

# Armed Conflicts and Security of Oil and Gas Supplies

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## Synopsis

The paper offers a systematic analysis of the impact of international or civil wars and violent non-state groups on global oil and gas supplies. Statistical evidence points to the fact that international wars are becoming increasingly rare, while civil wars remain frequent. The paper discusses the cases of the Iraq-Iran war and the Iraqi invasion of Kuwait, showing the limits to the damage that belligerents were able to inflict on oil installations and illustrating how the world was able to compensate for this damage. The Iraqi insurgency following international intervention to replace the Saddam Hussein regime is discussed together with other cases of civil wars in Nigeria, Angola and Sudan. The analysis supports the conclusion that oil and gas installations appear to be much more resilient to armed conflict than is normally acknowledged. History shows that civil wars have caused limited damage to existing installations, but they have hindered the desired investment in new development and attainment of target production levels. However, it is very obvious that government's inability to overcome or reabsorb violent opposition discourages international oil company investment even if the violence does not affect the areas around oil and gas installations.

\* Giacomo Luciani is Director of Gulf Research Centre Foundation. CEPS Working Documents are intended to give an indication of work being conducted within CEPS' research programmes and to stimulate reactions from other experts in the field. The views expressed in this paper are those of the author and do not necessarily represent any institution with which he is affiliated.



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*CEPS Working Document No. 352 / June 2011*

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## Introduction

It is normally assumed that armed conflict affecting oil-exporting countries constitutes a significant threat to global oil supplies. The spectre of a regional war suddenly depriving the world of all oil produced in the Middle East is evoked frequently and helps create the impression that oil is an unreliable source of energy. In this paper, we attempt a systematic analysis of the impact of international and civil wars and violent non-state organisations on global supplies. Our aim with this analysis is to arrive at a reasonable estimate of the extent to which oil supplies may be seriously affected.

We analyse the impact of three main categories of armed conflict on the security of oil or gas supply:

- 1) 'classic' interstate warfare, which is fought primarily by regular armies;
- 2) civil wars, in which armed forces from opposing sides within the same country engage in violent encounters; and
- 3) terrorism/banditry.

Inter-state wars pit the armed forces of two or more states against each other. These are generally fighting for control of disputed territory, or seeking to force the enemy's surrender by occupying enemy territory beyond the contested areas.

Inter-state wars may be preceded, accompanied or followed by violent acts carried out by smaller or informal forces, and combine easily with resistance movements which are frequently labelled as terrorism. That said, an inter-state conflict is clearly recognisable because it involves the use of the countries' armed forces; such conflicts are sometimes officially declared by the belligerents and have a clearly identifiable end in a peace treaty or, at least, a ceasefire of indefinite duration.

Civil war differs from inter-state war in that it is fought between forces belonging to the same state and fighting either for redefinition of that state (e.g. secession of a province) or for control of power in the state as a whole. It may be fought between different sections of the state's army or between the army and various irregular forces, militias, etc. The distinguishing feature of a civil war is that both sides (or all sides, if there are more than two) control a part of the national territory. If one side does not have, or if it loses, continuous control of territory, the dispute becomes a terrorist conflict. Civil wars may attract the active involvement of outside forces (foreign countries) which may, for example, intervene directly in the territory of the country experiencing civil war, but such involvement is not normally prompted by territorial disputes, nor is it intended to redraw borders – it is not, therefore, a form of inter-state war.

What distinguishes terrorist activities from civil war is the fact that one side does not have permanent and continuous control of a part of the national territory. The distinction between

resistance, terrorism and banditry is one of motivations and rights, not one of observed behaviour.

Groups carrying out systematic violent acts against an established state will normally define themselves as legitimate fighters (for national liberation, for freedom, for social justice, for revolution...) and the state under attack will define them as terrorists. In theory, legitimate fighters should attack only military or state targets, and avoid harming the civilian population.

Terrorism refers specifically to the tactic that aims to create widespread terror in the population with acts of indiscriminate violence and leads to pressure on the state to yield or compromise. In this context, attacks on civilian economic installations, such as oil fields or refineries or logistic facilities, are not, strictly speaking, acts of terror because they aim to inflict economic damage on the state rather than terrorise the population – rather, these are acts of sabotage, but even so, we normally refer to them as acts of terrorism.

What distinguishes banditry from all of the above is the fact that the objective is material gain. However, in practice, politically motivated violent groups require funds and resources to continue their fight and thus engage in acts that are primarily motivated by material gain. They may also enter into tactical or strategic alliances with forces whose main objective is material gain.

Given the similarities between these different forms of armed violence, we shall, in the rest of this paper, refer to the technically preferable terminology of ‘violent non-state groups’ to encompass all forms of violence on the part of non-state groups that do not continuously control a part of the state territory.

Conflict waged by violent non-state groups is asymmetrical, in the sense that regular forces are usually much superior in military power to the insurgents or terrorists, but thanks, in part, to the active support of the civilian population, these groups manage to hide and escape retribution. In some cases, the residual control that state forces exert on parts of the territory is rather tenuous, but if the state decides to assert this control, it can do so with little difficulty. In a civil war, if the state loses control of part of its territory and tries to reassert its authority, it is not immediately in a position to overcome its adversary’s resistance.

This distinction is important for our discussion. In a civil war the state may lose access to some oil resources. In the case of violent non-state action, the state may retain access to its oil installations, but be unable to prevent damage to them.

## 1. Trends in armed conflict

Armed conflict has been a constant of human history, but the forms it takes have evolved constantly, and arguably this evolution has accelerated since the end of World War II.

The frequency, duration and scope of inter-state conflict have diminished dramatically. This is universally recognised and unlikely to change in the future. There are clearly understood causes for this evolution:

- The strategic equilibrium reached between the two superpowers during the cold war which dissuaded either side from risking direct conflict. This has fundamentally survived the end of both the cold war and the historic rivalry between the capitalist West and Communist East. For a while ideological differences gave rise to a pattern of proxy wars, but this has declined considerably in recent years.
- The role of the United Nations system in offering an alternative approach to resolving conflicts (through mediation or the pronouncement of the International Court of

Justice) and, more importantly, in frustrating the objective of war by making international recognition of changes in boundaries or of conquest almost impossible.

- The reduced importance of territory for the economic wellbeing of the people, as shown by the fact that some of the most prosperous economies may be either relatively small or, in some cases, not even politically independent (e.g. Hong Kong).
- The reduced willingness of public opinion to accept the high cost of war in terms of human life and displacement.

Inter-state war in its classic form has today almost completely disappeared in all parts of the world, except the Middle East.<sup>1</sup>

In contrast, civil war and the use of violence by non-state groups have continued. Most of the large-scale conflict prompting intervention by the major powers in the past 50-60 years originated as civil wars: Korea, Vietnam/Laos/Cambodia, former Yugoslavia, Afghanistan. Other civil wars did not lead to direct major-power intervention but have had significant impact nevertheless: Nigeria (Biafra), Angola, Zaire, Congo (Brazzaville), Sudan, Somalia, Lebanon,<sup>2</sup> Yemen... We may also regard the intervention of the US-led coalition in Iraq as outside intervention in a civil war. (The Baghdad government had in fact lost control over Northern Iraq. However, this case is unique because the opposition to Saddam was not able to operate in the rest of the country.)

Systematic conflict research indicates that conflict intensity is not random and is linked to certain crucial historical phases or turning points. For the reasons that we have already discussed, inter-state conflict is disappearing, and while it would not be wise to completely rule out the danger of new inter-state wars breaking out, the chances of this happening are small. Further detailed analysis shows that most wars are fought over relatively short periods of time (the main recent exception being the Iraq-Iran war, which turned into something resembling the First World War in Europe). They are then either resolved by one side achieving a decisive military victory (if not necessarily a political victory) or stopped by forceful international pressure and intervention. The international system effectively works to discourage revisionism and fighting.

We also see that internal conflicts, sometimes leading to outside armed intervention, are primarily linked to complex historical transitions that leave issues unresolved. We can thus cite the process of decolonisation (in the Near East, south and south-east Asia, and Africa) as being an important cause of violent internal conflict.

In some cases, a period of acute instability is followed by the consolidation of existing structures and a gradual decline in the use of violence. This process may be said to have concluded in south-east Asia (where it has been extraordinarily costly in terms of human casualties), and conflicts have been essentially frozen elsewhere (between India and Pakistan,

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<sup>1</sup> Several international research centres systematically monitor conflicts and maintain quantitative databases to measure conflict numbers, types and intensity. I refer in particular to the Centre for Systemic Peace at George Mason University (<http://www.systemicpeace.org/conflict.htm>); the Uppsala Conflict Data Programme (UCDP) in association with the Peace Research Institute of Oslo (PRIO) (<http://www.pcr.uu.se/research/UCDP/index.htm>) and the Heidelberg Institute for International Conflict Research (<http://www.hiik.de/en/index.html>).

<sup>2</sup> Major outside powers did briefly intervene in Lebanon, but this did not last long. Syria's intervention, in contrast, lasted for some considerable time and seriously threatened Lebanese independence – but the international community did not allow this to happen, and Lebanon has remained independent.

