For the Record*, London, 1981: "Earlier in this discussion (February 3rd) we spoke of the dangers of the 1980's entirely in terms of East-West relations. A fair assessment would show that the East-West problem is currently complicated by historical processes in many parts of the world, including the Gulf and Saudi Arabia, that are to some extent independent of the East-West conflict. In Saudi Arabia and the Gulf we now face two distinct problems. One is the growing perception of the potential irrelevance of American power to the most likely dangers that these countries face. They are bound to be concerned lest the United States, for a variety of

review the arrangements that existed between the Saudis and the foreign oil companies prior to 1973. The kingdom's first oil concession was granted by Ibn Saud in 1933 to the Standard Oil Company of California (later reorganised as the Arabian American Oil Company (ARAMCO)) which acquired the right to extract and transport whatever petroleum was found within its concession in exchange for the construction of a refinery and the payment of royalties to four gold shillings per ton of crude oil. The terms of the concession were immensely favourable to ARAMCO. Oil was discovered in the Eastern Province of Dhahran in 1938, but major commercial production did not take place until after World War II. During the 1950's, the concession agreements were modified so that Saudi Arabia and most other Middle Eastern oil producers received 50 per cent of the profits from the foreign companies. However, the oil-producing countries had little say in determining prices or production levels. ARAMCO emerged as a giant multinational corporation that controlled not only the exploration and extraction of Saudi oil, but also its refining, marketing and pricing.

As the world demand for oil rose, the Middle East came to supply an ever-greater percentage of the demand. This was especially true for Japan and Western Europe, areas that either had no oil of their own or had oil that was extremely costly to extract (as in the case of the North Sea reserves). As a result of this reliance on low-cost petroleum, Saudi Arabia supplied 21,6 per cent of Europe's oil requirements in 1972 and 13 per cent of the world's total production of crude oil in 1973. Even the United States, a major producer and the world's largest consumer of petroleum, became dependent on imported oil. Saudi Arabia's share of US oil imports in 1973 was 8.1

per cent[158].

In these circumstances of growing European, Japanese and US dependence on Middle Eastern petroleum, a gradual restructuring of the industry started to take place. Led by demands from the Shah of Iran, prices began to edge upward in the late 1960's, and some of the producing countries attained partial control over pricing and production levels. Despite these changes, the world was unprepared for the decision of the Arab producers to deploy their oil weapon as an instrument of diplomacy. In the midst of the Arab-Israeli War of October 1973, the United States engaged in an extensive air-lift of military supplies to Israel, and President Richard Nixon requested that Congress approve a $2,2 billion appropriation for military assistance to Israel. Saudi Arabia responded to these actions by declaring an embargo on all oil shipments to the United States and the Netherlands (the latter was targeted primarily because of Rotterdam's importance as a port of entry and distribution centre for oil destined for other parts of Europe). In addition, the Saudis and other Arab oil producers announced that they would cut back on oil production and reduce the amounts available to the consuming countries. These announcements created panic and confusion within the industrial States. A scramble to purchase non-Arab oil took place, and prices began to rise. In November 1973, the political leverage of the oil weapon became apparent as the European Economic Community and Japan both issued statements affirming Palestinian rights and urging Israel's withdrawal from the territories occupied in 1967. In the following

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[158] Nadav Safran, *Saudi Arabia: The Ceaseless Quest for Security*, Ithaca, 1988

months, previously underpriced petroleum began to find its true market value. OPEC set the price at $11.65 per barrel effective 1 January, 1974; a year earlier the price had been $2.74. The effect of the price increases on Saudi revenues was dramatic. In the year preceding the price hikes, the kingdom earned $6,4 billion in oil revenues; in the fiscal year 1974-75, Saudi revenues sky-rocketed by 330 per cent to $27,7 billion. During 1981, when oil prices peaked at $34 per barrel, Saudi Arabia's oil revenues were an astounding $102 billion. The kingdom was awash in funds.

The embargo of 1973 set in motion a series of other significant developments within the petroleum industry, most notably the increased participation by OPEC countries in the ownership of oil-producing operations and their involvement in such downstream activities such as refining, distributing and marketing. However, the giant foreign oil companies did not disappear. The provided the technology and expertise on which the producers still depended, and their services were retained through lease-back arrangements and joint ventures with the local national oil companies. ARAMCO thus remained a prominent factor in the national life of Saudi Arabia.

In the next chapter, I analyze how this new cartel used its power as an economic and diplomatic weapon by imposing oil embargoes to attain political goals, and how South Africa reacted to these threats.

CHAPTER 5 : OIL AS A DIPLOMATIC WEAPON

Oil embargoes were imposed by the Arab petroleum exporting countries in 1967 and 1973-74 against Western States that directly aided Israel in its war with Arab adversaries. The scale and speed of Israeli attacks on the Egyptian, Syrian and Jordanian air bases in early June 1967 led Cairo and Amman to accuse Washington and London of direct participation in the Arab-Israeli conflict. An emergency meeting of the Arab petroleum exporting countries in Baghdad decided to cut off oil supplies to the United States, Britain and West Germany, but not France, which had condemned the Israeli action. The embargo lasted until the end of August 1967 and led to the formation in January 1968 of the Organisation of Arab Petroleum Exporting Countries (OAPEC)[159], as discussed in Chapter 4.

Later, in 1973, a number of Arab nations used once again an oil embargo against the United States and its allies in an attempt to influence United States policy with regard to Israel[160]. The economic and political impact of this move in the United States was immediate and pronounced. Soon afterwards, the Middle Eastern members of the Organisation of Petroleum Exporting Countries (OPEC, were successful in persuading that organisation to exploit its strategic position as a cartel and dramatically increase the price of the oil they

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[159] The ten OAPEC member countries are: Algeria, Saudi Arabia, Bahrain, Egypt, United Arab Emirates (UAE), Katar, Kuwait, Iraq, Libya, and Syria

[160] Alan Randall. *Resources Economics* 2nd ed. New York, 1987. p.305

exported[161]. In 1979, following a political crisis in Iran (which reduced oil exports from that country and led to a situation in which the spot-market price for oil substantially exceeded the cartel price) and a continued decline in the value of the United States dollar relative to other currencies, the OPEC cartel significantly increased oil prices again[162].

The success of OPEC in quadrupling the price of petroleum was due to a peculiar set of favourable circumstances. Both demand and supply factors were ripe when the third Arab-Israeli War in 1973 caused Arabs to impose an embargo on the West and the Shah of Iran took advantage of the situation to raise the price of petroleum exports drastically. During the months just prior to the out-break of the War, demand for petroleum and other commodities had increased greatly while accelerating inflation had reduced the real price of oil. On the supply side, there was no longer an excess capacity available which the West could tap into to compensate for the Arab-induced shortfall. In fact, one can argue that the energy crisis actually began earlier, when the United States began full production from its domestic oil fields, thus losing its excess capacity and relinquishing to the OPEC cartel, effective control over the world petroleum market.

Within the context of the diplomacy of the Arab-Israeli conflict, the use of the oil weapon prompted the governments of Western Europe and

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[161] The producers associations constitute a form of action on prices. Under the international rights the legitimacy of such associations has many times been questioned. In the United States, for example, the Trade Act of 3rd January, 1975, considers illicit the cartels of the producers of raw materials and allows the North American administration the adoption of measures against member States of such agreements like, for example, their non-admission to the system of generalised preferences.

[162] See Figure 6

Japan to look more favourably on the Arab cause and forced United States policy-makers to face up to the growing United States dependency on imported oil.

5.1 A new powerful factor

Since the First World War, oil as a source of energy had become more and more important for industry and war. Most mechanised weapons and vehicles were driven by oil; consequently, countries that possessed considerable deposits of oil had acquired an influence in international affairs which in some cases could be attributed primarily, if not exclusively, to that possession. The emergence of oil as an indispensable raw material brought about a shift in the relative power of the politically leading nations. The former Soviet Union had become more powerful since it had been self-sufficient in this respect. Japan had grown considerably weaker as it had been completely lacking in oil deposits[163]

Aside from its location as the land bridge of three continents, the Near East was strategically important because of the oil deposits of the Arabian Peninsula[164]. Control over them traditionally had been an important factor in the distribution of power, in the sense that whoever was able to add them to its other sources of raw materials added that

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[163] Hans J. Morgenthau. *Politics among Nations*. 6th ed. New York, 1978, p. 133.
[164] See Figure 11

much strength to its own resources and deprived its competitors proportionally. It is for this reason that Great Britain, the United States and, for a time, France, embarked in the Near East upon what has aptly been called "oil dip' cy": that is, the establishment of spheres of influence giving them exclusive access to the oil deposits in certain regions.

Yet oil is no longer one of many raw materials important in the measurement of a nation's power. It is now a material factor whose very possession threatens to over-turn centuries-old patterns of international politics. The oil embargo by the oil-producing States in the winter of 1973-74, together with the drastic rise in the price of oil, suddenly clarified certain basic aspects of world politics which we might have understood theoretically, but which were brought home in earnest by the drastic change in power relations brought on by the new politics of oil.

A cartel was a powerful tendency to undermine itself, and its maintenance requires the existence of a large producer with excess capacity that can instil discipline; such a leader can strongly influence world prices through increases or decreases in the aggregate supply. By 1973, this pivotal position had shifted from the United States and its petroleum companies to the King of Saudi Arabia. Subsequently, the Saudis dominated world energy markets for over a decade; by increasing or decreasing their production, they maintained the cartel and influenced the world price. They thus operated the cartel to their own national advantage and that of at least some other producers.

In the early 1980's Saudi influence over the cartel was undermined and

OPEC's fortunes were dramatically reversed. The success of conservation measures, the entry of new non-OPEC producers, especially Mexico and Great Britain, and global recession, greatly reduced world demand for petroleum. At the same time, total production was increased as individual producers tried to prevent a fall in their total oil revenues. The consequent decline in oil prices from a previous high in the range of $35 or more a barrel to a low of less than $12 in the summer of 1986, caused the Saudis to increase production significantly to force a collapse in the price and thereby to re-establish their influence over the cartel. Although the consequences of this "price war" were undecided, projections suggested that the world demand for petroleum would again overtake supply sometime in the early 1990's. If and when this occurred, Saudi Arabia would regain its domination over the cartel and would once again strongly influence the price of petroleum and world energy.

Although commodity cartels have had varying degrees of success in raising or maintaining prices, there does not appear to be any other commodity in a situation similar to that of petroleum.

Over-estimation by developing countries of their ability to manipulate raw material prices, following the model of the oil cartel, has been one of the causes of the recent failure of the North-South dialogue[166]. However, oil is a special case. It is unlikely that even the most imaginative schemes could alter the long-term market prospects for any other commodity. One basic reason is that the industrialised countries, particularly the United States, Canada, Australia and the

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[166] Henry Kissinger. *For the Record*. 1977. Op. cit. p. 33

Soviet Union, are themselves major producers of commodities like iron ore, nickel, copper, cotton and sugar. In addition, there are technological possibilities for substitution, which make it difficult to assert in other commodities the kind of control over supply and price, which the oil cartel enjoys[166].

Substitutions for almost all other commodities are readily available, and the world demand for many commodities has declined due to dramatic reductions in the resource content of manufactured goods. With the exception of a few metals, the United States or one of its allies can produce the commodities. However, more importantly, no single producer like Saudi Arabia exists that can control the supply and hence the price. Finally, although cartels may benefit certain less developed countries (as happened with petroleum), they do so only at the expense of most other LCD's. For many reasons, cartels in scarce commodities do not appear to provide a promising method for improving the lost of the less developed countries.

Traditionally, a functional relationship has existed between political, military and economic power. That is to say, political power has been throughout history, a function of military and - in recent times more particularly - of economic power. Take for instance the expansion of Europe into what later became the colonial areas of the Western Hemisphere, Africa and Asia. That expansion was primarily due to a technological gap between the colonial powers and the colonised nations. In other words, the conquest of India by Great Britain (greatly inferior in manpower and in many other aspects of national power) was

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[166] Op. cit. p.33

largely made possible by Great Britain's possession of a high technology which, when transformed into military power; the Indian States could not resist[167].

Those relationships of a functional nature between technology and economic power, on the one hand, and political and military power, on the other, have been disturbed - one might even say destroyed - by the recent use of oil as a political weapon. Measured in terms of natural resources, they have nothing but sand and oil. However, it is the oil, which seemingly overnight has made it those small plots on the map which we call States, important and even powerful factors in world politics. In other words, a State which has nothing to go on by way of power, which is lacking in all the elements which traditionally have gone into the making of a national power, suddenly becomes a powerful factor in world politics because it has one important asset - oil. This is indeed an event which is of revolutionary importance for world politics.

A State which is powerless in all other respects, which is not a major force in terms of traditional power, can exert enormous - and under certain conditions even decisive - power over nations which have all the implements of power at their disposal except one - deposits of oil. Thus a nation like Japan, one of the foremost industrial nations of the world and potentially a great power, is completely dependent upon the supply of oil from abroad. If for some reason the oil-producing nations were to impose a total embargo upon Japan, they could destroy her political, economic and social fabric, and if they were to combine that

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[167] Ibid. p 134.

threat of a total embargo with political conditions, they could impose their will upon Japan. They could reduce Japan to the status of satellite, a dependency of the oil-producing nations.

5.2 Oil revenues for political ends

Since the 1967 war, OAPEC at a series of Arab conferences held to determine future policy, a new philosophy towards the use of oil as a means of achieving desired ends began to emerge. In brief, the new policy was to make deliberate use of revenues from exported oil to provide the financial base for the achievement of political ends. The scope of this new policy - emerging not only from the growth in total exports, but also from the growth in revenue per barrel[168], which rose from about 30 cents in 1946 to about $1 by 1970 - is clear. In 1972, the Middle East (including Libya and Algeria but excluding Iran) exported over 5 000 million barrels of oil and secured some $5,000 million in revenues. The small monthly payments of approximately $5 million being made by two of the major Arab oil-producing nations (Kuwait and Saudi Arabia) to Egypt while the Suez Canal is closed, and to Jordan for an indefinite period, to help with the costs of the Palestine refugees and the loss of the West-bank region to Israel, was a first small indication of the possibilities which exist for using oil revenues for political ends[169].

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[168] See Figure 6

[169] Peter R. Odell. *Oil and World Power.* 3rd. ed. Middlesex, 1974. p. 174

The former Egyptian Minister of Foreign Affairs, Mohamed Heikal argued that no problem in the Middle East area involving war and peace could be solved without an active participation of the two super-powers, but that there was no need for the Arab-Israel problem to become polarised between the former Soviet Union and the United States. While Egyptians had to accept that the interests of America and Israel, Heikal wrote, were closely linked, Egyptians should always strive to ensure that they did not become completely identified with each other. "We must work to preserve a gap between the interests and policies of the two countries, and in that gap we should find room to manoeuvre and to bring pressure on Israel. The assets on which we could count for the achievement of these ends include our ability to wage a limited war, our close relations with the Soviet Union (always provided they are kept properly informed of our intentions) the oil ...n and the solidarity of other Arab countries"[170].

...re now appeared to be a chance that oil revenues alone would be ...ed to achieve the geo-political aims of the Arab group of States, with ... main results. Firstly, there would be a flow of oil from the area unaffected by political crisis, as the producing countries increasingly attached more importance to ensuring the continuation of revenues from oil rather than use oil as a political weapon. Secondly, as a result of the economic and political advantages that oil revenues could buy, there would be an Arab Middle East with greater internal cohesion and a more significant geo-political potential among the blocs of the world in the later part of the twentieth century[171].

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[170] *The Road to Ramadan*. London, 1975. p. 115
[171] Peter R Odell. Op. cit. p. 175

By 1973 Egypt had almost become the laughing stock of the Arab world. They claimed to be the leader and protector of the Arabs, but gave no lead to their own people and showed themselves unable to protect their own territory. We asked others, Mohamed Heikal wrote, to use their oil weapon but showed no sign of using our own weapons[172].

The symbiotic relationship among bank creditor, LDC borrower and advanced country exporters, worked effectively throughout much of the 1970's. The market was praised for its successful recycling of petro-dollars. Then came the second oil crisis in 1979, t' ecession of the late Carter Administration and the even deeper recession of the first years of the Reagan Administration. The Reagan "revolution" in economic policy followed these disturbing events. The world economy and America's role in it was dramatically transformed.

The massive American budget deficit and accompanying restrictive monetary policy had a profound impact on LDC debtors. The United States was forced to raise interest rates to finance its unprecedented budget deficit; this siphoned off the world's capital. In addition to raising global interest rates and service charges, American policies induced a world recession that decreased debtor earnings on their commodity exports. The un-anticipated reversal in interest payments placed the debtors in an impossible position; the rise of protectionism against their manufactured goods aggravated their plight by decreasing their export earnings. The debtors suddenly found themselves caught

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[172] Mohamed Hel[illegible] *The Road to Ramadan*. London, 1975. p. 205

between increased interest payments due tc the "crowding out" phenomenon caused by the American budget deficit and decreased prices for their commodity and other exports due to the global recession. The world "debt crisis had arrived.

American officials played a key role in the transformation of world financial markets, most notably on two occasions. The first was in 1971 when Nixon closed the "gold window". No longer was it possible to redeem dollars for gold. For non-Americans this meant that they had to keep their dollars on deposit somewhere in the world or convert them into some other currency. The second event came eight years later, in 1979, when Paul Volcker, chairman of the Federal Reserve Board, tried to fight inflation in the United States by cutting the money supply. He used the standard tool, charging substantially higher interest rates to commercial banks to obtain dollars from the Federal Reserve. Since the dollar was the reserve currency for the world, however, the Fed had unwittingly raised interest rates everywhere, and both interest rates and exchange rates began fluctuating widely. The buying, selling and lending of monetary products world-wide became businesses in themselves. Most of it had little or nothing to do with investmen either production or commerce. (However, as exchange rates became more volatile, hedging became almost a necessity for some transitional businesses). Foreign banks of the world saw that they could reap quick profits in commissions, fees and interest by "recycling" tens of billions of "petro-dollars" from the coffers of Kuwait and Saudi Arabia to the governments and their business associates in poor countries.

In brief, the combination of the massive OPEC financial surplus, the

over-eagerness of the international private banks (frequently abetted by their governments) to recycle that surplus, and the multitude of capital-hungry economies in Eastern Europe and the Third World proved to be a dangerous mixture. This curious alliance of capitalist bankers hoping to profit from the accumulated OPEC surplus and the governments of less developed and East European countries seeking unrestricted financial support for state-directed programs of rapid economic growth brought the capitalist world to the brink of financial disaster. Although the tale is complicated and its conclusion not as yet unfolded, it is clear that the debt problem introduced a novel and unstable element into the post-war international financial system.

The shift by the United States to a more restrictive monetary policy in 1979, the spread of global recession and the energy conservation efforts of the advanced economies, produced a third oil shock; a major decline in revenues for oil exporters like Algeria, Nigeria and Mexico. These countries had sunk heavily into debt to finance development projects, subsidise food imports and expand welfare programs. With the drop in oil revenues, they found themselves unable to finance their debt burden.

The global recession, the rise in real interest rates due to the drop in the rate of inflation, and the declining terms of trade for the exports of debtor economies produced a global debt problem and a severe threat to the integrity of the international financial system. The market was unable to manage the escalating crisis. In 1982, with the Mexican economy $86 billion in debt and on the verge of default, optimism gave way to deep pessimism. Drastic and immediate action was clearly required.

5.3 The implementation and first use of the "oil weapon"

In October 1973, the Egyptian armies swarmed over the Suez Canal. In the new few days of fighting, they and the Syrians to the north dramatically reversed the current of the previous decades and proved that Arabs could hold their own with Israel in open battle. In the still more critical weeks that followed, oil for the first time was used as a political weapon by the Arab powers. Yet these events were only the culmination of a long and patient process of negotiations and reconstruction which had gone on since the crushing defeat of the Arabs in the June War of 1967[173].

President Sadat ordered a meeting of the Egyptian National Security Council - a political body - on the 2nd October. At this meeting, in Ramadan[174], the President explained that it might be necessary in the near future to break the cease-fire. He was asked what sort of battle he expected to result and said he thought it would be a limited battle. Some of those present tried to get him to define more precisely what he meant by a "limited battle". The President was asked whether he thought oil would become a weapon in the battle. . .is answer was that he did not think he could make any demands on the oil-producing Arab States in advance but that once the fighting had started, any Egyptian requests would find a ready response[175].

