Royal Dutch Shell and its sustainability troubles

Background report to the Erratum
of Shell's Annual Report 2010

Milieudefensie - Friends of the Earth Netherlands

Colophon

May 2011

This report is made on behalf of Milieudefensie
(Friends of the Earth Netherlands)

Author: Albert ten Kate, freelance researcher
corporate social responsibility
Pesthuislaan 61
1054 RH Amsterdam
phone: (+31)(0)20 489 29 88
mobile: (+31)(0)6 185 68 354
e-mail: atk@antenna.nl

This document has been produced with the financial assistance of the European Union. The contents of this document are the sole responsibility of Milieudefensie and can under no circumstances be regarded as reflecting the position of the European Union.

Contents

Introduction

Measured in revenue, Royal Dutch Shell is one of the biggest companies in the world. According to its annual report of 2010, its revenue amounted to USD 368 billion in 2010.

Shell produces oil and gas in 30 countries, spread over the world. Downstream, the company is engaged in manufacturing, distribution and marketing of oil products and chemicals. It employed an average of around 97,000 people in over 90 countries during 2010.

Shell encounters a wide range of sustainability issues throughout its operations: climate change, the rights of indigenous people, the livelihood and well-being of nearby communities, health problems, endangered species, working conditions, corruption, interfering with politics, all kinds of pollution, increasing pressure on land for bio-fuels, biodiversity, safety, paying taxes etc.

This report comprises 12 sustainability cases on Royal Dutch Shell. Some cases relate to a specific sustainability issue, for example the cases on climate change or interfering with politics. Other cases reflect specific operations of the company in a certain geographical area, where one or more sustainability issues are at stake.

This report provides the background information for another report: Erratum of Shell's Annual Report 2010. This shorter report can also be found on www.milieudefensie.nl/english/shellinnigeria

It was not possible to include all sustainability problems surrounding Shell, during the course of writing this report. Shell is a huge company, limited information is publicly available, and for this project there was limited time to explore cases more in-depth than through desk research. Though not complete, this report however covers some of the main sustainability issues encountered by Shell.

Several people from NGOs that are involved with one of the 12 sustainability cases in this report, offered suggestions and comments to parts of this report. Thank you all!

Special thanks go out to Evert Hassink of Friends of the Earth Netherlands for his suggestions and comments on the whole bit.

Albert ten Kate
May 2011

Methodology

Selection of issues

In a quick scan, more than 20 sustainability cases with regard to Shell's operations worldwide were roughly assessed. Out of these issues, in cooperation with the initiators of this project, 12 issues were chosen for further research. The selection was based on available information of the risks that Shell may impact the environment, people and society negatively.

Research

The research on the 12 sustainability cases has been limited to desk research. The desk research comprised:

- Screening of all website content Royal Dutch Shell (news releases, speeches, annual reports, sustainability reports, Shell Venster magazine etc.).
- Screening of all the Wikileaks cables for content on Royal Dutch Shell via http://cablesearch.org/
- Assessing the online library of news articles and leaked documents (over 25,000 articles and documents) about Royal Dutch Shell via http://royaldutchshellplc.com (This is not a Shell website nor is it officially endorsed by or affiliated with Shell in any way).
- Use of web search engines to find information on each of the cases: NGO-reports, reports governmental institutions, newspaper articles, court documents, scientific papers etc. As much as possible the original source of information was retrieved.
- Use of archives Friends of the Earth Netherlands.
- Use of databases to assess scientific articles.
- Contacting several NGOs that are involved with cases as described in the reports.

This report has not been reviewed by Shell before publication.

Case 1
Muddling through in Nigeria

Shell in Nigeria

In oil production, Nigeria is the most important country for Shell. During the period 2006-2010, Nigeria accounted for about 16% of Shell's worldwide production of oil and liquid natural gas. During the year 2009, production falls due to disrupting activities by militant groups in the Niger Delta reached their peak for the time being. During the year 2010, production climbed back again, with Nigeria accounting for almost 19% of Shell's worldwide production of oil and liquid natural gas.[1]

Nigeria's share in the profits of Royal Dutch Shell has been estimated at an annual average of USD 1.8 billion over the period 2005–2009, representing 7.3% of Shell's total profit and 10.4% of its profits from upstream operations.[2] Shell's business in Nigeria seems to do well.

Shell's Nigerian activities are divided among three companies. The largest is the Shell Petroleum Development Company of Nigeria Ltd (SPDC). SPDC is also Nigeria's largest oil and gas joint venture. Most of its oil production takes place onshore in the Niger Delta. Shell is the operator of SPDC and has a 30% stake in the joint venture.[3] SPDC has been pumping oil for more than 50 years in the Niger Delta. The other businesses of Shell in Nigeria refer to liquefied natural gas (LNG) for export, and offshore oil operations (among other the Bonga field). This case focuses on Shell's onshore activities in the Niger Delta. This is the area where most environmental problems are manifested (such as oil spills and gas flares) and where oil production has caused severe conflicts.

The Niger Delta, resembling the South of Nigeria, is made up of fertile wetlands. It is one of the most densely populated regions of Africa. It has more than 30 million inhabitants. Subsistence farming and fishing are the mainstay of the people. The number of communities hosting oil / gas facilities in the Niger Delta is estimated at 1,500.[4]

The SPDC-activities in the Niger Delta, as operated by Shell, are spread over some 30,000 square kilometres (about three-quarters the size of the Netherlands) and include a network of more than 6,000 kilometres of flowlines and pipelines, 86 oil fields, 1,000 producing wells, 68 flowstations, 10 gas plants and two major oil export terminals at Bonny and Forcados.[5]

Nigeria is a poor en corrupt country. It ranks number 142 (out of 169 countries) in the Human Development Index of the United Nations[6] and number 134 (out of 178 countries) in the Corruption Perceptions Index.[7] Over-reliance on crude oil and gas (accounting for about 95 per cent of foreign earnings and over 80 per cent of federal budget) has weakened investment in other vibrant sectors of the economy, including agriculture. The oil sector employs just one per cent of the labour force. Many reports and studies have reiterated that, despite its vast resources, Nigeria ranks among the countries with the widest gap between their poorest and richest citizens. Its 54.4 percent official poverty prevalence translates to about 70 million poor persons. Within the last decade the traditional challenges facing Nigeria – mass poverty and unemployment, absence of transformation and prevalence of high inequality – have remained largely unchanged.[8]

Case 1a
Oil spills

Oil spills in the Niger Delta

Oil spills from oil installations (pipelines, flowlines, well-heads, flowstations, storage tanks etc.) occur at a regular basis in the Niger Delta, some ten times a week. According to the National Oil Spill Detection and Response Agency (NOSDRA), oil companies reported 2,054 cases of oil spill incidents (spills of more than one barrel) between June 2006 and June 2010.[9]

Human suffering

Amnesty International has concluded that the oil companies in the Niger Delta are linked to violations of several internationally recognized human rights as stipulated by the United Nations. These rights comprise the right to food, the right to work, the right to an adequate standard of living, and the right to health and a healthy environment.[10] Audrey Gaughran, Amnesty International's Head of Business and Human Rights, describes the impacts of oil spills on communities as follows: "People living in the Niger Delta have to drink, cook with and wash in polluted water. They eat fish contaminated with oil and other toxins – if they are lucky enough to be able to still find fish. The land they farm on is being destroyed. After oil spills the air they breathe smells of oil, gas and other pollutants. People complain of breathing problems and skin lesions – and yet neither the government nor the oil companies monitor the human impacts of oil pollution".[11]

Shell's spill data

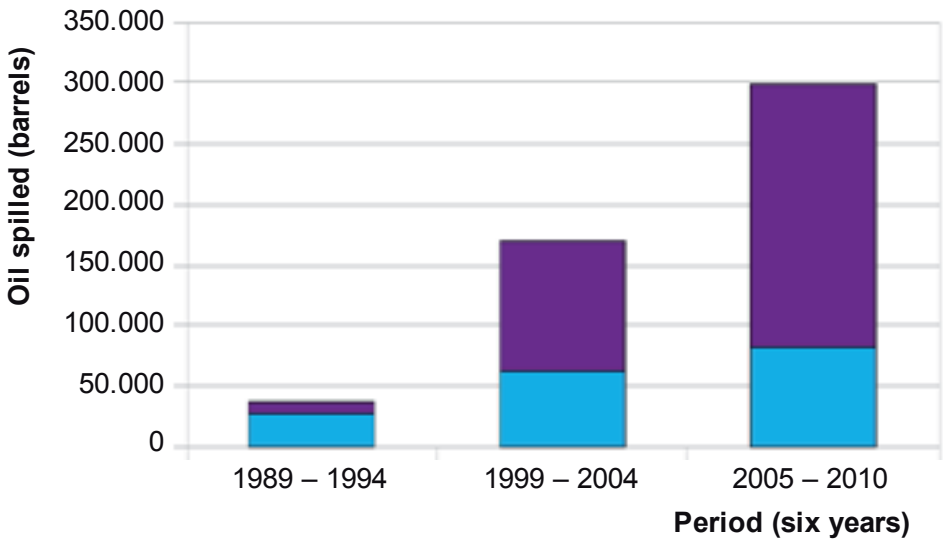
Shell experiences some 150 to 200 oil spills each year[12], spread out over the Niger Delta and affecting several communities.

