THE CLIMATE JUSTICE PROGRAMME

ERA

# GAS FLARING IN NIGERIA:

## A HUMAN RIGHTS, ENVIRONMENTAL AND ECONOMIC MONSTROSITY

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**Environmental Rights Action/Friends of the Earth Nigeria** is dedicated to the defence of human ecosystems in terms of human rights, and to the promotion of environmentally responsible governmental, commercial, community and individual practice in Nigeria through the empowerment of local people. More information is available here: **www.eraction.org**

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## CONTENTS

0

## EXECUTIVE SUMMARY

More gas is flared in Nigeria than anywhere else in the world. Estimates are notoriously unreliable, but roughly 2.5 billion cubic feet of gas associated with crude oil is wasted in this way everyday. This is equal to 40% of all Africa's natural gas consumption in 2001, while the annual financial loss to Nigeria is about US $2.5 billion. The flares have contributed more greenhouse gases than all of sub-Saharan Africa combined. And the flares contain a cocktail of toxins that affect the health and livelihood of local communities, exposing Niger Delta residents to an increased risk of premature deaths, child respiratory illnesses, asthma and cancer.

This is a monstrous and unnecessary state of affairs. Especially in a country where 66% of people reportedly live below the poverty line, and where the benefits of nearly half a century of oil production have gone almost exclusively to the multinationals and the corrupt local elite.

Routine flaring of associated gas began at the start of the industry in the Delta at the very end of British rule, with its patronising, complicit attitude and double standards. It has been carried to world record heights by Shell, ExxonMobil, ChevronTexaco, Agip and TotalFinaElf in joint ventures with the state-owned Nigerian National Petroleum Corporation. This is quite astonishing, as flaring has been in general illegal since 1984 pursuant to section 3 of the Associated Gas Reinjection Act, 1979. This section only allows companies to flare if they have field(s)-specific, lawfully-issued, ministerial certificates. Despite requests, none of these have ever been made public. Moreover, the toxic cocktail from flares violates the Delta residents' rights guaranteed under Nigerian law, such as to live in dignity, and to enjoy health and a satisfactory environment.

Gas flaring continues despite the seeming general agreement that it should stop. Though President Olusegun Obasanjo and the major transnational oil companies appear to have agreed a non-binding commitment to a flare-out date of 2008, efforts to achieve the target have been, at best, tardy. With crude oil production having risen to 2.5 million barrels per day in 2004, and with the projected increase to 4 million barrels per day by 2010, it is difficult to see how most of the resulting increased amounts of associated gas will not be flared.

We demand an immediate end to gas flaring, and an end to exploration and new oil field development until facilities are in place for the utilization of all associated gas.

# 1


## INTRODUCTION

The flaring of associated gas (AG) in the Niger Delta is a human rights, environmental and economic monstrosity. Nowhere else in the world have communities been subjected to it on such a scale. It is estimated to cost Nigeria US $2.5 billion annually [1], whilst the roaring, toxic flares affect the health and livelihoods of Delta inhabitants. It is estimated that 66% of Nigerians live below the poverty line.[2]

Gas flares contribute significantly to climate change, thus affecting communities all over the world. With Nigerian per capita GNP lower than at independence, they are an appaling waste of resources that the country cannot afford.

Everybody seems to agree that the flaring should stop. There is even a Global Gas Flaring Reduction Initiative, promoted by the World Bank, for which Nigeria is an important focus. Yet the country remains the world's biggest gas flarer.

We say that flaring must stop. And the time has come for all communities, citizens and the courts to insist on ending the dangerous practice. Not only is it unacceptable, unaffordable and avoidable, it is also, in our view, illegal.

This Report, written by Environmental Rights Action (ERA) and the Climate Justice Programme:

- tracks the flaring back to the closing days of colonial history,
- sketches the scale of the activity in what has become one of the world's biggest oil and gas producing countries,
- explains some of its implications for climate change and communities,
- shows how the practice constitutes a violation of human rights and is generally prohibited under the regulations, and
- concludes with recommendations for its elimination, and transparency.

It is a story of appaling carelessness, greed, corruption, double standards and environmental racism. Perhaps, above all, it is a story of serial, cumulative and shameful failure, on the part of British colonialism, the oil companies and the Nigerian ruling elite.

***This story's final chapter is long overdue. We are committed to helping write it.***

1 "[F]laring represents a significant economic loss (lost opportunity value estimated at some US$2.5 billion, based on LNG values)", Strategic Gas Plan for Nigeria, Joint UNDP/World Bank Energy Sector Management Assistance Programme (ESMAP) (February 2004), page 13, paragraph 1.13.

2 "GNP per capita, at about US$320, is below the level at independence forty years ago and below the US$370 that it gained in 1985. About 66 percent of the population now falls below the poverty line of roughly one U.S. dollar a day, compared to 43 percent in 1985. Economic mismanagement, corruption, and excessive dependence on oil have been the main causes of the poor economic performance and rising poverty.", World Bank Nigeria Country Briefing, April 2005, available here: http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/NIGERIAEXTN/0,,menuPK:368906~pagePK:141132~piPK:141107~theSitePK:368896,00.html

# 2

## GAS FLARING STARTED UNDER BRITISH RULE, WITH ITS DOUBLE STANDARDS

**Gas flaring starts at the end of colonial rule** Shell and BP started exploring for oil in the Niger Delta in the 1930s. The first field was found in 1956 and the first export was made in 1958. Flaring of gas mixed up with the crude oil began right at the start, and so did a recognition of its unacceptability.

In the run-up to independence in 1960, the Secretary of State for the Colonies, Lord Home, was asked to address the flaring, as:

*"there might be a wastage of energy and resources going on which, one day, those giving advice to the Nigerians (i.e., the British) could be reproached."*[3]

The official response, citing economics and lack of markets, was complacent:

*"Until there is this worthwhile market and until there are facilities (e.g. pipe lines and storage tanks) to use the gas, it is normal practice to burn off this by-product from the oil wells".*[4]

But the unacceptability of the practice, and the massive profits to be made by Shell and BP under the unsuspecting nose of the Nigerians, were officially recognised by the British. The two extracts in the box on the right, from a confidential note from the British Trade Commissioner in Lagos to the Foreign Office in 1963, are particularly patronising, offensive and illuminating.[5]

*"Shell/BP's need to continue, probably indefinitely, to flare off a very large proportion of the associated gas they produce will no doubt give rise to a certain amount of difficulty with Nigerian politicians, who will probably be among the last people in the world to realise that it is sometimes desirable not to exploit a country's natural resources and who, being unable to avoid seeing the many gas flares around the oilfields, will tend to accuse Shell/BP of conspicuous waste of Nigeria's 'wealth'. It will be interesting to see the extent to which the oil companies feel it necessary to meet these criticisms by spending money on uneconomic methods of using gas."*
**British Trade Commissioner to UK Foreign Office, 1963**

*"In the longer run, Shell/BP is going to have to consider very carefully how it should explain publicly the large outflow of capital that is likely to take place towards the end of the decade....it will no doubt come as something of a shock to Nigerians when they find that the company is remitting large sums of money to Europe. The company will have to counter the criticisms which will very probably be made to the effect that the company is 'exploiting' Nigeria by stressing the very large contribution it is making to Nigeria's export earnings."*
**British Trade Commissioner to UK Foreign Office, 1963**

These extracts from official, historical documents show that the British government knew of the practice of gas flaring at the very start of the oil industry in the Delta. They recognised its unacceptability. They understood the significant sums of money that Shell and BP would be making by producing and exporting Delta crude. Yet they did nothing to prevent the waste. And they were completely oblivious to the impact on local communities.

If the British colonial government had taken the attitude that they subsequently took in their own country, the people of the Niger Delta would not have been put on a track that has led to them being exposed to continuous flaring for over four decades.

3 This request was made in a Memorandum of 21st June 1960 given to the Secretary of State by Mr Edmund de Rothschild of the banking family: 'Natural Gas in Nigeria', File DO 35/10500, UK National Archives.

4 'Nigerian Oil and Natural Gas Industry', File DO 177/33, UKJ National Archives.

5 These comments were contained in a confidential "reasonably comprehensive survey of the history, the present position and future prospects of the oil producing industry in Nigeria" provided by Mr. J.S. Sadler, the British Trade Commissioner in Lagos to the Economic Relations Department of the Foreign Office in London on 9th August 1963: 'Development of Oil Resources in West Africa 1963', File 371/167170, UK National Archives.

**British double standards** The British government took a quite different attitude towards flaring their own gas when North Sea production started in the 1970s.

Their attitude is best expressed in this official note:

*"Natural gas has commonly been treated as a waste product by the oil companies. Last year for example over 500 million cubic feet a day was flared in Libyian (sic) oilfields alone – well over 15% of total UK consumption. We have set our face firmly against such waste of a precious resource in the UK Continental Shelf however..."*[6]

A general prohibition to flare UK gas without Ministerial consent was included in section 12 of the Energy Act 1976. Exchanges between the Minister and an MP during passage of the Bill[7], in the box on the right, give an insight to the British approach, which recognises that national and corporate interests do not always coincide, and which might fairly be summarised as 'it goes on abroad, but it's not for us'.

*"[MP]: One should get the whole thing in perspective. Companies are naturally bent to conservation measures; as whatever they waste will cost them money, they will conserve. But when one compares what is happening in other parts of the world, for example, in Abu Dhabi, where 85 per cent. of the gas is flared; in Iran, 67 per cent.; Iraq, 49 per cent.; Kuwait, 29 per cent. and in Saudi Arabia, 80 per cent., we realise that we are not doing badly in the United Kingdom. We are concerned only with a tiny amount.....*

*[Minister]:.....I think that he and the whole Committee would agree that we would not want extensive flaring at home in the same way as extensive flaring takes place, for example, in Middle Eastern countries. It is not always in the immediate economic interests of the company not to flare....The clause...is mainly for conservation reasons but partly...for environmental reasons as well. It is not true to say...that industry would never flare because it is in its own interests not to flare. It may not appear in the immediate economic interests of a company at that particular time without capital investment to use flared gas, but it may well be in the interests of the nation that the Secretary of State may refuse an exemption to flare in a specific case."*

The result of successive British governments' attitude to flaring North Sea gas was that whilst flaring of AG was over 90% at the start of crude oil production, it has decreased over the last 25 years to around 2%, with onshore flaring at between 6-14% since 1991[8]. As we will see, Nigeria probably flares most of its AG production.

British double standards have proved a fertile breeding ground for the corrupt Nigerian elite to connive with the oil companies to waste this "precious resource" at world record levels.

***The results of these double standards are still with us today.***

6 Note to the Minister of State from Mr. C.E.H. Tuck, 19th March 1974: 'Utilisation of gas associated with oil production', File POWE 63/1173, UK National Archives.

7 Hansard, 13th July 1976, pages 405-416.

8 See the Tables provided by the UK Minister in a Parliamentary Answer, showing annual UK offshore and onshore associated and non-associated gas production, and the percentages and amounts of gas vented and flared since 1979, Hansard, 10th February 2005, Column 1792W, available here: http://www.publications.parliament.uk/pa/cm200405/cmhansrd/cm050210/text/50210w44.htm#50210w44.html_sbhd0

# 3

## NIGERIAN OIL BENEFITS MULTINATIONALS AND THE CORRUPT LOCAL ELITE

The main hallmarks of the development of the Nigerian oil and gas industry over the last 50 years, apart from its internationally-notorious environmental and human rights record, have been two-fold:

- significant production by foreign oil companies – first of oil, and now increasingly of gas - the vast majority of which has been exported to the developed world for billions of dollars, and
- the fattening of a corrupt elite, as the vast majority of Nigerians fail to benefit and the country becomes one of the world's poorest.

It has also deliberately eroded community values and systems which would have allowed communities to challenge company practices.

**Nigeria has become one of the world's main oil and gas producers.....** According to the US Government, Nigeria is the largest oil producer in Africa and 11th largest in the world. It is an increasingly major supplier to the US, averaging 1.1 million barrels per day (bbl/d) in 2004, compared with 589,000 bbl/d in 2002. Crude oil production in 2004 was 2.5 million bbl/d. Oil export revenue is estimated at $20.9 billion for 2003 and forecast to be $27 billion for 2004, an increase of over 22%. The country has significant oil, and even more, gas reserves.[9]

The Nigerian National Petroleum Corporation (NNPC) now holds 55-60% interests in the main producing companies. Shell and BP were joined over the years by most of the other oil majors, exploring and producing, both onshore and offshore, and acting as operators in joint ventures with NNPC. Though BP were kicked out of the country by the government in 1979.

About 95% of Nigerian oil (and gas) production is now carried out by Shell, ExxonMobil, ChevronTexaco, Agip and TotalFinaElf – the Big 5 – through joint venture (JV) companies in which the western companies are the operators but hold minority shares. The Table on the right was compiled by the US Government in April 2003.[10]

**TABLE 3.1** **MAJOR NIGERIAN OIL PRODUCTION VENTURES**

| OPERATOR (%INTEREST) | OTHER PARTNERS (% INTEREST) | NNPC (% INTEREST) | MAJOR PRODUCING FIELDS | PRODUCTION BPD (EST. 2003) |
|---|---|---|---|---|
| Shell (30%) | TotalFinaElf (10%)<br>Agip (5%) | 55% | Bonny or Eastern Division - Nembe, Cawthorn Channel, Ekulama, Imo River, Kolo Creek, Adibawa & Etelelbou<br><br>Forcados or Western Division - Forcados Yorki, Jones Creek, Olomoro, Otumara, Sapele, Egwa & Odidi | 950,000 |
| ExxonMobil (40%) | None | 60% | Edop, Ubit, Oso, Unam & Asasa | 500,000 |
| ChevronTexaco (40%) | None | 60% | Meren, Okan, Benin River, Delta/Delta South, Inda, Meji & Robertkiri<br><br>Funiwa, Middelton, North Apoi, Pennington & Sengana | 485,000 |
| Agip (20%) | Phillips (20%) | 60% | Obama, Obiafu, M'Bede, Abgara & Oshi | 150,000 |
| TotalFinaElf (40%) | None | 60% | Obagi, Aghigo, Okpoko, Upomami, Afia & Obodo-Jatumi | 150,000 |

According to one 2002 publication, there were 606 oil and gas fields in the Delta, 355 onshore and 251 offshore, of which 193 were producing in 2002.[11] And according to the Shell website,

*"SPDC [the Shell Petroleum Development Company Limited] has more than 90 oil and gas fields spread over some 30,000 square kilometres of oil mining leases in the Niger Delta. It is a massive operation involving a network of more than 6,000 kilometres of flowlines and pipelines, seven gas plants, 86 flowstations and other facilities."*[12]

The flaring of AG takes place mainly at the flow stations.

**.....but most Nigerians have not benefited** Despite its oil and gas, Nigeria is now one of the poorest countries in the world.