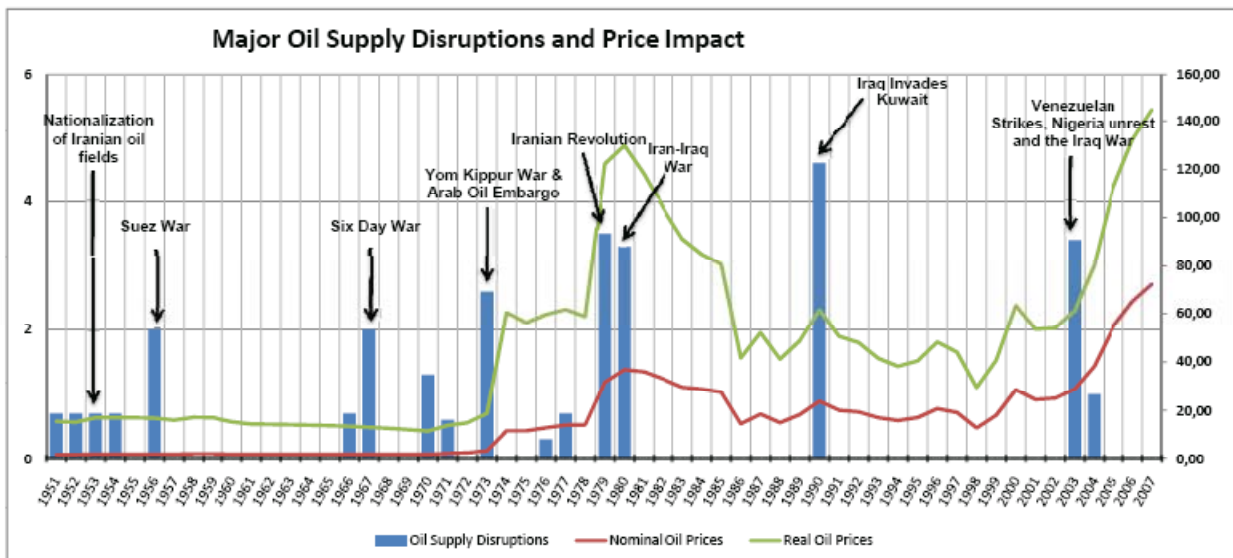
and in the Balkans). However, in other areas such as sub-Saharan Africa, there is no clear prospect of peace. In the Near East, the main conflict (between Israel and its Arab neighbours) has been progressively reduced in scope following the peace treaties signed with Egypt and Jordan, and the freezing of war with Syria. Lebanon is still a problem area, but otherwise the conflict has now become a purely Israeli-Palestinian affair, which Arab neighbours are unwilling to be drawn into militarily. The future of Iraq and Afghanistan also remains uncertain and the intentions of Iran are not clear – its claims over Bahrain keep resurfacing from time to time, although not in the form of official policy.

The collapse of the Soviet Union has been another cause of violent conflict and tensions have cooled but not disappeared. The Caucasus, in particular, remains an area rife with conflict, opposing Azerbaijan and Armenia, and Georgia and Russia, with secessionist movements in some Russian republics. At the same time, the relationship between Turkey and Armenia remains very difficult, although it has improved following the visit of the Turkish President, Abdullah Gul, to Armenia in September 2008.

## 2. Historical experience of oil supply interruptions caused by conflict

The literature on oil supply interruptions has developed a fairly universally accepted list of historical events that are characterised as ‘major disruptions’. Figure 1, from the Energy Information Administration (EIA) of the US, illustrates these events.

Figure 1. Major oil supply disruptions and price impact



Source: EIA 2008.

This figure shows eight events, of which five are international conflicts, two are domestic political events, and one is a combination of the two. A slightly different listing is proposed by the International Energy Agency (IEA): the IEA's list excludes the Iranian nationalisation of 1951-54, but includes the Iraqi export suspension of 2001 and the impact of hurricanes Katrina and Rita in 2005 (certainly not a geopolitical event) and separates the Venezuelan strike from the onset of the war in Iraq.<sup>3</sup>

<sup>3</sup> IEA *Response System for Oil Supply Emergencies*, International Energy Agency, December 2008, p. 11.

The two lists concur on six armed conflict events that caused major disruption:

1. The Suez crisis or war
2. The Six-Day war
3. The Yom Kippur war
4. The Iraq-Iran war
5. The Iraqi invasion of Kuwait
6. The US-led coalition's intervention in Iraq

Of these, the first two (Suez crisis and the Six-Day war) affected global oil supplies primarily because the Suez Canal was closed – for a short period in the first case and a much longer period in the second. The shortfall was due to limited availability of tanker capacity rather than a shortage of crude oil per se. The Six-Day war and the long closure of the Suez Canal led to the development of VLCCs (very large crude carriers) and ULCCs (ultra-large crude carriers) to circumnavigate the African continent. The direct effect of the war on oil supplies was, in fact, insignificant: the Egyptian fields in the Sinai continued to operate during the Israeli occupation between 1967 and 1973, and disruption to production was minimal. The Yom Kippur war disrupted oil supplies indirectly because OAPEC (Organisation of Arab Petroleum Exporting Countries) declared an embargo on two importing countries, the US and the Netherlands.

In this paper, I shall focus on analysis of the three remaining inter-state wars, all of which involve Iraq: the Iraq-Iran war, the Iraqi invasion of Kuwait and the coalition intervention in Iraq (which we shall refer to as the first, second and third Gulf wars respectively).

Among civil wars, we shall consider specifically the experience of Nigeria. 'Nigerian unrest' is considered by the EIA to be one of the causes of the significant disruptions to supply in 2003, while it is not included in the IEA list. Neither list includes the Biafra secession as a cause of major disruption. We shall briefly cover both episodes in our analysis – as well as, more superficially, other important civil wars in Angola, Sudan and Algeria.

## 2.1 The Iraq-Iran war (first Gulf war)

The Iraq-Iran war is especially important for our analysis because it is the only historical example of an inter-state war between two major Gulf producers which was bitterly fought over an extended period of time (eight years) with very high cost in terms of human life and surprisingly limited intervention on the part of outside powers. It was, in other words, the 'perfect storm' or 'nightmare scenario'.<sup>4</sup>

The war began on 22 September 1980, when Iraqi troops entered Iranian territory, and ended with a ceasefire on 20 August 1988. It is quite clear that oil played a major role in the war inasmuch as it gave the two opponents the wherewithal to continue the fight for such a long time. If the two belligerents had had normal diversified economies, either one or the other or both would have collapsed much earlier under the extraordinary burden of the war. Instead, access to oil revenue and the authoritarian nature of the political leadership on both sides imposed extraordinary human costs on their respective populations.

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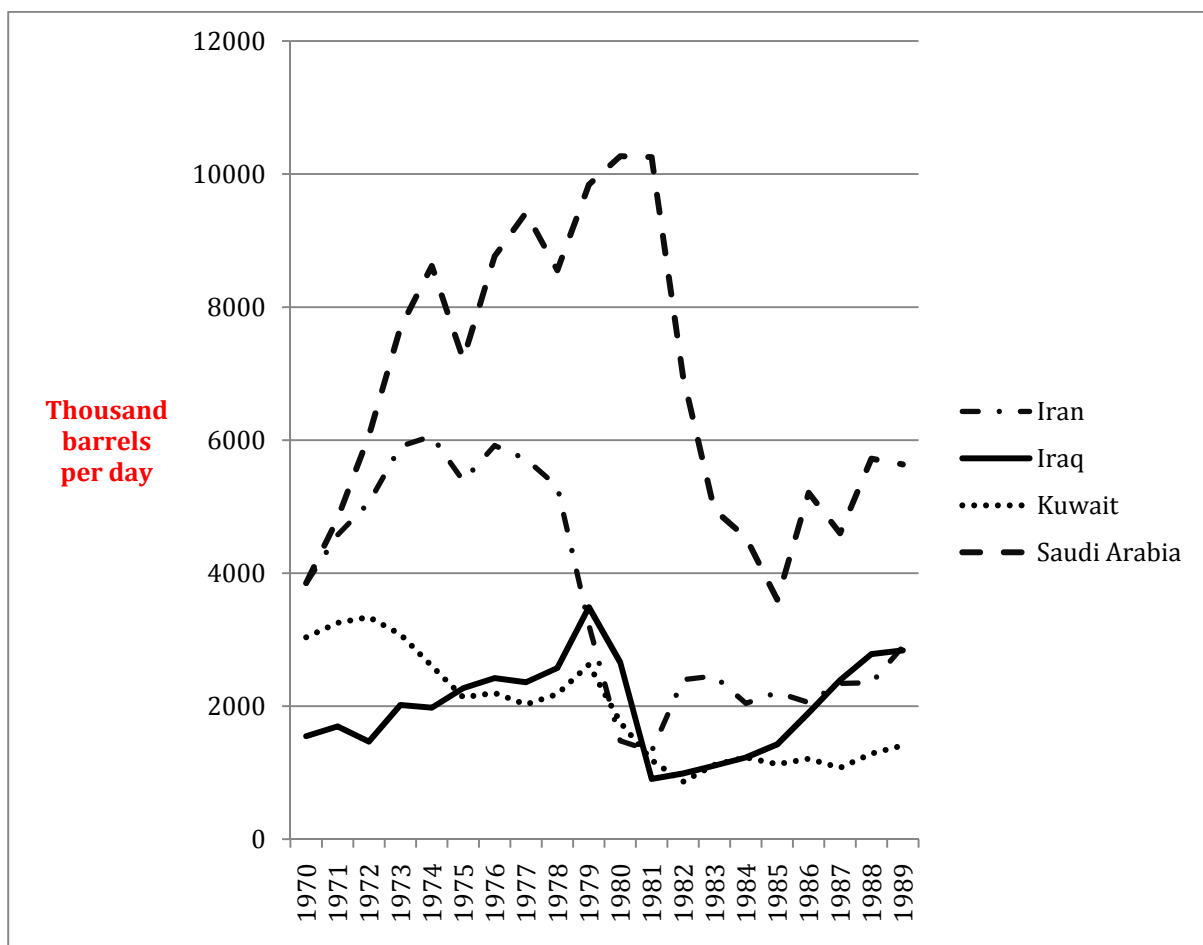
<sup>4</sup> The analysis in this paragraph is based primarily on Giacomo Luciani, "Oil and Instability: The Political Economy of Petroleum and the Gulf War", in H. Maull and O. Pick (eds), *The Gulf War: Regional and International Dimensions*, London: Pinter, 1989.