After the failure of the United States Security Council called by United States President Nixon to meet, attention began to move to the

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[173] Ibid. p. 23.

[174] The Ramadan is the month-long fast commemorating the first revelation of the Loran during which devout Moslems neither eat nor drink during the hours of daylight.

[175] Mohamed Heikal. Op. cit. p. 27

question of the air-lift of arms to the combatants. The Israelis had organised an air-lift from the first moment of the war, diverting as many of their own civilian planes as they could to the United States where they were enabled, with the express sanction of President Nixon, to load up with arms and ammunition. When the Egyptians and Syrians heard of this Israeli air-lift, they increased their pressure on the Russians to organise a corresponding air-lift for themselves. Once this Russian air-lift to the Arabs had started, the Americans stepped up their air-lift to Israel, making open use of American plans for this purpose. There was however, a conflict between the State Department and the Pentagon, with some fearing that if the United States rushed to Israel all the arms that were being asked for (and the Israeli demands for, above all, anti-tank guns and missiles had become urgent) there would be an adverse reaction on the Arab side and even the implementation of the much feared "oil weapon"[176].

During the October 1973 Arab-Israeli War, OAPEC oil ministers met in Kuwait on 16 October. The next day, in a gesture of sympathy with Syria and Egypt, reacting to United States President Richard Nixon's decision to air-lift weapons to Israel on a massive scale, the Arab member States of OPEC[177] decided that "all Arab oil exporting countries shall forthwith cut production by no less than 5 per cent of the September production, and maintain the same rate of reduction each month until the Israeli forces are fully withdrawn from all Arab territories occupied during the [June] 1967 [Arab-Israeli] War and the

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[176] Ibid. p. 245

[177] OPEC is an organisation formed in 1960, as discussed in Chapter 4, and includes the following member States: Algeria, Saudi Arabia, United Arab Emirates (UAE), Equador, Gabon, Indonesia, Iraq, Iran, Kuwait, Nigeria, Katar, Lybia, and Venezuela.

legitimate rights of the Palestinian people are restored[178]". They categorised the consumer countries as friendly, neutral or hostile to the Arab cause, with friendly nations to be supplied at the September level, neutrals at a reduced level and hostile ones not at all. They also confirmed the steep price rise decided earlier by OPEC. Saudi Arabia ordered a 25 per cent cut in its out-put, then running at 8 million barrels a day, but Iraq ignored the OAPEC decision. Two days later, Saudi Arabia suspended indefinitely all oil shipments to the United States. The reduction in the international supply of oil sent prices soaring and caused the world community to reassess its previously held assumptions that about petroleum production.

The October 1 '73 War completely changed the face of the petroleum industry and provided the oil-producing nations with a level of power that was previously thought impossible for th·m to achieve.

One consequence of the war was that the Arabs used the so-called "oil weapon" for the first time. This was something that many people in the Arab world had been demanding for a long time and which many people in the West had been dreading. However, as will be seen, the first application of it did little to harm those it was meant to harm, or benefit those it was meant to benefit.

As the former Egyptian Minister of Foreign Affairs Mohamed Heikal wrote:

"It was hoped that the oil-producing countries would co-operate

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[178] See Figure 10

> by putting pressure on the Americans, but should these hopes not be realised it might become necessary to think of other ways of exerting pressure."[179].

As Henry Kissinger stated to a request by the editors of the *Washington Post*, published in the *Washington Post* on the 29th November, 1979:

> "In 1973-74, Iran was the only Middle East oil-producing country that did not join the oil embargo against us; it continued to sell oil to the United States, to Israel, and to our other allies. Iran kept its oil production at maximum capacity (thus helping stabilise the price) and never used oil as a political weapon. The Shah was a source of assistance and encouragement to the forces of moderation in the Middle East, Africa and Asia; he used his own military power to ensure the security of the Persian Gulf and to discourage adventures by radicals. He firmly supported the peace process that culminated in the Egyptian-Israeli treaty; he was a defender of President Sadat against radical forces in the area. After his initial advocacy of higher prices in 1973, he used his influence to keep the prices steady so that the real price of oil actually declined over the period from 1973 to 1978 (due to inflation)."[180].

Unlike the June 1967 embargo, this only hurt the United States - partly because it was applied during autumn and winter when demand for

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[179] Op. cit. p. 35

[180] For the Record : Selected Statements 1977-1980. London, 1981. p. 253.

heating oil was high, and partly because the United States had become more dependent on Arab oil, as I dealt with in Chapter 4. The OAPEC move reduced the annual United States gross domestic product by $10-20 billion.

These oil embargoes, which might have become the Achilles heel of the South African economy, and threatened a real crisis, was one for which South Africa had plenty of time to prepare. Kuwait banned oil exports to South Africa in 1964, as part of an international bid to force South Africa to change her policies, with very little effect on the country's supplies. The OPEC added weight to the ban in the 1973 embargo; but at that time South Africa could still obtain supplies from Iran, and continued to import Iranian oil until the Iranian revolution of 1979 no longer made this possible. However, by this time, South Africa possessed its own oil-from-coal, as I will deal with in the next chapter.

The resolve of OAPEC members, especially of Saudi Arabia, began to falter. Aware of the staunchly anticommunist views of the Saudi monarch, Faisal ibn Abdul Aziz, Edward Heath, Prime Minister of Britain (which was not on the Arab oil embargo list) argued publicly in late December that any prolonged oil squeeze would, by weakening the West, strengthen communism. It did not take long for President Anwar Sadat, working in conjunction with United States Secretary of State Henry Kissinger, to convince Faisal to end the embargo. Faisal and Sadat then prevailed upon other members of OAPEC to end the five-month embargo on 18 March 1974 "as a token of Arab goodwill" to the West - even though the Israelis had not withdrawn from anywhere in the occupied Arab territories and the legitimate rights of the Palestinian

people had not been restored.

As a consequence of the embargo, the first oil shock occurred in 1973-1974, when, shortly after the 1973 Yom Kippur War, the price of oil increased fourfold as a result of that major Middle Eastern oil producer's collective action[181]. The second jump in world oil prices produced by the oil-exporting countries occurred in 1979-1980 in the wake of the revolution in Iran. Iraq's invasion of Kuwait on August 2, 1990 precipitated the third shock. The next day, Friday, August 3, the United States National Security Council met at the White House. The United States President Bush indicated that he agreed with his national security adviser. The participants discussed economic sanctions, and ways the administration might work with the allies and the United Nations to erect a wall around Saddam to isolate him. They discussed a CIA report arguing that the invasion posed a threat to the current world order and that the long-term impact on the world economy could be devastating. Saddam was bent on turning Iraq into an Arab super-power - a balance to the United States, the former Soviet Union and Japan. Control of 20 per cent of the world's oil would give him more than enough leverage. Bush ordered the CIA to begin planning for a covert operation that would destabilise the regime and, he hoped, remove Saddam from power[182].

On the 29th November, the United States Security Council met to vote for an authorization to use force to expel Iraqi forces from Kuwait. If it passed, the resolution would be the broadest authority for war it had

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[181] See Figure 6

[182] Bob Woodward. *The Commanders.* New York, 1991. p. 237

granted since Korea in 1950. The resolution passed 12 to 2. Yemen and Cuba were the two countries voting against it. China abstained[183].

As the former United States President Richard Nixon wrote:[184]

> "it became embarrassingly obvious that the consuming countries had become so dependent on OPEC - and the OPEC governments had assumed so commanding a position in oil decisions - that in the short run, at least, the West was virtually helpless in the face of whatever demands those governments might choose to make. The control over Midwest oil had shifted from the multinational companies to the host countries and statesmanship and restraint on the part of Arab leaders suddenly became the key to Western survival. Neither the oil companies nor the Western governments could dictate terms to the OPEC countries any longer. The best the Western nations could do was try to persuade the producing nations that their own long-term interests were tied up with those of the West; that if their actions wrecked the Western economies, or destroyed the dollar, or so weakened the West that it could no longer protect their interests as well as its own, then those actions would be ultimately self-defeating.".

The oil factor was a major incentive for Washington's intensive effort to seek a peaceful settlement of the Arab-Israeli conflict.

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[183] Ibid. p. 333.
[184] *The Real War*. London, 1980. p.81.

These efforts were represented by Secretary of State Kissinger's so-called shuttle diplomacy[105] In January 1974 Kissinger negotiated a disengagement agreement between Egypt and Israel, and in September 1975 he persuaded the two parties to sign a document known as Sinai II, which provide for the withdrawal of Israeli forces from Western Sinai. United States peace-making was smoothed by economic assistance. The special relationship between the United States and Israel was reconfirmed during the negotiating sessions and was reflected by an increase in United States military aid from an average annul sum of $400 million in the period 1971-1973 to an average of $1,5 billion during 1974-1975. This amounted to 42 per cent of Israel's annual defence spending. Egypt also reaped rewards for its willingness to follow Kissinger's lead. The United States contributed to the reconstruction of the Suez Canal, which reopened in 1975, and raised its economic assistance package to Cairo from $8,5 million in 1974 to $750 million by 1976.

5.4 Economic consequences of the oil embargoes

Although the domination of the world economy by multinational corporations seemed assured in the 1960's as discussed in Chapter 4, the 1973-74 oil embargo by OPEC and the subsequent massive rise in the price of petroleum demonstrated that nation-States had not lost their capacity for counter-attack. Within a relatively short period of time, the gigantic oil companies - previously the quintessential

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[105] *The White House Years*. London, 1988. p. 558.

international corporations - had had many of their foreign subsidiaries nationalised and had become subservient to States earlier considered powerless and servile. World history records little equivalent redistribution of wealth and power in such a short period.

In the United States, the close identification of corporate interests and national interest began to wane after the 1973 energy crisis. Organised labour and certain academic critics had long been concerned about the implications of foreign investment for domestic employment, the distribution of national income, and the competitive position of the American economy. Such criticism became more general at the time of the Arab-Israeli War of October 1973, when United States oil companies were viewed as aiding the Arab oil embargo of Western countries. Subsequently, with the relative decline of American industry and the onset of massive trade deficits, high unemployment, and chronic balance-of-payments difficulties, the belief has spread that multinationals export United States jobs and decrease United States exports. Some critics have argued that multinationals should be forced to invest in the American economy and to limit the transfer of American technology to competitor economies[186].

In all G7 countries,[187] long-term trends in unemployment since the War show a distinct break around 1970. The increase in unemployment has been greatest in the major countries of the European Union, with

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[186] Robert Gilpin. *The Political Economy of International Relations*. Princeton, 1987. p. 244

[187] The seven leading industrialised *First World* nations - the United States, Canada, Great Britain, France, Germany, Japan, and Italy - who meet annually to discuss global economic issues.

Western Germany experiencing an almost eight-fold increase (from a very low base). Of the major European countries, only Italy had a relatively small proportionate increase in unemployment, but this was from what was, for the 1960's, a high base. Canada and the United States, both relatively high unemployment countries in the 1960's have also suffered "only" 50 per centum and 130 per cent increases in average levels of unemployment[166]. "The year 1969 marked the first trade deficit of the United States with Japan, and the nation fell behind in its competition with Germany as well. As inflation climbed, so did unemployment. By the early 1970's stagnation became a new phenomenon. The Great American industrial machine, the source of unprecedented political and economic might, was running down. Government and consumers alike were spending wildly, and investing little. America's competitiveness, especially vis-a-vis Japan and its East Asian neighbours, was eroding. In 1973, the rapid rise in the price of oil dictated by OPEC exacerbated the difficulties. Rather than facing the reality of increasingly expensive energy, the government sought to soften the blow. Its control of oil prices delayed the inevitable adjustment by the automobile industry and by the economy as a whole. The country was still feeling the consequences of that exercise in escapism as late as the 1980's. Simultaneously, new perceptions of the environment were forcing Americans to realise that they were contaminating their life-support system. Air and water, like oil, were neither free nor inexpensive. In response to the crisis and interest-group pressures, government regulation proliferated. This was a massive intervention in the free-enterprise system, but, because Americans were so adverse to the concept of planning, the intervention was fragmented.".

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[166] George C Lodge. *Ideology and National Competitiveness.* 1987. p. 166.

Japan's experience is exceptional, having very low unemployment in the 1960's, and from that low base suffering "only" a 120 per cent increase[189]. The economic disruption visited upon the 1970's by oil price shocks, together with the deflationary measures taken by G7 governments in reaction to the oil price rise, might be thought to be the source of the deterioration in G7 economic performance[190]. Not only had the Western economies absorbed similar rises in raw material prices at the time of the Korean War without similar slow-down, but also the new high trend levels of unemployment were not notably affected by the collapse in oil prices and other commodity prices in 1986[191].

Many of the post-war favourable supply conditions had dramatically changed by the 1980's, at least as far as the advanced economies were concerned. Not only did these economies no longer possess inexpensive labour supplies, but in some cases they were forced to import "guest workers" or resort to the strategy of foreign direct investment in low-wage economies. The global shortage of capital raised real interest rates, thus depressing growth rates. On the positive side, at least for importing countries, the world in the mid-1980's had a glut of petroleum[192] and other commodities due in part to conservation measures and reductions in the material content of manufactured goods. This over-capacity, particularly in petroleum, however, was also a consequence of the restrictive growth policies

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[189] Jonathan Michie. *Managing the Global Economy*. Oxford, 1995. p. 271

[190] The OECD estimated that 20 per cent of the loss in OECD real income was due to the terms of trade effect of the oil price rise, and 80 per cent due to the concerted deflation of the Western economies.

[191] Jonathan Michie. Op. cit. p. 272.

[192] See Figure 12

pursued by many governments rather than being solely as a reversal of the supply situation that had triggered the global recession in 1973; many governments had trade-offs of higher levels of unemployment and lower rates of economic growth for reductions in the rate of inflation and energy costs. With the continuing industrialisation of the less developed countries, the world demand for petroleum could once again exceed supply sometime in the 1990's.

The most problematic aspect of supply conditions had been the change in the technological situation. Although important new technological opportunities existed in computerisation, bio-technology and other advanced fields, it was highly doubtful that the would cause a replication of the unprecedented post-war global rate of economic growth. This unusual situation created elevated expectations of an ever-increasing standard of living and of expanding welfare programs in many economies, which had made adjustment much more difficult.

Oil and politics - or more accurately, "petroleum and politics" because gas is involved too - have enormous potential to make each other's job more difficult. Daniel Yergin reminds us in his recent book that oil is a commodity "intimately intertwined with national strategies and global politics and power"; and he goes on to say that:-

> "Today, oil is the only commodity whose doings and controversies are to be found regularly not only on the business page but also on the front page".[193]

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[193] *The Prize: The Epic Quest for Oil, Money and Power.* London, 1991

However, political problems, pressures and priorities change over time. The politics of oil in the 1990's are very different from those of the1960's and 1970'. With hindsight, we can now see that the 1980's was a decade of transition; suspicion and unease between "politics and petroleum" giving way to a greater sense of interdependence[194].

Something else happened in the 1980's. Whether as a cause or a consequence is not too important; but it is clear that many governments now feel that petroleum companies pose a far smaller threat to the public interest than was once widely supposed. It is beneficial that they should reach this conclusion, although for the industry this is not all-good news. The risks facing the community are as great as ever - not least because we are now expected to assume some of the risk formerly shouldered by governments[195].

A different kind of consequence occurred in 1973 when the Bretton Woods[196] system came to an end. In March, the decision was taken to let exchange rates float. Then, the quadrupling of world energy prices in the OPEC revolution dealt another blow to the system[197]. Its impact on international balances of payment and on financial markets confronted the dominant economic powers once again with the task of realigning their currencies. In contrast to the Smithsonian

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[194] See Figures 4 and 5

[195] Robert Horton. *Oil and Politics in the 1990's in the World Today*. 1992. p. 101

[196] Created by the design of new international financial machinery. This had been under discussion since 1942, and agreement was reached at a United Nations Conference at Bretton Woods in the summer of 1944. Two new institutions, an International Monetary Fund (IMF) and an International Bank for Reconstruction and Development (IBRD), were created. The chief purpose of the IMF were to maintain exchange stability and to assist the establishment of a multilateral system of payments, unhampered by foreign exchange restrictions. The IBRD was concerned to facilitate investment for productive purposes.

[197] John Williamson. *The Open Economy and the World Economy: A Textbook in International Economics*. New York, 1983

Agreement however, in which the currency realignments had been forced upon other countries by the United States and then negotiated multilaterally, the key actor this time was West Germany, which refused to continue to support the dollar. In effect, the United States and its economic partners decided to abandon the post-war system of fixed exchange rates in favour of one based on flexible rates. The refusal of an important ally to allow American economic leadership led to the abandonment of a key component of the Bretton Woods system. Bretton Woods was, in truth, an extension of the United States domestic financial system to the world, and the attempts at building an enlightened world financial government were compromised even in the exceptional circumstances of the early post-war period[198]. First, the early 1970's saw progressive disintegration and the eventual breakdown of the Bretton Woods system: currency market turbulence and exchange rate instability could thus be expected to persist until floating was generalised and the markets learned and established new rules of the game. Second, the inflationary experience following the oil price rises of the 1970's had destabilising influences for the international monetary and financial system[199].

The *de facto* end of fixed exchange rates and the Bretton Woods system was made *de jure* in 1976, at a meeting of the leading IMF[200] members held in Kingston, Jamaica. The Jamaica Conference decided as follows:

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[198] Jonathan Michie. Op. cit. p. 305

[199] Jonathan Michie. Op cit. p. 55

[200] International Monetary Fund (IMF) is an autonomous organisation, affiliated since 1947 with the United Nations; co-operates closely with the International Bank for Reconstruction and Development (IBRD); designed to facilitate international trade, reduce inequities in exchange and stabilise currencies

(1) floating exchange rates were legalised;

(2) the reserve role of gold was reduced;

(3) IMF quotas were increased, especially those of OPEC countries;

(4) funding for the less developed countries was increased; and, most important,

(5) the determination of the par value of a currency became the responsibility of the country itself.

Domestic autonomy had triumphed over international rules; nations disengaged from the requirements of a fixed-exchange system in order to pursue one or another national objective such as expanding exports, stimulating economic activities, or preventing the importation of inflationary pressures.

Now consider the supply side of the equation. Oil and natural gas production in the United States peaked by 1970. Oil imports increased rapidly, so that by 1977 imports amounted to more than 40 per cent of all United States consumption. Early in the 1970's, there was serious discussion of massive imports of liquefied natural gas to the United States. Elsewhere, the major petroleum exporters, many of which were Middle Eastern countries and almost all of which had relatively backward economies heavily reliant on the petroleum industry, were becoming increasingly aware that their reserves were finite and, in some cases, approaching exhaustion at current rates of extraction.

5.5 Increasing dependence of the oil consumers

Yet even as the Cold War division between east and West has lost its significance, so economic progress is also erasing the division between North and South that was once so intense. Today, producers and consumers have a common interest in the technological advances needed to keep oil environmentally as well as economically competitive. The global energy supply system itself has become much more flexible. Over the last two decades, both producers and consumers have learned powerful lessons that reinforce their mutuality of interests and recognition of inter-dependence. Those lessons in themselves are a form of security. They constitute a major element in a framework that can help buffer whatever surprises may lie ahead.

In the middle of the 1970's the world entered what has been called the Second Cold War. It coincided with a major change in the world economy, the period of long-term crisis which was to characterise the two decades beginning in 1973, and reached a climax in the early 1980's. However, initially the change in the economic climate was not much noticed by the players in the super-power game, except for the sudden jump in energy prices brought about by the successful coup of the oil-producers cartel, OPEC, one of several developments which seemed to suggest a weakening of the international domination of the United States. Both super-powers, in that time, were reasonably happy about the soundness of their economies. The United States was plainly less affected by the new economic slow-down than Europe; the former Soviet Union - whom the gods they wish to destroy they first make complacent - felt that everything was going its way. Leonid Brezhnev, Khrushchev's successor, who presided over the twenty

years of what Soviet reformers were to call "The era of stagnation", seemed to have some cause for optimism, not least because the oil crisis of 1973 had just quadrupled the international market value of the gigantic new deposits of oil and natural gas which had been discovered in the former Soviet Union since the middle 1960's.