According to Shell, the volume of oil spilled from Shell-installations in the Niger Delta has been increasing over the years:

- In the period 1989-1994 (six years), SPDC recorded a total of 37,000 barrels of oil spilled. Shell attributed 72% of this volume to ageing facilities and operational failures, and 28% to sabotage.[13]
- Over the period 1999-2004 (six years), Shell's spillage totalled around 169,000 barrels. Shell attributed 63% of this volume to sabotage/theft by third parties and 27% to its own operational failures.[14]
- Over the period 2005-2010 (six years), the total spillage amounted to 299,000 barrels. Shell claims that 72% of the spillage was due to sabotage/theft by third parties.[15]

Over the years, Shell has been using some other figures. For example, during 2009 the company stated that some 85% of the volumes of oil spilled was caused by sabotage/theft.[16] Sometimes Shell related this percentage to 2008, sometimes it would not specify the time period. It was not until May 2010 that Shell in Nigeria revealed that its updated data for the year 2008 showed that 48% of the volume was caused by sabotage/theft.[17]

Figure: Development of oil spill volumes from Shell-installations in Nigeria, according to Shell



Probably due to ongoing public pressure, in 2011 Shell has started to publicly register all the spills that have occurred in the Niger Delta, including photographs and the report by the Joint Investigation Team.[18] The Joint Investigation Team (JIT) is the team that visits the site, after a leak occurs. The team comprises government agencies, SPDC and representatives of impacted communities. It determines the spread, the volume and the cause of the spill. During 2008 and 2009, SPDC spilled more than 100,000 barrels of oil.[19] During 2010 (27,580 barrels) and 2011 so far (around 6,000 barrels as of 28 April), the volume has decreased. This can partly be explained by the amnesty given to militants in Bayelsa State and Delta State in late 2009. Since then, explosions of pipelines have decreased drastically.[20]

Oil spill data Shell challenged

In January 2011, Amnesty International and Friends of the Earth International filed a complaint against Shell at the Dutch and UK National Contact Points dealing with the OECD Guidelines. They claim that Shell's misleading and incomplete reporting about oil spills in the Niger Delta constitutes a breach of the OECD Guidelines, specifically Sections III (Disclosure) and VII (Consumer Interests) as well as Section V (Environment). The complainants state that the oil spill investigation system – on which Shell bases its data – is totally lacking in independence. Both organisations found that in many cases oil companies have significant influence on determining the official cause of a spill. The complainants also allege that Shell, in several communications, has used misleading figures (70%, 85%, 90% and 98%) to attribute pollution and contamination to sabotage. According to Amnesty International and Friends of the Earth International, the implications of Shell's repeated claims are both serious and negative for the communities of the Niger Delta. Firstly, when spills are classified as the result of sabotage Shell has no liability or responsibility with respect to compensation for damage done to people or their livelihoods. Secondly, these figures have tended to be used by Shell to deflect attention away from legitimate criticism of its own environmental and human rights impact in the Niger Delta and as such to mislead key stakeholders – including consumers of Shell's products and investors in the company.[21]

The OECD Guidelines are meant for multinational enterprises that are based in OECD member countries, accession candidate countries and enhanced engagement countries, and/or with activities in these countries. The United Kingdom and the Netherlands are OECD member countries; Nigeria is not present in any of the country categories mentioned above.[22] The OECD guidelines cover standards on labour rights, human rights, the environment, consumer protection, and corruption.[23] National Contact Points (NCPs) handle the complaints from organizations and individuals concerning alleged violations of the guidelines. At the end of mediation between the bringer of a complaint and the defendant company, the NCP may publish a final statement with its conclusion on the alleged violation of the OECD Guidelines. It used to take a few years before NCPs would come to a final statement. Recently, however, NCPs have promised to speed up their process.

Pending court case in the Netherlands

In November 2008 and May 2009, four Nigerian citizens and Friends of the Earth Netherlands/Nigeria filed a civil lawsuit against Shell in a Dutch court. The plaintiffs in the "People of Nigeria versus Shell" lawsuit accuse Shell of negligence with regard to the prevention and proper clean-up of oil spills. The four Nigerians, farmers and fishers, reside from the villages of Goi, Oruma and Ikot Ada Udo in the Niger Delta. Oil from Shell-installations has leaked onto their fields and into their fish ponds. The plaintiffs want Shell to prevent any spills in the future and to clean up the remainder of the pollution. They want to fish and farm once again.[24]

It is the first time that a Dutch company's liability for pollution overseas is asserted in a Dutch court. The following Shell-companies were summoned: Royal Dutch Shell plc (head quartered in the Netherlands); Shell's subsidiary in Nigeria; the predecessors of Royal Dutch Shell (Koninklijke Olie BV en Shell Transport and Trading). In May 2009, Shell stated that its subsidiary in Nigeria is a Nigerian company, and thus not required to appear before a Dutch court. There was a court session on this matter. In December 2009 and February 2010, the court dismissed Shell's arguments that the Dutch court would not be authorised to rule on its Nigerian subsidiary. The plaintiffs had overcome the first hurdle in this groundbreaking case.
Presently pending is the issue on Shell's exhibition of evidence papers. Much information in relation to the oil spills that occurred near Goi, Oruma and Ikot Ada Udo resides within Shell. Already in May 2008, the lawyer representing the farmers and Friends of the Earth had asked Shell to disclose these evidence papers. Some papers were handed over by Shell, and many papers were not. Therefore, in March 2010 the lawyer asked the court to force disclosure of the evidence papers by Shell. Shell replied by saying that there are several formal reasons why it can't or won't hand over the evidence papers, and that it might appeal a decision by the court on this matter. On 19 May 2011, the court session will take place, with a decision expected in summer 2011. Most probably at the beginning of 2012 the court will finally be able

to focus on the core issue: has Shell been negligent with regard to the oil spills?[25]

Shell's double standard

Asset integrity work is a term for improving the quality of the pipelines, well-heads, flowlines, flowstations and terminals to get the oil out of the ground and export it. In 2007, the managing director of SPDC, Basil Omiyi, was quite clear about the integrity of SPDC's assets: "We do (...) have a substantial backlog of asset integrity work to reduce spills and flaring."[26] There have been a few attempts to get to know more about the (poor) status of Shell's assets to reduce spills, and its plans for improvement.

In 2004, questioned by the NGO Christian Aid, a Shell Vice-President admitted that the overall picture of the age and condition of SPDC's pipelines was incomplete. He promised improvements in transparency.[27] These promises have not been met.

December 2007, Olav Ljosne, Shell's former Regional Director Communications Africa, replied to an e-mail by U.S. professor Richard Steiner: "The Asset Integrity Reviews are internal Shell operating documents designed to provide information on the state of our assets and improvements that are necessary – and are regarded as strictly confidential and business sensitive."

Late 2010, Professor Steiner concluded in a report that Shell Nigeria continues to operate well below internationally recognized standards to prevent and control pipeline oil spills. It has not employed the best available technology and practices that it uses elsewhere in the world – a double standard. The author stated that, while the injured environment in the Gulf of Mexico (due to the BP Deepwater Horizon disaster in April-July 2010) stands to receive substantial funding and government attention, such environmental damage in the Niger Delta is left largely unattended. Clearly this constitutes another double standard, the author proceeds, and far greater attention needs to be paid to the chronic long-term damage from oil and gas operations in the Niger Delta.[28]

Case 1b
Primitive gas flaring

The gas flares of Nigeria

Below the surface, crude oil is often found mixed with natural gas. The natural gas must be separated from the oil during extraction. Technically the gas can easily be captured and utilized. In Nigeria, however, the associated gas is primitively flared in the open air. Rushing for oil exports in the 1960s and 1970s, Shell and the Nigerian government only built oil pipelines. They didn't care about infrastructure to utilize the valuable natural gas: just burn it. There are currently approximately 100 continuously burning gas flares in the Niger Delta and just offshore, some of which have been burning since the early 1960s.[29]

Based on satellite data, the World Bank estimates that the amount of gas flared by Nigeria has reduced from 21.3 billion m^3 in 2005 to 15.2 billion m^3 in 2009, a decrease by 29%. In 2010, Nigeria represented 11% of global gas flares. Only one country flared more gas than Nigeria: Russia.[30] In 2009, Russia flared about three times more gas than Nigeria. However, it produced about 4.5 times more oil than Nigeria. Per litre of oil produced, Nigeria exceeded Russia in flaring gas.[31]
Mainly due to the flaring and venting of gas, the greenhouse gas emissions of crude oil production in Nigeria are among the world's highest.[32] A recent study, at the request of the European Commission, refers to two different studies that have calculated the emissions of Nigerian oil production. The first study puts the oil production emissions at 16.8 grams of CO_2 per megajoule[33], the second one is quoted as putting the emissions at 21.1 grams.[34] The study at the request of the European Commission, puts the most likely average emissions of conventional oil production for the European market at 4.8 grams of CO_2 per megajoule. So, oil production in Nigeria is considered to cause 3.5 to 4.4 times more greenhouse gases than average conventional oil production.[35]

Greenhouse gases are not the only reported problems with respect to gas flares:

- The United Nations Development Programme has declared that gas flares destroy natural resources and local livelihoods, alienate people from their land, and "adversely affect human development conditions".[36]
- In November 2005, a federal high court in Benin ordered Shell to stop gas flaring near the village of Iwherekan, after the community had applied for an order enforcing or securing the enforcement of their fundamental right to life and dignity of human person. The judge ruled that gas flaring is a "gross violation" of the constitutionally-guaranteed rights to life and dignity, which include the right to a "clean poison-free, pollution-free healthy environment". Shell appealed and the case is still pending.[37]
- The Nigerian Gas Association (NGA) has estimated that Nigeria has lost about USD 72 billion in revenues (about USD 2.5 billion annually) in the period 1970-2006 period due to not selling, but burning the gas.[38]
- In a report published in 2005, the Climate Justice Programme and Environmental Rights Action / Friends of the Earth Nigeria have calculated the yearly health impacts from gas flares in one of the Niger Delta states: Bayelsa. The particulate matter and benzene emissions from gas flaring at the 17 onshore flowstations in Bayelsa state would likely cause, each year, at least: 49 premature deaths, 4,960 respiratory illnesses among children, 120,000 asthma attacks and 8 additional cases of cancer.[39] SPDC declares, however, that there is no evidence to support the argument that flaring damages the health of local communities.[40]
- The federal government of Nigeria states that heat stress and acid rain from gas flaring continue to degrade the ecosystem.[41]
- Local communities have reported numerous other impacts of the gas flares, such as: the eyes may turn red; there is never any darkness; corrugated roofs corrode more quickly; there is constant noise from the gas flares; the walls of houses crack due to ground vibrations caused by the gas flares.