This is difficult to believe. Until it is recalled, for example, that 28 of the 45 years since independence have been under military rule, and that the Economic and Financial Crimes Commission estimates 45% of Nigeria's oil revenues are reportedly wasted, stolen or siphoned away by corrupt officials.[13]

The World Bank puts GNP per capita at about US$320, below that at independence and below US$370 in 1985. About 66% of the population now falls below the poverty line of roughly US$1 a day, compared to 43% in 1985 .[14] As it stated in 2002:

*"the main beneficiaries of the oil sector are foreign oil companies and the Nigerian government. As yet, there has been very little direct impact of oil and gas production on the lives of Nigeria's poor."*[15]

A snapshot of the poverty in the country can be obtained from a comparison with Bangladesh, a country of virtually identical population size living on less than one-sixth of Nigeria's land area, receiving more than twice as much overseas aid[16], and sharing with Haiti the ignominy of being the only countries in the world to rank lower than Nigeria in Transparency International's Corruption Perceptions Index 2004.[17]

Bangladesh has a higher Gross National Income, a higher GNI per capita, and a higher Gross Domestic Product – despite exporting and importing at less than twice Nigerian levels, and despite foreign investment in Nigeria being many times greater.

A Nigerian mother is less likely to be attended by skilled health staff at the birth of her child than a Bangladeshi mother. Her child is more than twice as likely to die before reaching 5 years of age, and is less likely to be immunized against measles. Her life expectancy is considerably shorter, her use of electricity is lower, yet her proportion of short-term debt is nearly four times higher.

On the other hand, a Nigerian is more likely to be literate compared with a Bangladeshi, is less likely to have suffered malnutrition as a child, and is more likely to have a mobile phone and personal computer.

Incredibly, Nigeria's energy use is five times higher than in Bangladesh (705.6/138.4 kg oil equivalent), whereas electricity use per capita is lower (69.2 / 89.0 kwh).

These statistics do not begin to capture the human experience of living in poverty. But they give a sense of the context in which the outrageous waste of Nigeria's resources through gas flaring has taken place.

We next consider the scale of that flaring.

**9** EIA Country Analysis Brief: Nigeria, April 2005. Available here: http://www.eia.doe.gov/emeu/cabs/nigeria.html.The previous Brief (August 2004) cited a range for proven oil reserves from 25 billion (Oil and Gas Journal) to 35.2 billion barrels (OPEC). It stated: "The majority of these reserves are found in relatively simple geological structures along the country's coastal Niger River Delta, but newer reserves have been discovered in deeper waters offshore Nigeria. The majority of the oil lies in about 250 small (i.e., less than 50 million barrels each) fields." The April 2005 version states that Nigeria has an estimated 176 trillion cubic feet of proven natural gas reserves according to the Oil and Gas Journal, putting it in the global Top Ten. We consider that estimates of reserves should be treated with some caution, especially after it was revealed last year that Shell had been lying about its reserves and Nigeria was the biggest single country affected. The full impact of the reserves fiasco on gas flaring has yet to emerge.

**10** Available here: http://www.eia.doe.gov/emeu/cabs/ngia_jv.html

**11** Nigeria Oil Handbook and Review 2002, 11th Edition, page 20. We have little confidence in the reliability of this publication.

**12** http://www.shell.com/home/Framework?siteId=nigeria

**13** "The EFCC [Economic and Financial Crimes Commission] estimates 45% of Nigeria's oil revenues are wasted, stolen or siphoned away by corrupt officials.", BBC news report, 5th April 2005, available here: http://news.bbc.co.uk/1/hi/world/africa/4410109.stm

**14** See above, note 2.

**15** Memorandum of the President of the International Development Association and the International Finance Corporation to the Executive Directors on an Interim Strategy Update for the Federal Republic of Nigeria, February 13, 2002, Report No. 23633-UNI ("World Bank Joint Interim Strategy Update"), paragraph 29.

**16** The following statements are interpreted from the data set out in each country's World Bank Data Profile, They are available here: Nigeria - http://devdata.worldbank.org/external/CPProfile.asp?CCODE=NGA&PTYPE=CP; Bangladesh - http://devdata.worldbank.org/external/CPProfile.asp?SelectedCountry=BGD&CCODE=BGD&CNAME=Bangladesh&PTYPE=CP

**17** http://www.transparency.org/cpi/2004/cpi2004.en.html#cpi2004

# 4

## NIGERIA IS THE WORLD'S BIGGEST FLARER

Traditionally, oil companies don't like to find gas together with their oil fields – associated gas (AG). They prefer to find gas without it being mixed up with oil – so-called non-associated gas (non-AG). Finding AG means they have to find ways to dispose of it in order to profit from the oil, the lucrative driver. Whereas finding non-AG gives them the freedom to control their gas production without reference to oil production. So flaring of AG has traditionally been much more common generally.

But while AG flaring has been increasingly frowned upon in most parts of the world, in Nigeria it has flourished. Understanding the scale of flaring requires an understanding of oil and AG production, as well as of flaring data. Reliable data are difficult to find. In addition, oil production in the Delta is often affected by conflict, and a significant amount of oil is stolen ("bunkering") by organised gangs. But it is possible to track a history of increased oil production. And more oil production means more AG production, and thus, without other means of dealing with the gas, more flaring.

**As oil production has increased, so has associated gas production** Nigerian oil production has increased significantly. Official data suggest it has hovered around 2 million bbl/d for the last few years, but reached 2.5 million bbl/d in 2004. The Shell JV is reported to account for nearly half of this, or about 1.1 million bbl/d. The ExxonMobil JV produces about 570,000 bbl/d.[18]

Oil production levels determine the amount of AG produced, and thus bear on the amount of flaring. The rate and level of connection was summarised in a June 2001 speech by SPDC's current Chief Executive, Mr Basil Omiyi:[19]

*"On the average, about 1000 standard cubic feet (scf) of gas is produced in Nigeria with every barrel of oil. Therefore, with oil production of some 2.2 million barrels per day, about 2.2 billion scf of associated gas is produced everyday."*

However, recent figures of (what appear to be) AG production suggest a much higher AG/oil production ratio for 2000-2002. The Table below has been compiled from data in the February 2004 UNDP/World Bank Strategic Gas Plan for Nigeria (the Strategic Plan).[20]

With unreliable information on oil production levels, and conflicting information on AG production levels, it is difficult to be confident about flaring volumes. We will however, try to answer the question 'how much does Nigeria flare?'.

**TABLE 4.1** NIGERIAN ASSOCIATED GAS PRODUCTION, BY COMPANY, 2000-2002, MCF/D, ACCORDING TO UNDP/WORLD BANK

| | 2000 | 2001 | 2002(est) |
|---|---|---|---|
| Shell JV | 1,371,535 | 1,485,057 | 1,598,837 |
| ExxonMobil JV | 740,751 | 740,751 | 740,751 |
| ChevronTexaco JV | 714,262 | 711,757 | 708,218 |
| Agip JV | 502,731 | 516,163 | 530,419 |
| TotalFinaElf JV | 147,092 | 142,794 | 124,919 |
| **Big 5 total** | **3,476,371** | **3,596,522** | **3,703,144** |
| Others | 69,339 | 106,398 | 123,572 |
| **TOTAL AG PRODUCTION** | **3,545,710** | **3,702,920** | **3,826,716** |

**How much does Nigeria flare?**[21] For the first 20 years or so of the industry, almost all the AG was flared: 2.1 billion cubic feet per day (bcf/d) or 92% in 1981 for example. This percentage barely declined during the 1980s, standing at about 88% in 1989. It seems to have reached about 2.6 bcf/d in the late 1990s, including venting, though by then this was about 75% of all gas production.

Whilst OPEC has suggested that flaring has since dropped below 2 bcf/d, and whilst both OPEC and the Nigerian Department of Petroleum Resources have suggested that gas flared as a percentage of all gas production has dropped below 50%, this is not universally accepted.

For example, the Strategic Plan states:

*"Current [2000] production of 4.6 bcfd is largely wasted with nearly 55 percent or close to 2.5 bcfd being flared. The gross monetary value of this gas is in the order of US$2.5 billion per year to the economy, amounting to US$50 billion over 20 years.....the balance [is] split between reinjection, NLNG feedstock, internal fuel usage, and a small percentage marketed as LPG."*

The figure of 2.5 bcf/d would have been about 71% of AG production in 2000. This volume figure is repeated on the NLNG company website. The Vice President Atiku Abubakar's website says Nigeria flares 75% of the gas it produces, though the page is undated. On 23rd November 2004 the World Bank stated:

*"Nigeria currently flares 75 percent of the gas it produces."*

Given the significant increase in oil production in 2004, it seems reasonable to us to assume that Nigeria is currently flaring well over 2 bcf/d, probably around 2.5 bcf/d and quite possibly more.

**No country flares as much** Whatever the accurate amount, there is general agreement that in global terms, Nigeria is by far the Number One Flarer.

Using 2000 data, the World Bank has put together the following regional estimates[22]:

**TABLE 4.2 "BEST ESTIMATE" ON REGIONAL BREAKDOWN OF GAS FLARING (2000)**

| REGION | FLARED GAS (BCM) | SHARE OF WORLD TOTAL (%)[a] |
|---|---|---|
| Africa | 37 | 34 |
| Asia-Oceania | 11 | 10 |
| Europe | 3 | 3 |
| FSU | 19 | 18 |
| Central & South America | 10 | 9 |
| Middle East | 16 | 15 |
| North America | 12 | 11 |
| **WORLD** | **108** | **100** |

**Source:** Cedigaz, OPEC, World Bank.
[a] Shares rounded.

18 These figures are provided by the US government in the April 2005 EIA Country Analysis Brief: Nigeria, available here: http://www.eia.doe.gov/emeu/cabs/nigeria.html.

19 On page 2 of a paper entitled 'Shell Nigeria Corporate Strategy for Ending Gas Flaring', presented at a seminar in Norway, June 18-19, 2001. Available here: http://www-static.shell.com/static/nigeria/downloads/pdfs/corpstratendflare.pdf

20 UNDP/World Bank Energy Sector Management Assistance Programme (ESMAP)'s Strategic Gas Plan for Nigeria, February 2004, Appendix 3, Table A.3.3.

21 The following narrative is based on the following sources: (1) World Bank's Nigeria: Issues and Options in the Energy Sector report, August 1983, page 4, paragraph 1.11; (2) World Bank's Nigeria: Issues and Options in the Energy Sector Report No. 11672-UNI, 1993, page 45, paragraph 4.2; (3) World Bank's African Gas Initiative, Main Report, Volume 1, Table 2.2, February 2001; (4) OPEC Statistical Bulletin, 2003, Table 40, page 56; (5) Department of Petroleum Resources presentation at a conference in Norway in August 2003, slide on page 19; (6) the NLNG website at http://www.nigerialng.com/NLNG/The+Environment; (7) the Vice President's website at http://www.atikuabubakar.net/index.php?page=static/economy.html&topimage=images/facts.gif&menuid=3,0. (accessed on 9th April 2005); (8) World Bank Press Release of 23rd November 2004 at http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/TOGOEXTN/0,,contentMDK:20285812~menuPK:375271~pagePK:141137~piPK:141127~theSitePK:375265,00.html.

22 Based on Cedigaz data for 2000, with revised data for the United States, and estimates for Russia and China. Cedigaz is the industry statistics gatherer: www.cedigaz.org. The Table itself is taken from page 16 of the Global Gas Flaring Reduction Initiative: Report No.1: Report on Consultations with Stakeholders, World Bank Group in collaboration with the Government of Norway, (c.2002). Accessible from here: http://www.ifc.org/ogc/global_gas.htm

23 Page 1 of Global Gas Flaring Reduction Initiative: Report No.3: Regulation of Associated Gas Flaring and Venting – a Global Overview and Lessons (World Bank, March 2004).

# 4

Africa's contribution, at 37 billion cubic metres for 2000, could, according to the Bank, produce 200 terawatt hours of electricity, or 50% percent of the current power consumption of the African continent and more than twice the level of power consumption in Sub-Saharan Africa (excluding South Africa).[23]

Again for 2000, the World Bank Table on the right shows Nigeria as flaring the most gas, both absolutely and proportionately, about 46% of Africa's total, and as flaring the most gas per tonne of oil produced, albeit at a less bad ratio than in 1990:

**TABLE 4.3** "BEST ESTIMATE" OF GAS-FLARING TRENDS IN SELECTED COUNTRIES (2000)

| COUNTRY | FLARED GAS | SHARE OF WORLD TOTAL(%)[a] | RATIO GAS FLARED TO OIL PRODUCED ($m^3/toe$)[b] | |
|---|---|---|---|---|
| | | | 1990 | 2000 |
| Algeria | 6.8 | 6 | 79 | 101 |
| Angola | 4.3 | 4 | n/a | 118 |
| China | 3.2 | 3 | n/a | 74 |
| Egypt | 0.9 | 1 | 37 | 23 |
| Indonesia | 4.5 | 4 | 66 | 66 |
| Iran | 10.5 | 10 | 70 | 56 |
| Nigeria | 17.2 | 16 | 250 | 166 |
| Mexico | 5.6 | 5 | n/a | 33 |
| North Sea[c] | 2.7 | 3 | 18 | 9 |
| Russia | 11.5 | 11 | n/a | 77 |
| Venezuela | 4.5 | 4 | 30 | 27 |
| United States | 2.8 | 3 | 10 | 22 |
| Other countries | 33 | 30 | - | - |
| **WORLD[a]** | **107.5** | **100** | - | - |

**Source:** Cedigaz, US EIA, OPEC, IEA, World Bank, IHS Energy Group
[a] Shares rounded.
[b] Oil data from BP Statistical Review of World Energy (2001)
[c] North Sea - Denmark, Norway, and the United Kingdom, as Germany and the Netherlands do not flare according to Cedigaz 2000
n/a Not available

On the basis of the OPEC figures for Nigeria for 2001 – 16.8 bcm/y – Nigeria again comes out as the world's number one flarer and venter[24] on both absolute and proportionate bases. Estimating the total world flaring volume in 2001 at 84.87 bcm, Cedigaz data indicates that Nigeria accounted for 19.79% of the global amount. [25]

The Nigerian amount is more than the second and third countries combined[26], and four times higher than the nearest African country, Algeria, which is recorded as having flared and vented 4 bcm. European flaring is put at 2.54 bcm, or 0.76% of gross production; US flaring at 2.97 bcm, or 0.43% of gross production. World total gross production in 2001 was 3150.13 bcm, with 84.87 bcm or 2.69% flared and vented.

If, as seems probable, Nigeria flares at least 2.5 bcf/d, however, this would equal 40% of all Africa's natural gas consumption in 2001.[27]

24 The latest year for this information in the Statistical Leaflet on their website: www.cedigaz.org

25 It should be noted that Russia, China and several other countries are recorded, certainly wrongly, as zero. The World Bank has sought to rectify this with estimates, of unspecified origin, and so the percentage contribution of Nigeria would be lower (though still the global highest).