Yet, economics apart, two-year inter-related developments now seemed to shift the balance of the super-powers. The first was what looked like defeat and destabilisation in the United States, as that country launched itself into a major war. The Vietnam War demoralised and divided the nation, amid televised scenes of riot and anti-war demonstrations; destroyed an American President; led to a universally predicted defeat and retreat after ten years (1965-1975); and, what was even more to the point, demonstrated the isolation of the United States as not a single one of America's European allies sent even nominal contingencies of troops to fight alongside the United States forces. Why the United States came to embroil itself in a doomed war against which both its allies, neutrals and even the former Soviet Union had warned it, is almost impossible to understand except as part of that dense cloud of incomprehension, confusion and paranoia through which the main actors in the Cold War tapped their way.

As if Vietnam was not enough to demonstrate America's isolation, the 1973 Yom Kippur War between Israel, which the United States had allowed to become its closest ally in the Middle East, and the Soviet-supplied forces of Egypt and Syria, made it even more evident. When a hard-pressed Israel, short of planes and ammunition, appealed to the United States to rush supplies, the European allies, with the single

exception of Portugal, refused even to allow United States planes to use the United States air bases on their soil for this purpose (the supplies reached Israel via the Portuguese Azores Islands). The United States believed - one does not quite see why - that its own vital interests were at stake. Indeed, the United States Secretary of State, Henry Kissinger (whose President, Richard Nixon, was otherwise engaged vainly tried to fend off impeachment) actually declared the first nuclear alert since the Cuban missile crisis, an action characteristic in its brutal insincerity of this able and cynical operator. This did not sway America's allies who were far more concerned with their oil supplies from the Middle East than with supporting some regional ploy of the United States which Washington claimed unconvincingly to be essential to the global struggle against communism; for through OPEC, the Arab States of the Middle East had done what they could to impede support for Israel by cutting oil supplies and threatening oil embargoes. In doing so, they discovered their ability to multiply the world price of oil and the foreign ministries of the world could not fail to notice that there was nothing the all-powerful United States did or could immediately do about that.

The oil embargo of 1973 was a momentous event for the States of the Arabian Peninsula as well as for the world economy. Arab oil producers discovered that their petroleum could be used as a diplomatic weapon in the Arab-Israeli conflict, and oil consumers were brought to a sudden recognition of their growing dependence on Middle Eastern oil. By withholding their oil from the market, the producing States were given an opportunity to discover the true value of their most precious resource. During the final months of 1973, consuming countries were willing to pay several times the set price for

non-Arab oil. When the Arab producers re-entered the market-place in January 1974, they joined with their OPEC partners to set the price of a barrel of oil at $11,65, a dramatic increase from the $2,74 price of a year earlier. Until 1982, the price of oil rose steadily, bringing enormous wealth and enhanced status to the producing States.

Oil revenues fuelled a development boom of unprecedented proportions among the States of the Arabian Peninsula. Yet amid the glittering material improvements and the disruptive social changes, political power remained in the hands of the hereditary dynasties. The dominant ruling families attempted to preserve their authority by preventing the emergence of representative assemblies and mass politics. They muted discontent by the skilful distribution of oil income, providing well-paying jobs for the educated elite and generous welfare systems for the population as a whole. This technique created remarkable political stability and assured the survival of the ruling families. It did not however resolve problems, but merely postponed them.

Each of the importing countries reacted to the oil embargoes in its own way. Some, which imported almost all of the petroleum they used[201], made sure that the full price increase was reflected in the prices paid by the users of refined petroleum products. The United States, a significant importer that nevertheless produced more than half of its crude oil domestically, responded rather schizophrenically. Public policy was confused because at the outset, there was broad disagreement at the most basic levels of diagnosis: Was it a political

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[201] See Figure 12

problem or an economic problem, and if a political problem, was it a problem for foreign or domestic policy?

During the early years of the "energy crisis", the political diagnosis seemed to old. Reducing domestic consumption was the stated goal of the foreign policy attack, with the objective of reducing the demand for OPEC oil and thus undermining the cartel. To this purpose, speed limits on the interstate highways were reduced from 70 to 55 miles per hour, a rather crude method of reducing the total miles driven while increasing the average number of miles per gallon of gasoline consumed.

The dominant domestic political objective seemed to be distributional. The negative impacts of the energy crisis on the welfare of ordinary consumers were to be minimised, and redistribution from citizens to domestic oil producers was to be limited to politically acceptable levels. Obviously, the foreign and domestic political objectives were in direct conflict. If one wishes to reduce the quantity of energy demanded as a means of reducing imports, it is counterproductive to protect the ultimate consumers of energy from large price increases[202]. When OPEC increased the price of oil again in 1979, the second oil shock helped throw the industrialised world into a recession. In 1982, it brought the United States the deepest recession it had experienced since World War II. Immediately thereafter, the United States entered into the longest period of peace-time growth in its history. Low inflation and low unemployment accompanied this growth. However,

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[202] Alan Randall. Op. cit. 307

in the middle and late 1980's, the United States also experienced large federal budget deficits, huge balance-of-trade deficits and a burgeoning national debt. According to some methods of accounting, it was transformed from the world's largest creditor to the world's largest debtor. Finally, in 1990, the long period of economic growth came to an end as the United States entered into a recession, which, along with the Persian Gulf War, threatened to create even larger federal budget deficits[203].

Oil demands, left stagnant or declining by the 1970's oil crisis, only began to grow again after the 1986 price collapse. By 1989, world consumption finally regained the previous record level of 1979, and is continuing to grow[204]. Indeed, if Russia is excepted, world oil demand is currently increasing at 1,8 per cent per year, even in the midst of a weak global economy.

However, the pattern of growth has changed. Demand is rather flat in North America and Western Europe, reflecting among other things, the growing use of more efficient automobiles. In these nations, the oil industry is preoccupied with the costs of staying in business. The US oil industry is estimated to be facing $152 billion in costs and investment over the next 20 years to meet environmental standards[205].

Demand growth is elsewhere - reflecting economic advancement in the developing world. The new prize is Asia. Economic "miracles", sustained growth and rising incomes require energy. Many of these

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[203] James Lee Ray. *Global Politics.* 6th ed. Boston, 1995. p. 265

[204] See Figure 10

[205] National Petroleum Council. *US Petroleum Refining: A Report to the US Secretary of Energy.* Washington, 1993.

countries are swiftly applying higher environmental standards, but they do not want to be impeded from striving for higher standards. Over a decade, Asia will require in excess of a trillion dollars of energy investment to support economic growth[206].

Oil demand will increase by five million barrels or more. By early i next decade, Asia will be consuming more oil than North Am This means a shift in the oil market's centre of gravity and the Asian countries will come to play a bigger role in investment and oil trade, commensurate with their stakes. Despite continued conservation, global oil demand could be 15 to 20 per cent higher a decade from now. The trend could, of course, be changed by the considerable research and development efforts to find alternatives to oil, particularly in transportation. Yet, as things are today, oil is more than economically competitive - something that would have seemed unlikely in the era of the oil crisis.

The years ahead will see an economic and environmental competition among energy sources, a technological horse race in which tens of billions of dollars will be wagered. To date, oil is proving to be environmentally competitive, keeping up with or even running ahead of new standards, albeit with considerable investment.

Natural gas, once the unwanted by-product of oil production, is now oil's biggest competitor and is becoming the premium fuel around the world. A great deal of the financial resources of the "oil and gas industry" will actually be going into natural gas. It is an environmentally

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[206] Cambridge Energy Research Associations. *Energy Investment to Meet Asia's Economic Growth.* MA, 1993

attractive fuel; some even call it the "politically correct" energy source. A decade from now there is every likelihood of being a vigorous and diversified international trade in natural gas. Natural gas is not a significant competitor in transportation, where oil reigns supreme. Rather, the battle for markets will be played out around the world in electric generation, where the emphasis will very much be on environmental attributes.

However, there is a question mark over oil supplies. An United States embargo has excluded Iraq from the world market since it invaded Kuwait. As a result, Iraq has forgone more than $40 billion of oil earnings from August 1990 to 1993. At some point, however, Iraq will meet United States requirements and will re-enter the world market with substantial exports. When it does, prices could well sag for a time.

As it is, OPEC countries continue to argue over quotas. Still, the market balance is very different from the conditions of a decade ago. Even taking the circumstances prevailing in Iraq, the world oil market is operating at about 92 per cent of production capacity, quite different from the 1990's when it was down to 80 per cent. Today's market is reminiscent of the balance in the 1970's on the eve of the first oil shock.

Although political considerations and producer-consumer relations are very different from the 1980's, a tight oil market is vulnerable to shocks in a way that an over-supplied market is not. Projecting into the next century, one sees no shortage of potential crisis that could affect world oil supplies, with dangerous consequences. Future crisis could arise

from the Middle East, as in the past. Since the fall of the Shah in 1979, Iran's population has grown from 39 million people to more than 60 million[207]. Its policies in the future are uncertain, torn as they will be between Islamic militancy, both at home and abroad, and economic self-interest. A number of other countries are feeling the pressure of political Islam and social turbulence. However future crisis could also arise from events in other parts of the world such as some kind of disruption in the former Soviet Union.

The embargo caused the cost of oil to soar and speeded up negotiations that enabled oil producers to acquire control of pricing and marketing. As the price of oil increased precipitously, dire predictions were made about the collapse of the Western and Japanese economies. However, the industrialised nations were willing to pay whatever the market would bear. Access to oil, not its price, became the driving force behind the West's policies toward the oil-producing States. To ensure access, the West, led by the United States, sought to shore up the friendly monarchies that ruled most of the major oil-producing States and preserve the political status quo in the Persian Gulf[208].

Of the several new political forces to emerge during this era, two may be mentioned here. Israel's occupation of the West Bank and the Gaza strip following the 1967 was contributed to the rise of Palestinian organisations committed to the establishment of an independent Palestinian State. The activities of these organisations exercised a

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[207] See Figure 7

[208] William L. Cleveland. *A History of Modern Middle East.* Oxford, 1994.

major influence on Middle Eastern developments. A second factor, the revival of Islamic-based political activity, was not really new, but it appeared with new force. In the first two decades after World War II, Western developing world for that matter, would become increasingly secular as they became increasingly modern. Yet even as the role of the ulama declined and the jurisdiction of the Shariah was legislated out of existence, the Islamic sensibilities of the population as a whole remained intact. When the imported ideologies of the independence era failed to bring economic well being to society at large, a current of Islamic revivalism came into existence. Its most dramatic manifestation was the Iranian revolution of 1979, but it was a persistent feature of the political life of every Islamic country in the Middle East and shows little sign of abating[208].

The overthrow of Muhammad Reza Shah Pahlavi of Iran in early 1979, partly caused by a strike in the Iranian oil industry, raised the price from $14 to $28 a barrel within a few months. The outbreak of Iran-Iraq War in September 1980, resulting in extensive damage to both countries' oil industries and a drop in their oil exports, led to higher prices during 1981, reaching a spot-price peak of $41 a barrel but stabilising around $34 a barrel in the early 1980's. When, in response to the high price, world-wide demand for oil began to decline, Saudi Arabia, the largest OPEC producer, curtailed its out-put sharply to stabilise the price at $29 a barrel in 1984.

To meet the price-cutting challenge by non-OPEC Western producers such as Britain and Norway, and to enlarge OPEC's share of the

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[208] William L. Cleveland. Op. cit

market and damage Iran's war effort, Saudi Arabia and Kuwait began to flood the oil market from December 1985, depressing the price from $28 to less than $10 in July 1986. Then Saudi Arabia decided to reverse the strategy, and in alliance with Iran, encouraged OPEC to aim for $18 a barrel by cutting overall production. By and large this aim was achieved, the dollar price rising to the lower 20s in the spring of 1989. However, in early 1990[210], once again for political reasons (this time to put pressure on Iraq), Kuwait and the United Arab Emirates over-produced and reduced the price to $12 a barrel[211].

If a disruption occurs in a tight market a few years from now, perhaps at a time of economic growth around the world, the effects could be quite sharp, both as measured in inflation and recession and in terms of raising international tensions.

Such risks underline the continuing need to assure an adequate "security margin" that can absorb such shocks. Moreover,considerable new production capacity will have to be added to support a growing world economy, but the timing of those additions is uncertain. What happens to oil prices, with all that they signify for the world economy, depends very much on the relative timing of demand growth and investment in new production capacity.

Where will the additional supplies come from? Not from the United States, where oil production has fallen by a dramatic 25 per cent since 1986 and is continuing to decline. The domestic US oil production

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[210] The oil price nearly doubled between 1960 and 1993. Taking into account the 600-plus per cent inflation in the Western nations of the 24-member OECD during that period, oil was one third cheaper in the mid-1990's than it was in the late 1950's.
[211] Dilip Hiro. *Dictionary of the Middle East*. London, 1996.

industry is deeply depressed and the US oil services industry, which is the global leader, is also under heavy economic pressure. US oil imports are likely to continue rising in the years ahead. Some of it will come from oil development that is being encouraged by more open investment policies around the world. As Russia struggles to stem its economic decline, at least two of the newly independent Republics, Azerbaijan and Kazakhstan, will become important players in the world oil market.

Much of the new supplies will come from the Middle East, in particular from Saudi Arabia. In 1972 the Middle East provided 42 per cent of world oil (excluding the former Soviet Union); by 1983 it had declined to 27 per cent; today it is 32 per cent, and will probably rise to 45 per cent by 2003. This means that production capacity in the Middle East will rise from 18,3 million barrels a day[212] to 28 million barrels a day. In light of the political and social forces in the region, and the potential for yet another surprise or two in the decade ahead, security of supply will be a continuing concern for importing countries, even as the exporters continue to worry about "security of demand".

There is no single answer to these security questions. Rather, the best bet for stability in a changing world arises from a global pattern of investment and trade in which security is enhanced by the diversity and density of economic and political links and by the commonality of interests to an environmental age.

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[212] See Figure 11

In the years ahead, relations between producers and consumers could become strained again if, for instance, economic and demographic pressures mount in the exporting countries, or if political instability becomes pervasive, or if ideologies again shift, or if changes take place in the balance of power of the kind for which Saddam Hussein bids; or, for instance, if the exporting countries come to see the implementation of the environmental agenda in developed countries as an assault on their main source of national income.

If we ask who emerged victorious out of the first use of the oil weapon, the answer must be the United States. Before 1973, we had been thinking of a world in which the domination of the two super-powers, the United States and the Soviet Union, was being challenged by the newcomers, Western Europe, Japan and China. After 1973, the challenge from Western Europe and Japan faded out completely while China remained as much on the side-lines as ever. In the end, the Americans were to decide that the best oil price for them was one somewhere between the pre-war price and the price to which they oil-producing companies and countries had pushed it, so they stepped up their attempts to bring Europe into line with them. It will be an unfortunate outcome for the Arabs if Europe is taken over, where oil is concerned, by the American camp. However, whatever happens, there can be no doubt that it was the two energy giants, the United States and, to a smaller degree, the former Soviet Union, which stopped the war and formulated the peace - if peace is in fact ever to come.

CHAPTER 6 : REACTION TO THE EMBARGOES IMPOSED BY OIL PRODUCERS

THE SOUTH AFRICAN OPTION : OIL-FROM-COAL (CASE STUDY)

Oil embargoes imposed by Arab petroleum exporting countries in 1967 and 1973-1974 against dependent consumers caused little effect on South Africa's supplies because at that time the Republic could still obtain supplies from Iran, and continued to import Iranian oil until the Iranian revolution of 1979 no longer made this possible, as I discussed in Chapter 5. The South African government knowing the country's lack of crude oil, as discussed in Chapter 3, had begun to develop pioneering techniques for the extraction of oil from coal, which South Africa possessed in abundance, in order to prevent future embargoes and economic threats with consequence to its security and sovereignty.

This era of energy austerity was ushered in by the startling events of 1973, which marked a year of major changes in the worldwide petroleum business. It was a year which saw:

(1) the privilege of posting market prices for crude oil pass from the International oil companies to the Organisation of Petroleum Exporting Countries (OPEC) and saw prices sky-rocket to unprecedented levels;

(2) the Arab oil-producing countries cut back on production and embargo oil shipments to "unfriendly" countries;

(3) control of their oil resources taken by a growing number of producing countries; and

(4) production in non-communist areas increase by 9.5 per cent to a record 45,8 million barrels per day, while crude oil output in the United States declined by 2.8 per cent to 9.2 million barrels per day.

In addition, 1973 saw varied activity worldwide in nearly every segment of the industry - exploration, refining, marketing and pipelining. In exploration, the big surge for hunting new oil reserves has taken explorationists offshore. Increases in the world prices of crude oil have guaranteed the creation of a major, worldwide synthetic-fuel industry. The price and demand for liquid petroleum and flowing natural gas - as well as the determination of governments - has enhanced the economics of synthetic fuel past the point of no return. Large, commercial synfuel plants already are operating in South Africa and Canada. Now large-scale plants are being planned in the United States, Israel, and other oil-importing countries with large coal and oil-shale reserves. Meanwhile, the South African government began production of oil from coal using the Lurgi process to make gas from coal, and its own process to convert the gas into liquid fuel.

Generating electricity from coal satisfies three quarters of South - frica's energy needs[213]. Most of the principal industrial centres are situated near extensive coalfields. Nearly all electricity is generated from coal,

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[213] See Figure 13.

and some households, industries and mines also use coal as a direct source of energy. Oil is used to a relatively limited extent by the industrial, mining and conversion sectors, mainly for transport purposes and as a chemical feedstock[214]. South Africa is mainly dependent upon imports for oil but the Sasol oil-from-coal plants play an important part[215].

The 1973 crisis ushered in a new era in Sasol's progress, bringing an expansion and development programme which had long been planned, but which was implemented far sooner than initially expected. As a result, South Africa was able to weather the 1973 debacle successfully. The mid-seventies were a frustrating period for energy planners throughout the world. Inflation and a lack of dynamism in the majority of economies created financial problems for many planners who, following the 1973 oil crisis, proposed gigantic energy projects to replace petroleum. Many of these energy proposals held great promise but vanished like the morning mist in the face of economic and ecological realities.

The revolution in Iran and the resultant oil price explosion in 1979 held grave economic implications for the world. When Iranian oil was no longer available to South Africa, the country already had its first synthetic fuel plant (Sasol One) and the second (Sasol Two) was under construction. South Africa could therefore survive.

The South African government, industry and labour groups are considering options for changing the regulatory framework of the fuel

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[214] See Figure 1.
[215] Standard Bank. An Economic Profile of South Africa, 1995. Johannesburg. p. 14.

industry. Regulation in the past was guided by sanctions and the resulting need to secure oil supplies by building stock-piles and developing synfuel production (oil and gas from coal) as well as by efforts to make the investment environment for foreign companies attractive enough to overcome the political disincentives.

South Africa disposed of their financing resources, technological background and abundant raw materials, which could be used in order to create its own alternative in case of foreign pressures and future embargoes.

In this chapter, I analyze both the oil embargoes imposed on South Africa and those economic and financial parameters which brought about the strategy developed and implemented by South Africa between 1973 and 1993 to obtain liquid fuel from its own national product, coal, in order to grant South African energy independence and security of supply.

6.1 Oil embargoes imposed on South Africa

Oil was South Africa's economy potential Achilles heel, for none had been found in the Republic[215]. In the case of oil sanctions, a real crisis threatened, but it was one for which the country had had plenty of time to prepare. Kuwait banned oil exports to South Africa in 1964, with very little effect on the country's supplies because at that time the South African government had invested in converting the country's

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[215] See Figure 14

abundant supply of coal into oil (the Sasol project) but it was still reliant on imports which came mainly from Iran.

Rhodesia's Unilateral Declaration of Independence in November 1965 increased South Africa's difficulties on the international front, for without wishing to appear to back white supremacy outside her borders, she felt bound to ignore the instructions of the United Nations Security Council to impose economic sanctions on the territory, especially as South Africa was itself beginning to feel the chill of an external arms embargo. It was politically impossible to alienate the upstart government of Rhodesia, to which the while South African government felt drawn by ties of common interest. From the outset, therefore, the South African government treated the dispute between Britain and the Smith regime as a private dispute, and recognised the Smith government *de facto* but not *de jure*. It also refused to apply sanctions on the grounds that it was opposed to such action in principle. The ties between the South African government and the Rhodesian government were drawn tighter in 1967 by the dispatch of South African police units to help combat guerrillas on the Zambesi border. Two years later, a two-thirds majority in the United Nations Security Council voted for the application of sanctions on South Africa and Portugal for the assistance they had given to Rhodesia; but the United States and the United Kingdom vetoed implementation. As political confrontation developed between South Africa and the outside world during the premiership of Verwoerd[217] and Vorster, so there grew

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[217] Hendrik Verwoerd, was telling the world in 1965 : "Our motto is to maintain white supremacy for all time to come over our own people and our own country, by force if necessary". John Vorster who followed, assured the white electorate that the world should know that in defending itself white South Africa "will fight to the end with all that we have got" James Barber and John Barratt. *South Africa's Foreign Policy*. Cambridge, 1990. p.2

a parallel threat of economic confrontation as part of an international bid to force South Africa to change her policies. The issues were complex, as attempts by South Africa's critics to promote disinvestment and various forms of sanctions on the one hand, and South Africa's retaliatory flaunting of her global strategic position and her possession of strategic minerals on the other, had side effects which were not always anticipated.