Shell's Nigerian flares: mystifying messages

Estimating from what is stated in Shell's Sustainability report 2010, SPDC (government share 55%, Shell share 30%) must have released about 7 million tonnes of greenhouse gases (measured in CO_2 equivalents) through gas flaring during the year 2010.[42] This is equivalent to the annual greenhouse gas emissions of about 3 million cars driven on roads in Europe.

Shell states that in the period 2002-2010 SPDC's flaring has decreased by about 50%.[43] The company mentions two reasons for this:

- Since 2000, SPDC has spent over USD 3 billion on

installing associated gas gathering infrastructure at 32 flowstations. These projects reduced continuous flaring by more than 30%.[44] This 30% result was already achieved in 2005. There has been little progress from 2006 onwards.
- The rest of the decrease is a result of reduced production since 2006 in Nigeria[45] and, to a lesser extent, the installation of gas gathering equipment in 2010.[46]

In 2007, SPDC promised "to shut down production from any fields where there is no prospect of a solution for gathering the associated gas by 2009".[47] In May 2009, SPDC stated that it would need to invest another USD 3 billion to gather some 85% of the total associated gas produced in its operations.[48] Wikileaks revealed a statement in October 2009 by the Shell Executive Vice President (EVP) for Shell Companies in Africa, Ms. Ann Pickard. She stated that the SPDC-flares could be out by 2011. SPDC would have to spend USD 4 billion to do this, but the Nigerian government would also have to fund its part and that was a risk. Shell would shut in oil production in fields where it is uneconomic to end gas flaring.[49] In 2011, Shell stated that it still needed funding from partners to execute projects that would bring flaring down by 90%.[50] In a letter dated 31 December 2008, the government directed SPDC and other oil companies to continue with production (and therefore flaring) until instructed otherwise.[51] During this process of oil extraction the oil fields will be running out of oil, making investments in gas gathering infrastructure less economically attractive. Thus, gas might be flared to the bitter end of oil operations.
In May 2010, SPDC announced that it was working on a series of projects totalling investments of more than USD 2 billion. The Managing Director of SPDC, Mutiu Sunmonu, said: "SPDC is pleased to be able to restart work on delayed projects and begin new ones to further reduce gas flaring in our operations to the lowest practical volume. Security and funding conditions permitting, we have a real chance to progress our flaring reduction plans through these key projects."[52] SPDC did not provide for a time-line as to when the facilities would be fully functioning, and how much associated gas would be gathered. By mid January 2011, three additional associated gas gathering sites had been completed.[53]

As of this moment, it is not clear how the gas flare picture of SPDC will evolve in the near future. In 2010, Shell's flaring rose by 32% compared to 2009. This was mainly due to increased oil production in Nigeria and the start of its oil production at the Majnoon field in Iraq.[54] In 2010, Shells oil production in Nigeria rose to 302,000 barrels of oil per day, up from 231,000 barrels of oil per day in 2009.[55]
Whenever the security situation allows SPDC to produce more oil, its gas flaring might increase again. On the other hand, the series of projects SPDC is working on at present might decrease gas flaring to some extent.

Over the years, SPDC has been spreading mystifying messages with regard to its flaring operations. The company has never shown a breakdown of flowstations where gas is flared. It has also never publicised a detailed plan to achieve a flare-out status. Like with oil spills, the company has never made a serious effort to get the facts clear with regard to the damages communities in the Niger Delta have suffered and still suffer.

Meanwhile, the Nigerian government may be busy with some deadlines to end gas flares, as it has been since the 1980s. Experience shows that these efforts can't be taken too seriously.[56]

Case 1c
Conflict and corruption

Shell assesses its contribution to conflict

With regard to conflict in the Niger Delta, Shell often profiles itself as one of the main victims. In July 2009, the company wrote: "We hope people recognise that the employees and contractor staff of [SPDC]…have to carry out their work against a backdrop of crime, violence, threats of kidnap and community actions."[57] Indeed, the Niger Delta is an extremely difficult environment for any company to operate.

However, one could also assess how Shell's activities might contribute to conflict. In 2002 and 2003, Shell commissioned such research. The resulting report, released in December 2003, was written by three external conflict resolution experts. The insights in the report drew "heavily on the experiences of more than 200 individuals consulted during its preparation."[58] Shell had declined to publish the independent report, but it was leaked in June 2004. The report states that "after operating in the Niger Delta for over 50 years, SCIN [Shell company in Nigeria] is an integral part of the regional conflict environment (….) and the manner in which the SCIN operates and its staff behave creates, feeds into, or exacerbates conflict."[59]

Examples of fuelling conflict

The report listed several examples of how oil companies fuel underlying factors causing conflict in the Niger Delta:

- The role of the oil companies in **fuelling corruption** is significant. Numerous examples can be found in how companies seek to maintain their license to operate through short-term cash payments, giving in to monetary demands following facility closures, exorbitant homage payments, use of ghost workers, surveillance contract implementation, contracting procedures, employment processes, and kick-back schemes in community development projects.
- The role of the oil companies in **fuelling perceived or actual discrimination** is largely related to unclear communications, poor transparency, the non-fulfilment of obligations, as well as corporate arrogance.
- The role of the oil companies in **fuelling inequitable distribution of revenue and infrastructure** is largely related to the non-fulfilment of obligations.
- The role of the oil companies in **fuelling social disintegration** largely comprises the design of the benefit distribution process that allows groups to fight over access to cash, jobs, contracts and power.
- It is important to note that accusations abound of "divide and rule" tactics and an active role of oil company officials in **fuelling specific communal conflicts**. Whereas this is likely to be the case where individuals or small groups of oil company staff are engaged in criminal activities, there is no evidence to suggest a company-wide "conspiracy" or manipulation of conflicts in the Niger Delta.
- The role of the oil companies in **fuelling crime and criminal cartels** is largely related to corruption in the contracting process and the payment of ransoms that make crime lucrative.
- Beyond the impact of the oil industry on the economy ("Dutch disease") oil companies do not directly **fuel youth unemployment**. However, the interaction between companies and youth groups who control employment at a community level is important. Contracts that routinely contain inflated and imaginary elements, excessive numbers of workers and payment, kick-backs, etc. serves to corrupt youth.[60]

The report was published in 2003, and it was meant to assess how SCIN can contribute to conflict resolution and sustainable peace in the Niger Delta. For this report, due to lack of available information it is not examined to what extent Shell has altered the practices described above presently.

Co-opting militants

In 2006, it became clear that some of the militant leaders linked to the attacks on oil facilities in the Niger Delta earn tens of thousands of dollars from contracts with Shell. Leaders of the Federated Niger Delta Ijaw Communities (FNDIC), involved with violent activities in Delta State in 2003, later ran contracting companies working with the oil majors. The payments included "incident free" bonuses. Officials told the Financial Times that subcontracting work to local strongmen is one method some oil companies have used to buy off militants threatening attacks on oil facilities in the Delta.[61] In September 2008, the Shell Executive Vice President (EVP) for Shell Companies in Africa, Ms. Ann Pickard, said that Rivers State Governor Rotimi Amaechi lacked the connections among Rivers State militant leaders to successfully co-opt them as the governors in Delta and Bayelsa states have done with

militants in their states.[62] Co-opting militants seems to be one of the tactics to (temporary) reduce conflict. However, it can also be seen as a measure that serves conflict and corruption.