### 2.1.1 Attempts at blocking oil exports

Given the importance of oil as the economic and financial basis for conducting the war, it is hardly surprising that each country attempted repeatedly to interrupt the other's oil exports. The remarkable fact is that both failed: exports continued at levels that, in the light of the decline in international demand and OPEC's attempts at rationing production, may be considered 'normal'.

All three main OPEC producers experienced very substantial decline in their production levels, and this was in response to the decline in OPEC's overall share of the international oil market rather than because of the war (see Figure 2). If we consider the period 1970-78, we find that Iran produced on average 5.31 million barrels per day (b/d), Iraq 2.04 million, Kuwait 2.65 million and Saudi Arabia 7.22 million.

Figure 2. Oil production in selected Gulf countries, 1970-89



Source: Data from BP Statistical Review of World Energy, 2010.

In the period 1982-87, Iran produced on average 2.25 million b/d (42% of the previous level), Iraq 1.51 million (74%), Kuwait 1.10 million (41%) and Saudi Arabia 4.98 million (69%). Thus Iraq fared better than Saudi Arabia and Kuwait fared worst of all, even though the latter two countries were not belligerent. Iran did fare worse than Iraq, but then Iranian production declined most drastically in 1978-80 and that was because of the revolution and not the war. The impact of the war appears to have been very significant only in 1980-81, when both Iranian and Iraqi production was very low, while Saudi Arabia was pumping at an extraordinarily high level.



In the first days of the war, Iran attacked the pipelines through which Iraq exported oil to the Mediterranean across Syria and Turkey. But by the end of November 1980, Iraq had resumed exports via Turkey at an estimated level of 400,000 b/d. At the same time, Iraq also attacked Iranian export installations and caused considerable disarray, but within a month Iran was exporting again, to the tune of 300,000-400,000 b/d.

It was at the very beginning of the hostilities that the war had the most severe impact on oil production. Subsequently both belligerents maintained much higher production levels despite the increased intensity of attacks on oil installations. This shows that installations may in fact be far less vulnerable than is often assumed, and emergency organisation and procedures may be highly effective in maintaining a minimum level of operation.

Iraqi exports to the Mediterranean via Syria continued until 10 April 1982 when the pipeline was closed, not because of Iranian attacks, but because of unilateral action on the part of the Syrian government. In previous months, Iranian planes had attacked the pipeline repeatedly, but Iraq was able to repair the damage rapidly and those attacks never made much difference to the level of Iraqi exports. This suggests that the use of costly and vital combat aircraft to attack targets that could be easily repaired offers a dubious cost/benefit profile. In fact, even the Syrian action did not prevent Iraqi exports in 1982 increasing over the previous year's levels.

Possibly in retaliation for the closure of the pipeline across Syria, Iraq first attacked Kharg, the main Iranian loading terminal, on 25 August 1982, initially causing a halving of export flows. But only a week later, export levels had been restored to the previous July peak of 1.8 million b/d. Iraqi military action did not prevent 1982 Iranian exports increasing significantly over those of the previous year.

Following the closure of the pipeline across Syria, Iraq moved swiftly to increase the capacity of the line across Turkey and to acquire a new outlet by building a pipeline across Saudi Arabia. A pipeline across Jordan to Aqaba was also considered but abandoned because of its proximity to Israel. The Iraqi government, one suspects, might have been willing to run the risk had they needed that pipeline badly enough, but given OPEC's resorting to production quotas, Iraq could not hope to increase its oil exports much beyond what was allowed by its existing outlets.

Relying only on the Turkish and Saudi pipelines in operation, Iraq was able to achieve a level of exports of 3.2 million b/d, which was quite high given the oversupply in the international oil market. While technically Iraq could produce more and consistently reserved for itself the right to do so (in spite of OPEC's efforts at regulating supply), it is far from clear that it would have been able to achieve its goals in peacetime.

Iran never attacked the Iraqi pipeline across Turkey, nor did it exert diplomatic pressure on Turkey to have it closed. Indeed, the fact that Turkey was able to maintain good relations with both belligerents is quite remarkable. The possibility of an Iranian pipeline across Turkey was discussed at the time and rejected because of Iran's insistence on having an outlet to the Black Sea<sup>5</sup> rather than to the Mediterranean, which would inevitably have come very close to the head of the Iraqi pipeline. Turkey's ability to maintain neighbourly relations while actively supporting Iraqi oil exports was a further indication that economic interests

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<sup>5</sup> At the time, there was little or no preoccupation with routing tanker traffic through the Turkish Strait. In fact, Iran used to export to Rumania and ship oil through the straits into the Black Sea.

can, under appropriate conditions and through the use of diplomacy, be isolated from political and military conflicts.

Overall, the experience of the war suggests that overland oil transportation via pipelines is more resilient in face of attacks than maritime outlets and sea transportation. While the Iranian oil terminal at Kharg island was able to continue operations (albeit far below its theoretical maximum capacity), its well-advertised air defence system could not prevent substantial damage.

Iraq intensified attacks on Kharg in the spring of 1984, and then again in August 1985. But even these attacks were more effective from an economic point of view than physically obstructing loadings and exports. It drove up the cost of insurance for tankers venturing to load Iranian oil and obliged Iran to discount heavily to compensate for this. In fact, Iranian exports in 1985 were marginally higher than in the previous year. Iran addressed the problem by conducting a successful shuttle operation between the islands of Kharg and Sirri and loading for export at the latter (which is at the entrance to the Gulf).

In 1986, as pressure on Iran's export operations increased, export volumes declined by 7.3% compared with the previous year. Again, however, the physical decline in exports was less important than the parallel collapse in oil prices.

Iran attempted to retaliate against Iraqi attacks by mining the waters of the Gulf and searching ships passing through Hormuz. These actions triggered international intervention, but had no tangible effect on the exports of other non-belligerent Gulf countries.

This proved that Iran's ability to close the Straits of Hormuz is very limited. Certainly, Iran would have the capability to block traffic through Hormuz if no other party were to intervene to keep it open, but this is a very unlikely scenario. Mining Gulf waters is also unlikely to be effective unless it is carried out on a large scale.

Given the lessons of the Iran-Iraq war, the world can afford to be less nervous about the danger of interruptions in the flow of oil exports from the Gulf. In the 1970s, threatening scenarios such as a complete interruption of exports from the Gulf or blockage of Hormuz by terrorist attacks were frequently conjured up. Interestingly enough, they still are, notwithstanding the lessons from experience.