In the years of sanctions that followed there were periods of concern, particularly when oil sanctions were imposed in December 1965 and the British blockaded the port of Beira in Mozambique, through which most of Rhodesia's oil had passed. Fuel supplies from South Africa in transit through Mozambique on the "CFM" railway lines to Rhodesia were flowing at a reassuring rate during the most crucial period of 1966 and the months that followed. As Jorge Jardim, former Portuguese Secretary of State for Commerce and Industry (1948-1952) wrote:[218]

> "76,614 tons (2,471 tank-cars) had gone through in these six months of 1966".

The imposition of trade sanctions grew into a campaign at the United Nations during the 1970's when South Africa refused to join the boycott of Rhodesia, thus undermining the effectiveness of that campaign. At first South Africa could rely on the vetoing of resolutions demanding sanctions by one or more of its trading partners with permanent seats on the United Nations Security Council, namely the

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[218] *Sanctions Double-Cross, Oil to Rhodesia*. Bulawayo, 1979. p.87.

United States, Britain and France, the only exception being the arms embargo, which had the endorsement of every other member nation by mid-1987. In 1981 the new socialist government in France began to take a more punitive line. However if a single event can be said to have committed the international community to a general sanctions policy, it was Botha's "Rubicon" speech of August 1985, for the false expectations which it had aroused after the out-break of the disturbances of that year, seen against the continuing deadlock in South West Africa and the unstable relations between South Africa and the Frontline States.

The Organisation of Petroleum Exporting Countries (OPEC) added its weight to the ban in 1973.

All the Scandinavian countries, which had banned new investment in South Africa in 1979, placed restrictions on trade in 1986-87. The European Community decided on both restrictive and positive measures at Luxembourg in September 1985, and extended these to a ban on new investment and various imports after the failure of Sir Geoffrey Howe's visit to South Africa in 1986, though they found collective punitive sanctions hard to bring together. The United States Congress went much further by sweeping aside a relatively mild package proposed by President Reagan prior to enacting its Comprehensive Anti-Apartheid Act of 1986. This banned new investment in South Africa, loans to the South African government, the export of computers and oil, the importation of non-strategic minerals and agricultural products from South Africa, as well as direct air travel between the two countries. Further clauses threatened to deny weapon sales to countries which continued to supply South Africa

(which Israel took to heart in 1987 by deciding to cut back on the extent of her scientific co-operation and renouncing new military contracts) and threatened also to slap trade embargoes on countries which took advantage of restrictions imposed on United States nationals.

The Commonwealth was slower to act, but ended with the most decisive package of all. At their meeting in the Baharnas in 1985 most foreign ministers recommended the imposition of various trade and financial restrictions. A committee appointed at their Kusaka meeting in February 1988, consisting of Canadian, Indian and Australian experts, reported in August that the most targetable areas of the South African economy were trade credits, which were commonly converted into medium-term loans. When the Commonwealth leaders met again at Kuala Lumpur in Malaysia in October 1989, the entire gathering, with the exception of the British representatives, was prepared to adopt a three-wave plan to "ratchet up" sanctions against South Africa in a manner calculated to make it very difficult indeed for South Africa to reject demands for the effective dismantling of apartheid. The first wave envisaged the ending of all agricultural and manufactured imports from South Africa, and of selected mineral imports excluding high-value or strategic categories such as gold, diamonds, chrome and platinum, and a start to the phasing-out of trade credits. The second phase, should it prove necessary, would tighten oil and arms embargoes and ban the export to South Africa of refined oil products, computers, electronic and telecommunications equipment, and stop technology transfers, the export of key vehicle parts, all devices which promote automation, and the recruitment of skilled personnel. In case a third stage should be necessary, a decision was taken to investigate the

possibility of sanctioning South African gold exports and third-country products with significant South African content.

6.2 The South African coal availability

Coal is a South African major energy source; production has picked up since the late 1980's and exports are benefiting from the fact that the country no longer needs to give a "political" discount on overseas sales because of sanctions. Proven reserves[219] could yield more than 150 years' production and exports[220] reached a record 59,7m tons in 1995, helped by improved facilities at the ports of Maputo (in Mozambique) and Richard's Bay.

In South Africa, the first recorded discoveries of coal were in Kwazulu Natal and the Eastern Cape towards the middle of the last century. Mining on a substantial scale, however, only began in 1870 when the now dormant Molteno-Indwe coalfields in the Eastern Cape, from where coal was transported by ox-wagon to Kimberley, was exploited in order to supply energy to the newly discovered Kimberley diamond fields. In Mpumalanga, the Voortrekkers discovered coalfields, but mining only commenced after the development of the Witwatersrand gold deposits in the late 19th century. Concurrently with the great expansion of the South African economy, there has been a

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[219] See Figure 15.
[220] See Figure 16.

concomitant increase in coal production since World War II[221]. Coal production rose from 500 kt in 1890 to 2 Mt in 1990. By 1920, with an out-put of 6,6 Mt per annum, the Mpumalanga coalfields comprised the country's leading producers and it was in that year that the first recorded export of coal occurred when approximately one ton was exported. During most of the 1940's, production averaged about 20 Mt per annum. Coal out-put rose to about 30 Mt per annum at the beginning of the 1950's, and at the same time, exports increased to 3 Mt per annum[222].

After the advent of Eskom's "captive colliery" policy, coal demand and production grew rapidly. The onset of the world energy crisis in 1973, as discussed in Chapters 4 and 5, created further interest in South African coal, and rising demand saw out-put escalate to new heights. During the 1970's, production rose from 50 Mt to 74 Mt, most of the coal being used locally. Coal exports became important only later as a consequence of the development of a new product called "low ash bituminous". This beneficiated product eventually became acceptable in the European market as steam and blend metallurgical coal. The necessary infrastructure for the large-scale exports of coal was created with the establishment of the Richards Bay Coal Terminal and associated railway lines.

In all, the country has 18 principal coalfields, spread over an area of some 700 km from North to South and 500 km from West to East.

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[221] Department of Mines. *Geological Survey. Mineral Resources of the Republic of South Africa.* Handbook 7 5th ed. 1976. p. 289

[222] Department of Mineral and Energy Affairs, Minerals Bureau. *South Africa's Mineral Industry: 1995/96.* p. 49.

The resources of mineable coal *in situ* were assessed at 81 274 million tons by the Commission of Inquiry into Coal Resources of the Republic of South Africa (Petrick Report, 1975). The resources of mineable coal *in situ* represent only a portion of the total coal in the ground and is calculated from total coal by applying certain specifications. From this quantity, 24 891 million tons of high-grade steam coal and 3,451 million tons of metallurgical coal could be obtained by washing. Resources of mineable anthracitic coal *in situ* were estimated at 744 million tons when washed[223]. The Commission also calculated that under the economics and technology which applied in 1974, only 24 915 million tons of coal (apart from anthracite) or 31 per cent of the mineable coal *in situ* would be extractable by underground mining. When the extractable is prepared for the market, a further loss arises from transport and benefaction.

Generally, the rank of maturity of coal seams increase eastward, with concomitant decrease in the number of seams and their thickness. Compared with the great time-span during which coal of the Northern hemisphere were laid down, mainly some 330 million years between the Devonian and Cretaceous, South Africa's coal seams were deposited essentially over only 55 million years between the Permian and Triassic periods, and under very different conditions. The dense tropical forests of Europe, China and North America were formed in shallow ice-scoured basins and associated rivers, swamps and deltaic systems in cool or temperate environments. Not surprisingly, therefore, coals from the two hemispheres differ markedly in several respects. Northern hemisphere coal is generally rich in vitrinite and

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[223] Op. cit. p. 329

exinite, and is, thus, more reactive and softer than the durain-rich types common in the Southern hemisphere. Northern coal, by contrast, is more friable and prone to spontaneous heating, richer in sulphur but containing less ash than the coal in the south[224].

Most of South Africa's coal mining occurs in Mpumalanga, which contributes some 82 per cent to the country's total production; the Free State contributes 9 per cent, the Northern Province 6 per cent and KwaZulu Natal 3 per cent. As anthracitic coal deposits in the East become more depleted, bituminous coal from the central coalfields (contributing 98,9 per cent in 1995) will eventually make up all of South Africa's coal production.

In 1992, coal was again a major contributor to foreign exchange earnings[225]. A total of 59,7 Mt, valued at R6 478,8 million, was shipped to foreign consumers, representing an increase of 8,8 per cent and 34,1 per cent in terms of mass and value, respectively. This was the result of increased economic activity in Asia, the United States and Europe, which fuelled the demand for coal and strengthened prices[226].

Economists are very cautious about the prospects for marketing coal in Europe in the near-term future. Their concerns are based on the recent appearance of a European Union White Paper advocating an energy policy that requires a reliable but "clean" energy source to meet the future needs of the European Union. As a result, natural gas is

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[224] Op. cit. p. 50
[225] See Figure 3
[226] Department of Mineral and Energy Affairs. *Annual Report*, 1995. Johannesburg, 1996.

seen as the logical substitute for hard coal in Europe, and powerstations are therefore slowly shifting to gas. It is expected that by the turn of the century, about 20 per cent of the European Union's power utilities will be gas-based. On the other hand, it is also anticipated that with the removal of coal mine subsidies, many existing mines in the region will close, which will result in an increase in demand for imported coal. However, whatever the outcome in Europe, rapid economic growth is bound to raise power requirements in Asia, thus creating alternative opportunities in South African coal exports.

6.3 Technological background to produce fuel-from-coal

South Africa became a world leader in synthetic fuel technology. Liquid hydrocarbons[227] have been synthesised from coal since 1955 at Sasolburg in the Free State. Two more Sasol plants, Sasol Two in 1980 and Sasol Three in 1982 have since been completed at Secunda in Mpumalanga. The Sasol plants also produce fuel gas[228]. Past decisions of the government to invest in synfuel projects were largely based on strategic considerations. However, decisions on future synthetic fuel projects will be based on economic considerations[229].

Sasol produces synthetic oil (about 32 per cent of South Africa's requirements), gas and a host of other by-products (some 120) such

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[227] See Figure 18

[228] See Figure 19

[229] Department of Mineral and Energy Affairs, Minerals Bureau. *South Africa's Mineral Industry, 1995/96*. 1996. p. 58

as waxes, phenol, ammonia, explosives and sulphuric acid from coal. The Fischer-Tropsch process used was originally developed overseas but was improved to the extent that South Africa is the first World producer of these products from coal and gas[230].

Synthetic oil is refined to hydrocarbon fuels at three refineries: Sasol One at Sasolburg with a capacity of 4,5 million tons per annum and Sasol Two and Sasol Three at Secunda. Liquid fuel production at Sasol One is to be phased out and the plant will be converted to produce ammonia, other chemicals and waxes[231].

To the layman it may seem bewildering that petrol can be made from coal. Actually, coal is similar to petrol in that both have the elements carbon and hydrogen as constituents. The basic problem originally was to combine hydrogen with carbon by means of a chemical reaction. In 1925 the work of Fischer and Tropsch had shown conclusively that liquid hydrocarbons could be produced when synthesis gas derived from coal was passed over a suitable catalyst, and in Germany the Fischer-Tropsch process was applied industrially for some years, starting in 1936.

The South African Turbinate Mining and Refining Company (Satmar), to some extent the cradle of the future Sasol, was established by Anglovaal at about the same time as Boksburg. Satmar's motor spirit was the first to be manufactured from entirely indigenous raw materials.

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[230] Op. cit. p.60
[231] Ibid. p. 59

Anglovaal was determined to use this process in order to make oil out of the coal. It lost no time in acquiring the right to an oil-from-coal process developed in Germany, known by the names of the scientists Fischer and Tropsch.

When the company acquired the Fischer-Tropsch rights it planned to apply that process to the coal which occurred in association with Ermelo oil shale. Progress on this project was interrupted by the war, but towards its end Anglovaal also came into the possession of the rights to the American version of the process. However, as has been related, it surrendered the oil-from-coal process because of devaluation and the demands made on its capital resources by the developing Orange Free State gold-fields.

It was Dr F Meyer, later chairman of Iscor, and a technical adviser to the Department of Commerce, Industry and Mines, who wrote the White Paper of 1927 in which coal gasification and low temperature carbonization were strongly recommended.

The utilisation of coal in South Africa for the manufacture of oil, gas and petrochemicals began in 1950 with the establishment of the South African Coal, Oil and Gas Corporation Limited (SASOL).

The oil-from-coal plant is based on the Fischer-Tropsch synthesis process by means of which carbon monoxide and hydrogen are catalytically combined to produce a range of hydrocarbons and organic chemicals. At Sasol two versions of the Fischer-Tropsch synthesis are employed. For the lighter hydrocarbons such as liquid petroleum gas, petrol and diesel oil, the moving catalyst synthesis is

used. For the medium to heavy hydrocarbons, from naphtha upward to waxes, the stationary-catalyst synthesis is used. Both processes employ iron-based catalysts, produced in the Sasol plant. The coal as mined is crushed to 6-50 mm size and pressure-gasified with the aid of steam and oxygen. After stringent purification, which is necessary to avoid sulphur poisoning of the catalyst, the gas is sent to the synthesis sections[232].

Various systems of coal gasification have been developed and virtually any coal can be gasified. Normally, higher temperatures lead to faster reaction rates and thus greater throughputs - here a limiting factor may be the ash fusion characteristics, as low ash fusion temperatures could limit operating temperatures[233].

Although the history of Sasol dates from September 1950, construction of the plant could only start towards the middle of 1952, and the first units were put into operation in 1954. By the end of 1955 all the main construction work of Sasol's first phase had been completed. It was supervised by the Kellogg International Corporation (KIC) which had by that time become one of the leading builders of oil refineries and chemical plants in the world. Most of the equipment came from Germany and USA; smaller quantities came from Britain, Switzerland, Belgium and France. The South African industry supplied an equivalent amount of structural and reinforced steel.

Sigma's relatively shallow coal, 150 metres below the surface, had a high ash content and would be of little value on the open market.

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[232] Mineral Resources of the Republic of South Africa. Op. cit. p. 328
[233] Op. cit. p. 328

However it was suitable for pressure gasification and for steam generation without any pre-treatment beyond crushing and screening. The minus ten-millimetre fraction was to be pulverised for use in boilers, and the ten-millimetre to fifty-millimetre was to be fed to the gasifiers.

The first main unit of the Sasol works to be started up was the power station, where the first boiler was fired on oil on the 15th June 1954. This was only thirteen months after the building of the power station had started. Once coal from Sigma could be brought to the surface, the power station boilers switched over to coal burning. Also in the second half of 1954 the first turbo-compressor in the oxygen plant was started up, and in the following months, several air separation units were commissioned.

The first synthesis reaction was achieved in 1955 and by the end of that year, cars were filling up with Sasol.

As a pioneering achievement it is one of South Africa's greatest success stories, one which can largely be attributed to Dr Etienne Rousseau, managing director for eighteen years. He said, after the factory had been built "We at Sasol believe that we are engaged in the most exciting and one of the most important technological developments in South Africa".

Once could see how the Sasol plant was originally envisaged through a scale model, which was put up on view in the entrance hall of the administration building. When actual construction began, provision was made for the establishment of allied industries - or those, which

were to make use of Sasol products - adjoining the plant. To start with, the undertaking comprised a synthetic oil plant, a colliery, water works, a power station, sewage and industrial waste disposal plant, railway siding, roads, administrative buildings, a village, housing for Black miners and a township for those Blacks not employed at the mine.

At the Sigma Mine capital spending escalated from R3 611 260 at the end of the 1954-55 financial year to R16 420 628 on 30 June 1974. From October 1953 until the mine was officially opened by Francis du Toit in September 1954, 66 746 tons of coal had been raised. On the 11th of that month, the first coal was supplied to the power station and on 19 November the gasifiers received their first 136 tons. By 1974 Sigma's annual out-put had increased to 4 537 000 tons.

From Sasol's inception, the objective-orientated management wanted "to deliver the goods". So the main laboratory checked the quality of raw materials and intermediate and final products at an early stage. Coal and ash were tested, raw and pure synthesis gas, catalysts, tar, gas liquor, ammonium sulphate, petrol, diesel oil and paraffin waxes, as well as numerous solvents. Products aimed at were enormous quantities of ammonia, creosote, tar, paraffin waxes of various types, alcohol, a host of other chemicals and, of course, fuel. Sasol petrol was to be of top-grade quality as it would be practically sulphur-free and required no lead additive.

6.4 Financial resources

The calls for economic sanctions and embargoes against South Africa, as I discussed previously, were ineffective because those who advocated them had few links with South Africa, while those that had, opposed sanctions. Yet the government was not complacent. To counter the sanctions threat it set out to increase self-reliance and reduce the country's vulnerability. Through the Defence Amendment Act and the Foreign Affairs Special Account, trade and investment was promoted and international partners shielded from adverse publicity by suppressing information. Strategic minerals, including oil, were stockpiled, and strategic industries were promoted, such as the Iron and Steel Corporation (ISCOR), Sasol the coal to oil plants, and Armscor the arms manufacturing company. The strongest economic links were in Southern Africa and with the West. In the West the traditional links with Britain flourished, while trade with the United States, the former West Germany and Japan expanded quickly. For example, trade with Japan which had totalled about USD180m in 1967 had risen spectacularly to more than USD1 000m by 1973. The battle over gold prices continued, but with a decline in the strength of the dollar and increased demand for gold following the 1973-74 oil crisis, South Africa emerged in a strong position. Gold remained South Africa's single most important export and its position strengthened on the free market. In 1971 the gold price, which had been fixed at USD35 an ounce for forty years, was allowed to find its own value. By June 1972 it had reached USD60 and by the end of 1974 it stood at USD198. In 1973, 96 per cent of gold production, worth R1,750m., was exported. Alongside gold, the production of other minerals also increased reinforcing South Africa's links with Western industries.

Alerted by the 1973-74 OPEC oil shock, there were overall concerns about South Africa's minerals. Between 1970 and 1980, the world trade in chrome doubled as industrial demand increased. There was no easy substitute, and although supplies were plentiful in the main, production areas (former Soviet Union and Southern Africa - Rhodesia and South Africa) chrome had become "critical for Western economies". South Africa was an attractive supplier because of its relatively low labour costs, its investment in research, its reliability and its sound infrastructure. Added to that, by 1977 the international chrome market was in confusion when the former Soviet Union supplies became erratic and the United States repealed the Byrd Amendment (by which the United States had continued to import Rhodesian chrome). In that situation, South Africa, which in 1978 produced 35 per cent of the world's chrome and 52 per cent of ferrochrome, was of key importance. In 1977-78 South Africa supplied 50 per cent of the EEC's chrome (70 per cent in Britain's case) and 48 per cent of the United State's.

The importance of South Africa as a producer of strategic minerals became a question for the Western powers of balancing current ease of access to minerals of unquestionable military and economic importance, the obtaining of which from other sources would have been possible, but not always easy and probably very expensive, against the need to ensure continued access to South Africa's minerals in the event of a change of regime at some later date. By common agreement, the three key strategic minerals found in large quantities and produced in South Africa, were chrome, manganese and platinum. All had to do with the production of high quality hardened, heat-resistant steel, of special importance for jet engines and the burning of

rocket fuels. In 1983 South Africa produced half the world's platinum, 36 per cent of the world's chrome and 22 per cent of the world's manganese. These proportions were by any standards impressive, especially when it is realised that 81 per cent of the world's reserves of chrome and 78 per cent of manganese were considered to be located in South Africa.