Corruption

On paper, Shell's stance against corruption is clear. Its Code of Conduct gives employees detailed instructions on the behaviour Shell's Business Principles require. With regard to bribery and corruption the Code of Conduct contains the following principles:

- Never offer, pay, make, seek or accept a personal payment, gift or favour in return for favourable treatment, to influence a business outcome or to gain any business advantage.
- Ensure people you work with understand bribery and corruption is unacceptable.
- Tell Shell if you suspect or know of corruption in Shell or in any party (company or individual) Shell does business with.[63]

Relevant staff must undergo specific training in areas such as combating bribery and corruption. Shell's global helpline and supporting website allow staff and business partners to report concerns confidentially. In 2009,165 violations of the Code of Conduct were reported (204 in 2008). As a result, Shell stated that it has ended its relationships with 126 staff and contractors (138 in 2008).[64]

Corruption is rife in the Niger Delta. On 27 January 2009, Shell's regional executive vice president for Africa, Ann Pickard, met with the U.S. ambassador in Nigeria in Abuja, Nigeria. During the meeting, she stated that corruption in the Nigerian oil sector was worsening by the day. Pickard said that Nigerian entities control the lifting of many oil cargoes and there are some "very interesting" people lifting oil (People, she said that were not even in the industry). As an example she said that oil buyers would pay Nigerian National Petroleum Corporation (NNPC) General Managing Director Yar'Adua, (Note: not related to President Yar'Adua. End Note), Chief Economic Advisor Yakubu, and the First Lady Turai Yar'Adua large bribes, millions of dollars per tanker, to lift oil. Pickard also said that a former associate of hers had told her that he had been present when Attorney General Aondoakaa had told a visitor that he would sign a document only if the visitor paid USD 2 million immediately and another USD 18 million the next day.[65]

Shell fined USD 58 million

The extent of Shell's involvement and practices with regard to corruption in the Niger Delta is not known. Late 2010, Shell paid a total of USD 58 million to U.S. and Nigerian authorities to head off the threat of legal action for corruption. SNEPCO, a 100% Nigerian subsidiary of Royal Dutch Shell, had paid approximately USD 2 million in the period 2004-2006 to its subcontractors with the knowledge that some or all of the money would be paid as bribes to Nigerian customs officials to import materials and equipment into Nigeria in relation to the offshore Bonga project. SNEPCO and the U.S. based Shell International Exploration and Production Inc. employees were aware that as a result of the payment of the bribes, official Nigerian duties, taxes, and penalties were not paid when the items were imported.

In November 2010, the U.S. Department of Justice and the U.S. Securities and Exchange Commission (SEC) announced that Shell had agreed to pay USD 48 million to settle investigations on violation of the U.S. Foreign Corrupt Practices Act (FCPA).[66] The Deferred Prosecution Agreement Shell signed with the U.S. Department of Justice (DOJ) still requires Shell to report to the DOJ, promptly, any credible evidence of questionable or corrupt payments.[67] Separately, Shell also agreed to pay USD 10 million to the Nigerian authorities.[68]

Shell started an internal research in 2007, and found that a small number of its employees knew or should have known of the incorrect payments. These employees have been subject to disciplinary sanctions or were fired, according to the company.[69]

The Ibori case

In November 2007, it became publicly known that the UK Metropolitan police was investigating alleged money laundering by James Ibori, a former governor who ran the oil-rich Delta state until May 2007. According to a witness statement, the former governor had used banks in Britain to stash GBP 20 million in stolen funds during 2005-06. Since 2005 funds from Nigeria, intended for education and engineering projects, "[were] allegedly stolen by James Ibori [and] have been laundered through the UK banking system". Over three years, Shell, Chevron and the Nigerian National Petroleum Company paid GBP 3.6 million into a Barclays account controlled by Ibori for renting out houseboats to foreign employees.[70] Nuhu Ribadu, chairman of Nigeria's Economic and Financial Crimes Commission (EFCC), which worked closely with the British investigators, told the Financial Times that he was "investigating huge payments made by Shell and Chevron to MER Engineering" over the hiring of the houseboats. Shell admitted that MER was on its register of approved contractors. It declined to elaborate on the amount and type of work done by MER.[71]

A leaked report from the Nigerian Army Intelligence Corps, dated November 2007, linked James Ibori also to thousands of arms stolen from governmental storage depots for onward transfer to Niger Delta militants from the year 2000 to 2007.[72]

Mr. Ibori had close ties to Umaru Yar'Adua, the former president of Nigeria. Mr. Yar'Adua sacked Nuhu Ribadu, the head of the EFCC, after 170 charges were brought against Mr. Ibori. In a very questionable Nigerian court case, in December 2009, a judge dismissed all cases.[73] A Wikileaks cable sent from the UK embassy in London in May 2009 stated that Attorney General Aondoakaa had directly told the UK that the Nigerian Government would not begin negotiations on a prisoners transfer agreement, unless the UK would drop its case against James Ibori and his associates.

Mr. Ibori denies all charges against him. He was arrested in Dubai in May 2010 after the intervention of the global police agency Interpol. Dubai's highest court ruled in December 2010 that he could be extradited to Britain to face corruption charges. Mr. Ibori's sister and his alleged mistress are already convicted of money laundering and sentenced to five years in UK prison in June 2010. Mr. Ibori's wife and his UK lawyer face similar charges.[74]

Shell and the murder of Ken Saro-Wiwa

Ken Saro-Wiwa (10 October 1941 – 10 November 1995) was a well known Nigerian author and television producer. He was also president of the Movement for the Survival of Ogoni People (MOSOP), an organization set up to defend the environmental and human rights of the Ogoni people in the Niger Delta. In January 1993, Saro-Wiwa gathered 300,000 Ogoni to march peacefully to demand a share in oil revenues and some form of political autonomy. MOSOP also asked the oil companies, especially Shell, to begin environmental remediation and pay compensation for past damage. In May 1994, Mr. Saro-Wiwa, who had been briefly imprisoned several times before, was abducted from his home and jailed along with other MOSOP leaders in connection with the murder of four Ogoni leaders. Amnesty International adopted Saro-Wiwa, a staunch advocate of non-violence, as a prisoner of conscience. Meanwhile, the Nigerian military took control of Ogoniland subjecting people to mass arrest, rape, execution and the burning and looting of their villages. In October 1995 a military tribunal tried and convicted Saro-Wiwa of murder. Governments and citizens' organizations worldwide condemned the trial as fraudulent, and urged the Nigerian dictator Abacha to spare Saro-Wiwa's life. They also called upon Shell to intervene. On 10 November 1995 Saro-Wiwa and his eight co-defendants were hanged.[75]

In 1996, the Center for Constitutional Rights and EarthRights International and other human rights lawyers sued Shell in U.S. court for their role in the repression of the Ogoni and the executions of the "Ogoni Nine". The case Wiwa vs. Shell charged Shell with complicity in human rights abuses against Ogoni people in Nigeria. Shell financed, armed, and otherwise colluded with the Nigerian military forces that used deadly force and conducted massive, brutal raids against the Ogoni, with a motive of restarting oil operations on Ogoni territory. Shell was also allegedly involved in a strategy that resulted in the executions of the nine Ogoni leaders. The plaintiffs in the case included surviving family members of the murdered Ogoni leaders, Owens Wiwa (Ken Saro-Wiwa's brother) who was detained and tortured for his activities on behalf of the Ogoni; and two other (relatives of) victims of violence by Nigerian troops. After thirteen years of litigation, in June 2009 the case against Shell ended in a USD 15.5 million settlement for the plaintiffs.[76]
The settlement meant that the testimonies by witnesses were never made public. In December 2010, The Independent on Sunday gained exclusive access to witness accounts that were to be used in evidence in the case Wiwa vs Shell. One of the key witnesses due to testify was Boniface Ejiogu, Lt-Col Okuntimo's orderly in the Internal Security Task Force, a coalition of army, navy and police. Mr Ejiogu described how, just days before the Ogoni elders were murdered, he drove with Lt-Col Okuntimo to Shell's base in Port Harcourt, where seven large bags of money were received. On another occasion, Mr Ejiogu witnessed four bags being given by a Shell security official to Lt-Col Okuntimo at the official's house late at night. Another witness, Raphael Kponee, also due to testify, was a policeman working for Shell. On a different occasion, he saw three bags being loaded into Lt-Col Okuntimo's pick-up truck by his driver and another driver in front of the security building at the Shell base.
Mr Ejiogu also offers compelling evidence as to who may have murdered the four Ogoni elders at a meeting on 21 May 1994. Saro-Wiwa was due to speak but was turned away by the military. Mr Ejiogu said he heard Lt-Col Okuntimo tell his task force commander to "waste them... in the army you waste them is when you are shooting rapidly". Within 24 hours Saro-Wiwa was arrested and charged with the murders. A Shell spokesman replied to the allegations: "Allegations concerning Okuntimo and Shell are not new. There is a lack of any credible evidence in support of these allegations. Shell Petroleum Development Corporation and Shell at the time spoke out frequently against violence and publicly condemned its use."[77]

Case 2
Denial of Brazilian pesticide diseases

A Shell pesticide factory

For a decade or more, beginning in 1977, Shell produced organochlorine pesticides (aldrin, dieldrin, endrin etc.) and other pesticides at a plant located near Paulínia, about 125 kilometres north-west of São Paulo, Brazil. The plant covered approximately 40 hectares.[78] Due to its severe health impacts, by 1990 the use of aldrin and dieldrin was totally banned in the USA and Brazil.