26 Second highest was Iran (10.50 bcm; 9% of gross production) and third was Indonesia (4.80 bcm; 5.8% of gross production).

**How much do the companies flare?** If around 2.5 bcf/d of gas is flared in Nigeria, then from information in the public domain it is impossible to arrive at this figure by adding up the estimated contribution from the individual JV companies that account for 95% of production.

SPDC, the Shell JV company, is the biggest oil company in Nigeria and accounts for almost a half of production. The Table below has been compiled from SPDC's own figures for 2001-2003, in mmcf/d.

**TABLE 4.4 SPDC FIGURES 2001-2003**

| | 2001 | 2002 | 2003 |
|---|---|---|---|
| AG flared | 850 | 570 | 700 |
| Gas sold | 729 | 812 | 1,171 |
| Total gas flared & sold | 1,579 | 1,382 | 1,871 |
| AG gas sold | n/a | 140 | 210 |
| Non-AG gas sold | n/a | 672 | 961 |
| Flared multiple of AG sold | n/a | 4.07 | 3.33 |

These data indicate much lower AG, and higher non-AG, production than the Strategic Plan data. Clearly, there is a discrepancy, and it is reasonable to question whether SPDC has under-estimated its flaring.

The second biggest AG producer is ExxonMobil Nigeria, estimated by the Strategic Plan to be 740 mmcf/d. According to one source, "most operators currently flare about 70 per cent of their produced gas", but ExxonMobil, however, is said to use 70% of their produced gas, and to "have consistently met the estimated industry gas utilization figure of 30 per cent, making it a clear leader". [28]

The ChevronTexaco JV appears to be the next biggest AG producer at around 710 mmcf/d. Its Escravos Gas Plant is said to have a current capacity of 285 mmcf/d. Even if, which is unlikely, that Plant was operating at full capacity, taking all AG, that would leave 425 mmcf/d to be supplied, reinjected or flared.

The Agip JV company, Nigerian Agip Oil Company produces over 500 mmcf/d of AG. In 2000, it was reported to be ending "land area zero gas flaring" by 2001, and ending "swamp area gas flaring" by 2004[29]. In 2003, it reported that it had flared 5,424 million cubic metres of gas in Nigeria[30]. Its parent company, Eni's website, last updated in December 2004 stated[31]:

*"Projects currently underway in the gas sector will enable Eni to become the first company to achieve- by the end of 2004 – the ' Zero Gas Flaring Policy' in all its sites in Nigeria."*

The fact that Agip is still flaring probably explains why this statement has been deleted from the same web page updated on 13th April 2005.

We have found no data on the extent of flaring by TotalFinaElf. Minister Okopido stated in 2002 that TotalFinaElf would terminate its onshore flaring by 2002, with an offshore flaring termination date of 2005 "to be dialogued".[32]

### *To sum up, what can we make of all these different figures?*

We think it is possible to say this:

- Nigeria's flaring has grown in absolute amounts since the start of oil production in 1958.
- Increased oil production is increasing the amount of flaring.
- Flaring has declined in percentage terms, whether of associated gas produced or of all gas produced, since the 1980s, but it was still in excess of 70% of associated gas production in 2000, and in November 2004 the World Bank said Nigeria flared 75% of all gas produced.
- Suggestions that less than half of the gas is no longer flared are contradicted by the latest report, which is independent of government and the JV companies, and by the World Bank.
- Nigeria is the world's biggest flarer of gas in absolute and proportionate terms.
- It probably flares about 2.5 bcf/d currently, and quite possibly more.
- SPDC is the largest company flarer, though its own flaring estimates must be questioned as being under-estimates.
- Without an enforced legal obligation to stop flaring, communities and the wider public cannot have any confidence that the companies will do so.

27 US EIA, International Energy Outlook 2004, page 69.

28 Nigeria Oil Handbook and Review 2002, 11th Edition, page 92. We have little confidence in the reliability of this publication.

29 http://www.ngex.com/news/160600.htm

30 ENI HSE Report, 2003, page 91. Available here: http://www.eni.it/eniit/eni/servlet/view/eni/upload/documentazione/20_salute_sicurezza/_28V5_0_xoidcmWopk/HSE2003%20Eni%20eng.pdf?lang=en&sessionId=@@@@1486309702.1113042673@@@@

31 http://www.eni.it/eniit/eni/internal.do?lang=en&sessionId=@@@@1486309702.1113042673@@@@&icommand=show&channelId=1073751995&continent=africa&country=nigeria&layout=home_page. Accessed on 9th April 2005. However, this page was updated on 13th April 2005 and the cited extract had been deleted.

32 This statement appears in the Appendix to a speech made by the Minister at a conference in Norway in April 2002. Available here: http://www2.ifc.org/ogmc/files/Okopido.pdf.

5

## FLARES OUT BY 2008?

Broken promises, shifting commitments, shady deals and ignored legislation mar the history of flare-out targets. In this section we focus on two questions: what date has the government fixed for ending flaring? And, is it likely to be met?

**What date has the government fixed for ending flaring?** It is widely reported that the government has set a date of 2008 for the ending of flaring. This was apparently set relatively recently, replacing the previous apparent date for ending the flaring of 2004.

It is very difficult to know for certain where either of these dates come from. The decision itself has not to our knowledge been officially published. And no report of it that we have seen attempts to link it to the exercise of any lawful authority.

In 1996, the Federal Government of Nigeria set up a Committee that prepared a report called "Vision 2010". In its report, it apparently set 2008 as the flares-out date.[33]

However, according to the Vice President's website[34]:

*"In May 2000, representatives of the major oil companies operating in Nigeria announced that they would be able to meet Nigeria's required phase-out of associated gas flaring by the following dates: Chevron, 2008; TotalFinaElf, 2008; Shell, 2008; Texaco, 2005/6; Agip, 2005; and ExxonMobil, 2004. Dr. Imeh Okupido, Minister of State for the environment, stated that an agreement had been reached between the government and the oil companies to end all gas flaring in Nigeria by 2004. The agreement, announced in August 2000, was a compromise, the companies had proposed an end date of 2006, while the government wished to end flaring by 2003."*

On the other hand, in November 2003 the Nigerian government informed the United Nations that:[a] *"The government of the Federal Republic of Nigeria has placed a dateline for all oil/gas producing companies to eliminate gas flaring by the year 2010."* In March 2004, the World Bank said that:[b] *"The Nigerian government has announced a target to end all nonoperational gas flaring by 2008."*

Given (as will be discussed in section 8) that flaring is a violation of human rights, and given (as will be discussed in section 9) that it has generally been prohibited under the regulations since 1984, the effect of the flare out date is political and not legal. This lack of alignment of a political agreement with the legal framework, and the lack of transparency highlighted by the overall confusion on the end date itself, are serious causes for concern. The consequent public perception, that continuation of gas flaring is a stitch-up between government and the companies, is a reasonable one.

**Whatever the date, is it likely to be met?** It is tempting to believe that the flaring will end by 2008.

Not only is that date too late, the history of Nigerian flaring suggests that such a belief would be naïve.

Indeed, the Strategic Plan states that:

*"It also seems that industry is seeking clearer guidance from the FGN in meeting the 2008 zero flaring deadline and it is trying to "guess-out" true FGN intentions as meaning business this time or just another down the road deadline that this government would not live to see."*[35]

We set out in the Table on the following page three different descriptions of the work that is supposedly being done to end the flaring by the JV companies, prepared for us by E-Tech International.

Clearly, the security situation in the Delta, and adequate budget allocation will in general affect the progress of this work, as they do oil production. We have seen no evidence, however, to support the view that these factors affect work necessary to end flaring more than they affect work necessary to enable oil production.

a See page 105 of Nigeria's National Communication referenced in note 33.

b See page 5 of the Global Gas Flaring Reduction Initiative: Report No.3: Regulation of Associated Gas Flaring and Venting – a Global Overview and Lessons (World Bank, March 2004). The Nigerian Oil Handbook and Review, 2002, 11th edition, captures the confusion, referring both to the "government's compulsory flare out date of 2008" (page 92) and then three pages later to "the flare-out target of 2010".

## TABLE 5.1 "BEST ESTIMATE" OF GAS-FLARING TRENDS IN SELECTED COUNTRIES (2000)

| COMPANY | NIGERIA HANDBOOK AND REVIEW, 11TH EDITION 2002 | NNPC PRESENTATION. NOVEMBER 2004, ABUJA CONFERENCE | COMPANY DESCRIPTION OF FLARE-OUT PROGRAMS, 2004 (SHELL NIGERIA WEBSITE, 'FLARES OUT BY 2008') |
|---|---|---|---|
| Shell Nigeria | Flare-out target is 2008:<br>No details provided, other than expansion of the NLNG plant is the principal avenue to be used by Shell Nigeria to monetize AG. | **1.** Offshore Gas Gathering System (OGGS) - completed Dec 2003.<br>**2.** Crawford Channel AG Gathering - supply 210 mmcfd of AG to NLNG Train 3, project 95% complete.<br>**3.** Forcados-Yokin AG Gathering - send 110 mmcfd AG to NLNG via OGGS, project 80 % complete.<br>**4.** Afam Power - utilize 250 mmcfd to increase power generation from 200 MW to 950 MW.<br>**5.** South Swamp - gather 120 mmcfd of AG, export to NLNG via OGGS, target completion date Dec 2005.<br>**6.** Odidi Gas Link Pipeline - link Odidi to Forcados - Yokri Project.<br>**7.** Eastern Gas Gathering System (EGGS) Phase 1 - move Soku AG to NLNG Trains 4&5.<br>**8.** Gbarab/Ubie Integrated Project - deliver 1,000 mmcfd AG/NAG to NLNG Trains 4, 5, 6 by 2008. | Over several years, SPDC has developed gas gathering modules based on geographic catchment areas. By 2008, all SPDC flow stations and processing facilities will be provided with equipment to harness their AG.<br>Operation AG gathering projects:<br>• Soku Gas Project - 200 mmcfd<br>• Obigbo North AG Gathering<br>• Odidi Project<br>• Cawthorne Channel Project<br>• South Forcados Project<br>• Belema Project<br>• Great Ughelli Project<br>• Otumara Gas Gathering Project<br>• Oguta Gas Gathering Project<br>• Gbarabu/Ubie Project |
| Chevron Texaco Nigeria | Flare-out target is 2006:<br>Planned projects are Escravos Gas Project Phase 2 and Phase 3 (GTL project using gas from Phase 2 plant) | **1.** Escravos Gas Project Phase 3 utilize 250 mmcfd AG commingled with 140 mmcfd NAG for liquid extraction.<br>**2.** West Africa Gas Pipeline - joint venture with Shell, under construction, online date 2005. | Chevron Texaco should have enough productive outlets for its current production of 800mmcfd of AG by late 2007 if the WAGP and EGP-3 are completed on schedule. *E-Tech note:* Chevron Texaco has suggested that using NAG might be a more profitable approach than AG in the WAGP, potentially undercutting a primary stated goal of the WAGP (convert flared AG to powerplant fuel).[a] |
| ExxonMobil | Flare-out target date is 2004:<br>**1.** East Area Gas Project (EAGP) - will gather all gas produced in OML 67 for reinjection and storage.<br>**2.** Extract NGL prior to AG reinjection and storage. | **1.** East Area Project - arrest reservoir oil production decline via reinjection, strip out NGL prior to reinjection.<br>**2.** Qua Iboe Terminal (QIT) Gas Project - up to 50 mmcfd AG processed for NGL by late 2007. | Most of ExxonMobil's production is from shallow water offshore fields in East Area[b]<br>ExxonMobil has indicated it is on schedule to end flaring in 2006. |
| Agip (NOAC) | Flare-out target date is 2004:<br>Gas markets include NLNG Train 5 through Okrika, NGL to Eleme, IPP (powerplant) at Kwale, and reinjection/gas cycling. Complete gas gathering in Oshie and Ebocha with new turbo compressor to reach 400 mmcffd injection. | Flare-out date is 2006:<br>**1.** NLNG - supply additional 164 mmcfd AG to Train 3<br>**2.** Swamp Area Gas Utilization - supply AG to NLNG Trains 4&5.<br>**3.** Idu Gas Revamping - send AG to NLNG Trains 4&5.<br>**4.** Kwale/Okpai IPP - use 80 mmcfd to generate 450 MW. | NAOC has installed gas gathering systems for two production areas (Oshie and Ebocha) to supply AG to the NLNG plant. The joint venture has installed an AG reinjection system to enhance oil recovery at it Obiafu-Obrikom field. NAOC has completed the Kwale Region 480 MW power plant, expected to utilize approximately 80 mmcfd of AG starting in 2005. |
| Elf (Total) | Flare-out target is 2006:<br>Projects include Amenam/Kpono. Ofon (Phase 2), and four integrated oil/gas projects. | Amenam/Kpono Oil/Gas Export Project<br>- supply gas to NLNG Trains 4&5. | Elf/Total indicates the consortium will reinject all AG not immediately saleable to the NLNG plant from the consortium's new offshore Amenam field in 2003, and will reinject AG that is currently being flared in the adjacent Ofon and Odudu fields in 2005.[c] |

[a] John H Shinn - Chevron Texaco, Example Potential CDM Projects and Complications: Gas Re-Injection and Utilization, IPIECA Workshop and Reporting, CDM and JI, March 2004, p.10. [b] http://www.nigerianoil-gas.com/upstream/joint_venture_companies.htm#MOBIL [c] Total, Greenhouse Gases - Exploration and Production, September 2004. http://www.total.com/hp/em/library/finance/dpf/da/2003/chemins_development_durable/greenhouse_gases_ep.pdf

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**Will Shell make it?** Much work is apparently being undertaken by SPDC. But neither smoothly nor in a manner that attaches equal importance to crude oil production and AG use.