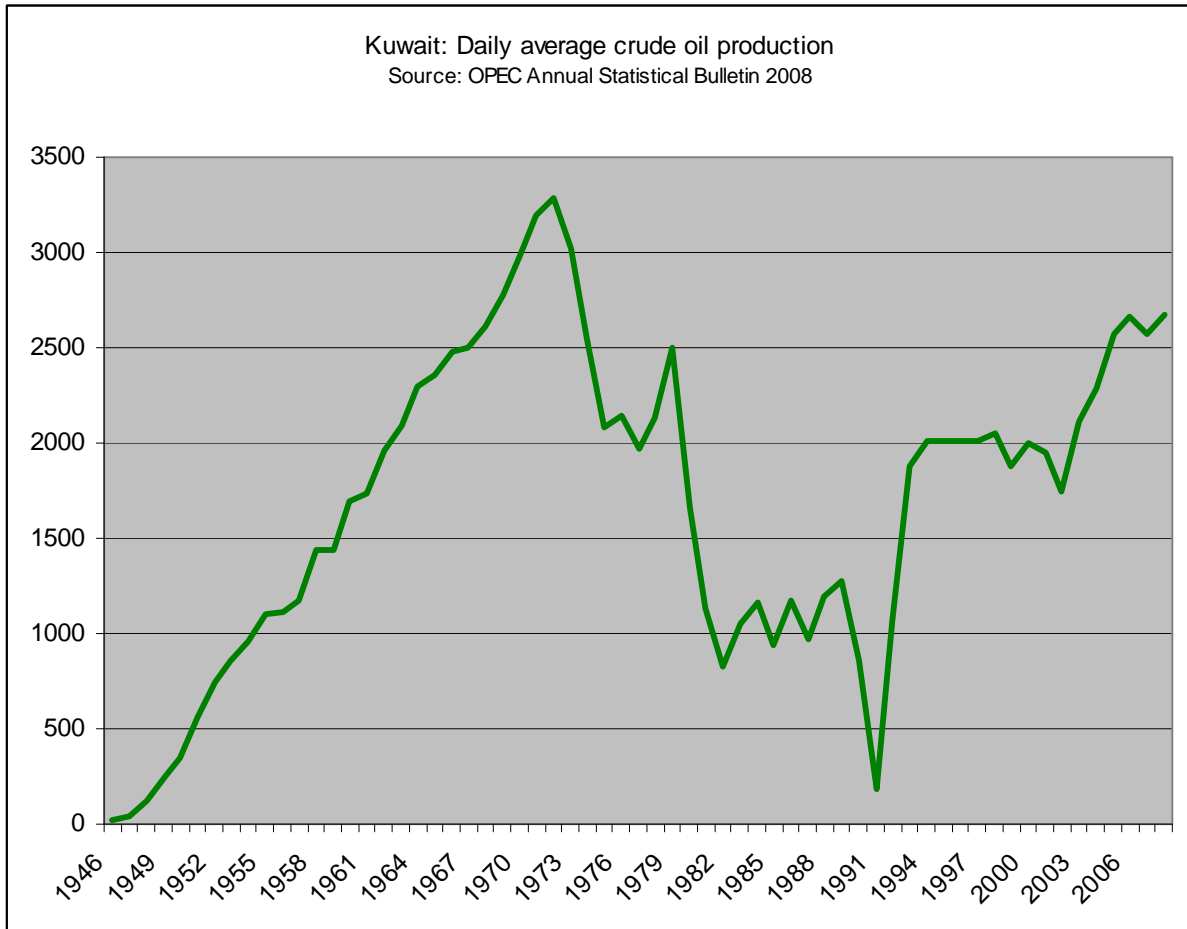
In fact, after the Iraq-Iran war it became clear that - short of physically occupying the wells - there is little that an attacker can do to deny permanently an outlet to an enemy's oil exports.

## **2.2 The Iraqi invasion of Kuwait (second Gulf war)**

The Iraqi invasion of Kuwait was closely linked to the outcome of the first Gulf war which had left Iraq seriously weakened politically but still commanding a military machine that was much more powerful than that of any of its neighbours (except Israel).

Figure 3. Kuwait: Daily average crude oil production

[Left-hand axis shows thousands of barrels per day]

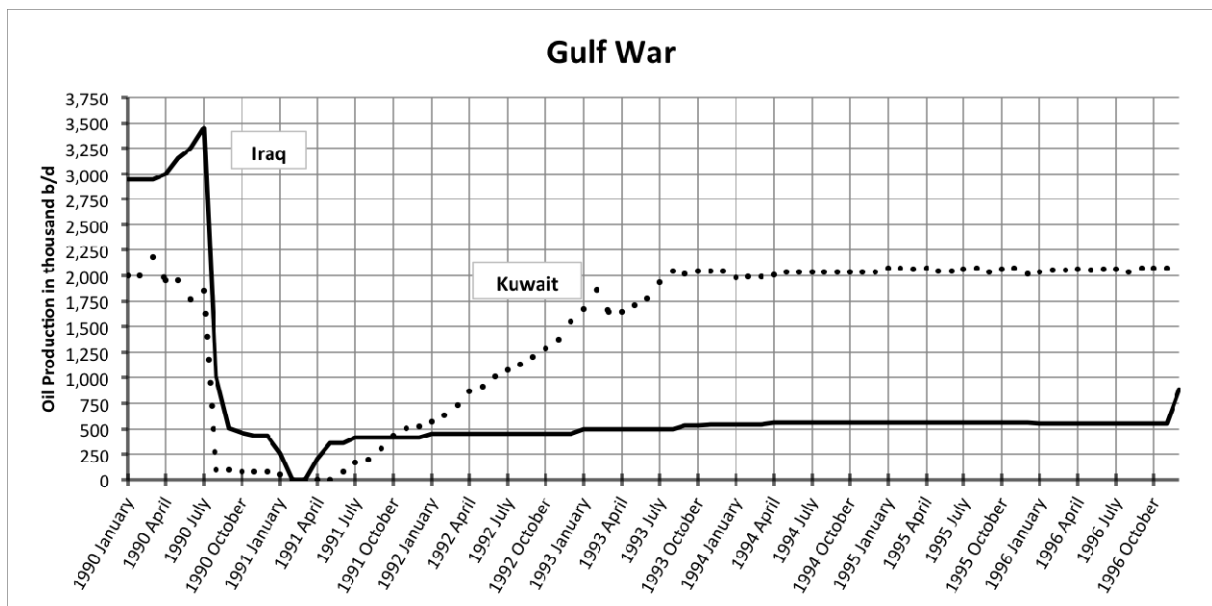


Source: OPEC Annual Statistical Bulletin 2008.

Kuwait and Saudi Arabia had financed Saddam's war against the Iranian regime with 'loans', which Saddam had felt had been made as gestures of solidarity and, as such, were not meant to be repaid. Kuwait, however, insisted on repayment. Faced with an impossible situation, Saddam revived an old revisionist claim of previous Iraqi governments and invaded Kuwait, annexing it as an Iraqi province.

The invasion and the resulting international reaction led to a boycott of exports from both Iraq and Kuwait and provoked the collapse of oil production in each. It did little damage to the oil installations. However, when the international coalition formed to liberate Iraq launched its offensive, the Iraqi troops set more than 600 Kuwaiti oil wells on fire. The main damage was, therefore, done not by the hostilities per se, but by deliberate sabotage on the part of the withdrawing Iraqi troops.

Figure 4. Gulf War



Source: Data from EIA International Petroleum Monthly, various issues.

The last fire was extinguished on 6 November 1991, but it took until mid-1993 for Kuwait to get back to previous production levels.

The war was important for the many lessons that it taught. Firstly, it made clear that the international community and the major Western powers (the same countries on this occasion) would not tolerate a major revision of the region's political map. It is now clearly understood that any attempt to remove an existing independent state from the map would be forcefully resisted.

Secondly, the war confirmed that when modern military forces are involved and advanced weaponry is available, the conflict is likely to be short and have a clear winner. In this respect, the previous Iraq-Iran war – which reverted to a mode of fighting resembling that of the First World War in Europe – was an exception, due to the fact that both sides had limited access to modern weaponry. A short war is less likely to lead to attack on oil installations as the benefit of depriving the enemy of oil revenue is felt only in the long run.

Thirdly, it was shown that the only way to inflict extensive damage on oil installations – especially upstream oil installations – is to be physically present at each well. Only a force controlling the territory can inflict major damage on oil installations – but normally if it is the enemy that is in control, it will have no incentive to destroy them. What happened in Kuwait was sabotage on the part of a retreating army, which, in the end, brought no benefits for the loser.

Even so, the impact of the fires and the huge oil spill provoked by the deliberate emptying at sea of two laden tankers which had been moored at the Sea Island oil terminal proved to be much less serious than initially feared. Kuwaiti production was halted entirely for a little less than one year and production recovered gradually over the following 18 months. Iraqi production was curtailed because of sanctions imposed by the United Nations and not because of war damage. The loss of both countries' production was compensated by an increase in Saudi production, but had this not been the case, strategic stocks available under the IEA programme would have been sufficient to cope with the situation.

In fact, the use of US strategic stocks was authorised by the president before the offensive was launched, but it was soon stopped because prices collapsed and there was no need to continue sales from these stocks.

### 2.3 The US-led coalition intervention for regime change in Iraq (third Gulf war)

The end of hostilities in the second Gulf war did not mark a permanent end to the conflict. Sanctions against Iraq continued for another 12 years until an international coalition led by the United States was formed to bring down the regime of Saddam Hussein.

Sanctions did have an impact on the availability of crude oil to the world and there is little doubt that Iraq would have produced more than it did had international oil companies been allowed to sign the contracts that were on offer during the 1990s (although one may argue that in the absence of sanctions those contracts would not have been on offer...). Arguably, sanctions imposed by importers have had a very significant impact on oil production, much more significant than most conflicts, terrorism or 'resource nationalism'.