After negotiations starting in 1993, in 1995 Shell sold the Paulínia facility to the companies American Cyanimid and BASF. A sales condition was that Shell would assume legal responsibility for the pollution at the site. In 2000, BASF took full ownership of the facility.[79] In 2002, BASF shut it down the facility after a ban by the Brazilian Ministry of Labour, in view of existing contamination and serious risks to human health.[80]

Pollution at the factory site

There have been many cases of pollution at the factory site:

- Between 1998 and 1985 three leaks in a waste-water storage tank were officially reported.
- Over the years, CETESB (São Paulo State Environmental Protection Agency) had issued three warnings that the plant's incinerator was not operating within acceptable standards.
- March 2001, the Justice Department listened to the testimony of a former company employee, Antonio de Marco Rasteiro. He confirmed the existence of four clandestine landfills inside the plant area, and accused Shell of dumping ashe from its incinerator and waste from its manufacturing process in these landfills. He also confirmed that Shell's incinerator sold its services to third parties, for example to DuPont. He also reported that drums with toxic wastes were buried in other areas inside the plant.[81]

Pollution spreading across farmlands

Later, several studies of the area revealed that the contamination had moved into the groundwater under the farms located between the plant and the Atibaia River. For example, in February 2001, the Dutch environmental consulting company Haskoning/Iwaco, hired by Shell, produced a technical report with soil and groundwater analysis in nine sites located in the farms near the industrial site. Levels of contamination by dieldrin as high as 17 parts per billion (ppb) in soil and 0.47 ppb in water were found. The water contamination levels were higher than the levels allowed by Brazilian law (Administrative Rules 36/1990 and 1469/2000 – Ministry of Health – Highest Permissible Level: 0,03 ppb of dieldrin). However, no decontamination work had begun in the area. In February 2001, Shell admitted that it had contaminated the groundwater and sections of the nearby community, and was ordered by CETESB to begin a clean-up.[82]

Pollution creating severe health problems

Both aldrin and dieldrin are highly toxic to humans, the target organs being the central nervous system and the liver.[83] A report at the request of the Paulínia local government, produced by August 2001, showed that 156 of the 181 examined residents living near the factory had some degree of contamination from metals or pesticides which could result in various cancers, liver disorders, or neurological problems. Shell dismissed the Paulínia report, saying it used very low thresholds to measure contamination compared with those recommended by the World Health Organization. Shell also claimed its own tests showed no human contamination. "If there is proof of contamination with the products that we handled there, we will assume the responsibility immediately, which is our policy worldwide," said Jose Cardoso, a Shell manager in Brazil. "But so far, there is no data indicating that."[84] Maria Lucia Braz Pinheiro, vice president of Shell-Quimica for Latin America, described the report as "another report with technical inconsistencies and lacking a scientific base."[85]

In a doctoral dissertation approved in February 2005, an analysis was made on the existing health data from a group of 62 former Shell/Cyanamid/BASF workers. Three cases of thyroid cancer were confirmed. The author concluded that the incidence of thyroid cancer among the estimated 1,120 workers of Shell/Cyanamid/BASF was 166 times greater than the incidence in the male population of Campinas, a county within Sao Paulo state. The chance of finding three cases of thyroid cancer out of a random selection of 1,120 men living in Campinas would

be less than 1 out of 1,000,000.[86]
At the beginning of 2009, it became publicly known that the Center for Excellence in Occupational Health (Cerest) of Campinas had examined 69 former employees of Shell / Cyanamid / BASF. Ten malignant cases of cancer to the prostate and thyroid were diagnosed. There was also a case of myelodysplastic syndrome (MDS, formerly known as "preleukemia"). There were 34 cardiovascular diseases, of which 21 related to hypertensive heart diseases. There were also an unspecified number of liver diseases. In 30 cases there was a prevalence of repetitive strain injury (RSI). In total 56 ex-workers had serious problems with reproductive organs and the urinary system, with prostate disorders, changes in fertility and impotence.[87]

August 2010: Shell/BASF ordered to pay severe fine

In 2007, the public prosecutor Ministério Público do Trabalho (MPT) filed a case to ensure funds for health treatment of former employees, along with compensation for damages. The Association of Workers Exposed to Chemical Substances (ATESQ) and another union of workers had also filed a case against Shell and BASF. ATESQ was created by Antonio de Marco Rasteiro, a former employee of the Shell/BASF plant in Paulínia. He worked there for 21 years. In his role as ATESQ Coordinator, Mr Rasteiro has led the struggle of nearly a thousand former workers. In November 2009, he won the International Health & Safety Award of the American Public Health Association.[88]

In August 2010, a Brazilian court (Tribunal Regional do Trabalho de Campinas) ruled that Shell and BASF should assume responsibility for the medical treatment of all former employees of the Paulínia facility, and pay a total of 1.1 billion Brazilian Real (about EUR 490 million[89]) in connection with the More than 1,000 former employees of the companies were covered by the court order, and also the children of employees who were born during or after services and independent contractors.[90]

Some extracts from the court ruling in August 2010:

- "Workers were constantly exposed to harmful substances in water and air, without any use of protective clothing. This exposure took place during and after work, during breaks, in the vicinity of the site, as well as through the use of water on site. Therefore, the simplistic explanation of Shell that the presence of harmful substances in the bodies of the workers do not constitute evidence of intoxication is unacceptable"
- "(...) Although it is not certain that all employees will develop diseases such as cancer, it is not excluded. Certainly it has been determined that among the employees exposed to the pollutants, cancer occurs much more frequently than normal."
- "(...) The most shocking is that the accused companies, especially Shell, were since 1970 fully aware of the harmful effects of substances used by them. After the production was banned in the U.S., Shell coolly moved its plant to Paulínia. BASF also has not taken precautionary measures: it was aware of the pollution at the site, which was already raised and well known in Paulínia. Nevertheless, BASF located itself in the same place, in the full knowledge that this place was not appropriate, with the result that its employees were exposed to obvious risks".[91]

Shell and BASF appealing

Soon after the court order in August 2010, Shell and BASF announced that they would appeal the decision. "We expect that the Brazilian courts at a higher level will eventually establish that we were not responsible for alleged health impacts and other claims", a Shell spokesman told press agency Reuters.[92]
Jennifer Moore-Braun, a spokeswoman for Basf told press agency Bloomberg: "We are of the opinion that the environmental damage was caused by Shell, and we will appeal the decision." Shell was quoted saying: "We are convinced there is no link between our operations and injury to people's health based on blood tests of local residents, medical assessments of former workers and expert medical opinions."[93] In April 2011, the Tribunal Regional do Trabalho de Campinas denied an appeal filed by Shell and BASF against the decision, and maintained the sentence. Shell and BASF may appeal the decision at the Superior Labour Court (TST) in Brasilia.[94]

Case 3
Mining the Canadian tar sands

Shell's largest unconventional oil resource

Due to "easy" oil getting scarce, oil companies are investing in unconventional oil resources. In general, unconventional oil production has greater environmental impacts than conventional oil production. The Canadian oil sands (often called tar sands) are Shell's largest unconventional oil reserve. As of 31 December 2010, Canadian oil sands amounted to 26% of Shell's proven oil reserves.[95] Oil reserves refer to the oil production Shell has secured to exploit in the future.

The oil sands are found in the Canadian province of Alberta. In December 2010, the government of Alberta listed 47 oil sands projects that are planned, underway, or recently completed. The total investment costs for these projects amounted to USD 85 billion.[96]

Typical mining

The extraction of oil from tar sands has many features that are typical to industrial mining: dig up the earth; use lots of energy and water; sell the product; create a huge lake with toxic waste. At Shell's main oil sands operations, an oily tar mixed with sand, clay and water is dug up in open-pit mines. Enormous trucks deliver these goods to a place where warm water is added to separate sand from the bitumen. After this process, the bitumen goes to an upgrader. In this upgrader (that usually runs on natural gas) the large heavy hydrocarbon molecules are cracked into lighter molecules. The synthetic crude oil is then sold to refineries to make gasoline; the remainder of the process is dumped in a tailings lake.[97]
Some oil sands in Alberta are buried too deep below the surface for open-pit mining. In these cases, the oil will be recovered by in-situ techniques. Mostly steam needs to be injected into the deposit (thermal method), causing hot bitumen to migrate towards producing wells.

Shell's presence

Shell's Athabasca Oil Sands Project (AOSP, Shell share 60%) presently comprises two open-pit mines (the Muskeg River mine and the Jackpine mine) and the Scotford Upgrader. The present capacity was developed for a total cost of USD 19 billion. The total resource base is estimated at 3.4 billion barrels, so at the same pace this project could last for almost 40 years. AOSP has many more mining leases along the Athabasca river that may be utilised for oil production in the future.

By mid 2011, oil production is expected to be 255,000 barrels per day.[98] Due to efficiency and de-bottlenecking operations the AOSP-production is assumed to increase by another 85,000 barrels to 340,000 barrels a day within the coming 7-10 years.[99]

Shell has several 100% positions in in-situ mining. Production in 2010 is estimated at 18,000 barrels a day, from its Peace River and Cold Lake Orion assets. Shell is proposing to increase thermal bitumen production from its Peace River leases by 80,000 barrels of bitumen per day, through the Carmon Creek project.[100] Investments of USD 3.5 billion are proposed for this project during the period 2011 – 2016.[101] Shell estimates that the project has a 1.5 billion barrels resources potential. The company is also assessing its Grosmont and Woodenhouse in-situ assets including vast landholdings in west Athabasca.[102]

Greenhouse gas emissions of fuels from oil sands

In a study at the request of the European Commission, released February 2011, typical tar sand well-to-wheel greenhouse gas (GHG) emissions were found to be most likely 23% worse than GHG emissions of typical conventional oil sources. For this study, many earlier studies on this subject were reviewed.[103] Shell usually states that fuels derived from oil sands mining have 5 to 15% higher well-to-wheel (GHG) emissions, compared to fuels derived from conventional oil and dependant on crude type & source.[104]

It should be noted that the recent study at the request of the European Commission refers to well-to-wheel GHG emissions. Well-to-wheel emissions include the emissions produced during crude oil extraction, processing, distribution, and combustion in an engine. For all sources of crude oil, 70 to 80 percent of GHG emissions occur at the combustion phase. Combustion emissions do not vary for a given fuel among sources of crude oil. Oil companies can influence well-to-tank emissions only,

which account for 20 to 30 percent of total life-cycle GHG emissions.[105]