The offshore EA field was allowed to start production in 2002 without its AG gathering system in place. In its 2002 Annual Report, SPDC stated that:

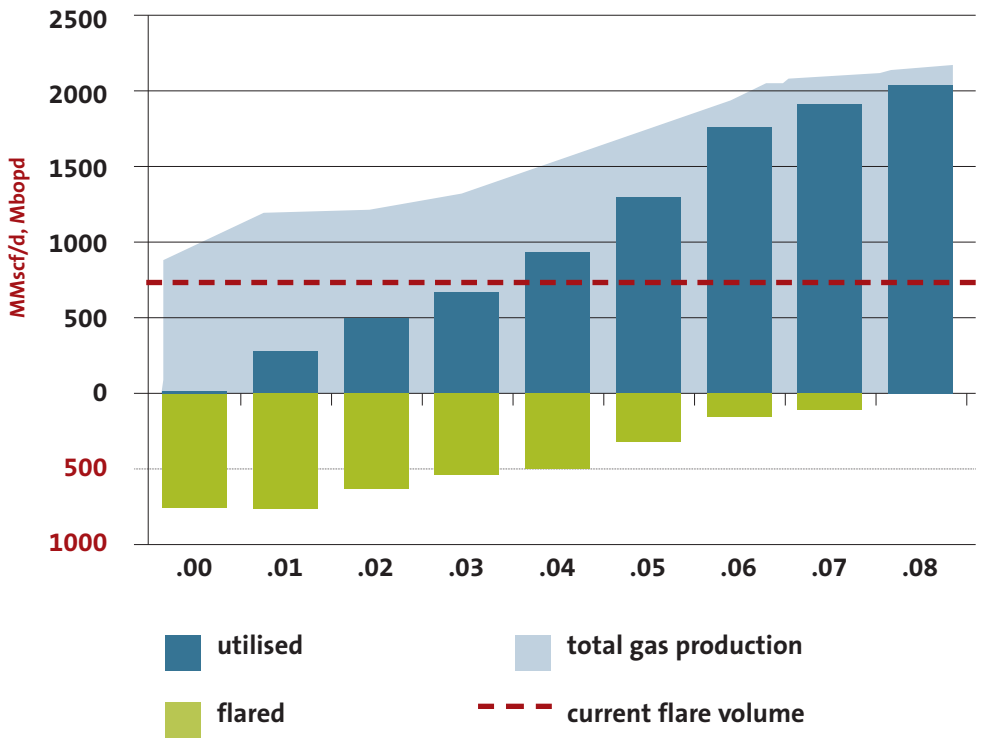
*"The associated gas produced from EA and other fields, such as Odidi, Forcados-Yokri and Cawthorne Channel, will be transported to the NLNG plant in Bonny through the new Offshore Gas Gathering System, a 32-inch pipeline which will come into operation in 2003."*

But by the time of the 2003 report:
"*Onshore associated gas gathering (AGG) projects have suffered slippage. The Cawthorne Channel project, scheduled to come on stream during the year, was delayed until the second quarter of 2004, while those at Forcados Yokri and the Southern Swamp area are now scheduled for commissioning in 2005 and 2008 respectively, due to re-phasing driven by joint venture funding constraints. The Odidi-Forcados-Yokri pipeline will now be commissioned in the second quarter of 2005 to facilitate gas supply to the LNG plant in Bonny.*"

And completion of the Offshore Gas Gathering System (OGGS), which originates in the Western Area off Forcados, was delayed until December 2003 (36-inch pipeline with 1,200 mmcfd capacity). When will the Eastern Gas Gathering System (EGGS) be operational?

The Figure on the right is how the current Chief Executive of SPDC depicted the company's flare-out plans in 2001.[36]

**SPDC gas utilisation/flares-out programme**




33 See section 7.5.1 on page 99 of Nigeria's National Communication to the United Nations Framework Convention on Climate Change. Available here: http://unfccc.int/parties_and_observers/parties/items/2162.php

34 http://www.atikuabubakar.net/index.php?page=static/economy.html&topimage=images/facts.gif&menuid=3,0. The page is undated. It seems to have been written around 2001. The page was accessed on 9th April 2005.

35 UNDP/World Bank Energy Sector Management Assistance Programme (ESMAP)'s Strategic Gas Plan for Nigeria, February 2004, page 13, paragraph 10. Available here: http://www2.ifc.org/ogmc/files/strategicgasplanfornigeria.pdf.

We now know that the projected 2003 flared volume was exceeded. And in its 2003 report, SPDC admitted that the 2008 deadline was "becoming tight" and would be reviewing in 2004 the resources needed to meet it.[37] We have seen no public statement on the results of that review.

In the midst of the Shell reserves fiasco, the New York Times reported a clear difference between Shell's public statements and its internal documents:[38]

*"In any case, the documents about Nigeria offer a far bleaker assessment of Nigerian operations than the company's public disclosures. Nigeria, for example, has called for an end to the practice of flaring, or burning off, natural gas that is a byproduct of oil production; two billion cubic feet of natural gas are burned this way in Nigeria every day, and this has become an environmental and political issue. Mr. Corrigan [a Shell spokesperson] said the company was committed to meeting the target. Shell's Web site says "this opportunity" to gather gas "is going well." But the Shell documents present a different view. A high-level review in December found that many oil field projects did not include plans to gather natural gas, and that "oil production would have to be shut in," or stopped, unless the company found a way to use the gas."*

The full extent of the relationship between Shell's reserves fiasco and the flaring has yet to emerge. It should be noted, however, that its failed concealment strategy was to increase production in order to play for time.[39] Increased oil production in Nigeria means increased flaring. And it was in 2001, with this failed strategy underway, that the current SPDC Chief Executive was telling a seminar in Norway that the reason SPDC could not put the flares out before 2008 was the significant growth in production.[40]

**Projects promising to use AG aren't delivering** Two major projects have been consistently touted by the companies as key to stopping the flares. But their stories so far give little confidence that they will use enough AG to end the flaring.

**Bonny LNG** In 2001, LNG exports were described as "the cornerstone" of SPDC's flares-out programme by the current Chief Executive of SPDC, Basil Omiyi. How has it turned out so far?

Nigeria LNG Limited (NLNG) was set up in 1989, 49% owned by NNPC, 25.6% by Shell, 15% by Total and 10% by Agip/Eni. It began LNG production at Bonny in September 1999 (Train 2) with the second train (Train 1) coming on stream in February 2000. Train 3 began production in November 2002, along with LPG facilities. Trains 1-3 require 1.476 bcf/d of gas.

Disgracefully, it was only in November 2002 that the Plant was reported to be able to take 100% AG. And the amount of AG used so far has fallen well short of this figure.

Train 4 is expected to be on stream in mid-2005, and Train 5 in early 2006. Once all 5 Trains are in place, the Plant will require 2.8 bcf/d of natural gas. Train 6, the final Train, is planned to be operational by 2007.

NLNG has long-term Gas Supply Agreements with the three joint ventures operated by the Nigerian affiliates of NLNG's three foreign shareholders namely: Shell, TotalFinaElf and Agip. For the first two trains, the joint ventures supply 960 million scf/d feedgas in the proportion of 53.33%, 23.33% and 23.33% respectively.[41]

36 "The significant growth (±300%) in the NNPC/Shell/Elf/Agip joint venture oil production programme is the reason it takes up to 2008 for the last flares to go out." SPDC Corporate Strategy for Ending Gas Flaring in Nigeria, A Paper Presented by Basil Omiyi, then External Relations Director, SPDC, at a seminar on Gas Flaring and Poverty Alleviation in Oslo, Norway, 18th-19th June, 2001, page 13.

37 SPDC Annual Report 2003, page 7.

38 Shell Withheld Reserves Data to Aid Nigeria, by Jeff Gerth and Stephen Labaton, New York Times, 19th March 2004.

39 "...EP management's plan was to 'manage' the totality of the reserve position over time, in hopes that problematic reserve bookings could be rendered immaterial by project maturation, license extensions, exploration successes and/or strategic activity. Simply put, it is illustrative of a strategy to 'play for time' in the hope that intervening helpful developments would justify, or mitigate, the existing reserve exposures. Ultimately, as described below in the discussions of Australia (Gorgon), Oman, Nigeria and Brunei, this strategy failed as business conditions either deteriorated or failed to improve sufficiently to justify historic bookings.....SPDC accumulated over the 1990s and, particularly, in the late 1990s very large volumes of proved oil reserves. No later than early 2000, however, it became clear to EP management that SPDC's substantial proved reserves could not be produced as originally projected or within its current license periods. Rather than de-book reserves, an effort was undertaken to manage the problem through a moratorium on new oil and gas additions, in the hope that SPDC s production levels would increase dramatically to support its reported reserves. This solution remained in place for the next several years, until January, 2004, notwithstanding the knowledge of EP management that, in fact, production was not increasing to a level which could support the booked proved reserves." Report of US Attorneys, Davis Polk & Wardwell, to the Shell Group Audit Committee, Executive Summary, 31st March 2004, Section III, Summary of Findings, pages 6 and 12. The full report has not been made public.

40 "The significant growth (±300%) in the NNPC/Shell/Elf/Agip joint venture oil production programme is the reason it takes up to 2008 for the last flares to go out." SPDC Corporate Strategy for Ending Gas Flaring in Nigeria, A Paper Presented by Basil Omiyi, then External Relations Director, SPDC, at a seminar on Gas Flaring and Poverty Alleviation in Oslo, Norway, 18th-19th June, 2001, page 12.

# 5

Shell is therefore currently entitled to supply 512 Mmscf/d to Trains 1 and 2, with Agip and TotalFinaElf 224 Mmscf/d each.

For Train 3, Shell and Agip only supply 516 Mscf/d in the proportion 69.57% and 30.43%, respectively. Shell is therefore entitled to supply 359 Mmscf/d to Train 3, with Agip 157 Mmscf/d.

As the Bonny LNG Plant therefore currently stands, Shell is able to supply 871 Mmscf/d, Agip 381 Mmscf/d and TotalFinaElf 224 Mmscf/d.

According to SPDC, 812 Mmscf/d of gas sold to NLNG and others in 2002, out of which only 140 Mmscf/d was AG. In 2003, 1,170 Mmscf/d was sold, of which 210 Mmscf/d was AG.

Therefore, of 1,982 Mmscf/d sold by SPDC mostly to NLNG in the last two years for which figures are available, only 350 Mmscf/d or 17.6% has been AG - while on SPDC's own figures 1,270 Mmscf/d of AG has been flared. This is an appaling state of affairs, and undermines the promises made about the impact that Bonny LNG would have on reducing flares. The reality is that SPDC will sell as much non-AG as it can get away with. But the Nigerian national interest is not synonymous with the Shell or SPDC corporate interest. Shell has stated that one of its strategies for eliminating flaring is apparently to replace non-AG with AG[42], but in the absence of an enforced obligation to do so it would be unwise to believe them.

For Trains 4 and 5, Shell and Agip have the same supply shares. On the basis of NLNG's figures, these trains will take 1,324 Mmscf/d, of which SPDC's share will be 921 Mmscf/d.

In 2002, Malcolm Brinded, one of Royal Dutch Shell's Managing Directors, made a speech in which he showed a slide promising 70% AG to Bonny LNG by 2006.[43] If the US government's view in April 2005 is correct, this is pie-in-the-sky:[44]

*"The facility is currently supplied from dedicated natural gas fields, but within a few years it is anticipated that half of the input natural gas will consist of associated (currently flared) natural gas from Akri/Oguta, Otumara, Utapate and offshore blocks."*

To achieve Mr Brinded's promise, Bonny LNG would need to take 1.96 bcf/d of AG once Train 5 is operational. SPDC's share of that would appear to be 1.79 bcf/d.

Despite the promises and the spin, the Bonny LNG plant bears the hallmarks of a non-AG project. Without a legal obligation to use AG, there can be no confidence that AG will be supplied.

**West African Gas Pipeline** In November 2004, the World Bank approved US$125 million in guarantees supporting the construction of a 678 km gas pipeline to transport natural gas from Nigeria to Benin, Ghana and Togo – the West African Gas Pipeline (WAGP).

The WAGP will be built, owned and operated by a new company, the West African Gas Pipeline Company, expected to be owned (directly or indirectly) by Chevron Nigeria Limited (36.7%), NNPC (25%), SPDC (18%), Volta River Authority of Ghana (16.3%), Societe Beninoise de Gaz S.A. (2%) and Societe Togolaise de Gaz S.A. (2%).

The WAGP feasibility project dates back to 1992, and its promise to end the flaring has been around for years. According to the US government:

*"The $500-million WAGP will initially transport 120 Mmcf/d of gas to Ghana, Benin and Togo beginning in June 2005. Gas deliveries are expected to increase to 150 Mmcf/d in 2007, to 210 MMcf/d in 7 years and be at 400 Mmcf/d when the pipeline is functioning at its capacity (approximately 15 years after construction).... The major positive environmental impact of WAGP will be the development and use of gas currently flared in Nigeria."*[45]

ERA and other civil society groups in Nigeria, Africa, and in the US have been criticising the proposed WAGP for the inability of the project sponsors led by ChevronTexaco to address the problem of gas flaring from its Escravos Gas fields. Though the transnational corporation claims that the project will contribute to flares reduction, there remains no clear programme for use of flared AG into the WAGP. Moreover, the WAGP will be connected to the Escravos-Lagos Gas Pipeline, which was built in the 1980s to transport unflared non-AG and was constructed without an environmental impact assessment.

When the World Bank was asked in November 2004 to require the use of AG before approving its guarantees, it failed to do so. The continued failure to require the use of AG, and to enforce regulatory and human rights obligations to end the flaring, will mean that the WAGP will become yet another non-AG project. Moreover, the allied failure to ensure proper community participation and environmental impact assessment point to yet another project benefiting the multinationals and the corrupt local elite. This is wholly unacceptable.

We have no confidence in the flares being ended by 2008. Apart from the waste, which Nigeria cannot afford, they contribute to climate change and affect local communities. We next consider these environmental and human rights aspects.

41 This information, and much of what follows was taken from the NLNG website. However, when access was sought again on 9th April 2005, this web page was not available: http://www.nlng.com/NLNG/The%20Project/supply.htm. Obviously, we are assuming this information remains accurate.

42 C.I. Ozumba, Shell Nigeria, Gaseous Emission Monitoring in the Land Area of the Western Niger Delta, Society of Petroleum Engineers, SPE 66499, 2001.

43 http://www.worldbank.org/ogmc/files/brinded.pdf.

44 EIA Country Analysis Brief: Nigeria, April 2005. Available here: http://www.eia.doe.gov/emeu/cabs/nigeria.html

45 http://www.eia.doe.gov/emeu/cabs/wagp.html

# 6

## GAS FLARING CONTRIBUTES TO CLIMATE CHANGE

**Gas flaring contributes to climate change, which has serious implications for both Nigeria and the rest of the world** The burning of fossil fuel, mainly coal, oil and gas – greenhouse gases - has led to warming up the world and is projected to get much, much worse during the course of the 21st century, according to The Intergovernmental Panel on Climate Change (IPCC). This scientific body was set up in 1988 by the UN and the World Meteorological Organisation to consider climate change.

In its 2001 Third Assessment Report[46], the IPCC said that the global average surface temperature increased by about 0.6°C over the 20th century, that it was 66-90% confident that most of the observed warming over the second half of the century was due to the increase in greenhouse gas concentrations, and projected that the temperature would increase from 1990-2100 by 1.4 to 5.8°C. It also stated that global mean sea level is projected to rise by 0.09 to 0.88 metres between 1990 and 2100, due primarily to thermal expansion and loss of mass from glaciers and ice caps.

In July 2003, Sir John Houghton, formerly co-Chair of the IPCC's Scientific Scientific Assessment Working Group and Chief Executive of the United Kingdom's Meteorological Office said that:

*"the impacts of global warming are such that I have no hesitation in describing it as a 'weapon of mass destruction'".*[47]

In January 2004, the UK Government's Chief Scientist said that:

*"climate change is the most severe problem we are facing today, more serious even than the threat of terrorism."* [48]

Climate change is particularly serious for developing countries, and Africa as a continent is regarded as highly vulnerable with limited ability to adapt.