Despite its successes, South Africa could not escape the vagaries of the international economy, and in her case problems were compounded by political factors. That was underlined by the oil crisis. The crisis, which started in 1973-74, with a sharp increase in prices, deepened following the October 1973 Arab/Israeli wa., as discussed in Chapter 5, when the Arab States cut 20 per cent of their production, increased prices further, placed an embargo on "unfriendly" States and supported and OAU call for a total embargo of the white "racist regimes". Although South Africa could meet many of her energy needs from her own coal[234] and hydro-electrical[235] supplies, she had no natural oil. Before the crisis oil supplies had come from Iran (38 per cent), Saudi Arabia (24 per cent), the Gulf States (20 per cent) and Iraq (18 per cent) which Sasol produced 7 per cent. In 1973 oil accounted for only 25 per cent of total energy requirements but it represented more than 80 per cent of transport needs. There was, therefore, great concern. The government reduced consumption by raising the price of petrol, imposing speed limits, closing filling stations in the evenings and weekends and calling for restraint, but the solution came in a new agreement with Iran for increased supplies. While the cost of the agreement was high, it was offset by the increasing price of South

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[234] See Figure 20
[235] See Figure 21

Africa's own minerals as traders turned to gold as insurance against fluctuation currencies, and Western industrialists, alerted by the oil crisis to the vulnerability of strategic materials, stocked minerals. In January 1974 the government was able to announce that petrol rationing would not be necessary.

Dr Diederichs, the South African Minister of Finance's, 1974 New Year economic survey was optimistic. He based it on the previous year's growth - domestic product 6 per cent; gross national product 8 per cent; and manufacturing production 9 per cent. He said that it would be misleading to suggest that South Africa had not been affected by adverse international developments because trade and investment were so important to her economy, but four factors had helped to overcome the problems - the recognition that South Africa stood "on the threshold" of a new phase of prosperity; her limited reliance on oil for energy needs; the favourable climate for her manufacturers and exporters; and finally, increased international demand for her natural resources.

6.5 Political Will

The decisions taken in the fifties, resulting in today's technological gain, rescued South Africa from crisis and supported it through critical periods of history. In August 1966, three weeks before the death of Dr H.F Verwoerd, South Africa's sixth Prime Minister, the Cabinet took the decision to establish the Natref Petroleum refinery, in which Sasol, Total and the National Iranian Oil Company (NIOC) would be,

shareholders. This move had security as well as economic objectives, and it was in keeping with action taken by governments of many Western consumer countries, through which they acquired an interest in the oil industry. Shortly before World War I, the British government on a proposal by Winston Churchill, created a precedent when it obtained control of the Anglo Persian Company, later known as British Petroleum. Subsequently France, and then Italy, took similar steps, and the majority of consumer countries followed suit.

It was obvious that Sasol would be chosen to take the lead with the establishment of the refinery on behalf of the government. In fact, Sasol had initiated the venture and had paved the way to a satisfactory agreement between the partners concerned. Its vice-chairman at the time, Dr H.J Van Eck, was the first to advocate participation by Sasol in the refining of natural petroleum, which he considered to be in the interests of the country and the balanced development of the organisation. Apart from its established interest and accumulated know-how in the production of liquid and gaseous fuels from coal, Sasol was instrumental in purchasing and stock-piling crude oil for strategic purposes, and it also held half the shares in Soekor, the concern charged with the search for natural oil and gas.

The Shah of Iran had always indicated that his country, as an exporter of petroleum, desired participation in down-stream operations and that it was prepared to make investments in consumer countries. South Africa was prepared to accept that offer. On the occasion of Sasol's twenty-third annual general meeting in September 1973, when an oil crisis seemed inevitable, the chairman had cause to state,

> ".... we at Sasol consider ourselves fortunate in already having the National Iranian Oil Company as a partner and the main oil supplier at the Natref refinery".

It is significant that the Iranian investment in Natref was one of the first two down-stream ventures in a consumer country by a member of OPEC. The Iranian decision to co-operate with Sasol was taken six years before the OPEC Participation Agreements and was proof of excellent foresight.

In the early seventies the world's energy policy-makers began to appreciate that energy sources such as oil were indeed finite. Genuine attempts to conserve oil and revert to alternative forms of energy on a large scale were expressed worldwide. Little came of this. By 1975 oil provided more than half the world's energy needs and consumption was increasing.

In 1973, when oil-related politics began to place the energy world in jeopardy, two-thirds of the non-communist world obtained its oil from the Middle East and Africa, and only 19 per cent came from America. Cheap oil from the Middle East was a major cause of oil greed and the abandonment of economic laws - the so-called "diseconomy of plenty". The growing dependence on oil made the highly developed oil-importing countries an obvious economic and political target for oil-producing Middle Eastern countries. These politically unstable countries were, for some time, in a position to open or strangle the oil flow to the rest of the world voluntarily, thereby manipulating c prices.

As early as 1960 the Organisation of Petroleum Exporting Countries

(OPEC) was founded, its primary aim being the negotiation of higher oil revenues for its member countries.

Strife among its members meant that immediate success was not forthcoming, and the oil price in 1970 was nearly the same as that of 1960. At the beginning of the seventies the members of OPEC settled their differences and OPEC began to use oil as a political weapon. Drastic price increases followed in rapid succession, shaking an energy-greedy world to its foundation. In 1970 a barrel of oil still cost $1,25. By 1973, it had risen to as high as $17.

In October 1973, the world was wrenched even further from its energy Utopia. In the Middle East, the Yom Kippur war broke out between Israel and Egypt - a war from which the Israelis were to emerge victorious after just six days. The consequences of the war, however, were not as short-lived. The sympathy of the Western countries lay with Israel. The Middle Eastern oil countries, on the other hand, were well disposed towards Egypt and used oil as a powerful international weapon, by drastically reducing production while at the same time imposing boycotts on countries well disposed towards Israel. An artificial oil shortage was created. The West had no option but to accept phenomenal price increases.

Being heavily dependent on imported crude oil from the Persian Gulf for its transportation fuel, South Africa lost approximately R500 million per annum due to the higher oil prices. Moreover, it seemed that there was virtually no ceiling to further price increases.

There were, however, factors that counted in South Africa's favour

which helped to counter the shock of the energy crisis. Firstly, imported oil accounted for less than 25 per cent of the country's energy needs; secondly, Natref, in which Iran had a share, had already begun production in 1971, and thirdly, six of the big international oil companies with access to sources of oil in many countries had vested interests in South Africa.

However, the greatest asset was coal. As the sixth biggest producer of coal with the fifth largest reserves, South Africa's greatest strength lay in better utilisation of coal.

On 12 November 1973, the South African public was literally stopped in its tracks by the announcement of drastic fuel conservation measures, including speed limits of 60km/h on the open road. In sharp contrast to the speed limits, this era was one of unprecedented acceleration in the development of the oil-from-coal process. South Africa might not have had its own oil resources, but it have its own coal resources.

On 5 December 1974, the SABC's *News at Nine* (from Durban) featured Senator Owen P.F Horwood, Minister of Economic Affairs, announcing that "the Cabinet has decided that a second Sasol must be built as soon as possible to produce petrol, diesel and other petroleum products from coal", and further, in the same announcement, that "the new plant, Sasol Two, will produce more than ten time the amount of petrol and petroleum products than the existing oil-from-coal plant, and will be one of the largest industrial projects ever undertaken in South Africa. Based on current costs, the capital requirements, township development excluded, will exceed one billion

Rand, and it will provide job opportunities for thousands of white and non-white workers. The capital funds will mainly be acquired from the following three sources: the Strategic Oil Fund, export credit facilities, and monies appropriated by Parliament to the value of approximately one fifth of the total. The withdrawals from the Strategic Oil Fund will make it necessary in due course to increase the existing levy on fuels".

To reduce South Africa's dependence on expensive imported crude oil, a second plant, Sasol Two (tenfold the size of Sasol One) was commissioned in the south-eastern Transvaal (now Mpumalanga)[236]. Construction started in 1975 and the first oil was produced in 1980.

In the consumer countries the lack of progress towards greater independence from imported oil was disappointing. This was especially applicable to the industrial countries and to the bigger consumer countries like the United States, in particular. Here oil imports had increased from 35 per cent to 46 per cent of total consumption. Very little came of the much-discussed Carter energy plan. The world's dependence on oil meant that it was still a powerful political weapon. Oil imports were seen as South Africa's Achilles heel, and a target on which radicals could focus their attacks. Oil boycotts would not only hinder industry and transport, but could have a ripple effect, causing disruption and unemployment.

In 1979 threats became reality for South Africa. The regime of the Shah of Iran was overthrown by a revolution. Iran's oil production was drastically reduced. The resultant oil shortage led to unheard-of prices

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[236] See *Sasol Facts 1997*. p. 4

being asked - and paid - for oil sold on the open market. These prices were sometimes substantially more than double the official price. Since the new Iranian government refused to supply South Africa or Israel with oil, South Africa could only satisfy part of its oil requirements on term contracts at official prices. The bulk had to be obtained on the open market, initially at high premiums.

If, as was generally predicted, the crude oil price would continue to rise after the completion of South Africa's second synthetic fuel plant, Sasol Two, the country would enjoy greatly increased savings in foreign exchange. The profitability of the Sasol project, and its strategic value to the country, would also increase considerably. For Sasol, therefore, the crisis was actually an energy boost, causing it to undergo a total transformation which would become evident later.

Between Christmas 1978 and New Year 1979, Sasol Managing Director, Mr Johannes A Stegmann (1976-1987), was requested by the Minister of Economic Affairs, Mr Chris Heunis, to submit a report on the doubling of Sasol Two to the government. A provisional but reliable report was ready on 5 January 1979. It covered all the parameters including costs of construction, economic justification for the project and the overall financial scheme, as well as the timetable for the project, the requirements and provision of staff and the effect on the economy of South Africa as a whole. This first brief report of only a few pages contained the essential facts and recommendations relating to the third synthetic fuel plant project. However, the decision to proceed with the project was not taken before further thorough studies had been undertaken.

The Energy Policy Committee, then under the chairmanship of Piet Pretorius of the Department of Planning, was to advise the government on all important energy matters. Minister Heunis' directive was that this committee should investigate and submit recommendations on the desirability of such a project. By the middle of January 1979, the committee submitted a concise but comprehensive report with a strong, unanimous recommendation that the project proceed. Just five weeks after the project had first been considered, the Cabinet was in a position to take a decision. The decision was made a week later, after the matter had been referred to a Cabinet committee. The estimated final cost was R3 267 million. The expected construction time, later improved upon, was 42 months. The accuracy of the data was facilitated by the fact that the Sasol Three project would be a duplication of Sasol Two.

s time, the financial plan had taken shape. It was already clear nuch money had to come from abroad, from fuel levies and from overnment. At that point, the financial contribution which the isation of Sasol would make could not be estimated. However, the possibility was already under consideration. For sound commercial reasons, Sasol requested Mr Heunis to postpone the announcement because contracts needed to be renegotiated. By using existing contracts to Sasol Two as a point of reference, vast sums of money were saved. With the majority of contracts concluded, Sasol could give the green light for the official announcement of the project. On 22 February 1979 Minister Heunis announced :

"Sasol Two at Secunda is to be extended to more than double its production. A levy will be imposed on the consumption of

petroleum products in order to cover part of the cost of expansion. The estimated cost of the expansions, including extended mining activities, is R3 276 million. The government has decided that this is a golden opportunity for greater participation by the private sector in the energy field; the opportunity will be created for the purchase of shares in the Sasol Group. A programme to this end is currently being devised and it is expected that the offer to the public of shares in the relevant companies in the Sasol Group will take place by the middle of this year. The expansions will be financed as follows:-

(1) shareholding by the State by way of parliamentary appropriations;

(2) shareholding by the private sector;

(3) export credits; and

(4) the State Oil Fund, financed by a levy on all products manufactured from oil and bridging finance from private sources, supplemented by State finance.

The first phase of the expansions at Sasol Two is expected to be completed as early as March 1982 and will be able to start producing immediately.".

Less than four months after the announcement, all the contracts and orders, with the exception of certain mass materials such as pipes, had

already been placed. Site preparation was already 25 per cent complete and the first foundation piles were sunk on 1 July 1979.

When the Sasol Two project was approved in 1974, the estimated time for completion was six and a half years. According to this timetable, the design was to have been finalised in September 1979, while construction was to begin in July 1977 and be completed in October 1981. In reality, Sasol Three (almost an exact replica of Sasol Two) was almost finished by then. It was fully operational in 1982.

According to Sasol's reports, Sasol had invested R5 800 million in the two Sasol plants alone. Today these two plants (Sasol Two and Three) have an estimated replacement value of R32 000 million. With Sasol Two still under construction, it was decided in 1979 to proceed with the construction of Sasol Three. Financing of the project was undertaken by the Central Energy Fund (CED)[237] and the Industrial Development Corporation (IDC)[238] through its subsidiary, Konoil, with the aid of State grants.

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[237] CEF's origins date back to 1964, with the formation of SFF to procure and store crude oil for South Africa's transport needs. The main objectives of CEF in terms of the Central Energy Fund Act, Act 38 of 1977 as amended, is finance and/or promote the acquisition of coal; the exploitation of coal deposits, and the manufacture of liquid fuel, oil and other products from coal. The 1975 RSA Budget levied two cents per litre on the retail selling price of petroleum products to be paid into CEF. The levy payable on petrol, aviation gasoline, kerosene and distillate fuel was increased from two cents per litre to four cents per litre in 1977 and was then discontinued on 31 March 1988. *CEF Annual Financial Statements for 1994-95* p. 19

[238] The IDC is a wholly owned State Corporation established by Act 22 of 1940. Its mission is to assist I n the financing of new and existing private sector enterprises so that industrial development takes place in South Africa according to sound business principles. *IDC Annual Report 1994*. The IDC granted R429,2 million in financial interests in Foskor and the Sasol group in 1984, and contributed for the financing of Sasol 2 and 3 projects. The IDC is actually (1992) a shareholder of Sasol in 3.4 per cent.

Sasol became a private sector company in 1979 when Sasol Limited, the group's holding company, was listed on The Johannesburg Stock Exchange. The share issue was then the biggest in the history of the Stock Exchange. Sasol was once again preparing for another important step of its development. Sasol One had shaken off its withdrawal symptoms. The commissioning of Sasol Two had produced some remarkable achievements. The construction of Sasol Three was progressing extremely well. The time was ripe to round off the privatisation process.

As far back as the 1979 prospectus it had been spelled out that Sasol would eventually buy out the government's shares in Sasol Two. The deadline for the takeover was 1989. In the 1979 prospectus, 1984 had been set as an optimistic target date. Thanks to Sasol's success and good financial results, it was possible to bring this date forward by approximately a year, in the midst of fluctuating exchange rates and uncertain international oil and commodity prices. Despite the difficult economic times prevailing in South Africa, on 7 November 1983 Sasol bought out the State's share in Sasol Two, and it became a wholly-owned subsidiary of Sasol Limited. Sasol repaid the State in full for its investment in Sasol Two - with interest calculated from day one. The buying out of the State's 50 per cent interest in Sasol Two, for an amount of R2 620 million, concluded a process which had begun ten years earlier. Sasol's contribution to the alleviation of South Africa's balance of payments problem at that stage was evident, particularly if it is borne in mind that the Sasol factories saved the country more than R2 billion in foreign exchange annually. For the State too, the privatisation was a great success. With the takeover of both Sasol One and Sasol Two, the State's return in the form of shares and cash

amounted to approximately seven times its investment in Sasol One, plus full repayment with interest in the case of its investment in Sasol Two. After the takeover of Sasol Two, Sasol's assets amounted to approximately R5,5 billion. Sasol Synthetic Fuels (Pty) Limited became responsible for coal conversion into fuels.

At the same time, in 1984, OPEC lowered the price of crude oil to $28 per barrel, reduced its production ceiling to 16 million barrels a day, and lowered individual production quotas. Despite OPEC's production allocation scheme, virtually all the decline in output was absorbed by Saudi Arabia. While other OPEC members either maintained or increased their output, Saudi production declined dramatically. By August 1985, Saudi Arabia's output had fallen to 2,5 million barrels a day, less than one-fourth of its production in 1980-1981. In the second half of 1985, Saudi Arabia abandoned the role of swing producer. In order to increase its production and restore its market share, Saudi Arabia abandoned selling crude oil on the basis of official OPEC prices and instituted a market-responsive price formula based on the value of products into which its oil was refined, or "netback" sales contracts. Once this happened, OPEC was no longer able to manage the price of oil. In December 1985, OPEC recognised the inevitable. It abandoned the system of fixed official selling prices and concerted production reductions. For the first time since the "seven sisters" agreed to set prices, the oil cartel agreed to allow prices to be determined by the market. Largely due to the dramatic increase in Saudi Arabia production, OPEC output soared by almost one-third in 1986. The result was volatility and a sharp fall in the price of oil. Spot market prices fell from about $27 to $31 per barrel in November 1985 to $8 to $10 per barrel in July 1986. The collapse of oil prices led to

a parallel drop in the value of oil exports to their lowest level since 1973[239].

Another important problem grew out of the Iran-Iraq war. It was a sign of the change in the oil markets that the bombing of oil tankers and shipping facilities in the Persian Gulf did not lead to a run-up in oil prices during the 1980s. The spare capacity of the other OPEC and non-OPEC oil producers, public stocks in consuming countries, as well as the oil-sharing arrangement of the International Energy Agency cushioned any potential threat. It was the end of the Iran-Iraq war that posed a threat to oil prices. During the war, Iraqi demands for an increase in its quote met implacable resistance from Iran, which insisted on maintaining its second place in OPEC quotas (behind Saudi Arabia) and refused to allow its enemy to improve its relative position. Resolution of the conflict was deferred during the war by leaving Iraq out of the allocation scheme. As long as the war limited the ability of both Iran and Iraq to pump oil, the Iraq-Iran conflict did not threaten OPEC's supply management. However, the cease-fire between the two agreed to in mid-1988, posed a serious threat to OPEC's ability to control oil supplies. Iraq was in the process of significantly expanding its production capacity. Both countries faced higher revenue needs for rebuilding and resuming economic development after the lengthy war, and both felt justified in producing more because of the post-war needs and because of their reduced production during the war. However, because of the mutual distrust and antagonism arising from the war, OPEC was initially unable to negotiate a new allocation scheme. By November, action by Saudi Arabia and Kuwait had forced

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[239] Joan Edelman Spero. *The Politics of International Economic Relations*. 4th ed. 1990. p. 283.

OPEC to agree on a new production agreement to limit production to 18,5 million barrels a day and raise prices to $18 per barrel. Iran received its old share allocation and agreed to allow Iraq to return to the OPEC system with a quota equal to its own. Iraq's increase came at the expense of other cartel members, especially Saudi Arabia, whose quotas were decreased.

Sasol's financial fortunes are intimately connected with events in the international oil markets[240]. The serious negative impact of the lower product prices was cushioned by increased production volumes achieved by the oil-from-coal Sasol's production division[241] and by the containment of cost increases to substantially below the inflation rate. In 1987, the total market growth of liquid fuels exceeded the increase in production of synthetic fuels at Secunda (Sasol) which led to a higher volume of crude oil being processed than in the previous year. However, the favourable effect of the increased volumes was counteracted by lower refining margins arising from the gradual rise in crude oil prices which were not fully reflected in the prices of refined products[242]. The 1987 Sasol operating profits of the crude oil refining division was therefore lower than in the previous year. South Africa kept its own strategic fuels without extra expenses for the government due to the fact that Sasol maintained its fuel-from-coal production which high costs were compensated by diversification of its by-products such as the chemicals for industry and agriculture by bold investment in new chemical plants and infrastructure, as well as new

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[240] Sasol Annual Report 198[illegible], p. 3

[241] The production of Sasol's fuel-from-coal was 40 per cent of the total of South Africa's total consumption

[242] Sasol Annual Report 1987, p.8

markets. Since the mid-1980s the Sasol Group's emphasis has shifted towards developing and marketing higher-value chemicals for a wide spectrum of domestic and international markets. This drive was based on several favourable factors which included:-

(1) extensive reserves of low-grade coal that have little alternative commercial value outside the Sasol Group's vast synfuels and chemical operations;

(2) world-class track record in developing and refining process technologies, especially in the field of Fischer-Tropsch synthesis;

(3) favourable economies of scale, especially at Secunda, and the all-round drive to reduce wastage, enhance the cost base and improve productivity and quality; and

(4) combination of unique technologies and feedstocks, as well as the extent of some of its under-exploited petrochemical pools (most notably olefins).