In the study at the request of the European Commission, the most likely well-to-tank emissions from tar sands fuel were put at 33.9 grams of CO_2 per megajoule. These are the emissions that can be influenced by Shell. The most likely well-to-tank emissions for conventional oil were put at 13.7 grams of CO_2 per megajoule. So, the well-to-tank emissions of oil sands are almost 2.5 times higher than the emissions for average fuel used in the European Union.[106]

CCS-project Quest

Shell's Athabasca Oil Sands Project (AOSP, Shell share 60%) is planning a carbon capture and storage (CCS) project, called Quest, near to its Scotford Upgrader. The total cost of the project is projected to be USD 1.35 billion. The province of Alberta (USD 745 million) and the government of Canada (USD 120 million) are willing to pay most of the costs.[107] The plant is planned to be commissioned at the end of 2015.[108]
The CO_2 will be permanently put under the ground during an estimated 25 years at a depth of over 2,000 meters, in a saline formation, with a maximum of 1.2 millions tonnes of CO_2 each year. In a recent report quantifying the GHG reduction benefits from the CCS-project, the facilities were assumed to operate with 90% availability, capturing 1.08 million tonnes of CO_2 annually.
The full lifecycle emissions of the CCS-project itself were estimated to be between 0.16 to 0.24 million tonnes of CO_2, around 20% of the annual capture. Conclusively, the project is estimated to reduce 0.84 to 0.92 million tonnes of CO_2 annually.[109] AOSP emitted 3.7 million tonnes of CO_2-equivalents in 2009[110], while its production stood at 78,000 barrels per day.[111] Considering an already planned 440,000 barrels per day tonnes of production by AOSP and in-situ by Shell before 2020, the CCS-project will only partly compensate for the increasing emissions due to deriving fuel from oil sands compared to fuels derived from conventional oil.

Pollution of Athabasca river

A study by the University of Alberta, released July 2010, indicates that the oil sands industry could be the source of substantially increasing pollution to the Athabasca river and its tributaries via air and water pathways. In the period February – June 2008, samples were taken at about a hundred sites. The oil sands industry was found to release 13 elements considered priority pollutants (PPE) under the U.S. Environmental Protection Agency's Clean Water Act.[112] Canada's or Alberta's guidelines for the protection of aquatic life were exceeded for seven PPE (cadmium, copper, lead, mercury, nickel, silver, and zinc) in melted snow and/or water collected near or downstream of development. According to the authors, their findings confirm the serious defects of the Regional Aquatic Monitoring Program (RAMP), which has not detected such patterns in the Athabasca river watershed. Based in part on results from RAMP, the industry, government and related agencies claim that human health and the environment are not at risk from oil sands development and that sources of elements and polycyclic aromatic compounds (PAC) in the Athabasca river and its tributaries are natural.[113]

Concerns of the Canadian Aboriginals

First Nations is a term of ethnicity that refers to the Aboriginal peoples in Canada who are neither Inuit nor Métis. In northern Alberta, Aboriginal communities rely on the land, water and wildlife for hunting, fishing, trapping, gathering, harvesting, navigation and ceremonial, recreational and domestic uses such as bathing, cooking and drinking. The communities are increasingly concerned about the negative impacts of the oil sands developments:

- Communities, especially those living downstream, have expressed interest in effective and strong watershed protection. In 2009, seven communities testified that they had significant concerns about deteriorating water quality or river flows in the Athabasca watershed. For example, the Mikisew Cree First Nation has experienced an increased incidence of cancers found in the population of Fort Chipewyan, located directly downstream from the most intensive oil sands development. They fear that this may be due to water pollution from oil sands development.
- The caribou is an important species to many Aboriginal groups, for cultural and spiritual reasons. In 2008, Canada's Environment Ministry released a report showing that due to cumulative development activities, all caribou herds in northeastern Alberta are now considered non-self-sustaining. The east side of the Athabasca River caribou herd, whose range includes much of the current in situ oil sands development in Alberta, has declined 71% since 1996.

Currently, oil sands mining operations are licensed to divert 604 million cubic metres of water annually from the Athabasca River Basin, which is equivalent to the needs of a city of three million people. As production increases, oil sands companies have the ability to withdraw the licensed amount. Although water use is often presented as a percentage of average annual flows, the amount of water used during low flow periods is of most concern, especially since the water is not returned to the river system after use as it would be with municipal uses. In July 2010, the Mikisew Cree and Athabasca Chipewyan First

Nations said the proposed Government of Alberta framework to manage water withdrawals would not protect the interests of these communities during low flow periods. First Nations are concerned that water withdrawals from the Athabasca River system reduces river flows, threatening fish populations during low flow periods, and the health of the Peace-Athabasca Delta.[114]

Case 4
The bitter taste of Brazil's sugarcane

Joint venture with Brazil's largest sugar and ethanol producer

On 25 August 2010, Royal Dutch Shell and the Brazilian sugar and ethanol producer Cosan S.A. have signed binding agreements to form a joint venture in Brazil. The definite formation of the joint venture is expected to occur in the first half of 2011. The name of the joint venture will be Raízen. "Due to the size of its operations, Raízen will help sugarcane ethanol, a sustainable, clean and renewable source of energy, to consolidate itself worldwide and strengthen Brazil's position in the international biofuels trading business," stated its appointed Chief Executive Officer, Vasco Dias.[115]

Cosan is Brazil's largest sugar and ethanol producer, accounting for about 10 percent of Brazilian production. Ethanol made from sugarcane has become the most popular fuel for cars in Brazil, surpassing gasoline. Cosan is the world's fourth largest ethanol producer and probably the world's largest ethanol producer from sugarcane.

The deal calls for Cosan to transfer its units for sugar and ethanol production, fuel distribution and energy generation to the venture. Shell will contribute its retail fuel and aviation fuel distribution business, and its participation in the biomass technology companies Iogen Energy and Codexis.

After state oil giant Petrobras, the proposed joint venture competes with Ipiranga, a unit of Brazil's Grupo Ultra, to become the second-largest fuel retailer in Brazil. In the fuel area, the joint venture will sell approximately 20 billion litres of fuels to the transportation and industry markets and to its network of over 4,500 retail sites.[116]

All Cosan's 24 sugarcane producing mills are located in the South-Central region of Brazil: 22 mills are located in São Paulo state, one in Jataí city (Goiás state) and one in Caarapó city (Mato Grosso do Sul state).[117]
Brazil's sugarcane plantations are located in the South-Central and North-eastern regions. These regions account for 89% and 11% of Brazilian production, respectively. Within the South-central region most is grown within São Paulo state.[118]

Some of Cosan's assets will not be included into the joint venture: the lubricant businesses; the sugar logistics business called Rumo Logistica; the land prospecting and development business called Radar Propriedades Agricolas, the food retail brands Da Barra, Uniao and other minor brands.[119]

Case 4a

Sourcing sugarcane from occupiers of indigenous land

Since June 2009, Cosan owns a newly-built sugarcane plant in Caarapó, Mato Grosso do Sul state. Presently, the plant has a capacity to crush 2.5 million tonnes of sugarcane a year.[120] The former owner has expected that the capacity will be over 6 million tonnes in 2017/2018.[121] The plant is included into the Shell-Cosan joint venture plans, so soon it will be half owned by Shell.

To supply the Caarapó plant, Cosan sources mostly from new sugarcane plantations in the neighbourhood. One of its known sourcing areas are the farmlands of the Santa Claudina farm. This farm is located within the indigenous territory Guyraroká of the Guarani-Kaiowá Indians. The federal public prosecutor in Mato Grosso do Sul stated in May 2010 that Cosan's purchase of raw materials from indigenous areas demonstrates its lack of social and environmental criteria for selecting suppliers, and disrespect for the second largest indigenous population of the country.[122] The Santa Claudina farm is owned by a state representative of Mato Grosso do Sul, Zé Teixeira.[123] Cosan has confirmed that one of its suppliers operates in the region.[124]

According to satellite images of the Brazilian Institute for Space Research (INPE), sugarcane plantations occupy already half of the indigenous territory Guyraroká.[125] Since there are 26 "owners" of farmland within Guyraroká[126], there could be more suppliers to Cosan.

The indigenous territory Guyraroká, comprising over 11.000 hectares, was traditionally occupied by Guarani-Kaiowá Indians. According to the Brazilian constitution and United Nations conventions the land is theirs.[127] In October 2009, the Brazilian Ministry of Justice produced a directive as a step forward to final demarcation.[128] The next steps for the Ministry are the administrative demarcation of the area and the withdrawal of the current occupants of the area. A signature by the Brazilian President, Ms Dilma Rousseff, is needed to make the demarcation definite. Generally, however, the demarcation process moves at a very slow pace. Moreover, the current occupants of the land are not likely to leave without resistance, be it in court or in the area itself.[129] Violence by land occupiers and discrimination against the Guarani-Kaiowá Indians are frequently performed in Mato Grosso do Sul state.