The IPCC identified 6 areas of concern for the continent as a whole, all of which are relevant in some part of Nigeria:[49]

*"Africa is highly vulnerable to the various manifestations of climate change. Six situations that are particularly important are:*

- *Water resources, especially in international shared basins where there is a potential for conflict and a need for regional coordination in water management*
- *Food security at risk from declines in agricultural production and uncertain climate*
- *Natural resources productivity at risk and biodiversity that might be irreversibly lost*
- *Vector- and water-borne diseases, especially in areas with inadequate health infrastructure*
- *Coastal zones vulnerable to sea-level rise, particularly roads, bridges, buildings, and other infrastructure that is exposed to flooding and other extreme events*
- *Exacerbation of desertification by changes in rainfall and intensified land use."*

According to the Nigerian government, "it is widely assumed that over the past decade in West Africa, temperatures have generally increased by 0.2 to 0.3 degree centigrade". [50]

On this basis the government has reported to the United Nations Framework Convention on Climate Change (UNFCCC) its analysis of the country's vulnerability to, impact of, and adaptations to climate change in relation to its physical and ecological systems, agriculture and livestock production, fisheries, water resources, energy, industry and mining, transport, tourism and health. This analysis was presented by the Federal Ministry of Environment in November 2003.[51]

For example, adaptation measures and coping strategies required in the agriculture and livestock production sectors include alterations to the planting calendar and crop choices, increased irrigation and reductions in stocking rates or livestock density. In respect of the energy sector, the analysis states:

*"The most significant impact of climate change on energy will include (a) higher electricity demand for heating, cooling, water pumping, etc., (b) reduced availability of hydroelectricity and fuelwood, and (c) extensive damage to petrochemical industrial installations presently concentrated in the coastal belt."*

In this context, the contribution to climate change of gas flaring in the Niger Delta is particularly ironic, to say the least.

# 6

Another major implication for northern Nigeria is further desertification:

*"In the past 25 years, the Sahel has experienced the most substantial and sustained decline in rainfall recorded anywhere in the world within the period of instrumental measurements (Hulme and Kelly, 1997). Linear regression of 1901-1990 rainfall data from 24 stations in the west African Sahel yields a negative slope amounting to a decline of 1.9 standard deviations in the period 1950-1985 (Nicholson and Palao, 1993). Since 1971, the average of all stations fell below the 89-year average and showed a persistent downward trend since 1951."*[52]

Desertification in Africa has already reduced by 25% the potential vegetative productivity of more than 7 million km2, or one-quarter of the continent's land area (UNEP, 1997.[53] It will lead to more people being unable to live in the countryside and to an increase pressure on urban areas.

**How flaring contributes to climate change** The burning of gas by flaring leads to the emission of carbon dioxide, the main greenhouse gas. Venting of the gas without burning, a practice for which flaring seems often to be treated as a synonym, releases methane, the second main greenhouse gas. Together, and crudely, these gases make up about 80% of global warming to date.

The IPCC estimated in the Third Assessment Report that about 60% of the radiative forcing (essentially, the measure of contribution to global temperature increases) due to increases of the well-mixed greenhouse gases from 1750-2000 was from carbon dioxide, and about 20% was from methane. Methane, however, has a much higher global warming potential than carbon dioxide even though it is shorter lived: after 20 years, 1 kg of methane is 62 times more powerful than 1 kg of carbon dioxide, over 100 years it is 23 times more powerful and over 500 years it is 7 times more powerful.

A helpful overview of the uncertainties associated with estimating accurate contributions is provided by the World Bank in the Box on the right.[54]

### Impact of flaring of natural gas on climate change

Flaring produces the primary GHGs, $CO_2$ and methane ($CH_4$). In addition, flaring of gas rich in liquids can produce smoke, with aerosol effects that also contribute to global warming.

One of the key problems in assessing the impact of flaring on GHG accumulation is the lack of information not only about the quantities involved but also about the types of gases emitted. Key issues include:

- The ratio of gas vented to gas flared is crucial because the impact of methane on global warming is about 21 times greater than that of $CO_2$, so a small change in the ratio of flaring to venting makes a disproportionate change in the impact on the global environment. For example, if 90 percent of the associated gas volume is flared and 10 percent is vented, the amount vented would have approximately twice the global warming effect as the amount flared.
- Gas flares vary greatly in the efficiency with which they burn methane and thus convert it into $CO_2$. The least efficient flares still frequently used may convert only 90 percent of the methane to $CO_2$, while the most efficient flares convert 98 percent. The global warming impact of the least efficient flares is twice that of the most efficient.
- The composition of the gas being flared can vary greatly. Some gas is rich in hydrocarbons heavier than methane (propane, butane, pentanes plus) and thus produces more carbon, as well as smoke and aerosols. In other cases, gas may contain significant proportions of inert gases (nitrogen, helium) and sulfur compounds ($H_2S$), as well as $CO_2$. Incineration of such "impure" natural gas will have a different impact on the climate change than that of pure hydrocarbons.

Because of these uncertainties, the impact of flaring on global warming could be larger than normally assumed. A possible means of reducing uncertainty would be to measure a representative sample of flaring sites and assess the likely range of average characteristics of flaring on a regional basis, using improved figures on flaring volumes to arrive at a global estimate of the impact of flaring on global warming.

46 www.ipcc.ch

47 http://politics.guardian.co.uk/green/comment/0,9236,1007302,00.html

48 http://news.bbc.co.uk/1/hi/sci/tech/3381425.stm

49 IPCC, Third Assessment Report, Working Group 2, Impacts, Adaptation and Vulnerability, Executive Summary, available here: http://www.grida.no/climate/ipcc_tar/wg2/378.htm

50 See Executive Summary on page 8 of Nigeria's National Communication to the United Nations Framework Convention on Climate Change. Available here: http://unfccc.int/parties_and_observers/parties/items/2162.php

51 Available here: http://unfccc.int/parties_and_observers/parties/items/2162.php

52 UNEP, 1997. IPCC, Third Assessment Report, Working Group 2, Impacts, Adaptation and Vulnerability, section 10.2.6.3. Available here: http://www.grida.no/climate/ipcc_tar/wg2/403.htm

53 UNEP, 1997. IPCC, Third Assessment Report, Working Group 2, Impacts, Adaptation and Vulnerability, section 10.2.6.1. Available here: http://www.grida.no/climate/ipcc_tar/wg2/402.htm

The same report also includes a useful summary of the Kyoto Protocol, agreed in 1997 under the UNFCCC and imposing legally binding emission cuts on developed country Parties. Nigeria acceded to the Protocol on 10th December 2004 and it came into force in February 2005:

*"Carbon dioxide ($CO_2$) emissions from flaring and methane emissions from venting have high global warming potential and contribute to climate change; methane is many times more potent a GHG than $CO_2$ (see box on previous page). Flaring may in some places have harmful effects on human health and ecosystems near flaring sites. Global $CO_2$ emissions from flaring are nearly 10 percent of the emissions that Annex 1 countries (including the United States) have committed to reduce under the Kyoto Protocol for the target period 2008.2012. [FN: According to the Kyoto Protocol, Annex 1 countries, consisting of industrialized countries of the Organization for Economic Cooperation and Development (OECD) and Central and Eastern Europe, including Russia, are committed to reducing greenhouse gas emissions within the commitment period 2008-2012. Reduction requirements vary by country, but for Annex 1 countries as a whole, greenhouse gas emissions should be approximately 5 percent below 1990 levels by the end of the commitment period. Assuming a 10 percent business-as-usual growth in emissions from 1990 to the commitment period, the actual reduction to meet the Kyoto requirements translates to 2.3 billion tons of $CO_2$ in 2010. It should be noted that the United States has stated it will not ratify the Kyoto Protocol. This means that the overall target of a 5 percent reduction is likely to translate to a 2.3 percent overall reduction, assuming the United States remains outside the Protocol during the first commitment period.]"*

**Flaring in Nigeria has contributed more emissions of greenhouse gases than all other sources in sub-Saharan Africa combined** A number of data sources exist on the size of the contribution to climate change from flaring in the Delta, though they should be treated with caution.

Table 6.1 on the right shows data published by the US government's Carbon Dioxide Information Analysis Center on carbon dioxide emissions from Nigerian flaring for 27 years from 1963-1989. Table 6.2 on the right shows data on these emissions for 23 years from 1980-2002 published by the US government's Energy Administration.

Not only do these data conflict between themselves, in view of later information on the following page from the Nigerian government and the Strategic Plan, these data appear to be under-estimates.

**TABLE 6.1**

**$CO_2$ EMISSIONS FROM NIGERIAN GAS FLARING, 1963-1989, ACCORDING TO THE US CARBON DIOXIDE INFORMATION ANALYSIS CENTER, IN MILLION METRIC TONNES OF CARBON DIOXIDE PER YEAR***

| | | | | | |
|---|---|---|---|---|---|
| **1963** | 1.15 | **1972** | 32.41 | **1981** | 29.58 |
| **1964** | 1.88 | **1973** | 38.97 | **1982** | 24.65 |
| **1965** | 4.95 | **1974** | 50.43 | **1983** | 24.07 |
| **1966** | 5.19 | **1975** | 35.69 | **1984** | 26.21 |
| **1967** | 4.72 | **1976** | 41.30 | **1985** | 26.93 |
| **1968** | 2.53 | **1977** | 33.21 | **1986** | 26.77 |
| **1969** | 7.89 | **1978** | 32.83 | **1987** | 23.58 |
| **1970** | 15.35 | **1979** | 52.67 | **1988** | 28.35 |
| **1971** | 24.61 | **1980** | 43.01 | **1989** | 36.13 |

**TABLE 6.2**

**$CO_2$ EMISSIONS FROM NIGERIAN GAS FLARING, 1980-2002, ACCORDING TO THE US ENERGY INFORMATION ADMINISTRATION, IN MILLION METRIC TONNES OF CARBON DIOXIDE PER YEAR***

| | | | | | |
|---|---|---|---|---|---|
| **1980** | 42.71 | **1988** | 22.31 | **1996** | 49.70 |
| **1981** | 26.12 | **1989** | 31.63 | **1997** | 41.12 |
| **1982** | 23.34 | **1990** | 38.33 | **1998** | 38.08 |
| **1983** | 22.77 | **1991** | 41.21 | **1999** | 34.29 |
| **1984** | 23.95 | **1992** | 45.30 | **2000** | 31.29 |
| **1985** | 23.70 | **1993** | 46.88 | **2001** | 34.93 |
| **1986** | 22.92 | **1994** | 48.96 | **2002** | 34.38 |
| **1987** | 21.48 | **1995** | 47.68 | | |

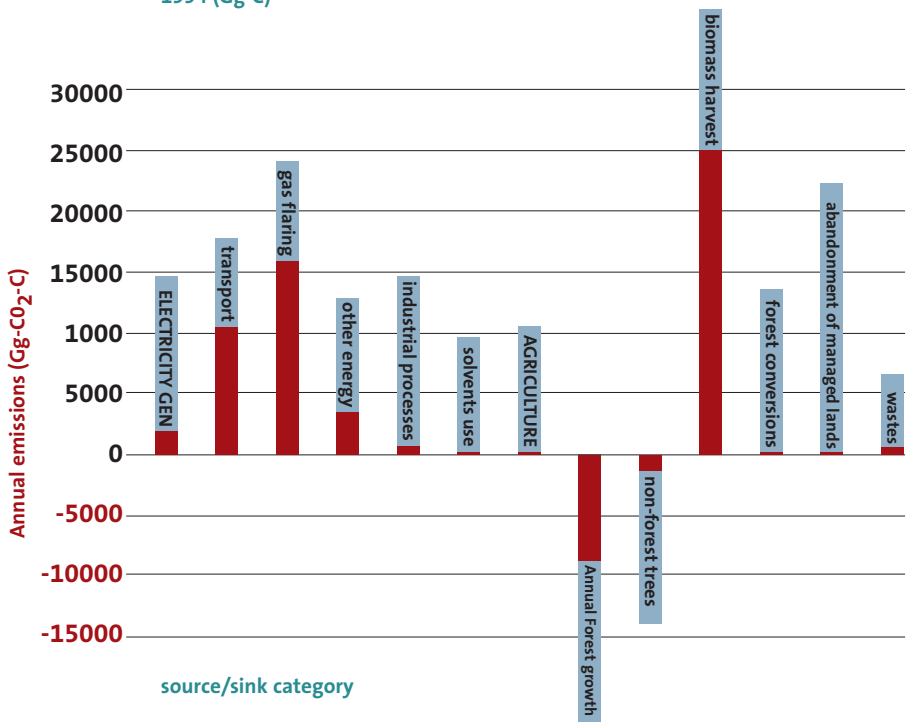
* Based on information in http://cdiac.esd.ornl.gov/ftp/trends/emissions/ngr.dat; and http://www.eia.doe.gov/iea/carbon.html. For some unclear reason, zero entries are made by CDIAC after 1989.

# 6

The Figure on the right, from the Nigerian government's National Communication to the UNFCCC, shows gross carbon emissions from energy, land use change, industry, solvents use, agriculture and waste management in 1994 at 52.5 Tg-$CO_2$-C.[56]

Using energy data from the DPR and the Federal Office of Statistics, gas flaring was calculated to have contributed over 15 Tg-$CO_2$-C. This is more than the emissions from transport, energy use and all other sources combined, except from biomass harvest. In carbon dioxide terms, the gas flaring contribution was 58.1 million tonnes or 50.4% of gross emissions from the energy sector – or 30% of carbon dioxide emissions from all sources - compared with emissions of 51.3 and 5.4 million tonnes of $CO_2$ from the consumption of liquid and gaseous fuels in the sector, respectively.

**Gross carbon dioxide emission and removal in nigeria 1994 (Gg-C)**




The most recent and independent source suggest that the carbon dioxide emissions from gas flaring are higher, at about 70 million tonnes of $CO_2$ annually.[57] For 2000, this figure alone would have made Nigeria the world's 42nd biggest emitter of carbon dioxide from fossil fuel and cement manufacture, ahead of the entire $CO_2$ equivalent emissions from these sources recorded, for example, for Portugal, Switzerland, Sweden and Norway.[58]

In addition to carbon dioxide emissions, the venting of gas gives rise to methane and volatile organic compound emissions. These occur from leaks and from the deliberate release of gas as gas, rather than burning. It is very difficult to find reliable data for these emissions, though the National Communication has acknowledged that once flaring has ended:

*"it is most likely that pipeline leakage emissions may remain the single most significant source of methane, and a substantial contributor to non-methane volatile organic compounds in the country. The control pipeline leak associated methane ($CH_4$) and non-methane volatile organic compounds (NMVOC) emission, has thus become an issue of high priority in the action plans and programs to reduce greenhouse gas emissions and the future potential impacts of climate change in Nigeria. This is especially so when considered along-side other important benefits such as improved ambient air quality, safe and efficient management of natural gas facilities in the Niger Delta."* [59]

54 On page 9 of the Global Gas Flaring Reduction Initiative: Report No.1: Report on Consultations with Stakeholders, World Bank Group in collaboration with the Government of Norway, (c.2002).