Since the mid-1980s, Sasol has entered several new chemical and associated fields, among them crylonitrile and acrylic fibres, alpha olefins, polypropylene[243]. This prompted Sasol to enter the fertiliser market in 1983, mining explosives in 1986 and polypropylene in 1990.

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[243] Sasol Report Engineering Week. April 1997. p. 8

In addition to producing and marketing a range of chemical fertilisers, the fertiliser division beneficiates phosphate rock at the 50% Sasol Chemical Industries-owned phosphoric acid facilities in Phalaborwa[244].

As the Sasol's chairman wrote in Sasol's Annual Report 1991:-

> "Admittedly, there are fewer opportunities for import replacement now than a few decades ago, but these should not be disregarded. More often than not it is the successful import replacement industry that also manages to compete effectively on export markets".... "Government's serious consideration of policies to improve the competitiveness of the South African industry should be commenced. There are many investment disadvantages and hence competitive impediments facing the South African industry. The major ones are high tax rates, inadequate investment incentives, scarce human resource skills and poor productivity"... "It is very gratifying, therefore, that Sasol, in a period of low economic activity, is able to proceed with confidence with a wide-ranging investment programme. Sasol is currently engaged in projects valued at R3 000 million, most of which will serve both export and domestic markets".

In fact, since the 1920s, South African trade policy has rested on the assumption that domestic import substitution industrialisation (ISI) could be financed by the export of natural resource products such as gold and diamonds, and by the exploitation of cheap labour. This led

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[244] Sasol Facts 1997. p.5

to the development of expensive and complex protectionism structures, which nurtured largely inefficient domestic manufacturing industries. These tendencies were strengthened by the permissiveness of the State as regards the protectionist and monopolistic behaviour of powerful business groups, and by strategic concerns deriving from apartheid-induced international isolation[245].

The formerly State-run synfuel firm, Sasol, has been privatised but continues to benefit from State subsidiaries although the government announced in December 1995 that these would be phased out. Sasol is likely to shift out of fairly expensive synfuel production into the development of a petrochemicals industry, which could significantly boost jobs and export earnings, and aid import substitution.

However, there was also an element of risk: the project's product would have to compete with OPEC oil. The prices of its products would therefore be influenced by international political considerations. As the Energy Chief Directorate wrote in its 1995 Annual Report:

> "The development of a liquid fuel policy has been a long and tortuous process. This is mainly due to the formidably complex issues and the divergent interest groups, often with directly opposed agendas, involved. This sector has been regulated

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[245] *Trade Policy Dossier. South Africa and the GATT.* School of Economics, University of Cape Town. 1994 p.4
"Because of the crisis in South Africa's traditional exports and the obvious need to stimulate competitive manufactured exports, a range of South African commentators and government institutions proposed various paths to trade and industrial policy reform in the late 1980s and early 1990s. In addition, both the World Bank and the GATT Trade Policy Review Mechanism issued reports during 1993 recommending the rationalisation and reform of South African trade policy".

> over 40 years and there are strong pressures to deregulate. If this is done without careful thought, many of the retailers and some of the 60 000 forecourt attendants could lose their livelihoods. Sasol produces 35 per cent of national fuel, and to complicate matters, the financial assistance which it receives from the motorist via the petrol price, is becoming increasingly controversial.".

On the other hand, South Africa's acceptance of the GATT trade reforms integrated South Africa into the world economy more fully than ever before. Not only will internal changes re-focus industry towards international markets, but greater opportunities will emerge throughout the world for South African products. The GATT certainly will provide the most important tool for South Africa's exports as well as a wider range of oil suppliers in order to avoid dramatic situations created by exporters cartel. In any way, South Africa will keep its 35 per cent of national fuel produced by its own natural resources (oil-from-coal) as a strategic reserve.

CONCLUSIONS

One cannot deny that there is a close relationship - but not imperative - between the possession of natural resources and the wealth of a country, being one of the factors of its power. The increasing demand for energy resources by the industrial countries led them to the need of implementation of energy policies. Its implementation will allow to the adoption of policies destined to assure access to the additional ial supply, reducing its dependency on external supplies. Unlike the more traditional military aspects of security, which focus on external threats, many current issues touching on national security emphasise the growing linkages between the domestic and international realms. Enhanced economic expectations on the part of national populations that frequently cannot be met from within a State's own resources may create demands on government, which, if not satisfied, can produce internal instability, and thus increase insecurity.

The growing dependency on energy led still to the implementation of conservative policies, offering incentives for the development of energy alternatives, in an attempt to reduce the demand and stimulate production. However, the success of these measures depends largely on the opportunity of its implementation and on the availability of energy resources in the country. The access to determined resources such as oil, imposed new and important obligations on the external and defence policies as in the years of sanctions imposed on South A frica, particularly when oil sanctions were imposed in December 1965 and the British blockaded the port of Beira in Mozambique, through which most of Rhodesia's oil had passed. Oil was South Africa's potential Achilles' heel, for none had been found in South Africa. The

government had therefore invested in converting the country's abundant supply of coal into oil but it was still reliant on imports, which came mainly from Iran. Before the 1973 oil crisis supplies had come from Iran (39 per cent), Saudi Arabia (24 per cent), the Gulf States (20 per cent) and Iraq (18 per cent), while South Africa's own production of oil-from-coal supplied, in that time, only 7 per cent of the total country's needs. In 1973 oil accounted for only 25 per cent of South Africa's total energy requirements but it represented more than 80 per cent of transport needs.

The surprise attack that launched the 1973 Yom Kippur War was quickly followed by the biggest oil embargo. In fact, the crisis had been building over the previous three years as the work market tightened and oil exporters began pushing up prices and asserting control over the oil resources within their borders. The 1973 crisis drove prices from $2,50 to $20 a barrel and sent the global economy into a downturn. Then, at the end of the 1970's, revolution disrupted supplies from Iran, creating a panic that drove prices from $13 to $33 a barrel, seeming to foretell a permanent shortage and continuing turmoil.

The calls for embargoes and economic sanctions were ineffective to South Africa because those who advocated them had few links with South Africa, while those that had, opposed sanctions. Yet the South African government was not complacent. To counter the sanctions threat it set out to increase self-reliance and reduce the country's vulnerability. Through the Defence Amendment Act and the Foreign Affairs Special Account, trade and investments were promoted but international partners could be shielded from adverse publicity by

suppressing information. Strategic materials, including oil, were stockpiled, and strategic industries were promoted, such as the Iron and Steel Company (ISCOR), Sasol the coal to oil plants and Armscor the arms manufacturing company. In the meantime, the battle over gold prices continued, but with a decline in the strength of the dollar and increased demand for gold following the 1973-74 oil crisis the South Africans emerged in a strong position. In the early seventies, the gold price rose substantially after the fixed dollar price had been abandoned in 1971. By 1974 gold rose to a high of $198 an ounce, which served to push up the growth rate of the South African economy to 8.3 per cent that year. Alerted by the 1973-74 OPEC oil shock, there was special concern about Southern Africa's minerals. Among these chrome provides an example of the issues at stake. Between 1970 and 1980 the world trade in chrome doubled as industrial demand increased. There was no easy substitute, and although supplies were plentiful in the main production areas (Soviet Union, Rhodesia and South Africa) chrome had become critical for Western economies. South Africa was an attractive supplier because of its relatively low labour costs, its investment in research, its reliability and its sound infrastructure. In that situation South Africa, which in 1978 produced 35 per cent of the world's chrome and 52 per cent of ferrochrome, was of key importance. In 1977-78 South Africa supplied 50 per cent of the EEC's chrome (70 per cent in Britain's case) and 48 per cent of the United State's. Gold and minerals, mainly chrome, allowed South Africa to emerge from the first oil crisis in a strong position and granted the indispensable financial resources to maintain its energy programme which would support it through future critical periods.

Within a few years, however, it became evident that the price increases and the spectre of oil shortages was creating powerful counter reactions. Non-OPEC oil development proceeded at a rapid pace. Conservation proved far more powerful than generally expected. All over the world, utilities switched from oil to other fuels. Confronted with such developments, the exporters found that they could maintain high prices only through laboriously negotiated production quotas.

OPEC was soon faced with declining oil demand and diminishing market shares. Its share of the world oil markets (excluding the former Soviet Union) fell from 63 per cent in 1972 to 38 per cent by the end of 1985. In one memorable quarter, Saudi Arabia's oil production had slumped to less that of the British sector of the North Sea. In 1986, in the exporters' quest to regain market share, oil prices collapsed, falling to $10 before recovering to about $18 a barrel.

In the meantime, the consuming countries established security measures that would help moderate future crisis as decided by the South African government who long before had begun to develop pioneering techniques for the extraction of oil from coal, which South Africa possesses in abundance, in order to prevent future embargoes and economic threats with consequence to its security and sovereignty. Those global security measures included the International Energy Agency, an international emergency sharing system, increased communications, and pre-positioned stocks such as the United States strategic petroleum reserve.

In the same years, the oil market became more flexible and transparent, with the development of trading (oil as just another

commodity) and the rise of future markets. Oil is now carried around the world not only in behemoth supertankers but also in a sea of electronic information that instantaneously sweeps through trading rooms on every continent. While it can take a decade or more to develop a major new oil field, today's market can swiftly adjust to changes in current supply and demand. For example, oil prices rose dramatically at the beginning of the Gulf crisis but began declining in response to adjustments after only two months, as other producers hastened to bring unused capacity back into production. By the eve of Desert Storm, oil prices were actually lower than they had been a half-year earlier, in the weeks before the Iraqi invasion of Kuwait.

These changes have bought a dramatic shift in the perspectives of oil exporting countries. The are redefining their relationship with the market and with the international oil industry. For the exporting nations, the essential issue of sovereignty has been answered. They own their resources and determine what happens to them. That was their essential victory in the 1970's. Now undisputed, this fundamental political recognition provides the exporting countries with the flexibility to focus on their longer-term economic interests.

Part of this reflects a shift in the broad intellectual currents in the global economy. In the 1970s the trend was towards increased state control - whether nationalisation in developing countries or price controls in the United States. Today, the trend is quite the opposite - towards privatisation, deregulation and commercialisation.

Many of these developing countries are also in an economic bind. Populations are growing rapidly. When combined with flat oil prices,

that means declining real per capita income. The OPEC surpluses, which so worried central bankers in the 1970s have long since disappeared. What is less recognised is the debt burden and the budget and balance-of-payments pressures many of these countries are under. Like many other governments around the world, they need to reduce government spending and deficits. Yet they face political difficulties in making such adjustments in a world in which oil prices are not even keeping pace with inflation, oil earnings can be increased only through greater productivity and increased output. But that takes significant investment - money that many exporters do not have.

Thus economic imperatives and changing ideologies are moving current and would be exporting countries to seek the international oil industry's capital, technology and management skills. These countries are showing a new willingness to transfer the risk of exploration and the investment requirements to an international oil industry that is organised to carry such risks and that has the capital - thus preserving limited state funds for investment in infrastructure and societal needs.

Around the world, doors are being reopened. Venezuela, which nationalised foreign companies in 1976, was cautiously inviting them back to develop marginal fields. Argentina, which established the first state oil company in 1922, is now privatising it, and at the same time was encouraging foreign companies to explore and produce within its borders. Algeria was actively inviting companies to stem the threatened decline in its oil production and to bolster natural gas output, and Vietnam no longer a Soviet dole, has offered some of the most attractive terms to entice companies to explore there. It is already the site of a mini-oil boom and will become the site of a bigger

boom once the United States' restrictions on American companies are lifted. China, worried about the adequacy of energy to sustain its economic growth, is opening new areas to Western companies as well.

The oil crisis had two apparently fortunate consequences. For oil producers, of whom the former Soviet Union happened to be one of the most important, it turned black liquid into gold. It was like a guaranteed weekly winning ticket to the lottery. The millions are simply rolled in without effort, postponing the need for economic reform and, incidentally, enabling the Soviet Union to pay for its rapidly growing imports from capitalist West with exported energy. Between 1970 and 1980 Soviet exports to the developed market economies rose from just under 19 per cent of total exports to 32 per cent. It has been suggested that it was this enormous and unforeseen bonanza that tempted Brezhnev's regime into a more active international policy of competing with the United States in the middle of the 1970s, as revolutionary unrest once against swept the Third World, and into the suicidal course of trying to match American arms superiority.

The other apparently fortunate consequence of the oil crisis was the flood of dollars which now spurted from multi-billionaire OPEC States, often with tiny populations, and which was distributed by the international banking system in the form of loans to anyone who wanted to borrow. Few developing countries resisted the temptation to take the millions thus shovelled into their pockets, and which were to provoke the world debt crisis of the early 1980s. For the socialist countries, which succumbed to it - notably Poland and Hungary - loans seemed a providential way of simultaneously paying for investment in accelerating growth and raising their people's standard of living.

On the other hand, the triumph of OPEC in 1973 produced, for the first time, a body of Third World States, mostly backward by any criteria and hitherto poor, which now emerged as world-scale super-millionaires, especially when they consisted of smallish thinly inhabited stretches of sand or forest ruled by (usually Muslim) sheiks or sultans. It was plainly impossible to class, say, the United Arab Emirates, each of whose half-million inhabitants had, in theory, a share of the GNP worth over $13 000 - almost double the GDP per capita of the United States at this date, 1975 - in the same pigeon-hole as, Pakistan, which then enjoyed a GNP per capita of $130. Oil States with a large population did not do so well, but it nevertheless became evident that States dependent on the export of a single primary commodity, however disadvantaged in other respects, could become extremely rich, even if this easy money also, almost invariably, tempted them into throwing it out of the window.

In that specific field South Africa attained its aim too. Grace of its gold and its minerals, mainly chrome, South Africa got its own financial resources to produce its own liquid fuels from coal, which rescued it from crisis, keeping the country out the set of debtor countries that provoked the world debt crisis of the early 1980s. In fact, the foreign South African debt increased from R524 million in the next five years. By the early 1990s even Saudi Arabia had managed to run into debt. In 1991, the total South African foreign debt reached the sum of R1771 million but its gold and foreign exchange contingency reserve account reached the sum of R10 351 million.

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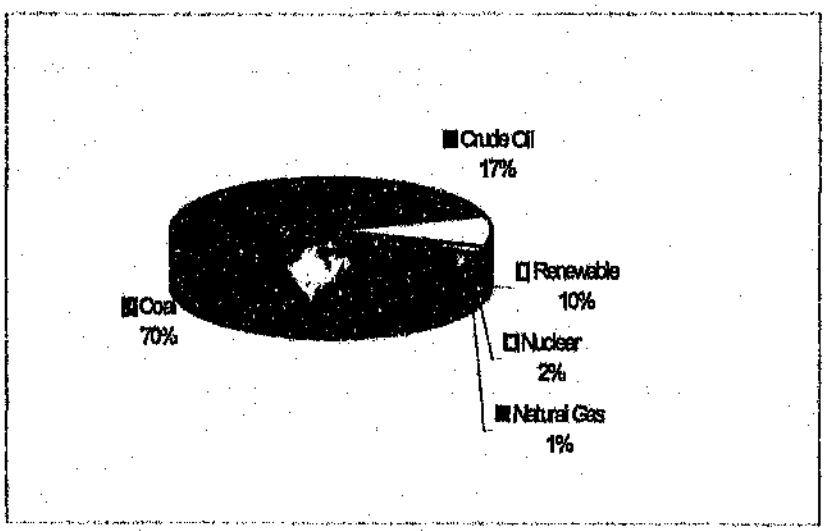
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REFERENCE FIGURES

Figure 1

SOUTH AFRICA
Percentage contribution of the various energy sources to primary energy supply in 1993



Source: South African Energy Statistics No. 2, Department of Minerals and Energy (1995)

ENERGY

Largest producers
Million tonnes coal equivalent, 1992

1	United States	2,291.5
2	Russia	1,603.5
3	China	1,036.8
4	Saudi Arabia	674.1
5	Canada	416.2
6	United Kingdom	307.7
7	Iran	285.7
8	Mexico	271.0
9	India	270.1
10	Germany	228.6
11	Australia	228.5
12	Venezuela	223.5
13	Norway	206.2
14	Indonesia	196.8
15	UAE	194.9
16	Ukraine	169.3
17	Algeria	157.8
18	Kazakhstan	155.6
19	France	152.2
20	Nigeria	137.6
21	South Africa	134.3
22	Poland	128.8
23	Libya	109.8
24	Japan	107.1
25	Netherlands	104.5
26	Turkmenistan	87.6
27	North Korea	87.3
28	Brazil	82.7
29	Kuwait	82.0
30	Egypt	80.9

Largest consumers
Million tonnes coal equivalent, 1992

1	United States	2,739.6
2	Russia	1,096.2
3	China	972.7
4	Japan	589.4
5	Germany	472.7
6	Ukraine	312.7
7	United Kingdom	312.7
8	France	310.9
9	India	307.8
10	Canada	300.1
11	Italy	232.3
12	Mexico	166.7
13	South Korea	140.8
14	Poland	133.6
15	Australia	129.8
16	Brazil	124.8
17	Spain	121.5
18	South Africa	112.7
19	Kazakhstan	108.3
20	Netherlands	108.0
21	Iran	102.3
22	Saudi Arabia	97.1
23	North Korea	96.3
24	Indonesia	73.2
25	Uzbekistan	69.1
26	Belgium	68.7
27	Argentina	66.0
28	Venezuela	64.9
29	Romania	63.0
30	Turkey	61.0

Source: The Economist

ENERGY

Largest exporters
Million tonnes coal equivalent, 1992

1	Saudi Arabia	535.7
2	Russia	480.7
3	Iran	185.3
4	Canada	184.7
5	Norway	178.9
6	Venezuela	151.4
7	UAE	148.9
8	United States	139.0
9	Indonesia	125.1
10	Australia	123.6
11	Nigeria	114.5
12	Netherlands	113.9
13	Algeria	112.2
14	Mexico	107.8
15	United Kingdom	107.6
16	Libya	92.0
17	Kuwait	71.1
18	Kazakhstan	67.6
19	Turkmenistan	65.1
20	China	58.5
21	Malaysia	53.2
22	Oman	50.9
23	Singapore	47.5
24	South Africa	43.4
25	Egypt	38.0

Largest importers
Million tonnes coal equivalent, 1992

1	United States	631.9
2	Japan	529.9
3	Germany	290.4
4	Italy	224.4
5	France	203.3
6	Ukraine	165.9
7	South Korea	149.5
8	Netherlands	130.6
9	United Kingdom	113.4
10	Spain	113.9
11	Singapore	95.2
12	Belgium	91.4
13	Russia	60.6
14	India	58.2
15	Brazil	58.2
16	Canada	54.6
17	Belarus	52.1
18	Turkey	42.5
19	Kazakhstan	39.1
20	Sweden	38.5
21	Greece	32.4
22	China	32.4
23	Thailand	31.3
24	Poland	29.5
25	Portugal	27.1

Source: The Economist

OIL (Includes crude oil, shale oil, oil sands and natural gas liquids)

Top 15 producers
'000 barrels per day, 1993

1	Saudi Arabia	8,695
2	United States	8,565
3	Russia	6,995
4	Iran	3,620
5	Mexico	3,135
6	China	2,900
7	Venezuela	2,565
8	UAE	2,435
9	Norway	2,340
10	Canada	2,180
11	United Kingdom	2,085
12	Kuwait	1,950
13	Nigeria	1,910
14	Indonesia	1,530
15	Libya	1,420

Top 15 consumers
'000 barrels per day, 1993

1	United States	16,410
2	Japan	5,455
3	Russia	3,585
4	China	2,965
5	Germany	2,920
6	France	1,965
7	Italy	1,905
8	United Kingdom	1,790
9	Canada	1,675
10	South Korea	1,635
11	Mexico	1,560
12	Brazil	1,360
13	India	1,295
14	Spain	1,090
15	Indonesia	790

NATURAL GAS

Top 10 producers
'000 terajoules, 1992

1	Russia	21,761
2	United States	19,379
3	Canada	4,767
4	Netherlands	2,881
5	Turkmenistan	2,345
6	Algeria	2,177
7	United Kingdom	2,120
8	Indonesia	2,022
9	Uzbekistan	1,670
10	Saudi Arabia	1,343