Guyraroká is just one of the indigenous territories within the Central-South region of Mato Grosso do Sul, that has experienced serious delays in being demarcated. Dozens of Guarani-Kaiowá groups are waiting for their right to plots of land. Some 30,000 Guarani-Kaiowá live in Mato Grosso do Sul state. In the past they were pushed off their land and into reservations. Today, these reservations are severely overcrowded. The communities subsist mainly on government food aid. According to the federal public prosecutor of Mato Grosso do Sul, Dr Marco Antonio Delfino de Almeida, "the demography is comparable to being imprisoned in spaces so small that social, economic and cultural life are impossible to sustain."[130] In a 2009 report on Brazil, the UN Special Rapporteur on the situation of human rights and fundamental freedoms of indigenous people, mister James Anaya, wrote that Mato Grosso do Sul "has the highest rate of indigenous children's death due to precarious conditions of health and access to water and food, related to lack of lands."[131]

Sugarcane plantations are arising rapidly in Mato Grosso do Sul. The state area cultivated for sugarcane harvest amounted to 502,000 hectares during the 2010/11 season. For the 2005/06 season the figure stood at 160,000 hectares.[132] Both Cosan and the Brazilian government have identified the Central-South region of Mato Grosso do Sul as one of the main areas for future growth.[133] This is the same area as where dozens of different Guarani-Kaiowá groups are claiming plots of land.

Case 4b
Bad labour conditions sugarcane harvesters

Cosan's short-lived inclusion into the "dirty list" of slave labour

On 31 December 2009, Cosan had its name included into the "dirty list" of slave labour published by the Ministry of Labour and Employment (Ministério do Trabalho e Emprego, henceforth MTE). The inspection resulting in Cosan's inclusion in the "dirty list" took place in June 2007, at the Junqueira processing plant in Igarapava, São Paulo, when 42 workers were freed.
Right after MTE's announcement, the Brazilian Social and Economic Development Bank (state agency, Banco Nacional de Desenvolvimento Econômico e Social, BNDES) and private company Walmart announced the cancellation of their business with Cosan. On 8 January 2010, Cosan's lawyers succeeded in withdrawing the name of the company from the list, in a preliminary court order. They sustained that the 42 workers caught in a situation analogue to slavery had been hired by an outsourced company and their situation was not known to Cosan's representatives. BNDES and Walmart soon resumed their business with the company.[134] In its sustainability report 2010, Cosan stated that during the two-and-halve years before the inclusion to the dirty list, inspection reports had not referred to forced or compulsory labour, but rather to mere labour irregularities.[135] At the end of 2010, Cosan made an agreement with the prosecutor of the federal government. In most cases, the prosecutor would appeal preliminary court orders, such as the order of 8 January 2010. Part of the agreement, however, was that the prosecutor would not appeal the court order. Opponents of the agreement stated that the prosecutor had set a precedent. Other companies would now also try to get excluded from the list through agreements with the procecutor. The possibility to reach an agreement could reduce the effectiveness of the "dirty list", Brazil's main instrument to combat slave labour. Luís Inácio Adams, the head of the federal prosecutors office, stated that the arguments of the opponents were "legitimate", but that the Cosan case was "exceptional".[136]

Slave labour quite common in Brazil's sugarcane industry

Situations of slave labour are quite common in Brazil. Presently, about 4,000 workers per year are rescued. In 2009, the sugarcane industry was leader in number of slave labourers freed by inspection groups. A total of 1,911 workers in 16 cases were rescued, 45% of the total of 4,234 people freed during the whole year.[137]
A review by the Ministry of Labour and Employment (MTE) shows that since the establishment of a Special Mobile Inspection Group in 1995, almost 39,000 workers were rescued in Brazil from a situation analogous to slavery. Between 1995 and 2002 there were almost 6,000 rescues, while between 2003 and 2010 there were almost 33,000 rescues. The review shows a significant increase in numbers from 2003 when Brazil launched the first National Plan for Eradication of Slave Labour.[138]
As of March 2011, 211 companies were listed on the "dirty list" of slave labour.[139] It should, however, be noted that Brazilian law defines forced labour or "slave like" or "degrading" conditions more broadly than the International Labour Organization (ILO) of the United Nations. Consequently, a company cited for violations of the Brazilian labour code is not necessarily guilty of employing slave labour, but may in fact have fallen short in some other area.
Sugarcane workers do not live where they work. Many migrate from the North-east, the poorest region of Brazil, to São Paulo State, the richest part of the country. Industry studies show that outsourced workers suffer worse conditions than their direct hire counterparts. The worst situations occur on small plantations that use out-sourced labour. Apart from the working conditions, many sugarcane cutters risk losing their job. Most of the large producers are replacing sugarcane cutters with harvesting machines, in order to improve efficiencies and to reduce sugarcane's carbon footprint. With machines, the sugarcane fields no longer need to be burned to enable manual cutting. Mechanization destroys many of the cane-cutting jobs and leaves thousands unemployed.[140]

Recent example: the rescue of fourteen farm workers

In July 2010, fourteen farm workers from Pernambuco state were rescued. The cane cutters worked for the Santa Lúcia farm in Santa Cruz do Rio Pardo (São Paulo state), a supplier to Cosan. The payments of wages were delayed for more than 15 days and there was no drinking water on work sites. In statements to the prosecutor, the workers said they were cheated by the employer, since they received half of the promised wages. Not satisfied

with the working conditions and housing, the cutters stopped their activities of cutting sugarcane. Subsequently, the employer cut off the electricity and water within the cottages. After days without pay and without being able to work, workers reported the situation to the local prosecutor in Bauru. When verifying the veracity of the complaint, through interviews and records of the degrading conditions on the scene, the prosecutor proposed the signing of a Terms of Adjustment of Conduct (TAC). The agreement stated that the Saint Lúcia group would terminate the employment contract of all migrants and pay the workers their rightful salary. In addition, the company had to pay BRL 300 to each worker for the transport to the state of Pernambuco and BRL 264.50 for individual moral damages. Cosan stated that it would examine the events and examine the immediate disqualification of the supplier on its list of sugarcane suppliers.[141]

Cosan's recent labour irregularities

At the peak of the crop year ending 31 March 2010, Cosan had nearly 41 thousand employees. Of this total, about 27 thousand employees were seasonal. More than 33 thousand employees work in the operations sector, especially migrants working on manual sugarcane harvesting. According to Cosan, a manual harvest worker effectively works 6 hours and 45 minutes a day and is paid around EUR 250 a month.[142]

According to Cosan, in the 2010/2011 crop year, 100% of harvest workers working on land owned or leased by the company are Cosan's own employees. In addition, approximately 80% of cane purchasing operations with third parties started to be performed by labour contracted directly by Cosan. Cosan states that by contracting labour directly it minimizes the risk of non-compliance with labour legislation, as the company has carried out intensive work to reduce possible non-compliance in its relationship with the workers. While the company seems to take some supply chain responsibility with regard to its sugarcane purchasing operations, in its sustainability report 2010 Cosan did not refer to any supply chain responsibility with regard to the ethanol it purchases directly from third parties.[143]
As the company is also a main trader of ethanol it doesn't produce itself, the company should also publicly take responsibility for this part of its supply chain.

The following labour rights issues with regard to operations by Cosan have been found by the government in recent years:
- Production unit Da Barra, 2009: lack of records on workers' entrance and exit hours; work on Sundays

Table: present/forecast sugarcane crushing capacity, sugar production and ethanol production; Brazil versus Raízen.[154]

	Brazil			Raízen		
	2010/11	2020/21 (11 years)	% increase	2010/11	After 5 years	% increase
Crushing capacity (million tonnes)	638	1,038	63%	62	100	61%
Production of sugar (million tonnes)	38	45	18%	4.0	6.0	50%
Production of ethanol (billion litres)	29	65.3	125%	2.2	5.0	127%

Table: present/forecast share of Raízen within the entire sugarcane sector of Brazil[155]

	Present			After 5 years		
	Raízen	Brazil	% share	Raízen	Brazil	% share
Crushing capacity (million tonnes)	62	638	10%	100	820	12%
Production of sugar (million tonnes)	4.0	38	11%	6.0	41	15%
Production of ethanol (billion litres)	2.2	29	8%	5.0	46	11%
Trade in ethanol (billion litres)	5.5	29	19%	13	46	28%

without a license; irregularities in Personal Protective Equipment (IPEs); and dirty bathrooms;[144]

- Production unit Diamante, 2009: six workers without regular papers; no control on working hours; no time off on Sundays and holidays; cutting seven sugarcane streets instead of five; dirty bathrooms; irregular Labour Health Certificate, lack of a plan to assist accident victims; irregular lodging facilities; outsourced transport companies with no toilet or eating facilities;[145]
- Production unit Benálcool. In June 2010, Cosan was ordered to pay a fine of BRL 26,100, because it had breached a Terms of Adjustment of Conduct (TAC). It was found that workers for the Benálcool Plant were subjected to work on Sundays and holidays, contrary to the established TAC. The fine was ordered by the local attorney of the Ministério Público do Trabalho.[146]
- Production unit Univalem. In July 2010, Cosan was ordered to pay a fine of BRL 2,500,000, because it had breached two clauses of a TAC signed in 2007. The breaches happened at its unit in Valparaiso (Univalem plant). The company had pledged to give at least 11 hours off time between two days of work, and not to extend the normal working day beyond the legal limit. However, according to inspectors, 65 employees were found in an irregular situation with regard to granting no rest between two days, while 32 workers were found with excess journeys to and from work.[147] Irregularities at the Univalem plant had been reported yearly between 2005 and 2008.[148]
- Production unit Serra. In 2009 Cosan had to pay BRL 200,000 due to irregularities in working conditions at the Serra plant in the town of Ibaté (São Paulo)[149]
- During spot checks carried out during 2008 by the Ministry of labour and employment (Ministério do Trabalho e Emprego, MTE) and by the local prosecutor in São Paulo (Ministério Público do Trabalho, MPT) irregularities were found in 18 plants of Cosan in different counties. The prosecutor Mario Antonio Gomes stated: "We found the lack of drinking water in work areas, lack of Personal Protective Equipment (IPEs), lack of a proper place for meals, among others."[150]