The loss of production resulting from the sanctions was of little concern to the US and Europe until the early 2000s because the global market was well supplied and prices remained low (or fell gradually). This situation changed at the turn of the century and when the coalition offensive was launched in 2003, it was felt by many that increasing Iraqi oil production and breaking the back of Iraqi oil nationalism should be one of the main goals of regime change.<sup>6</sup>

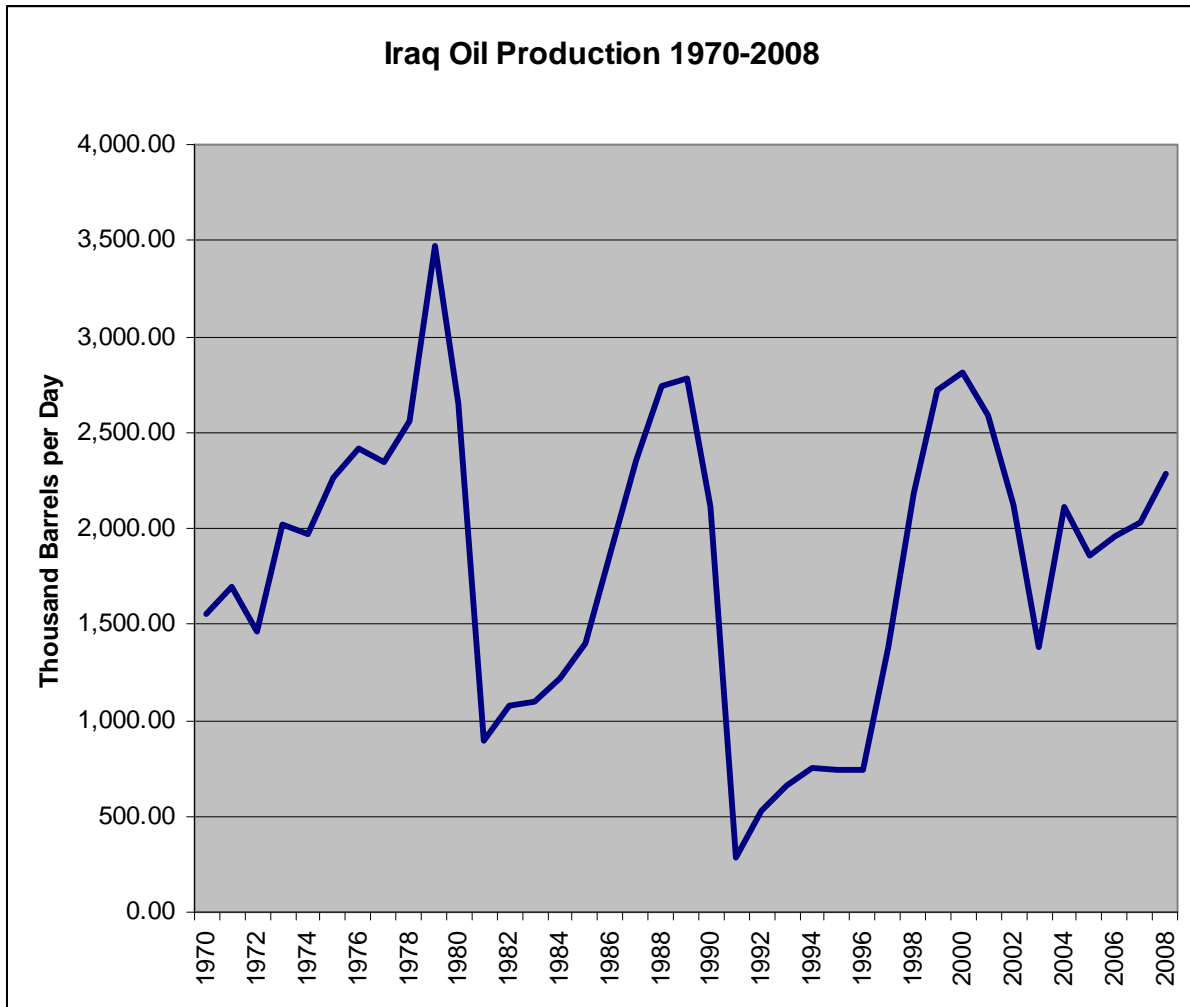
If this had indeed been an important objective, it was not met - and nor were other purported objectives. As figure 5 shows, Iraqi oil production had increased significantly in the late 1990s following the introduction of the 'oil for food' programme. However, the deterioration of the political climate and the intervention of the coalition forces caused production levels to fall sharply again and it is only since 2008 that they have managed to average above 2 million barrels per day.

The military operation of the coalition forces did not last long, beginning on 20 March 2003 and effectively finishing on 15 April. On 1 May, President Bush addressed the nation from the deck of the USS Abraham Lincoln claiming "mission accomplished".

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<sup>6</sup> On perceptions and views at the time of the invasion, see Walid Khadduri, "Iraq: Future of the Oil Industry", in c.P. Hanelt, G. Luciani and F. Neugart (eds), *Regime Change in Iraq: the Transatlantic and Regional Dimensions*, EUI and Bertelsmann Stiftung, 2004.

Figure 5. Iraq oil production 1970-2008

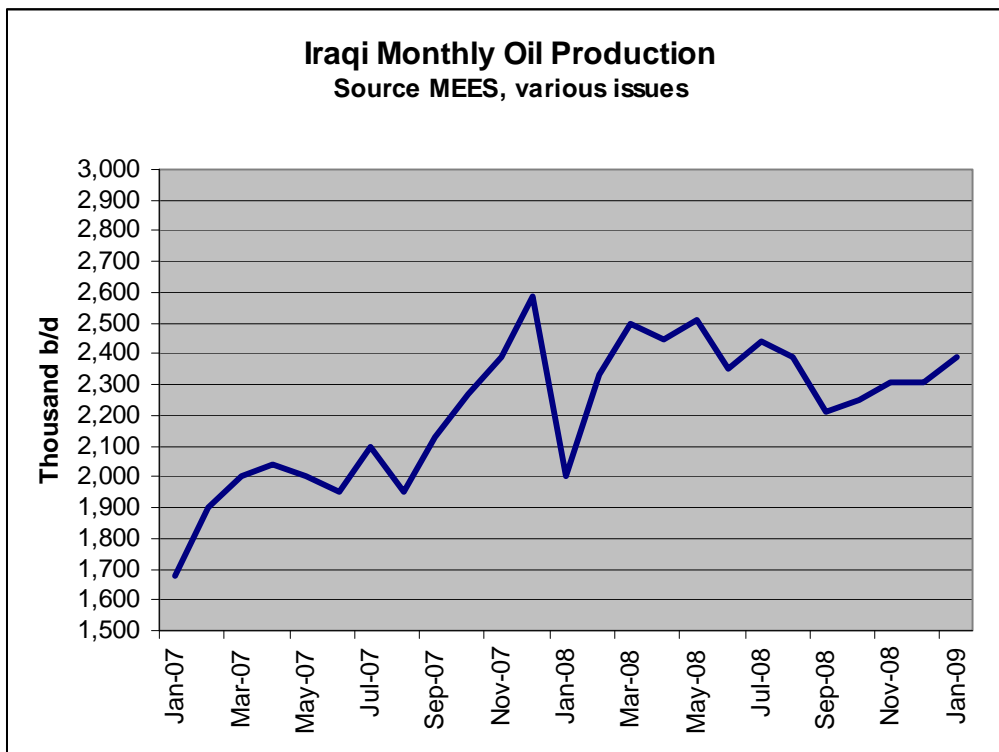


Source: BP Statistical Review of World Energy, various years.

The next phase, commonly dubbed the ‘insurgency’, was technically a widespread wave of violent action on the part of non-state groups (resistance fighters?), not entirely coordinated in a single opposition force. This led to extensive loss of human life and also to widespread sabotage of oil installations.

It is difficult to estimate what the cost of the insurgency might have been in terms of Iraqi output and exports. All that can be said is that in 2008 the situation in the country improved and the central government was better able to exercise control. In that year, production increased on average by 250,000 b/d over the previous year.

Figure 6. Iraqi monthly oil production



Source: Middle East Economic Survey, various issues.

However, if we consider monthly oil production data and the difference between the lowest point (January 07) and the highest recorded production (December 07), then we can say that security disturbances cost Iraq fully 1 million b/d.

Still another way of looking at things is to consider the fact that in 1979 Iraq had produced an average of close to 3.5 million b/d, while in the subsequent 29 years (1980-2008), its production averaged 1.7 million b/d. This shows that the cumulative cost of the three successive wars in which Iraq was embroiled was of the order of at least 1.8 million b/d, and that adds up to 19.05 billion barrels over the period. In addition, how fast would Iraqi production have grown in the absence of war? It is difficult to answer such a question because, of course, one should take into account the equilibrium of global demand and supply, the evolution of prices and the likely impact of OPEC quotas. However, we know that Iraq could easily produce at least six million b/d, possibly much more, and it is probable that the investment needed to reach this capacity would have been made over those 29 years.