55 http://cdiac.esd.ornl.gov/ftp/trends/emissions/ngr.dat. For some unclear reason, zero entries are made by CDIAC after 1989.

56 That is, 52.5 teragrams of carbon dioxide as carbon. One tonne of carbon is equivalent to 3.667 tonnes of carbon dioxide.

57 The Strategic Plan contains the following statement in paragraph 2.5 on page 16: "Current production of 4.6 bcfd is largely wasted with nearly 55 percent or close to 2.5 bcfd being flared. The gross monetary value of this gas is in the order of US$2.5 billion per year to the economy, amounting to US$50 billion over 20 years. The adverse global environmental impact of Nigeria's gas flaring is on the same scale, resulting in roughly 70 million metric tons of CO2 emissions per year. It is a large contributor to local and regional pollution as well as the emissions being a substantial proportion of worldwide Green House Gas (GHG)."

Flaring also contributes significantly to emissions of carbon monoxide and oxides of nitrogen. Along with volatile organic compounds, these three gases are classified by the IPCC as "reactive": their main role is in the formation of tropospheric ozone ($O_3$) – colloquially, photochemical smog or haze, often common in the Delta - which is the third most important greenhouse gas.[60] Figures for these are also included in the National Communication, but again should be treated with caution.

SPDC has also published its own figures of emissions. In the Table abridged on the right from the SPDC's 2003 Annual Report[61], the company's emissions from gas flaring have been unhelpfully described as "hydrocarbons". However, they are stated in the text of the report to include carbon dioxide, nitrogen oxides and methane, and so it may be assumed (on the basis of the comparatively small amounts reported for methane and nitrogen oxides) that almost all of the emissions are of carbon dioxide.[62]

On the basis of its carbon dioxide emissions for 2000, however, SPDC's reported emissions alone would rank it above more than 100 countries of the world, including Ecuador, Estonia, Sri Lanka and Bahrain.[63]

**TABLE 6.3** **EMISSIONS**

| | Units | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|---|---|
| **Oil & gas production** | Mln tonnes | 45.16 | 53.75 | 57.72 | 48.00 | 61.56 |
| **Hydrocarbon emission** | Mln tones | 0.135 | 0.160 | 0.183 | 0.100 | 0.117 |
| **Total emissions of carbon dioxide ($CO_2$)** | '000 tonnes | 18,353 | 21,838 | 22,489 | 15,467 | 18,821 |
| **Total emissions of methane ($CH_4$)** | '000 tonnes | 86.5 | 98.4 | 111.6 | 72.8 | 87.0 |
| **Hydrocarbon emissions (methane + VOC)** | '000 tonnes | 135.3 | 160.2 | 183.3 | 100.4 | 117.2 |
| **Gas flaring (hydrocarbons)** | '000 tonnes | 6,458 | 7,693 | 7,909 | 5,222 | 6,385 |
| **Total emissions of sulphur dioxides (Sox)** | '000 tonnes | 1.5 | 1.7 | 1.8 | 1.1 | 1.1 |
| **Total emissions of nitrogen oxides (NOx)** | '000 tonnes | 20.1 | 17.8 | 27.3 | 22.3 | 23.1 |

Whatever the precise figures, the following statement from the World Bank in 2002 sums up the scale of Nigerian flaring:[64]

*"15. The most striking example of environmental neglect has been in the oil sector, where natural gas flaring has contributed more emissions of greenhouse gases than all other sources in sub-Saharan Africa combined."*

On climate change grounds alone, the practice must stop. It should be noted, however, that simply stopping gas flaring will not mean that greenhouse gas emissions are prevented in the round. Broadly, for a net positive carbon effect, the AG not burned would have to be used to displace coal or oil and not lead to an overall increase in consumption. Whether this will happen depends on many variables, but obviously needless burning of greenhouse gases should be prevented in its own right.

58 This ranking is obtained from the World Resources Institute's Climate Analysis Indicator Tool, available here: http://cait.wri.org.

59 First National Communication to the UNFCCC, November 2003, page 105.

60 It is important to distinguish between tropospheric ozone and stratospheric ozone, both $O_3$. Crudely, ozone in the troposphere (the lowest part of the atmosphere from the surface of the earth up to and average of about 16 km in tropical areas) is bad, as it contributes to climate change; while ozone in the stratosphere (the next region of the atmosphere above the troposphere, to about 50 km), is good, as it absorbs ultra violet radiation from the sun – hence the need to protect the ozone layer. Many of the chemicals that release chlorine atoms into the stratosphere and thus deplete the ozone layer, are also greenhouse gases (often called halocarbons). But it is important to recognize that depletion of the ozone layer and climate change are quite different phenomena, and the former does not cause the latter.

61 SPDC 2003 Annual Report, page 23, "HSE Performance Summary"

62 It is frustrating that whilst SPDC makes a loud noise about how its measurements have been approved and figures audited, it then presents them in an unhelpful manner.

63 This ranking is obtained by comparing the SPDC data for 2000 with data for countries' total carbon dioxide equivalent emissions (excluding land-use change) for that year used in the World Resources Institute's Climate Analysis Indicator Tool (as above). 21.8 million tonnes of carbon dioxide would rank SPDC 73rd in the world amongst countries, immediately ahead of Ecuador (20.7 $MtCO_2$) and below Oman (25.0 $MtCO_2$). Emissions recorded for the other examples are: Estonia, 14.9 $MtCO_2$; Bahrain, 13.8 $MtCO_2$; and Sri Lanka, 11.2 $MtCO_2$

64 Memorandum of the President of the International Development Association and the International Finance Corporation to the Executive Directors on an Interim Strategy Update for the Federal Republic of Nigeria, February 13, 2002, Report No. 23633-UNI ("World Bank Joint Interim Strategy Update), page 4, paragraph 15.

# 7

## GAS FLARING POISONS COMMUNITIES

No comprehensive study is known to have been carried out into the health impacts of gas flaring on communities in the Delta, including the level of pollutants in the food chain. However, communities firmly believe that the flaring is damaging their health, reducing crop production and damaging their homes. While other factors may be at play, the lack of attention paid to this crucial issue, means that villagers' questions and fears are unanswered. Conviction that oil production is such a damaging force fuels community anger against oil companies.

Even in the absence of such a study, however, it is clear that flaring harms people, cattle and the environment. In this section, we describe how this happens.

**Flaring emits a cocktail of toxic substances** Flaring of AG from oil production facilities is like setting a match to an enormous container of lighter fluid. They are so hot that nothing will grow next to them.

Emissions resulting from the combustion of AG in this open, uncontrolled manner will be a mix of smoke, more precisely referred to as **particulate matter**; combustion by-products, including **sulfur dioxide**, **nitrogen dioxides** and carcinogenic substances, such as **benz[a]pyrene** and **dioxin**; and unburned fuel components, including **benzene, toluene, xylene**, and **hydrogen sulfide**. The Canadian Public Health Association has noted over 250 identified toxins.[65]

Environmental and health agencies have published excellent reviews of how exposure to these pollutants impact human health. According to the United States Environmental Protection Agency (U.S. EPA):

*"Many scientific studies have linked breathing **particulate matter** to a series of significant health problems, including: aggravated asthma, increases in respiratory symptoms like coughing and difficult or painful breathing, chronic bronchitis, decreased lung function, and premature death."*[66]

Also, according to the U.S. EPA:

*"It has been clearly established and accepted that exposure to benzene and its metabolites causes acute nonlymphocytic leukemia and a variety of other blood-related disorders in humans."*[67]

**Flaring is likely causing premature deaths and cases of leukemia** It is possible to estimate the extent to which emissions from gas flares are causing health effects among citizens of the Niger Delta. To simplify our analysis, we focus only on citizens of Bayelsa State and their exposure to two pollutants: particulate matter and benzene.

The human health effects of exposure to pollutant emissions from gas flares will be localized to the vicinity of such flares. Therefore, it is important to estimate how much gas each flow station in the Delta flares. Recent data show that the Kolo Creek and Obama flow stations in Bayelsa State flare, on average, approximately 800,000 $m^3$/day of gas.[68] It is reasonable to assume that this is representative of the average quantity of gas flared per flow station in Bayelsa State. Seventeen on-shore flow stations in Bayelsa State have been identified.[69] If each flow station flares an average of 800,000 $m^3$/day, then this would account for 13,700,000 $m^3$/day, which is consistent with recent data about AG production and flaring from on-shore sources in the Western Sector of the oil producing region of the Niger Delta.[70]

It is possible to estimate the impact on ambient air quality of typical 800,000 $m^3$/day flare by examining data obtained by Canadian researchers who measured pollutant emissions of sweet gas flares in Alberta, Canada. Their data showed that: 1) A small flare (8,600 $m^3$/day) would elevate particulate matter levels by 0.23 micrograms/$m^3$ (ug/$m^3$) at a distance of 1,325 meters from such flare; 2) This same flare would elevate benzene levels by 0.025 ug/$m^3$ at a distance of 5,000 meters from such flare.[71] Pollutant emissions are directly proportional to the size of a sweet gas flare. Hence, based on the Canadian data, an 800,000 $m^3$/day sweet gas flare would elevate ambient air levels of particulate matter by 21 ug/$m^3$ at a distance of 1,325 meters from such flare, and would elevate ambient levels of benzene by 2.3 ug/$m^3$.

A substantial number of persons will be exposed to these emissions. Recent data show that the population density of Bayelsa State is roughly 250 persons per square kilometer (km2).[72] Assuming there are 17 on-shore flow stations in Bayelsa State, it is reasonable to assume that, at this population density, 35,000 persons live within 1,325 meters of a flow station, and that 333,000 persons live within 5,000 meters of a flow station.

From this information, it is possible to gauge the extent of human exposure.

According to the World Bank, human exposure to **particulate matter** causes the following increased rates of adverse health effects:

- 6.72 premature deaths per year for each increase of 1 ug/m$^3$ for each 100,000 persons;
- 1,690 respiratory illnesses per year for each increase of 1 ug/m$^3$ for each 100,000 children; and
- 32,600 asthma attacks per year for each increase of 1 ug/m$^3$ for each 100,000 asthma sufferers.[73]

Assuming, conservatively, that 40% of the population of Bayelsa State are children[74] and that 5% of the population are asthma sufferers, **particulate matter emissions** from gas flaring at the 17 on-shore flow stations in Bayelsa State would likely cause, each year, at least:

- **49 premature deaths**
- **4,960 respiratory illnesses among children, and**
- **120,000 asthma attacks**

According to the U.S. EPA., human exposure to 1.0 ug/m$^3$ of benzene represents an elevated 1:100,000 lifetime risk of cancer.[74]

On the same conservative assumptions, **benzene emissions** from gas flaring at the 17 on-shore flow stations in Bayelsa State would likely cause:

- 8 additional cases of cancer

On the basis of current information, the above estimates are the minimum extent of the human toll that gas flaring can reasonably be expected to cause in the Bayelsa State. For the following reasons, it is reasonable to assume that the actual human toll is considerably higher, perhaps by several orders of magnitude:

- Gas flaring occurs at dozens of additional flow stations in the Niger Delta that are outside of Bayelsa State.
- Persons residing substantially closer than 1,325 meters to gas flares will be exposed to levels of particulate matter substantially higher than 21 ug/m$^3$. This population segment will suffer higher rates of premature death, respiratory illnesses among child and asthma attacks.
- Persons residing substantially closer than 5,000 meters to gas flares will be exposed to levels of benzene substantially higher than 2.3 ug/m$^3$. This population segment will suffer higher rates of cancer.
- Additional cases of premature death, respiratory illnesses among children, asthma attacks and cancer will occur from exposure to lower but still significant levels of particulate matter and benzene that occur beyond distances of 1,325 meters and 5,000 meters from gas flares, respectively.
- Gas flaring releases additional pollutants, such as sulfur dioxide, dioxins, nitrogen oxides, toluene, xylene and hydrogen sulfide, which cause other serious health effects that are not quantified in the above analysis.

65 "There have been over 250 identified toxins released from flaring including carcinogens such as benzopyrene, benzene, carbon di-sulphide ($CS_2$), carbonyl sulphide (COS) and toluene; metals such as mercury, arsenic and chromium; sour gas with $H_2S$ and $SO_2$; nitrogen oxides ($NO_X$); carbon dioxide ($CO_2$); and methane ($CH_4$) which contributes to the greenhouse gases." Canadian Public Health Association, Background to 2000 Resolution No. 3, available here: http://www.cpha.ca/english/policy/resolu/2000s/2000/page5.htm

66 http://www.epa.gov/air/urbanair/pm/hlth1.html

67 U.S. EPA (1997) "Carcinogenic Effects of Benzene: An Update." http://www.epa.gov/NCEA/pdfs/benzene.pdf

68 Ishisone, M. (2004) "Gas Flaring in the Niger Delta: the Potential Benefits of its Reduction on the Local Economy and Environment." http://ist-socrates.berkeley.edu/~es196/projects/2004final/Ishone.pdf

69 Nembe Creek, Nembe Creek North, Creek North, Nombe Creek East, Nembe Creek West, Kolo Creek, Etelebou, Non River, Diebu Creek, Opukushi North, Tunn, Beniseide, Brass Oil Terminal, Obama, Tebidoba, Ogoinbiri, Clough Creek.

70 UNDP/World Bank Energy Sector Management Assistance Programme (ESMAP)'s Strategic Gas Plan for Nigeria, February 2004, Appendix 3, Table A.3.3. http://www2.ifc.org/ogmc/files/strategicgasplanfornigeria.pdf.

71 Strosher, M. (November 1996) "Investigations of Flare Gas Emissions in Alberta."

72 Onokerhoraye, A.G. (June 1999) "Access and Utilization of Modern Health Care Facilities in the Petroleum-producing Region of Nigeria: The Case of Bayelsa State." http://www.hsph.harvard.edu/takemi/rp162.pdf

73 World Bank (1997) "Vehicular Air Pollution: Experiences from Seven Latin American Urban Centers," World Bank Technical Paper No. 373, p. 34.