Top 10 consumers
'000 terajoules, 1992

1	United States	21,654
2	Russia	15,402
3	Ukraine	3,769
4	Canada	2,702
5	Germany	2,627
6	United Kingdom	2,336
7	Japan	2,199
8	Italy	1,913
9	Uzbekistan	1,611
10	Netherlands	1,549

Source: The Economist

WORLD OIL CONSUMPTION AND PRODUCTION

(million barrels per day)

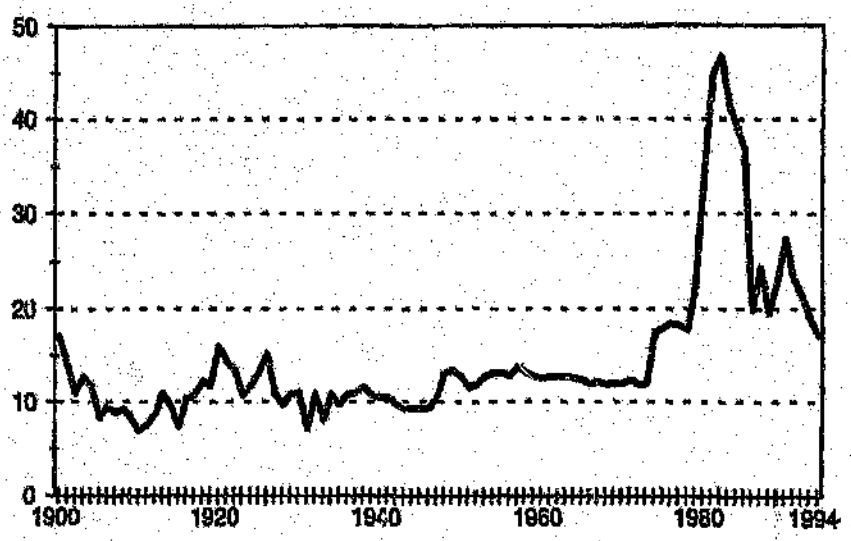
Figure 5

Supply and Disposition	HISTORY			PROJECTIONS		
	1990	1991	1992	2000	2005	2010
Production						
United States	9.66	9.66	9.77	8.0	7.8	8.1
Canada	2.02	2.03	2.12	2.2	2.5	2.5
OECD Europe	4.58	4.81	5.06	6.4	5.3	4.8
OPEC	24.81	24.93	26.38	36.5	40.9	44.0
Other Rest of World	11.12	11.43	11.72	13.0	12.3	12.1
Total	**52.21**	**53.08**	**55.07**	**66.1**	**68.8**	**71.4**
Net Eurasia Exports	2.17	1.36	1.58	1.2	1.4	1.6
Consumption						
United States	16.99	16.71	17.03	19.3	20.4	21.3
US Territories	0.21	0.24	0.21	0.3	0.3	0.3
Canada	1.69	1.62	1.64	1.9	1.9	1.9
Japan	5.14	5.28	5.46	6.8	7.1	7.2
Australia and New Zealand	0.82	0.84	0.82	1.0	1.0	1.1
OECD Europe	12.90	13.36	13.61	15.5	15.9	16.0
Rest of World	16.07	16.49	17.56	22.0	23.9	25.6
Total	**53.82**	**54.53**	**56.33**	**66.7**	**70.5**	**73.3**
Stock Draw and Discrepancy	-0.57	0.08	-0.32	0.3	0.3	0.3
Eurasia						
Production						
China	2.77	2.83	2.84	3.1	3.2	3.4
Former Soviet Union	11.40	10.41	8.91	8.5	9.7	11.0
Eastern Europe	0.34	0.29	0.25	0.4	0.4	0.4
Total	**14.51**	**13.54**	**12.00**	**11.9**	**13.3**	**14.8**
Consumption						
China	2.30	2.50	2.63	3.2	3.6	4.0
Former Soviet Union	8.39	8.35	6.70	6.2	6.8	7.5
Eastern Europe	1.65	1.33	1.09	1.3	1.5	1.7
Total	**12.34**	**12.18**	**10.42**	**10.7**	**11.9**	**13.2**
World Oil Consumption	**66.16**	**66.71**	**66.74**	**77.4**	**82.4**	**86.5**

Source: Energy Information Administration (EIA)
International Energy Outlook - 1994

Figure 6

PRICE OF US CRUDE OIL 1900-1994
(constant 1994 $/bbl)



Source: The World Bank: Review and Outlook for the Oil Market, p. 59

OPEC COUNTRIES STATISTICS 1994

	Population (millions)	Crude Oil Production (mb/d)	Crude Oil Reserves (Bbbl)	R/P (years)	Crude Oil Capacity (mb/d)	GDP per Capita* (US$)
Gulf						
Saudi Arabia	18.0	8.09[b]	258.7	88	10.2[b]	5,270
Iran	63.2	3.60	89.3	68	3.7	2,941
UAE	1.8	2.19	98.1	123	2.5	19,091
Kuwait	1.5	2.03[b]	94.0	127	2.4[b]	12,337
Iraq	20.4	0.53	100.0	91*	2.5	817
Qatar	0.5	0.41	3.7	25	0.5	15,296
Total	**105.4**	**16.85**	**643.8**	**105**	**21.8**	**—**
Non-Gulf						
Venezuela	21.3	2.44	64.5	72	2.6	2,557
Nigeria	108.0	1.91	17.9	26	2.1	357
Libya	5.2	1.38	22.8	45	1.5	n.a.
Indonesia	190.0	1.32	5.8	12	1.4	627
Algeria	27.5	0.75	9.2	34	0.8	2,438
Gabon	1.3	0.32	1.3	11	0.4	3,565
Total Non-Gulf	**353.3**	**8.12**	**121.5**	**41**	**8.8**	**—**
OPEC	**458.7**	**24.97**	**763.3**	**84**	**30.6**	**—**

* Pre Gulf War
a Estimates expressed in constant 1987 prices and exchange rates
b Includes half of neutral zone production of 0.39 mb/d

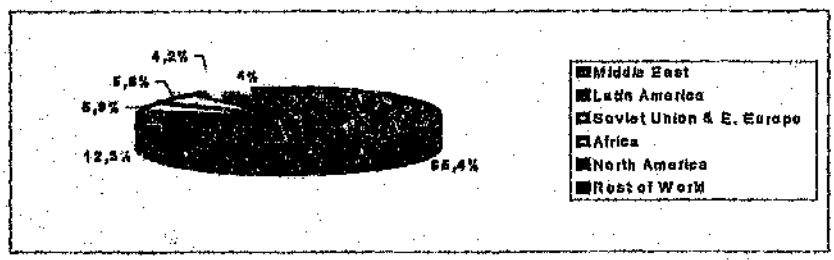
Source: The World Bank: Review and Outlook for the Oil Market, p. 64

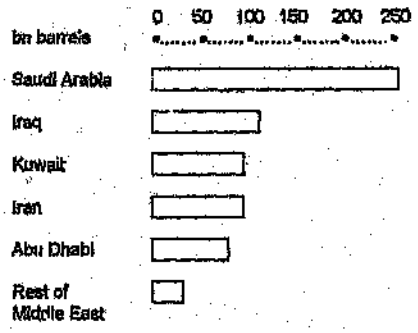
Figure 7

OIL POWER

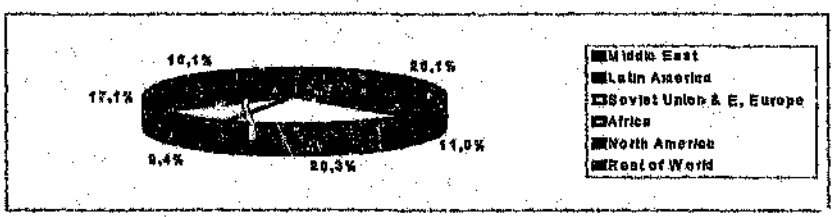
Figure 8

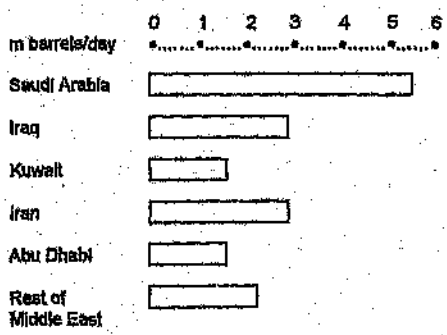
Proven reserves, end 1989
Total world: 1,012bn barrels





Production, 1989
Total World: 63.6m barrels/day





Source: Peter R. Odell, Oil and World Power: Background to the Oil Crisis

Figure 9

OPEC CRUDE OIL PRODUCTION
(mb/d)

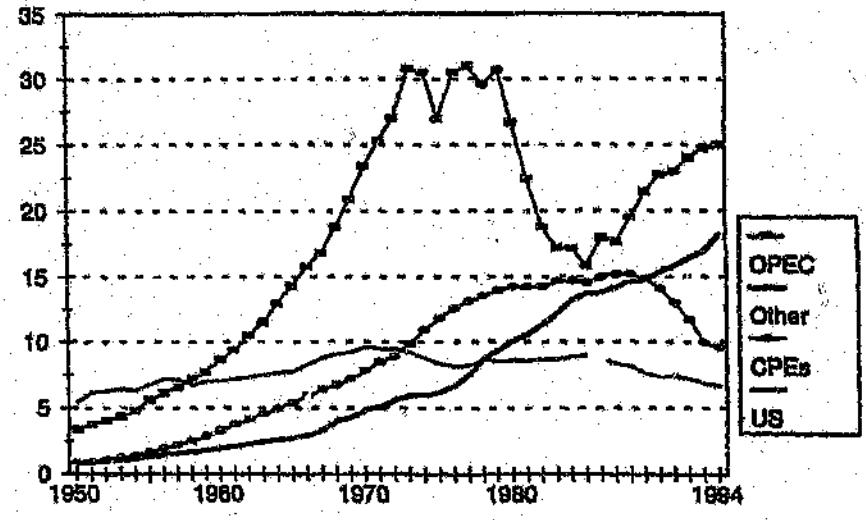
	1960	1965	1970	1978	1980	1985	1990	199
Saudi Arabia[a]	1.3	2.2	3.8	7.1	9.9	3.4	6.4	8.1
Iran	1.1	1.9	3.8	5.4	1.5	2.2	3.1	3.6
Iraq	1.0	1.3	1.5	2.3	2.6	1.4	2.0	0.5
Kuwait[a]	1.7	2.4	3.0	2.1	1.7	1.0	1.2	2.0
UAE	0.0	0.3	0.8	1.7	1.7	1.2	2.1	2.2
Venezuela	2.8	3.5	3.7	2.4	2.2	1.8	2.1	2.4
Libya	0.0	1.2	3.3	1.5	1.8	1.1	1.4	1.4
Algeria	0.2	0.6	1.0	1.0	1.0	0.7	0.8	0.8
Nigeria	neg.	0.3	1.1	1.8	2.1	1.5	1.8	1.9
Indonesia	0.4	0.5	0.9	1.3	1.6	1.2	1.3	1.3
Gabon	neg.	neg.	0.1	0.2	0.2	0.2	0.3	0.3
Qatar	0.2	0.2	0.4	0.4	0.5	0.3	0.4	0.4
Total[b]	8.7	14.3	23.4	27.0	26.7	15.6	2..7	25.0

[a] Includes neutral zone
[b] Totals do not add due to rounding

Source: *The World Bank: Review and Outlook for the Oil Market, p. 65*

Figure 10

WORLD CRUDE OIL PRODUCTION 1950-1994
(mb/d)



Source: The World Bank: Review and Outlook for the Oil Market, p. 61

Figure 11

WORLDWIDE CRUDE OIL PRODUCTION
(1,000 barrels per day)

Country/Region	12 Month Average Production 1994	1993
Argentina	658	594
Bolivia	26	22
Brazil	664	639
Canada	1,739	1,675
Chile	12	14
Colombia	466	451
Ecuador	379	340
Mexico	2,685	2,673
Peru	128	126
Trinidad	129	122
United States	6,626	6,847
Venezuela *	2,463	2,335
Other Latin America	36	32
Western Hemisphere	**16,011**	**15,876**
Austria	23	24
Denmark	185	168
France	58	65
Germany	65	60
Italy	88	87
Netherlands	78	54
Norway	2,579	2,268
Spain	18	17
Turkey	71	75
United Kingdom	2,468	1,946
Other Western Europe	10	11
Western Europe	**5,634**	**4,785**
Albania	12	10
CIS	7,030	7,854
Croatia	40	40
Hungary	70	58
Romania	138	137
Serbia	24	24
Other Eastern Europe	22	22
Eastern Europe & CIS	**7,336**	**8,145**
Algeria *	750	753
Angola	545	506
Cameroon	110	117
Congo	185	166
Egypt	894	891
Gabon *	329	300
Libya *	1,380	1,369
Nigeria *	1,883	1,902
Tunisia	91	97
Zaire	25	24
Other Africa	16	15
Africa	**6,208**	**6,162**

Country/Region	12 Month Average Production 1994	1993
Bahrain	105	106
Iran *	3,587	3,671
Iraq *	550	448
Kuwait *†	2,000	1,869
Oman *	807	782
Qatar *	407	429
Saudi Arabia *†	8,000	8,062
Syria	574	554
United Arab Emirates *	2,221	2,194
Yemen	338	222
Other Middle East	0	0
Middle East	**18,589**	**18,357**
Australia	537	496
Brunei	162	157
China	2,961	2,908
India	625	594
Indonesia *	1,319	1,326
Japan	15	16
Malaysia	640	645
New Zealand	45	40
Pakistan	57	59
Papua New Guinea	121	127
Thailand	54	52
Vietnam	143	123
Other Asia-Pacific	23	25
Asia-Pacific	**6,702**	**6,568**
TOTAL WORLD	**60,489**	**79,827**
* OPEC	24,889	24,678
North Sea	5,204	4,352

* OPEC member
† Kuwait and Saudi Arabia production each include half of Neutral Zone

Source: Oil & Gas Journal Data Book,, 1996 Edition.

INTERNATIONAL OIL CONSUMPTION

Country	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
	Million tonnes oil equivalent										
North America											
USA	704,9	723,3	720,2	749,3	764,8	796,7	795,3	781,8	765,6	782,2	787,5
Canada	68,2	66,7	68,5	71,0	73,1	76,8	80,3	77,7	74,8	74,9	76,6
Western Europe											
Austria	10,1	9,8	9,8	10,4	10,7	10,6	10,4	10,8	11,6	11,3	11,2
Belgium & Luxembourg	21,1	20,4	20,8	23,5	23,7	24,4	23,4	24,8	26,5	27,1	26,1
France	89,4	85,9	84,3	8,6	88,6	86,0	88,4	89,4	94,6	94,4	92,0
Italy	89,2	84,9	84,4	86,5	90,1	91,7	93,8	93,6	92,4	93,5	91,8
Netherlands	29,1	28,7	29,2	32,4	32,4	34,5	33,9	3,5	35,8	36,5	36,4
Portugal	9,5	9,5	8,8	9,5	8,9	8,7	11,3	11,1	11,5	12,8	11,9
Spain	47,8	44,8	42,9	42,7	44,7	45,8	46,1	46,7	49,4	52,8	51,5
Sweden	18,4	17,5	18,4	18,7	17,1	16,3	16,5	16,4	15,5	16,4	16,1
Turkey	16,2	17,0	16,6	18,3	21,0	22,3	20,8	22,1	22,1	23,5	27,0
United Kingdom	72,5	69,6	77,4	77,4	75,2	80,0	81,7	82,9	82,7	83,7	84,1
Germany	123,1	122,5	126,3	133,3	129,5	129,4	121,8	127,3	133,1	134,3	136,9
Australasia											
Australia	27,3	28,5	27,0	28,2	28,7	29,9	31,1	31,6	30,8	30,9	32,0
New Zealand	3,8	3,9	3,8	4,0	4,3	4,4	4,5	4,8	5,1	5,8	5,6
Rest of the world											
Japan	207,2	217,9	206,3	206,5	209,2	224,7	232,9	247,7	252,1	258,5	252,6
China	84,7	86,5	90,3	100,0	105,3	110,2	112,3	110,3	117,9	129,0	143,3
USSR	416,6	417	417,1	418,2	420,2	414,6	413,3	420,1	393,4	339,0	274,5
South Africa	11,9	11,7	11,5	11,3	11,1	11,9	12,9	12,8	13,2	13,4	15,5

Source: South African Energy Statistics 1950-1993 – N° 2

Figure 12

SUB-SAHARAN AFRICA
GROSS PRODUCTION OF ELECTRICITY

GWh

Country	Year Ended	Thermal	Hydro	Nuclear	Geo-thermal	Total	% of total
Angola [a]	12/95	165,00	877,00	—	—	1 042,00	0,50
Botswana [a b]	3/96	1 017,00	—	—	—	1 017,00	0,49
Congo	12/95	1,86	352,01	—	—	353,87	0,17
Kenya	6/95	283,66	3 103,09	—	291,56[c]	3 678,33	1,77
Lesotho [a b]	3/96	0	0	—	—	0	0
Malawi [a]	3/95	4,41	856,11	—	—	860,52	0,41
Mauritius [a]	12/95	913,20	134,18	—	—	1 047,38	0,50
Mozambique [a]	12/95	26,57	335,90[d]	—	—	364,47	0,18
Namibia [a b]	6/95	124,80	1 134,10	—	—	1 258,70	0,61
South Africa [a b]	12/95	161 324,00	2 090,00[e]	11 301,00	—	174 715,00	84,18
Swaziland [a b]	3/95	0,84	109,00	—	—	109,84	0,05
Tanzania [a]	12/96	252,00	1 539,00	—	—	1 791,00	0,86
Zaire [f]	12/94	5,40	5 373,60	—	—	5 379,00	2,59
Zambia [a]	3/95	14,00	8 102,00	—	—	8 116,00	3,91
Zimbabwe [a]	6/95	5 526,30	2 284,70	—	—	7 811,00	3,76
Total, GWh		169 660,66	26 290,69	11 301,00	291,56	207 544,11	100,0
SADC, GWh		169 369,92	17 461,99	11 301,00	0	197 085,53	94,96
South African Customs Union, GWh		162 466,44	3 333,10	11 301,00	0	177 100,54	85,33

[a] Member of the Southern African Development Community (SADC)
[b] Member of the South African Customs Union
[c] Includes 1,09 GWh generated by wind turbine
[d] Includes Cahora Bassa
[e] Includes pumped storage
[f] Statistics for year ended 31 Decer.. 1994 not available at time of publication

Source: Information obtained from electricity utilities and South Africa's National Electricity Regulator

Figure 14

SOUTH AFRICA
TOTAL PRIMARY ENERGY CONSUMPTION

Year	Coal	Crude oil	Natural gas	Hydro	Nuclear	Renewable	TOTAL
	Million tonnes coal equivalent						
1950	19,6	3,0	0,0	0,0	0,0	2,9	25,5
1951	20,5	3,3	0,0	0,0	0,0	3,0	26,8
1952	22,5	3,5	0,0	0,0	0,0	3,2	29,2
1953	22,5	3,7	0,0	0,0	0,0	3,3	29,5
1954	23,3	4,0	0,0	0,0	0,0	3,5	30,8
1955	26,0	4,5	0,0	0,0	0,0	3,7	35,7
1956	27,4	4,5	0,0	0,0	0,0	3,9	37,2
1957	26,5	4,8	0,0	0,0	0,0	3,9	37,2
1958	30,4	5,1	0,0	0,0	0,0	4,2	39,6
1959	29,9	5,3	0,0	0,0	0,0	4,2	39,4
1960	30,9	5,6	0,0	0,0	0,0	4,3	40,8
1961	32,0	5,8	0,0	0,0	0,0	4,5	42,3
1962	33,0	6,1	0,0	0,0	0,0	4,8	43,9
1963	34,2	6,6	0,0	0,0	0,0	4,9	45,7
1964	36,3	7,2	0,0	0,0	0,0	5,1	48,7
1965	39,2	8,1	0,0	0,0	0,0	5,1	52,4
1966	38,9	8,9	0,0	0,0	0,0	5,7	53,5
1967	40,0	9,6	0,0	0,0	0,0	6,0	55,6
1968	41,8	10,4	0,0	0,0	0,0	6,0	58,2
1969	42,2	11,5	0,0	0,0	0,0	6,1	58,8
1970	44,0	13,1	0,0	0,0	0,0	6,1	63,2
1971	47,5	14,2	0,0	0,0	0,0	6,8	68,3
1972	47,4	15,4	0,0	0,3	0,0	6,9	70,0
1973	50,1	17,0	0,0	0,1	0,0	7,2	74,3
1974	52,9	16,3	0,0	0,4	0,0	7,6	77,4
1975	55,4	17,6	0,0	0,4	0,0	8,2	81,5
1976	58,5	18,1	0,0	0,6	0,0	8,7	85,8
1977	60,3	17,8	0,0	0,6	0,0	9,0	87,7
1978	62,2	18,4	0,0	0,6	0,0	9,0	90,1
1979	66,7	18,1	0,0	0,4	0,0	9,3	94,4
1980	71,4	17,8	0,0	0,3	0,0	9,9	99,4
1981	81,2	17,6	0,0	0,5	0,0	10,6	109,9
1982	91,5	17,3	0,0	0,3	0,0	10,8	119,9
1983	93,7	17,0	0,0	0,2	0,0	10,7	121,6
1984	100,7	16,7	0,0	0,2	1,3	11,6	130,5
1985	103,7	16,5	0,0	0,2	1,7	11,5	133,6
1986	105,6	16,2	0,0	0,5	2,8	11,7	136,8
1987	106,9	15,9	0,0	0,5	2,0	12,0	139,3
1988	118,4	17,1	0,0	1,0	3,4	12,5	152,3
1989	106,0	16,5	0,0	0,9	3,5	12,6	143,7
1990	112,7	16,3	0,0	0,3	2,7	14,0	148,1
1991	108,8	16,9	0,0	0,6	2,9	14,5	146,8
1992	107,4	19,2	0,0	0,2	3,0	14,1	144,0
1993	108,1	22,2	2,5	0,1	2,3	14,3	149,6

Source: South African Energy Statistics 1950-1993 – N° 2

South Africa's position in the world mineral reserve base 1995

The reserve base is that part of an identified resource that meets specified minimum physical and chemical criteria related to current mining and production practices, those of grade, quality, thickness and depth. It is the *in situ* demonstrated resource from which reserves are estimated. It may encompass those parts of the resource that have a reasonable potential for becoming economically available within planning horizons beyond those that assure proven technology and current economics. The reserve base includes those resources that are currently economic (demonstrated reserves) and marginally economic (demonstrated marginal resources).