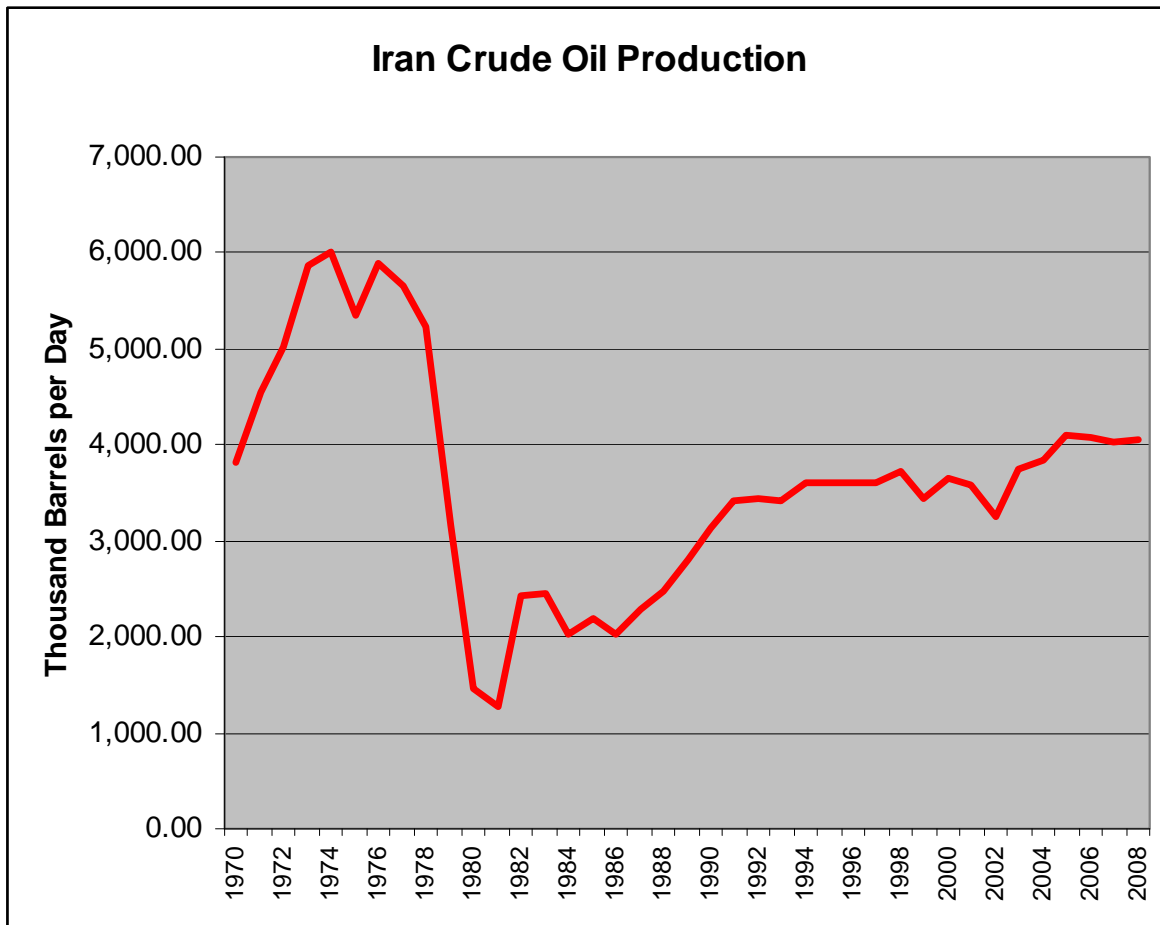
### 2.3.1 War, sanctions and Iranian petroleum production

Estimating the effects of the war and sanctions on Iranian production is rather more complicated. The war ended for Iran in 1988 and the country has been living in peace ever since. (Peace, of course, is different from having good relations with the international community.)

Nevertheless, Iranian oil production has not recovered to anywhere near the level that it reached in 1972 and 1975. The initial decline was certainly due to the revolution rather than the war and was to some extent deliberate. The painful climb back to four million barrels per day may be attributed to the combination of external sanctions and internal infighting and lack of pragmatism, all of which have seriously hindered the potential for attracting outside investment. In short, the poor outcome is largely due to Iranians themselves and is also to a

large extent deliberate – the fruit of choice rather than necessity. Call it resource nationalism or simply sectarianism; war is by now too far in the past to offer a credible justification.

Figure 7. Iran crude oil production



Source: BP Statistical Review of World Energy, various years.

In conclusion, history shows that wars *per se* do not cause lasting major disruption to oil supplies. Any disruption is likely to be very limited or have only a short-term impact if it is at all significant. However, renewed wars and the perpetuation of domestic and international conflict will hinder the 'optimal' development of resources in one of the key regions of the world.

## 2.4 Nigeria

The case of Nigeria offers a striking illustration of the impact of civil war and of strife subsequently continuing because of serious unresolved domestic political and institutional issues. It is not considered in the literature as provoking one of the major disruptions in oil supplies. Indeed none of the civil wars in oil-producing countries has previously caused a major disruption in the global oil market (not even the Bolshevik revolution and the subsequent Russian civil war). And yet civil wars have an impact on the development and exploitation of oil resources.



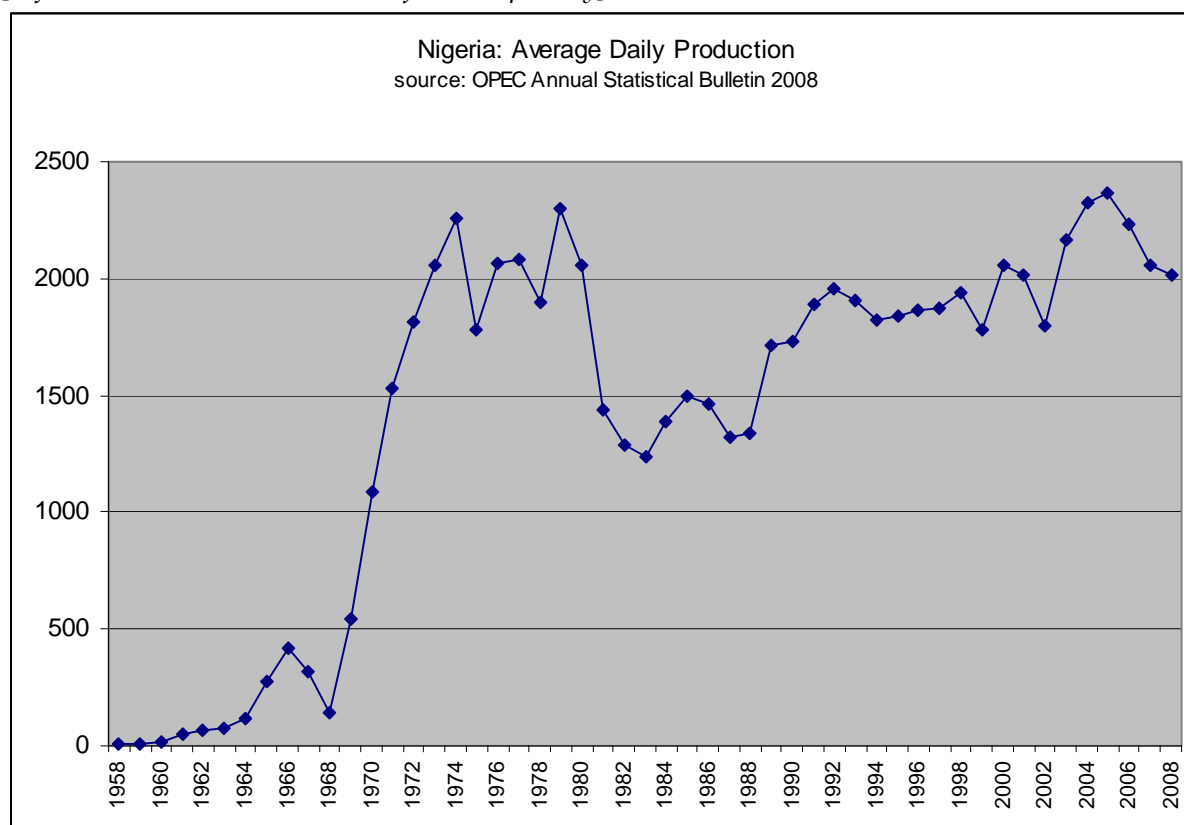
### 2.4.1 The Biafra war

The war, which followed Biafra's declaration of independence from Nigeria lasted three years from 1967 to 1970. It was an extremely bloody war, with some estimates of casualties running to three million dead, mainly among civilians and in large part because of starvation.

Nigerian oil deposits are primarily located in the eastern part of the country and this may have encouraged Biafra to secede, although it was neither the only nor (probably) the main cause. Oil installations were affected and the civil war had an impact on Nigerian production. In the first year of the civil war (1967) average daily production declined about 24%, from 417,000 to 319,000 b/d. The decline continued in the following year, when Nigerian production reached a minimum level of 141,000 b/d. However, already in the third year of the war, production jumped and surpassed the level recorded before the conflict began. The war ended only two years later.

Figure 8. Nigeria: Average daily production

[Left-hand axis shows thousands of barrels per day]



Source: OPEC Annual Statistical Bulletin 2008.

The early recovery of oil production in 1969 was due to the fact that by then the Nigerian federal forces had conquered back most of the Biafran territory. The Shell-BP and Safrap (ELF) operations were the most affected given their large presence in the eastern region. Safrap stopped production during the war and was accused by the Nigerian government of supporting Biafran separatism – the French government was generally sympathetic to the secessionists. Shell-BP production decreased from 367,000 b/d in 1966 to 43,000 b/d in 1968.