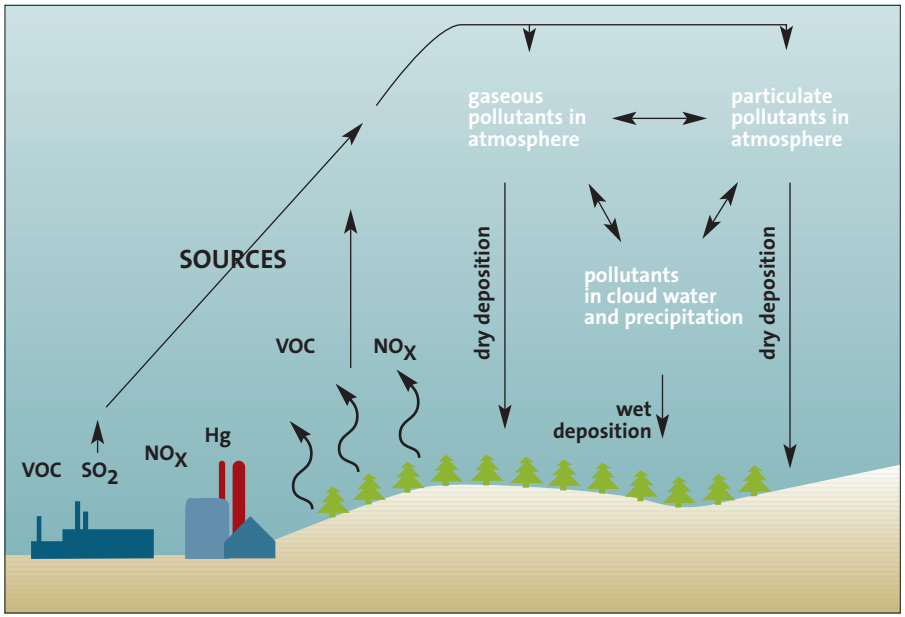
74 According to the CIA World Factbook, 43.4% of Nigeria's population is aged 0-14 years (male 29,985,427; female 29,637,684). Available here: http://www.cia.gov/cia/publications/factbook/geos/ni.html#Intro

75 http://www.epa.gov/iris/subst/0276.htm

# 7

**Flaring causes acid rain** Delta residents have long complained about how their corrugated roofs have been corroded by the composition of the rain that falls as a result of flaring. The primary causes of acid rain are emissions of sulphur dioxide ($SO_2$) and nitrogen oxides ($NO_x$), which combine with atmospheric moisture to form sulfuric acid and nitric acid, respectively. The graphic on the right from the U.S. EPA website shows how acid rain forms.

Acid rain acidifies lakes and streams and damages vegetation. In addition, acid rain accelerates the decay of building materials and paints. Prior to falling to the earth, $SO_2$ and $NO_x$ gases and their particulate matter derivatives, sulfates and nitrates, contribute to visibility degradation and harm public health.[76] In the Delta, an oily hue is often observed on collected rain water.




A recent scientific study links gas flare emissions to the corrosion of infrastructure in the Niger Delta. In this study, a researcher from the Institute of Oceanography, University of Calabar, showed that rain water samples at Ekpene Obo town of Esit Eket local government area, situated close to gas flares in Akwa Ibom State, contained high levels of acidity resulting in corrosion of corrugated roofs. According to the study:

*"an acidic rain of pH 5.4 was measured in a sample from Eket. A comparison of this direct rainfall with the corresponding roof rainfall showed a marked drop in chloride content from 1,050 mg/l in the direct rainwater to 28.4 mg/l in the roof rainwater. This drop is attributed to the reaction between HCl in rain and zinc in roofing material. A similar trend was also found in sulfate concentration, which was attributed to the reaction between $H_2SO_4$ in rainwater and the protective ZNO layer of zinc plated iron roofs. These reactions are responsible for the accelerated rusting of roofing materials in oil producing communities of Southern Nigeria. The main source of these acids in rainwater at Eket, is the Mobil Producing gas flaring operations at nearby onshore and offshore locations. During the wet season, flare gases are carried inland throughout Eket and environs by South West Trade Winds leading to persistent acidic rain in these communities with attendant infrastructural damages."*[77]

The observation that gas flaring in the Niger Delta is causing acid rain is also backed by the U.S government's Energy Information Administration, which states:

*"The continued process of gas flaring has not only meant that a potential energy source – and source of revenue – has gone up in smoke, but it is also a major contributor to air pollution and acid rain."*[78]

Other reasons aside, the toxic emissions which local communities in the Delta face daily from gas flares are a sufficient justification in themselves for ending the practice.

**76** See U.S. EPA: http://www.epa.gov/airmarkets/acidrain/effects/index.html

**77** Akpan, E.R. (2003) "Acidic precipitation and infrastructural deterioration in oil producing communities of Akwa Ibom State: a case study of Eket, South Eastern Nigeria," Global Journal of Environmental Sciences, 2(1):47-52. http://www.ajol.info/view article.php?id=6024&jid=11&layout=abstract

**78** Also available here: http://www.eia.doe.gov/emeu/cabs/nigenv.pdf

8

**FLARING IS A VIOLATION OF HUMAN RIGHTS**

As Section 7 above makes clear, gas flaring exposes people who live near flares, as well as those who live in the Delta, to a cocktail of toxins which threaten their health and livelihoods. The psychological and physical effects of roaring sounds and intense heat are also significant, as well as property damage. At the same time, no information is provided to the people of the Delta on the hazards to which they are exposed from flaring, no information is readily available, and even organisations such as ERA have huge practical and logistical obstacles in accessing information, often put in their way by government officials, even when seeking access to environmental impact assessments.

These matters constitute violations of human rights.

Under the 1999 Constitution of the Federal Republic of Nigeria, Article 20 provides that:

*"The State shall protect and improve the environment and safeguard the water, air and land, forest and wild life of Nigeria."*

and guarantees, for example, the fundamental rights to life (Article 33) and to dignity (Article 34).

Moreover, Nigeria has incorporated into its law[79] the African Charter on Human and Peoples' Rights, which provides, for example:

***"Article 16***
*1. Every individual shall have the right to enjoy the best attainable state of physical and mental health.*
*2. States Parties to the present Charter shall take the necessary measures to protect the health of their people and to ensure that they receive medical attention when they are sick.....*

***Article 24***
*All peoples shall have the right to a general satisfactory environment favourable to their development.*

***Article 25***
*States Parties to the present Charter shall have the duty to promote and ensure through teaching, education and publication, the respect of the rights and freedom contained in the present Charter and to see to it that these freedom and rights as well as corresponding obligations and duties are understood."*

The African Commission on Human and Peoples' Rights has set out its views on the relationship of human rights and environmental protection in the landmark case of *The Social and Economic Rights Action Center for Economic and Social Rights v. Nigeria.*[80]

This case concerned mainly SPDC operations in Ogoniland which had resulted in environmental degradation and health problems; in illegal disposal of toxic wastes, poisoning land and water; and in the government putting its military and legal powers at the disposal of the oil companies, which had led to several crimes, including the killing of Ogoni leaders and other civilians.

Nigeria was found to have breached the rights to environment under Article 24, to enjoy the rights guaranteed by the Charter without discrimination (Article 2), to life (Article 4), to property (Article 14), to health (Article 16), to housing (implied in Article 18), to food (Articles 4, 16, 22), and the right of peoples to freely dispose of their wealth and natural resources (Article 21).

We cite below two extensive extracts from the Decision in this case, in order for readers to appreciate the far-reaching obligations of the Nigerian government and the companies in relation to human rights violations from gas flaring, both generally and specifically in respect of Articles 16 and 24.

The following extract from the Commission's Decision gives a general indication of the obligations (footnotes omitted):

*"43. The present Communication alleges a concerted violation of a wide range of rights guaranteed under the African Charter for Human and Peoples' Rights. Before we venture into the inquiry whether the Government of Nigeria has violated the said rights as alleged in the Complaint, it would be proper to establish what is generally expected of governments under the Charter and more specifically vis-à-vis the rights themselves.*

*44. Internationally accepted ideas of the various obligations engendered by human rights indicate that all rights-both civil and political rights and social and economic-generate at least four levels of duties for a State that undertakes to adhere to a rights regime, namely the duty to respect, protect, promote, and fulfil these rights. These obligations universally apply to all rights and entail a combination of negative and positive duties. As a human rights instrument, the African Charter is not alien to these concepts and the order in which they are dealt with here is chosen as a matter of convenience and in no way should it imply the priority accorded to them. Each layer of obligation is equally relevant to the rights in question.*

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*45. At a primary level, the obligation to respect entails that the State should refrain from interfering in the enjoyment of all fundamental rights; it should respect right-holders, their freedoms, autonomy, resources, and liberty of their action. With respect to socio economic rights, this means that the State is obliged to respect the free use of resources owned or at the disposal of the individual alone or in any form of association with others, including the household or the family, for the purpose of rights-related needs. And with regard to a collective group, the resources belonging to it should be respected, as it has to use the same resources to satisfy its needs.*

*46. At a secondary level, the State is obliged to protect right-holders against other subjects by legislation and provision of effective remedies.[4] This obligation requires the State to take measures to protect beneficiaries of the protected rights against political, economic and social interferences. Protection generally entails the creation and maintenance of an atmosphere or framework by an effective interplay of laws and regulations so that individuals will be able to freely realize their rights and freedoms. This is very much intertwined with the tertiary obligation of the State to promote the enjoyment of all human rights. The State should make sure that individuals are able to exercise their rights and freedoms, for example, by promoting tolerance, raising awareness, and even building infrastructures.*

*47. The last layer of obligation requires the State to fulfil the rights and freedoms it freely undertook under the various human rights regimes. It is more of a positive expectation on the part of the State to move its machinery towards the actual realisation of the rights. This is also very much intertwined with the duty to promote mentioned in the preceding paragraph. It could consist in the direct provision of basic needs such as food or resources that can be used for food (direct food aid or social security).*

*48. Thus States are generally burdened with the above set of duties when they commit themselves under human rights instruments. Emphasising the all embracing nature of their obligations, the International Covenant on Economic, Social, and Cultural Rights, for instance, under Article 2(1), stipulates exemplarily that States "undertake to take steps...by all appropriate means, including particularly the adoption of legislative measures." Depending on the type of rights under consideration, the level of emphasis in the application of these duties varies. But sometimes, the need to meaningfully enjoy some of the rights demands a concerted action from the State in terms of more than one of the said duties."*

The Commission went on to consider the requirements arising out of the rights in Articles 16 and 24:

*51. These rights recognise the importance of a clean and safe environment that is closely linked to economic and social rights in so far as the environment affects the quality of life and safety of the individual. As has been rightly observed by Alexander Kiss, 'an environment degraded by pollution and defaced by the destruction of all beauty and variety is as contrary to satisfactory living conditions and the development as the breakdown of the fundamental ecologic equilibria is harmful to physical and moral health.'*

*52. The right to a general satisfactory environment, as guaranteed under Article 24 of the African Charter or the right to a healthy environment, as it is widely known, therefore imposes clear obligations upon a government. It requires the State to take reasonable and other measures to prevent pollution and ecological degradation, to promote conservation, and to secure an ecologically sustainable development and use of natural resources. Article 12 of the International Covenant on Economic, Social and Cultural Rights (ICESCR), to which Nigeria is a party, requires governments to take necessary steps for the improvement of all aspects of environmental and industrial hygiene. The right to enjoy the best attainable state of physical and mental health enunciated in Article 16(1) of the African Charter and the right to a general satisfactory environment favourable to development (Article 16(3)) already noted obligate governments to desist from directly threatening the health and environment of their citizens. The State is under an obligation to respect the just noted rights and this entails largely non-interventionist conduct from the State for example, not from carrying out, sponsoring or tolerating any practice, policy or legal measures violating the integrity of the individual.*

*53. Government compliance with the spirit of Articles 16 and 24 of the African Charter must also include ordering or at least permitting independent scientific monitoring of threatened environments, requiring and publicising environmental and social impact studies prior to any major industrial development, undertaking appropriate monitoring and providing information to those communities exposed to hazardous materials and activities and providing meaningful opportunities for individuals to be heard and to participate in the development decisions affecting their communities."*

This Decision of the African Commission is in line with many other decisions of tribunals and constitutional and legal instruments around the world, that have consistently recognised the importance of human rights in an environmental context, such as the UN Human Rights Committee, the Inter-American Commission and Court of Human Rights, the European Court of Human Rights, the Indian Supreme Court, the Bangladesh Supreme Court, the South African Constitution and the Aarhus Convention.

It is also worth noting that in its Decision, the Commission stated at paragraph 42 that the Nigerian government had said that:

*"in their Note Verbale referenced 127/2000 submitted at the 28th session of the Commission held in Cotonou, Benin, [it] admitted to the violations committed then by stating, "there is no denying the fact that a lot of atrocities were and are still being committed by the oil companies in Ogoni Land and indeed in the Niger Delta area".*

Not only does gas flaring amount to a breach of several human rights, but taking these human rights into account when issuing ministerial certificates to flare, and in environmental impact assessment approvals, is also legally necessary.

In addition, in our view it is unacceptable for the ending of a practice that is a violation of human rights and illegal to be treated as a valid basis for a Clean Development Mechanism (CDM) project under the UNFCCC, even if all other requirements could be met (which we doubt). It brings the CDM into disrepute if it is to be used as a mechanism to allow benefits to flow from stopping activities which should never have been occurring in the first place.

79 African Charter on Human and Peoples' Rights (Ratification & Enforcement) Act, 1990

80 Decision Regarding Communication No. 155/96, African Commission on Human and Peoples' Rights (ACHPR/COMM/A044/1, 27 May 2002). The text of the Decision can be accessed here: http://www1.umn.edu/humanrts/africa/comcases/155-96.html#_ftn2

9

## GENERAL FLARING IS PROHIBITED UNDER THE REGULATIONS

**The flaring of AG in Nigeria has been in general and in principle prohibited for over twenty years**

The current regulatory position is that flaring of AG in principle and generally has been illegal since 1984. However, the Minister has power to disapply the general prohibition in respect of a particular field or fields by issuing a certificate, if the minister is satisfied that utilization or re-injection of the produced gas is not appropriate or feasible in that field(s).

This regulatory position has been reached in four distinct steps:

**(1) Before 1969**: no regulation;

**(2) From 1969 until September 1980:** gas utilization feasibility studies, programmes or proposals that an operator may have had were to be submitted to the Minister;

**(3) From October 1980 to December 1983:** detailed programmes and plans for reinjection or utilization had to be submitted to the Minister; and

**(4) Since January 1984:** the flaring of AG has been prohibited unless the Minister has lawfully issued a field(s)-specific ministerial certificate.

We outline in this section the legislative history in this regard.

The primary and framework legislation governing oil and gas activities in Nigeria is the Petroleum Act. Under section section 9(1)(b)(iii) of that Act, the Minister has the power to make regulations providing for matters relating to licences, including prevention of pollution of the atmosphere.