Commodity	Unit	SA	World		Locality of major reserves		
			%	Rank			
Alumino-silicates	kt	50 800	37	1	SA	USA	India
Antimony	t	250 000	5	2	Bolivia	SA	Mexico
Asbestos	kt	8 200	Nav	Nav	China	Canada	CIS
Chromium	Mt	3 200	69	1	SA	Zimbabwe	CIS
Coal	Mt	55 200	11	5	USA	CIS	India
Copper	kt	13 000	2	12	Chile	USA	CIS
Diamonds	kcar	Nav	Nav	4	Australia	Zaire	Botswana
Fluorspar	kt	38 000	12	3	CIS	China	SA
Gold	t	39 933	45	1	SA	USA	Canada
Iron	Mt	5 900	6	8	CIS	Australia	Brazil
Lead	kt	3 000	2	6	Australia	USA	Canada
Manganese	Mt	4 000	81	1	SA	CIS	Gabon
Nickel	kt	11 800	10	5	Cuba	N. Caledonia	Canada
Phosphate rock	Mt	2 310	7	3	Morocco	USA	SA
Platinum-group metals	t	62 816	56	1	SA	Russia	Finland
Silver	t	10 000	2	7	USA	CIS	Canada
Titanium minerals	kt	72 000	17	2	Australia	SA	USA
Uranium	t	179 100	6	6	Australia	Niger	Kazakhstan
Vanadium	kt	12 500	45	1	SA	China	USA
Vermiculite	kt	60 000	40	2	USA	SA	
Zinc	kt	15 000	5	4	Australia	Canada	USA
Zirconium	kt	14 300	26	2	Australia	SA	USA

Source: Department of Mineral and Energy Affairs – Annual Report, 1995.

South Africa's position in world mineral exports 1994

Commodity	Unit	SA	World		Major Exporters		
			%	Rank			
Alumino-silicates	t	155 000	58	1	SA	France	USA
Antimony	t	2 001	4	3	China	Bolivia	SA
Asbestos	kt	131	2	3	Canada	Zimbabwe	SA
Chrome ore	kt	903	31	1	SA	Turkey	CIS
Coal	Mt	[illegible]	14	3	Australia	USA	SA
Copper	kt	82	1	11	Chile	Canada	USA
Ferrochromium	t	947 600	39	1	SA	CIS	Zimbabwe
Ferromanganese	t	428 700	24	1	SA	Norway	Brazil
Ferrosilicon	t	25 500	2	8	Norway	China	Brazil
Fluorspar	t	251 000	13	2	China	SA	Mexico
Iron ore	kt	19 800	5	6	Australia	Brazil	CIS
Lead	t	94 000	7	7	Australia	China	Canada
Manganese ore	kt	1 244	22	3	Gabon	Australia	SA
Phosphate rock	kt	1 344	5	6	Morocco	Jordan	USA
Platinum-group metals	kg	161 694	Nav	1	SA	Russia	Australia
Silicon metal	t	36 100	10	4	China	Brazil	Norway
Silver	t	182	<1	11	Mexico	USA	Canada
Vanadium	t	26 167	82	1	SA	NZ	CIS
Vermiculite	kt	134	95	1	SA	USA	
Zinc	t	11 000	<1	-	Australia	Canada	Peru
Zirconium	kt	145	28	2	Australia	SA	USA

South Africa's position in world mineral production 1994

Commodity	Unit	SA	World		Major Producers		
			%	Rank			
Aluminium	kt	172	1	22	USA	Russia	Canada
Alumino-silicates	kt	188	32	1	SA	CIS	USA
Antimony	t	4 534	12	4	China	CIS	Bolivia
Asbestos	kt	104	4	7	CIS	Canada	China
Chrome ore	kt	3 600	37	1	SA	CIS	Turkey
Coal	kt	195 800	6	4	China	USA	India
Copper	kt	173	2	13	Chile	USA	CIS
Diamonds	kcar	10 324	10	5	Australia	CIS	Zaire
Ferrochromium	kt	1 104	35	1	SA	CIS	China
Ferromanganese	kt	562	10	3	CIS	China	SA
Ferrosilicon	kt	99	3	6	CIS	China	Norway
Fluorspar	kt	218	6	4	China	Mexico	CIS
Gold	t	580	25	1	SA	USA	Australia
Iron ore	kt	32 300	3	8	China	Brazil	CIS
Lead	kt	96	4	9	Australia	USA	China
Manganese ore	kt	2 851	12	3	CIS	China	SA
Nickel	kt	30	3	7	CIS	Canada	N. Caledonia
Phosphate rock	kt	2 496	2	9	USA	China	Morocco
Platinum-group metals	kg	180 925	53	1	SA	Russia	Canada
Silicon metal	kt	38	6	7	USA	China	Brazil
Silver	t	192	1	14	Mexico	USA	Peru
Titanium minerals	kt	751	20	2	Australia	SA	Canada
Uranium	t	1 703	5	7	Canada	Uzbekistan	Niger
Vanadium	t	27 948	51	1	SA	China	CIS
Vermiculite	kt	214	43	1	SA	USA	Brazil
Zinc	kt	78	1	17	Canada	Australia	China
Zirconium minerals	kt	240	30	2	Australia	SA	Ukraine

Source: Department of Mineral and Energy Affairs – Annual Report, 1995.

INTERNATIONAL COAL CONSUMPTION

Country	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
	Million tonnes oil equivalent										
North America											
USA	397,4	430,2	440,5	435	453,8	475	476,9	481,4	473	475,5	494,7
Canada	28,2	32,3	29,3	32,6	33,4	30,5	27,5	24,4	25,5	26,2	25,6
Western Europe											
Austria	3,1	3,6	3,5	3,2	3,3	3,0	3,1	3,6	3,6	2,8	2,5
Belgium & Luxembourg	9,4	10,9	10,9	9,3	9,3	9,3	9,8	10,4	10,5	10,2	8,4
France	25,3	25,2	22,0	19,6	17,9	17,1	18,6	19,1	20,1	17,9	14,0
Italy	13,5	15,3	15,1	14,8	15,9	15,2	15,0	15,8	15,1	13,7	11,8
Netherlands	5,3	6,7	7,0	6,8	7,1	8,4	8,2	9,5	8,2	7,7	8,1
Portugal	0,4	0,5	0,8	1,5	1,9	2,2	2,4	2,8	3,0	3,0	3,1
Spain	19,2	19,2	19,2	18,9	18,5	15,5	20,4	19	18,8	19,1	18,2
Sweden	2,2	2,6	2,9	2,	2,8	2,7	1,8	2,2	2,4	2,2	2,1
Turkey	8,6	9,8	10,6	19,8	22,1	22,6	24,6	22,3	22,0	24,9	24,3
United Kingdom	65,6	46,5	62,0	66,8	66,4	64,1	64,2	63,5	59,8	50,7	50,1
Germany	141	147,4	147,6	143,4	141,3	140,1	138,2	129,6	113,3	104,4	96,7
Australasia											
Australia	31,2	32,6	35,3	38,3	41,4	36,1	35,3	39,5	37,4	39,0	37,2
New Zealand	1,5	1,3	0,9	0,9	1,1	1,0	1,1	1,3	1,1	1,2	1,3
Rest of the world											
Japan	63,0	69,9	73,3	39,5	69,4	76,2	75,4	76,0	79,0	78,0	79,3
China	352,4	388,5	417,0	434,1	449,1	468,4	509,9	516,1	50,4	527,1	541,5
USSR	328,1	322,6	322,6	330,2	335,6	327,0	312,7	307,9	277,6	256,6	238,0
South Africa	65,4	70,2	72,4	73,6	76,0	82,6	75,4	78,9	78,6	74,9	75,4

Source: South African Energy Statistics 1950-1993 – N° 2

Figure 17

SOUTH AFRICA
CONSUMPTION OF LIQUID FUELS

Year	Petrol	Auto-motive diesel	Jet fuel	Avia-tion gaso-line	Power paraf-fin	Illumi-nating kero-sene	Indus-trial diesel	Heavy furn-ace fuel	Liquid petro-leum gas	Total
	Megalitres									
1950	1405	191	1	32	255	168	##	79	#	2131
1951	1574	231	0	30	321	176	##	72	#	2354
1952	1577	256	2	33	340	161	##	87	#	2456
1953	1693	307	5	34	384	192	##	[illegible]	#	2623
1954	1677	375	3	36	415	208	##	70	#	2804
1955	1807	466	4	38	410	220	##	67	#	3012
1956	1883	663	5	43	417	232	##	62	#	3205
1957	1979	635	10	46	415	237	##	63	5	3390
1958	2075	733	9	46	367	247	##	97	7	3601
1959	2133	794	33	31	380	254	##	98	12	3735
1960	2219	891	47	33	371	262	##	107	17	3937
1961	2275	974	61	35	353	270	##	115	24	4107
1962	2342	1085	69	37	338	280	##	128	33	4315
1963	2471	1206	81	35	321	298	##	168	48	4528
1964	2709	1391	90	42	304	309	##	186	61	5091
1965	2941	1619	119	39	293	329	##	249	78	5667
1966	3142	1790	170	34	279	352	##	353	92	6212
1967	3322	2006	189	37	268	367	##	457	102	6738
1968	3578	2223	216	34	236	380	##	502	120	7289
1969	3998	2434	276	43	230	396	##	602	143	8021
1970	4366	2920	330	34	232	440	##	689	165	9178
1971	4690	3043	381	38	104	455	##	913	196	9920
1972	5015	3326	380	37	190	469	##	1093	218	10728
1973	5390	3821	419	40	187	475	##	1259	246	11847
1974	5064	3969	446	42	161	462	##	1090	280	11514
1975	5594	4306	531	60	143	476	##	924	280	12304
1976	5605	4576	589	55	119	491	##	859	292	12586
1977	5401	4634	618	68	106	483	##	837	282	12419
1978	5640	4895	657	61	105	494	##	868	294	13014
1979	4940	4597	689	#	80	409	72	807	303	11897
1980	5153	4677	695	#	66	378	56	348	311	12184
1981	5570	5085	737	#	61	409	61	804	320	13157
1982	5897	4756	708	#	52	309	56	599	323	12705
1983	6128	4639	747	#	46	333	49	511	337	12790
1984	6500	5019	746	32	45	374	66	614	356	13854
1985	6343	4921	739	29	35	385	42	670	325	13489
1986	6460	4717	687	28	32	417	18	579	326	13264
1987	7120	4875	709	29	31	466	17	553	360	14157
1988	7995	5387	788	31	30	641	26	524	406	15827
1989	8296	5354	840	31	34	679	15	538	432	16219
1990	8636	5341	861	34	32	724	9	611	446	16694
1991	8910	6138	864	31	26	727	7	526	476	17705
1992	9173	4951	1009	29	22	744	18	546	491	16983
1993	9205	4920	1095	25	20	835	37	595	469	17200

\# Not available
Previously included by Heavy Furnace Oil

Source: South African Energy Statistics 1950-1993 – N° 2

SOUTH AFRICA
COAL CONSUMPTION AND PRODUCTION OF THE SASOL GROUP

Year	Non energy products			Coal consumption in producing energy products								
	Chemical gas	Chemicals	TOTAL	Liquid fuels	Industrial gas	Electricity	Steam generation	TOTAL	Losses	Total Consumption	Stock changes plus nett purchases	Coal production
	Thousand tonnes											
1970	4	1273	1277	1440	882	419	44	2785	0	4062	-2308	1754
1971	5	1154	1160	1283	1132	414	84	2893	0	4053	-2404	1649
1972	6	1168	1174	1333	1263	434	87	3117	0	4291	-2629	1662
1973	8	1174	1182	1453	1400	459	107	3435	0	4617	-2618	1999
1974	13	1068	1081	1220	1801	454	108	3583	0	4661	-2643	2018
1975	80	971	1051	858	2051	439	108	3476	0	4527	-2567	1960
1976	24	964	988	931	2140	483	107	3661	0	4649	-2636	2013
1977	58	925	983	1098	2039	502	115	3754	0	4737	-2686	2051
1978	111	929	1040	1349	2195	482	171	4197	0	5237	-2969	2268
1979	110	870	980	1050	2720	740	210	4720	0	5700	262	5962
1980	70	1195	1265	4350	2960	1190	205	8705	0	9970	372	10342
1981	80	1687	1767	7340	2810	1109	214	11473	0	13240	110	13350
1982	131	1474	1605	14551	3277	2630	197	20655	0	22260	-3158	19102
1983	240	2138	2378	22265	3077	3458	212	29012	620	32010	-3435	28575
1984	179	2831	3010	23913	3486	4040	215	31654	599	35263	-4089	31174
1985	167	2713	2880	25595	3543	4368	126	33632	538	37050	-3768	33282
1986	110	2913	3023	27045	3347	4536	74	35302	766	39091	-3139	35952
1987	74	2827	2901	27397	3553	4415	93	35458	257	38616	-1734	36882
1988	93	3289	3382	29712	3728	3282	93	36813	276	40471	1162	41633
1989	144	4502	4646	26342	3796	3294	92	33516	294	38456	-5174	33282
*1990	201	4117	4318	25287	3786	3325	97	35475	241	40034	-3413	36621
*1991	88	4762	4850	27057	3566	3393	99	34415	226	39491	-4112	35379
*1992	83	4148	4231	24457	5984	3917	85	34453	260	38944	-1288	37656

* Preliminary numbers

Source: South African Energy Statistics 1950-1993 – N° 2

Figure 19

SOUTH AFRICA
COAL CONSUMPTION FOR CONVERSION PURPOSES

Year	Electricity	Towngas	SASOL	TOTAL
	Million tonnes			
1950	8,63	0,12	#	8,75
1951	9,17	0,12	#	9,29
1952	9,84	0,13	#	9,97
1953	10,41	0,14	#	10,55
1954	11,12	0,14	0,50	11,30
1955	12,34	0,14	0,54	13,02
1956	13,25	0,14	0,76	14,15
1957	13,83	0,15	0,99	14,98
1958	14,71	0,15	1,07	15,94
1959	15,46	0,14	1,17	16,77
1960	16,44	0,14	1,20	17,79
1961	17,10	0,14	1,33	18,56
1962	18,55	0,16	1,38	20,09
1963	19,35	0,17	1,32	20,84
1964	20,39	0,16	1,48	22,03
1965	22,07	0,16	1,54	23,76
1966	23,00	0,19	1,71	24,90
1967	24,97	0,25	1,72	26,94
1968	26,01	0,33	1,79	28,13
1969	27,60	0,36	1,74	29,70
1970	29,48	0,48	1,76	31,72
1971	31,89	0,58	1,65	34,12
1972	32,76	0,62	1,66	35,05
1973	34,89	0,90	2,00	37,79
1974	36,54	0,92	2,02	39,47
1975	39,09	0,89	1,96	41,93
1976	41,05	0,88	2,01	43,95
1977	42,43	0,88	2,05	45,36
1978	44,26	0,96	2,27	47,50
1979	49,31	1,18	5,96	56,45
1980	54,96	0,93	10,34	66,25
1981	59,40	0,37	13,35	73,11
1982	63,31	0,43	19,10	82,84
1983	63,54	0,41	28,58	92,53
1984	66,86	0,49	31,17	98,52
1985	67,91	0,48	33,28	101,68
1986	68,25	0,45	35,95	104,65
1987	72,39	0,44	36,68	109,71
1988	78,19	0,43	41,63	120,26
1989	72,50	0,40	33,28	106,18
1990	75,89	0,46	36,62	112,97
1991	74,68	0,40	35,38	110,46
1992	71,15	0,36	37,68	109,19
1993	73,60	0,05	40,25	113,89

Source: South African Energy Statistics 1950-1993 – N° 2

SUB-SAHARAN AFRICA
NET MAXIMUM GENERATING CAPACITY

MW

Country	Year Ended	Thermal	Hydro	Nuclear	Geo-thermal	Total	% of total
Angola [a c]	12/95	125,22	200,80	—	—	326,02	0,74
Botswana [a b]	3/96	172,00	—	—	—	172,00	0,39
Congo	12/95	18,20	89,00	—	—	107,20	0,24
Kenya [d]	6/95	100,48	569,50	—	45,35[e]	715,33	1,62
Lesotho [a b]	3/96	1,56	3,27	—	—	4,83	0,01
Malawi [a]	3/95	24,56	164,60	—	—	189,16	0,43
Mauritius [a]	12/95	277,70	54,20	—	—	331,90	0,75
Mozambique [a]	12/95	97,39	491,19[f]	—	—	588,58	1,34
Namibia [a b]	6/95	147,00	240,00	—	—	387,00	0,88
South Africa [a b]	12/95	30 612,00[g]	2 248,80[h]	1 840,00	—	34 700,80	78,75
Swaziland [a b]	3/95	9,50	40,50	—	—	50,00	0,11
Tanzania [a]	12/95	139,15	375,00	—	—	514,15	1,17
Zaire	12/94	37,80	2 442,16	—	—	2 479,96	5,63
Zambia [a]	3/95	94,00	1 670,00	—	20,00	1 774,00	4,03
Zimbabwe [a]	6/95	1 066,00	666,00	—	—	1 772,00	3,91
Total, MW		32 902,56	9 255,02	1 840,00	65,35	44 062,93	100,0
SADC, MW		32 746,08	6 154,36	1 840,00	20,00	40 760,44	92,51
South African Customs Union, MW		30 942,06	2 532,57	1 840,00	0	35 314,63	80,15

Thermal electricity comprises conventional plants of all types, whether or not equipped for the combined generation of heat and electric energy. Accordingly, they include steam-operated generating plants, with condensation (with or without extraction) or with back-pressure turbines and plants using internal combustion engines or gas turbines whether or not these are equipped for heat recovery.

[a] Member of the Southern African Development Community (SADC)
[b] Member of the South African Customs Union
[c] Available Capacity
[d] Effective Capacity = sent-out capacity + own use capacity
[e] Includes wind turbine capacity of 0,35 MW
[f] Includes Cahora Bassa
[g] Excludes Eskom's 4 591 MW in reserve storage
[h] Includes pumped storage

Source: Information obtained from electricity utilities and South Africa's National Electricity Regulator

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