But Gulf Oil, whose production was mostly offshore, increased its production from 51,000 b/d in 1966 to 98,000 b/d in 1968 and 186,000 b/d in 1969.<sup>7</sup>

This indicates, in any case, that the Biafran separatist forces did not engage in extensive and systematic destruction of the oil installations, and as a result recovery was relatively easy.

#### 2.4.2 *Ethnic conflict in the Niger Delta*

The end of the Biafra civil war did not solve the root causes of the problem. Ethnic tensions have continued in the region, fuelled by a sense of grievance among the local population, who feel deprived of their 'fair share' of the oil revenue.

#### **The security situation**

Many communities in the oil-producing region in the south-east of the country, the Niger Delta, have resented not receiving what they consider to be fair compensation. The government has been largely unable or unwilling to provide for infrastructure and development from oil revenues, which has meant that most residents of the delta continue to live in poverty. The thousands of barrels of oil a day that are illegally bunkered (stolen) are in turn used by rebel groups like MEND (Movement for the Emancipation of the People of the Niger Delta) to finance the purchase of weapons and political influence. As their political influence grows, so do these groups increasingly threaten the government's stability.

Unfortunately, a safe and secure upstream oil installation has been a difficult proposition for Nigerians and the foreign business community. According to one oil executive, in many parts of the Niger Delta "even the idea of government hardly exists."<sup>8</sup>

There is a debate on whether the 'root' of the conflict and tension in the Niger Delta is, on the one hand, ethnic conflict and grievances left unaddressed or, on the other, opportunism and the benefits of instability. There is evidence to support both sides of the debate. The International Crisis Group (ICG) has observed that "freelance fighters are said to offer their services for hire to kidnap expatriate oil workers on behalf of aggrieved communities in return for a share of ransom payments".<sup>9</sup> On the other hand, it is clear that only certain ethnic groups, like the Ijaw, have spoken out against oil extraction, a fact that would seem to support the ethnicity-based theory.

Security is also hard to maintain because of the nature of the region's geography. The swampy delta is a collection of hundreds of communities, some of which are completely isolated by water. Boats are the primary mode of transportation for some communities, especially on market days, making the security of facilities a more difficult proposition.

It should be noted that one particularly important grievance of local communities is the continued practice of gas flaring. Russia is the only other country in the world that flares as

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<sup>7</sup> Sarah Ahmad Khan (1994), *Nigeria: the Political Economy of Oil*, Oxford Institute for Energy Studies, Oxford.

<sup>8</sup> Quoted by Okey Ibeanu and Robin Luckham (2007), "Nigeria: Political violence, governance, and corporate responsibility in a petro-state", in Mary Kaldor, Terry Karl and Yahia Said (eds), *Oil Wars*, London: Pluto Press, p. 72.

<sup>9</sup> International Crisis Group (2006), *Fuelling the Niger Delta Crisis*, Africa Report No. 118, 28 September, p. 7. See also International Crisis Group (2006), *The Swamps of Insurgency: Nigeria's Delta Unrest*, Africa Report No. 115, 3 August; and *Nigeria: Ending Unrest in the Niger Delta*, Africa Report No. 135, 5 December 2007.

much (or more) gas. Reforms have been promised, but Royal Dutch Shell, which is the dominant oil company in the country, has complained that it cannot implement gas-gathering infrastructure as long as militants continue to attack its facilities. Shell has said it needs an additional \$3 billion to build equipment to capture and gather gases. A recent proposal by Gazprom to invest in gas gathering has been viewed as hostile to the European Union and intended to 'encircle' the European gas market.<sup>10</sup>

### Recent developments

In 2003 an estimated 800,000 barrels per day was shut in by civil unrest. Since then the situation has deteriorated. In June 2008, an attack was carried out on Shell's largest producing field, Bonga, even though it is more than 100km offshore. Bonga is responsible for 10% of Nigerian output, or about 200,000 b/d.

In April 2008 the Financial Times reported on an internal report by President Umaru Yar'Adua's energy advisers which warned that Nigeria risks losing a third of its oil output by 2015 unless it finds ways to boost investment in joint ventures with foreign energy companies. The report said that funding shortfalls "portend a grave danger not just to the reform process, but to the continued well-being of the industry as a whole." The warning came after an internal memo from the Shell Petroleum Development Company in 2007 said that funding problems could put the existence of the company's joint venture with the Nigerian government at risk.

In 2009, MEND intensified hostilities and Nigerian production fell further. By the end of the year, it appeared that an agreement for the cessation of hostilities had been reached, but it was a short-lived hope. In 2010, attacks resumed in full force.

### Conclusion

Nigerian oil production has, with relatively slight fluctuations, risen gradually over the past 27 years. There are two significant periods of decline: in the early 1980s and after 2005. In the first of these, it is difficult to know how far the decline was due to either internal or external factors. No publicly available source of information about Nigerian history during this time could be found attributing the decline to internal political factors. It is most likely that the decline had more to do with the worldwide fall in oil prices at the time and other external factors.

The second relative decline in oil production began in around 2003, though it was hidden until 2006 behind even greater production brought online by offshore investments. There appears to be a strong correlation between the increased organisation and violence of criminal networks in the Niger Delta (discussed earlier) and the fall in oil production.

## 2.5 Angola

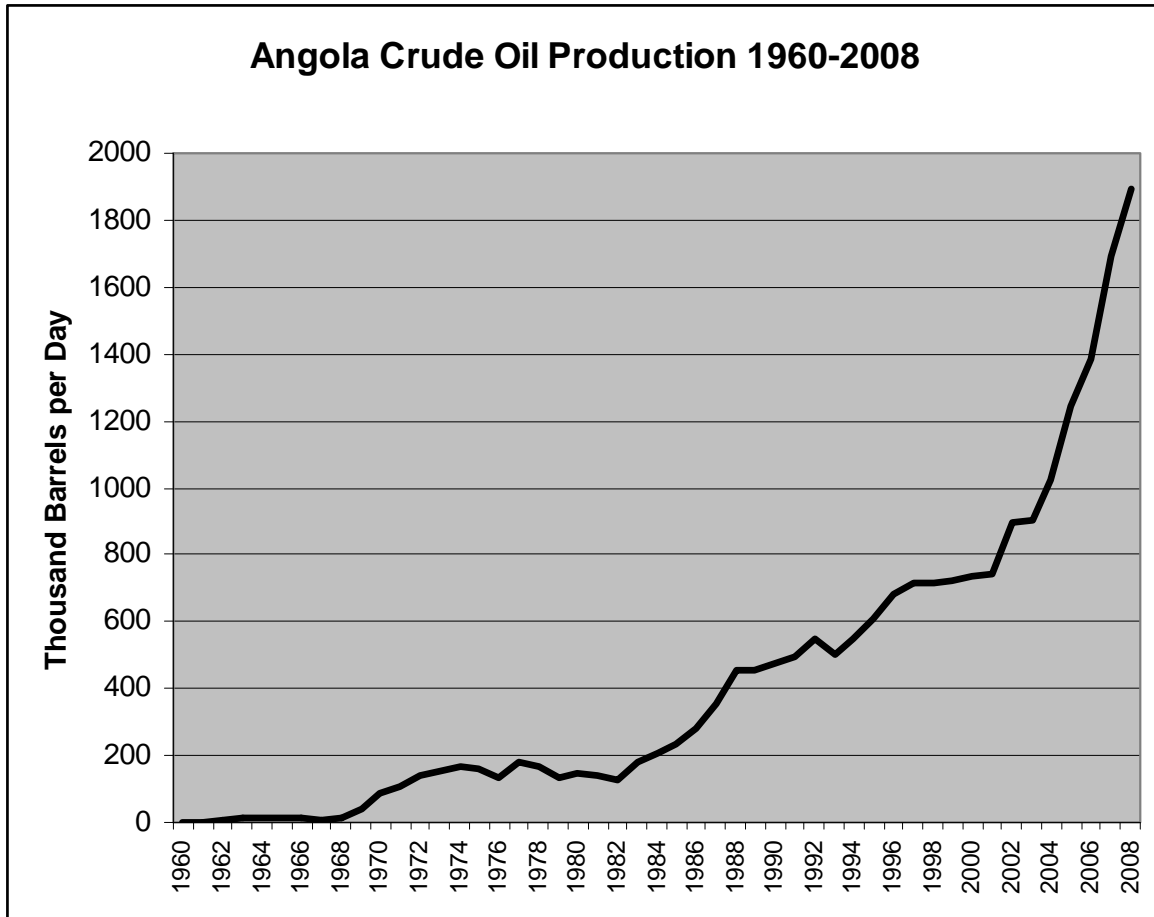
The Angolan civil war lasted 27 years, from 1975 to 2002. It was both a war for the control of power in Angola proper and a war against the secession of the Cabinda enclave where onshore oil production is located.