Under the Petroleum (Drilling and Production) Regulations 1969, made under that Act, Regulation 42 provides that:

*"not later than five years after the commencement of production from the relevant area, the licensee or lessee shall submit to the minister, any feasibility study, programme or proposals that he may have for the utilization of any natural gas, whether associated with oil or not, which has been discovered in the relevant area".*

This provision was strengthened by the Associated Gas Reinjection Act, 1979. Section 2(1) of that Act provides:

*"Not later than 1st October, 1980, every company producing oil and gas in Nigeria shall submit to the minister, detailed programmes and plans for either-*

*(a) the implementation of programmes relating to the re-injection of all produced associated gas; or*

*(b) schemes for viable utilization of all produced associated gas."*

Section 3 of the same Act provided as follows:

*"(1) Subject to subsection 2 of this section, no company engaged in the production of oil or gas shall after 1st January, 1984 flare gas produced in association with oil without the permission in writing of the Minister.*

*(2) Where the Minister is satisfied after 1st January 1984 that utilization or re-injection of the produced gas is not appropriate or feasible in a particular field or fields he may issue a certificate in that respect to a company engaged in the production of oil or gas-*

*(a) specifying such terms and conditions as he may at his discretion choose to impose, for the continued flaring of gas in the particular field or fields; or*

*(b) permitting the company to continue to flare gas in the particular field or fields if the company pays such sum as the Minister may from time to time prescribe for every 28.317 standard cubic metres (SCM) of gas flared: provided that any payment due under this paragraph shall be made in the same manner and be subject to the same procedure as for the payment of royalties to the Federal Government by companies engaged in the production of oil."*

With effect from January 1985, the Associated Gas Re-injection (Continued Flaring of Gas) Regulations 1984 provided that:

*"1.....the issuance of a certificate by the Minister under section 3 (2) of the Associated Gas Re-Injection Act, for the continued flaring of gas in a particular field or fields, shall be subject to any one or more of the following conditions, that is -*

*(a) where more than seventy-five per cent of the produced gas is effectively utilized or conserved;*

*(b) where the produced gas contains more than fifteen per cent impurities, such as $N_2$, $H_2S$, $CO_2$, etc. which render the gas unsuitable for industrial purposes;*

*(c) where an on-going utilization programme is interrupted by equipment failure: provided that such failures are not considered too frequent by the Minister and that the period of any one interruption is not more than three months;*

*(d) where the ratio of the volume of gas produced per day to the distance of the field from the nearest gas line or possible utilization point is less than 50,000 SCF/KM: Provided that the Gas to Oil ratio of the field is less than 3,500 SCF/bbl, and that it is not technically advisable to re-inject the gas in that field;*

*(e) where the Minister, in appropriate cases as he may deem fit, orders the production of oil from a field that does not satisfy any of the conditions specified in these Regulations.*

*2. The Minister may, from time to time, review, amend, alter, add to or delete any provision of these Regulations as he may deem fit."*

It should be noted that the above Regulations apply to ministerial certificates to permit flaring, regardless of whether a payment is made under section 3(2) of the 1984 Act.

To date, despite requests by ERA, neither the Big 5 companies nor the NNPC have disclosed whether any such Ministerial certificates have been issued, nor have they disclosed such certificates for their lawfulness to be assessed. The current position, as far as the public is concerned, is therefore that the lawfulness of the continued flaring has not been demonstrated.

Under the regulations - **quite apart from illegalities based on human rights legislation (see further below), and quite apart from the lawfulness of the Minister determining a generic 'flares out date' when the regulations have prohibited the practice in general for the last 20 years** - there are, broadly, many possible bases upon which continued flaring may be illegal. For example:

- No ministerial certificate has been issued;
- A ministerial certificate has been issued other than on a particular field or fields basis;
- A ministerial certificate has been issued without a lawful basis for the Minister being satisfied that utilization or re-injection is not appropriate or feasible in respect of that particular field(s);
- A ministerial certificate has been issued without compliance with the Associated Gas Re-injection (Continued Flaring of Gas) Regulations 1984;
- Flaring of gas is occurring without compliance with those Regulations;
- Flaring of gas is occurring without the company having submitted detailed programmes and plans for the implementation of reinjection programmes or schemes for viable AG utilization.

In other words, **even if a ministerial certificate has been issued, and even if payments are being made by the companies to continue to flare, flaring may still be illegal under the regulations.** Until, in particular, the ministerial certificates have been disclosed, along with the information on which their issuance was based, the public is not able to satisfy itself that the regulations have been complied with. **Given the failure of the companies and the NNPC to disclose the certificates, regulatory compliance has not been demonstrated and it is reasonable for the public to assume, without further information, that it cannot be demonstrated.**

It is worth noting that there seems to be widespread agreement that the payments made by the companies to continue to flare have not been effective, and are tiny compared to the loss of revenue to Nigeria.

For example, in the First National Communication to the UNFCCC, the Federal Ministry of the Environment states[80]:

*"There has been various attempts by the government to reduce gas flaring in the past, including introduction of penalties for the amount of gas flared by the producing companies. These have had only little effects."*

And here is what the World Bank says about these payments[82]:

*"In accordance with the Associated Gas Reinjection Act 1979, a fee is charged for flaring. This was first set at 0.50 Naira per million cubic feet (mcf) but effective January 1998 is 10 Naira per mcf, which at November 2003 exchange rates is equivalent to US$0.076 per mcf. This sum is payable in the same way as royalty—in foreign currency into the designated foreign account into which royalties are paid. It is worthwhile noting that in recent years oil companies in Nigeria have been charged a total of between 20 million and 50 million Naira (or US$150,000–370,000) annually for flaring associated gas. However, this has to be seen in the overall context of gas flared. A recent study carried out for the Bureau of Public Enterprises of Nigeria estimated that each year the country loses between US$500 million and US$2.5 billion to gas flaring."*

# 9

Alongside the gas flaring regulations, section 2(2) of the Environmental Impact Assessment Act (Decree No. 86 of 1992) requires an environmental impact assessment (EIA) to be carried out:

*"where the extent, nature or location of a proposed project or activity is such that it is likely to significantly affect the environment".*

An EIA is compulsory in certain cases including oil and gas fields development and construction of oil refineries, some pipelines, and processing and storage facilities. The Federal Environmental Protection Agency is the competent authority for EIA purposes, apparently in conjunction with the Ministry of Petroleum Resources which has a clear and unacceptable conflict of interest.

According to the World Bank:
*"The issue of atmospheric emissions must be addressed in the EIA prepared in support of the overall production plan. Standards for gaseous emissions from E&P activities are prescribed by the Effluent Limitation Regulations 1991. In summary, the maximum natural gas emission levels for upstream operations are set at 5,000 mg m-3, with a flaring emission limit of 5 mg/m3 hydrocarbons. Other operational restrictions are included in guidelines."*

The World Bank has made the following comments on the relationship between the gas flaring regulations and EIA requirements:
*"With the implementation of Decree No. 86 of 1992, EIAs have become an integral part of the planning process and are mandatory for the development of oil and gas fields. Permits to flare are, therefore, now granted in the context of EIA procedures, which are overseen by the Federal Environmental Protection Agency (FEPA) and the DPR. FEPA's EIA Guidelines for Exploration and Production (E&P) Projects 1994 state that mitigating measures to preserve air quality must specifically include the minimization of venting during production.*

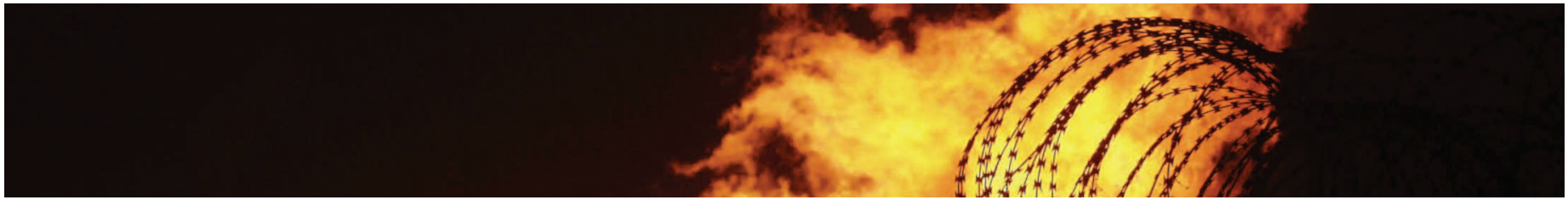
*In effect, petroleum operators are subject to two sets of regulatory provisions, with no clear precedence of one over the other having been established. Jurisdictional conflicts between FEPA and the Environmental Branch of the Department of Petroleum Resources are currently being addressed. The DPR's Environmental Branch now operates in conjunction with FEPA and it is understood that FEPA has played an active role in the review of the draft Environmental Guidelines for the Petroleum Industry. FEPA and DPR have the right to carry out inspections of industrial installations where reasonable grounds exist for believing that environmental degradation is taking place. Furthermore, FEPA and DPR are the competent authorities with regard to managing the EIA procedure."*

No confidence in the enforcement of gas flaring regulation and in the adequacy of EIA procedures will be possible for as long as the Ministry of Petroleum Resources continues its dual roles.

81 Section 3.2.1, page 41.

82 Global Gas Flaring Reduction Initiative: Report No.3: Regulation of Associated Gas Flaring and Venting – a Global Overview and Lessons (World Bank, March 2004), page 64.

# 10

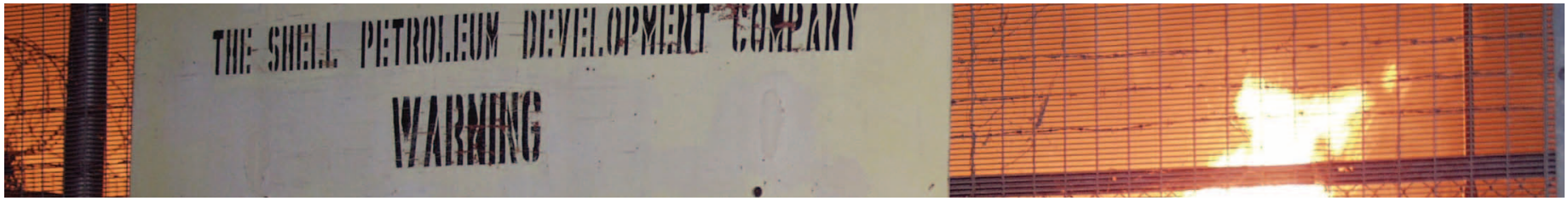


## CONCLUSION

**In our view:**

- Flaring must stop immediately. Its continuation is not only humanly and environmentally harmful, but also constitutes a huge source of revenue loss to the people and government of Nigeria.
- Exploration and new oil field development must end until facilities are in place for the utilization of all associated gas.
- Legal obligations must be imposed to require associated gas to be used at the Bonny LNG Plant before any further, and in the West African Gas Pipeline before any, non-associated gas is used.
- A full account should be given by SPDC of how its flaring was affected by Shell's concealment strategy over its reserves, including publication of the full Davis Polk & Wardwell Report.
- All ministerial certificates, if any, that have purported to allow flaring must be disclosed by the Big 5 companies and NNPC.
- Ministers issuing flaring certificates, if any, must disclose how they considered the human rights of communities before they issued such certificates.

And finally, every employee, and particularly senior management, of the Big 5 companies and NNPC should visit a flare site and stand next to a flare for as long as they can endure it. As sentient creatures, they can only have one reaction.

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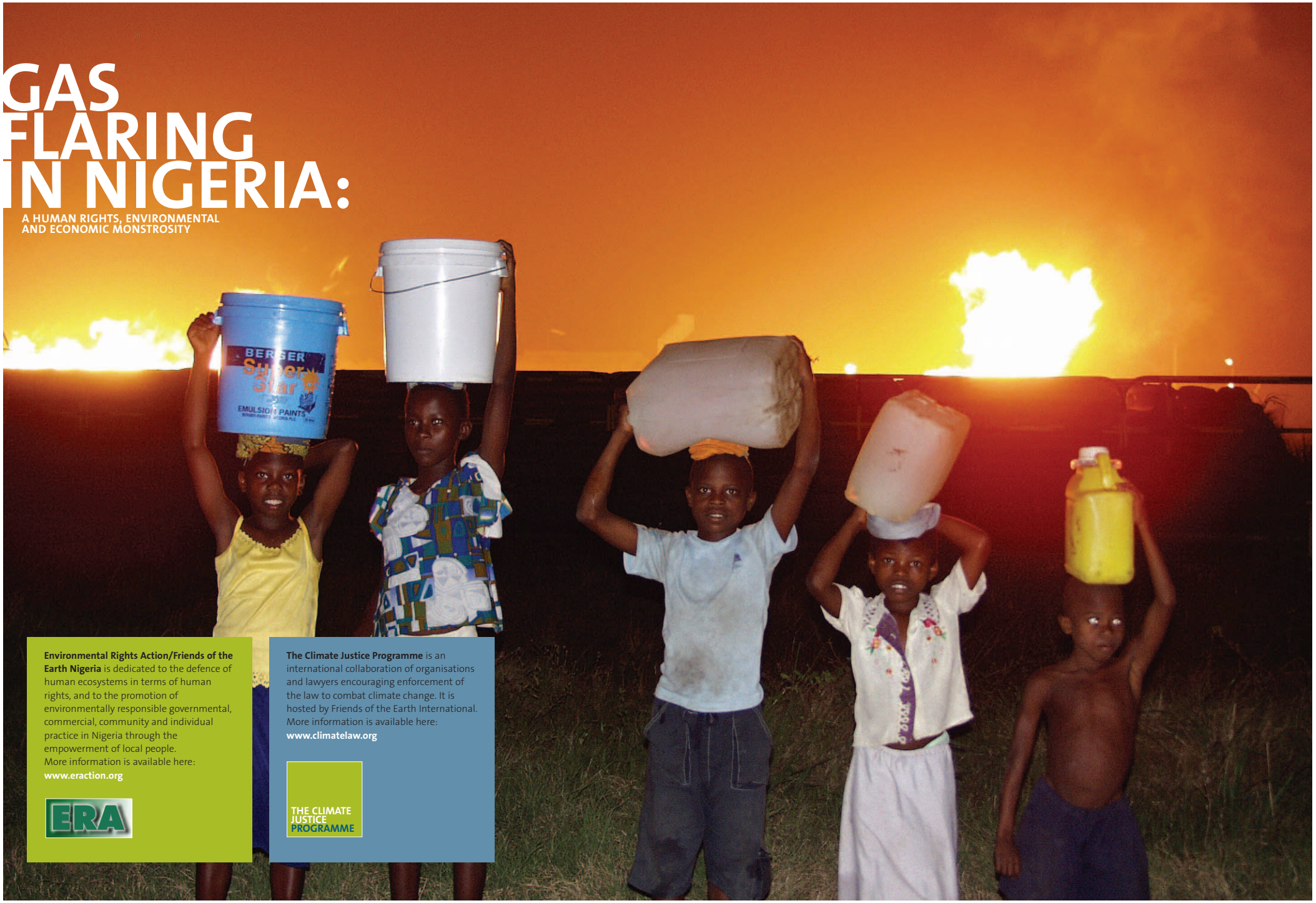
# GAS FLARING IN NIGERIA:

## A HUMAN RIGHTS, ENVIRONMENTAL AND ECONOMIC MONSTROSITY

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