The civil war had limited impact on the progress of Angolan oil production. Figure nine below shows that production stagnated for a period roughly coinciding with the first ten years of the civil war (1974-83). This was a time when OPEC production was contracting and

<sup>10</sup> See, for example, "Gazprom plans Africa Gas Grab", *Financial Times*, 4 January 2008.

other non-OPEC producers were expanding rapidly (North Sea, Alaska, Mexico...). It is reasonable to conclude that in the absence of civil war, Angolan production might have expanded earlier, but then it did increase very rapidly even during the last 17 years of civil war.

Figure 9. Angola crude oil production 1960-2008



Source: Data from BP Statistical Review of World Energy, various years.

Further acceleration since 2002 is largely unrelated to the end of the civil war and explained by successful exploration offshore in the years before. In fact, the causality link is probably in the opposite direction: increasing production allowed the central government to muster larger financial resources and acquire the military edge, which ultimately led to the defeat of the opposition.

Longer-term prospects appear sound as well. There is no active civil society in Angola advocating change and the 30 years of civil war that ended in 2002 have left few with an appetite for violence.

The biggest threat to oil supplies lies in the Cabinda province. Two thirds of Angola's oil is found there, although this proportion is decreasing as offshore megaprojects come online further south. There is a separatist movement in Cabinda, known by its initials FLEC-FAC, but at the moment it does not seem to have visible armed power; actions are sporadic and so far, unlike in Nigeria, they have not targeted oil facilities.

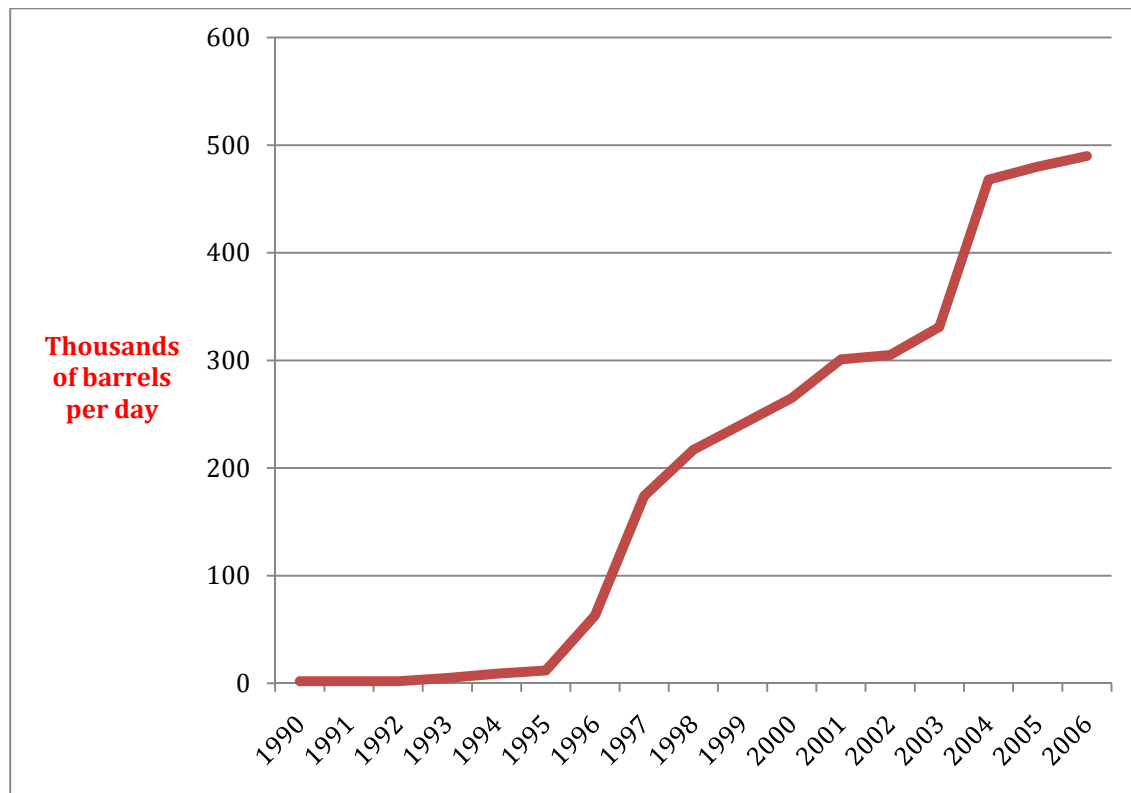
## 2.6 Sudan

Sudan has known civil war almost without interruption since its independence and it still does today. The first civil war lasted 17 years, from 1955 to 1972, and saw the south of the country fighting for greater autonomy from the north because of ethnic and religious differences between the two regions. The second civil war started in 1983 and was concluded only in 2005. The referendum held in January 2011 sanctioned the independence of southern Sudan, and time will tell how this affects oil production.

Oil was discovered in the country in the mid 1970s and civil war has significantly hindered exploration and development of these resources. As a result, production and exports only began much more recently. The original discoveries were made by Chevron, which later divested itself of its interests because of frustration with the political situation. Today, the major producing company in the country is China's CNPC. The region where oil was originally discovered lies at the border between north and south Sudan, making the situation even more difficult. However, exploration is currently underway throughout the country, including in parts of Darfur, and some observers attribute the second civil war and the current war in Darfur to the prospect of oil income.

So far, the Sudan has remained a relatively small producer, although production has been increasing rapidly.

Figure 10. Sudan oil production 1990-2009



Source: BP Statistical Review of World Energy 2010.

The Oil and Gas Journal lifted its estimate of Sudan's reserves from 563 million barrels in 2006 to 5 billion in 2007. The BP Statistical Review of World Energy is even more generous, attributing reserves of 6.7 billion barrels to Sudan by the end of 2009. If these estimates are confirmed, the country clearly has the potential to become a much more important producer.

Thus the experience of the civil war in the Sudan is different from that of other countries – and Nigeria and Angola in particular – because when oil was discovered, the central government was unable to plan for the development, exports and, therefore, revenue which may eventually have allowed it to defeat the armed opposition.

Instead, the civil war prevented oil exports and revenue, creating conditions whereby the two sides were encouraged to reach compromise.<sup>11</sup>

### 3. Conclusion

Our analysis of several historical examples of interruptions to the oil supply points to two main conclusions.

The first conclusion is that oil and gas installations appear to be much more resilient to armed conflict than is normally acknowledged. Major damage is inflicted only in cases in which hostilities take place in the immediate vicinity of the installation (initial phase of the Iraq-Iran war, initial phase of the Biafra war, Sudanese civil war), or when one side has control of the installations and chooses to sabotage them (Iraqi troops in Kuwait, MEND in Nigeria). But this is rare.

Inter-state wars are rare too. They are generally confined to two main belligerents and are contained. There has been no repeat of the Indochina situation in which the Vietnam conflict progressively acquired regional dimensions and engulfed neighbouring countries. Inter-state wars are even rare in the Middle East, where conditions might be prone to the spreading of conflict. Wars between regular armed forces are most likely to be intense and brief, thus reducing the strategic benefit of attacking oil installations.

In contrast, civil wars or violent action on the part of non-state groups are phenomena whose overall global frequency has not diminished. They have, however, become less widespread in some regions and more so in others - it is as if this is a 'phase' that each region has to go through. Historically, civil wars have caused limited damage to existing installations, but they have hindered the investment needed in new development and the attainment of production targets.

Cases in which violent action by non-state groups has caused significant damage to existing installations include the 'insurgency' phase in Iraq and MEND in Nigeria. In each case, the relevant non-state group was based in the same territory as the oil installations, close to population centres where government control was limited. If oil installations are in remote or uninhabited locations – as is the case in Algeria or Angola and many other countries including Saudi Arabia – then the cost-benefit balance of attacking oil installations is considerably worse for non-state groups. Installations are more easily protected, the attacker does not have superior knowledge of the terrain, and it is more difficult to withdraw quickly enough to avoid major casualties).

However, it is very obvious that government's inability to overcome or reabsorb violent opposition discourages international oil company investment even if the violence does not affect the area around oil and gas installations. Discouragement is not the same thing as complete prevention; investment projects will be more expensive if undertaken in a country

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<sup>11</sup> This thesis has been developed in particular by Achim Wennman, "Breaking the 'Conflict Trap'? Addressing the Resource Curse in Peace Processes", *Global Governance*, April-June 2011, Vol. 17, No. 2, pp. 265-279.

that cannot guarantee security. Nevertheless, if the expected return is large enough, projects will still be undertaken. Oil companies display different attitudes towards risk: some are willing to take risks that others would shy away from.

Intra-state conflict may become endemic and discourage oil and gas upstream investment for extended periods of time. In this respect, intra-state conflict should be added to accidents, natural disasters, corruption and the hindering of investment by non-violent political conflict to form a category of obstacles which may be more or less statistically predictable and, at any time, prevent global oil and gas production from reaching their theoretical 'optimum' or 'desired' (by whom?) level. The intensity of phenomena or the extent of the discrepancy between what is achieved and what would be optimal varies over time, justifying the need for reserve capacity and strategic stocks. But this need should not be measured against the theoretical optimum: it should be measured against the average that is normally achievable.

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