Case 4c
Massive monoculture land use

Expected expansion Raízen

Raízen, the new joint venture between Shell and Cosan, plans to rapidly expand its sugarcane production. In March 2011, its growth aspirations for the coming five years became known. Within five years, it expects to sell more than a quarter of Brazil's ethanol production.[151] In November 2010, the Brazilian association of sugarcane producers UNICA has published the growth expectations of the entire sugarcane sector in Brazil, eleven years from now.[152]

In the tables below, the growth estimates of Raízen and the entire Brazilian sugarcane sector are put next to each other. From the tables it shows that:

- Both Brazil and Raízen expect a sharp increase in the production of ethanol.
- Raízen expects its crushing capacity (in order to produce ethanol and sugar) to increase by 61% within five years, while Brazil expects to reach such an increase level (63%) after eleven years only.
- While currently Raízen has some 10% of the country's sugarcane crushing capacity, within five years Raízen's share will be 12%.
- Raízen has a larger share in Brazil's sugar production than its share in Brazil's ethanol production.
- Raízen also buys ethanol from other producers for resale. Its market share among Brazilian end sellers of ethanol is presently around 19%, more than double its share in Brazilian ethanol production.[153] The company currently produces 2.2 billion litres ethanol per year, while it sells 5.5 billion litres to customers (retail, industry, aviation). This trade in ethanol is expected to increase to 13 billion litres within five years. By then it will sell more than a quarter (28%) of Brazil's ethanol production. Raízen does not specify whether this increase is expected in exports or activities within Brazil.

Farmland under management

During the fiscal year ending 31 March 2010, Cosan had 700 thousand hectares of land (one-sixth the size of the Netherlands) under management for sugarcane production. Roughly 45% of the land is leased to Cosan and another 45% belongs to suppliers. The remaining 10% comprise 50 thousand hectares owned by Radar and leased to Cosan, and 25 thousand hectares owned by Cosan.[156]

In August 2008, Cosan announced the creation of the company Radar Propriedades Agrícolas S.A. (Radar). Radar focuses on the identification and acquisition of farms for subsequent lease and/or sale. Cosan has 18.9% of the shares and the other investor 81.1%. COSAN also has the first right to lease of land owned by Radar.[157] The

Table: Areas under cultivation for sugarcane production in South-Central Brazil; crop years 2005/2006 and 2010/2011; million hectares[163]

State	Abbreviation	area under cultivation (million hectares)			% increase in six years
		crop year 2010/2011	crop year 2005/2006	increase in six years	
São Paulo	SP	5.3	3.4	1.9	58%
Minas Gerais	MG	0.8	0.3	0.5	147%
Paraná	PR	0.7	0.4	0.3	77%
Goiás	GO	0.6	0.2	0.4	203%
Mato Grosso do Sul	MS	0.5	0.2	0.3	214%
Mato Grosso	MT	0.3	0.2	0.1	36%
Rio de Janeiro	RJ	0.1	0.0	0.1	
Espírito Santo	ES	0.1	0.0	0.1	
Total South-Central		8.4	4.7	3.7	80%

other investor is the U.S. Teachers Insurance and Annuity Association (TIAA). TIAA is a pension fund for non-profit and government institutions and their employees. For its Radar-business it has created a Brazilian company called Mansilla Participacoes Ltda. As of 31 December 2009, the investments of Mansilla amounted to USD 383 million.[158] Radar focuses on sugarcane, soy, corn and cotton. As of October 2010, 55% of its acquired farmlands constituted sugarcane plantations in São Paulo state. Radar had acquisitions in the pipeline worth USD 800 million and totalling 340.000 hectares for the period 2011/2012.[159]

Where in Brazil does sugarcane grow?

Raízen's sugarcane producing mills are all located in the South-Central region of Brazil; 22 mills are located in São Paulo state, one in Jataí city (Goiás state) and one in Caarapó city (Mato Grosso do Sul state).[160] The South-Central region accounts for 89% of Brazilian sugarcane production.[161] Over the past six years, sugarcane cultivation has expanded with 80% in the South-Central region. The satellite project Canasat registers the areas that are under sugarcane cultivation in the region.[162] The following table shows the main states where sugarcane is grown and the expansion that has been going on.

Expectations growing land use

The government of Brazil expects that in 2017 the area cultivated with sugarcane, will amount to 14.5 million hectares.[164] This is 3.5 times the surface of the Netherlands. The continuing expansion is expected to be mainly located in South-Central Brazil.

In September 2009, the former president Luiz Inácio Lula da Silva presented the Sugarcane Agroecological Zoning plan (ZAE Cana). This plan would prohibit the expansion of sugarcane production in the Amazon and Pantanal biomes, and in the Upper Paraguay River Basin. This would not apply to industrial units already installed, the cane produced for their supply, or their planned expansion. Neither would ZAE Cana be applied to units with environmental licensing. As of yet, the government has announced the plan, but there are no new enforcement mechanisms.[165]
Brazil's entire surface is estimated at 851.5 million hectares. The Amazon and Pantanal biomes, and the Upper Paraguay River Basin measure up to 694.1 million hectares. This would leave 157.4 hectares where it is allowed to grow sugarcane. Extra restrictions set by ZAE Cana, such as water use and the exclusion of areas with slope above 12%, would limit the placement of sugarcane plantations to 7.5% of Brazilian land (64.7 million hectares). This area, considered suitable, is currently being used for agricultural and livestock production.[166] Already, between the years 2000 and 2009, sugarcane expansion has replaced pastures (73.9%), agriculture (24.2%), citrus (1.4%) and forests (0.5%) in South-Central Brazil.[167]

A battle for agricultural grounds

The trouble in Brazil is that not only sugarcane is expanding rapidly. Between the years 2000 and 2008, the area harvested for soy beans has increased 54% to 21.1 million hectares and the area harvested for maize has increased 24% to 14.4 million hectares.[168] In addition, the production of meat – mainly cattle and poultry meat which also needs land for grazing and other feed – has increased with 48% to 15.4 million tonnes between 2000 and 2008.[169] Between the years 2000 and 2008, the export by Brazil of soy beans, meat, and sugar has increased from USD 5.6 billion to USD 33.2 billion.[170]

The trend of increasing production and export of soy, meat, sugar and also ethanol is expected to continue. The Brazilian ministry of Agriculture has estimated the exports and production for the year 2019/2020 of the most dynamic agricultural products, and compared these with the exports and production for the year 2008/2009. The following table shows the outcome. According to the ministry, which assumes an unprecedented annual production growth of crops of 2.67% per hectare, this production could be met with an increase in crop area of 10 million hectares.[171]

Table: expected increase production and export (both volume) of most dynamic agricultural products of Brazil; 2019/2020 versus 2008/2009

Million tonnes	% increase production in 2019/20 compared to 2008/09	% increase exports in 2019/20 compared to 2008/09
Beef	27	83
Soy (beans, cake and oil)	38	30
Chicken meat	49	72
Sugar	48	52
Ethanol	127	223

Meat, soy and sugarcane: dangerous cocktail

The staggering increase of meat, soy and sugarcane production may cause many social and environmental impacts:

- **Deforestation in the Amazon and Cerrado**. Currently, in Brazil, soy is displacing cattle ranching, and sugarcane is displacing both soy and cattle ranching, creating a complex mix of drivers for deforestation. Soy farming and cattle ranching are being pushed into the forest frontiers.[172] A recent study published in Environmental Science & Technology, shows that Brazilian beef production is the major cause of deforestation in the Amazon. An estimated 60-70 per cent of the deforested land is used for cattle ranching. According to the study, beef from deforested areas constitutes about six percent of Brazil's total production. However, this six percent causes about 25 times more carbon dioxide emissions than beef produced in the rest of Brazil. The authors argue that increased production for export has been the key driver of the pasture expansion and deforestation in the Legal Amazon Region (LAR) of Brazil during the past decade, and that increased global demand for soy meal and bioethanol from sugarcane also drive the conversion of forest into pasture in the LAR. Livestock farmers in the South who sell their land to soya and cane farmers and move to the northern region can multiply their pasture area: the average land price is seven times lower than in the south and the differential is increasing.[173] During the international climate conference in Copenhagen late 2009, the former president Luiz Inácio Lula da Silva made the commitment to reduce the deforestation of the Amazon rainforest by 80% by the year 2020.[174] According to Brazil's National Institute for Space Research (INPE), the Amazon deforestation has indeed decreased since the year 2005. However, during 2009/2010 the deforestation in the LAR still amounted to a high 645,000 hectares.[175] While most attention goes out to the Amazon, the deforestation through expanding soy and, to a lesser extent, sugarcane plantations in the Brazilian Cerrado is also a matter of concern. Deforestation in the Cerrado ran at around 1,420,000 hectares per year during the period 2002-2008. Between 2008 and 2009, the deforestation amounted to 760,000 hectares.[176] The Cerrado occupies approximately 24% of Brazil's territory. Its core area covers ten
  Brazilian states: Goiás, Mato Grosso, Mato Grosso do Sul, Tocantins, Maranhão, Bahia, Piaui,
  Minas Gerais, Sao Paulo and Parana.[177]
- **High income and land inequality**. In some situations, agricultural expansion and industrialization has led to the concentration of land and wealth in fewer hands, resulted in dangerous working conditions, and been accompanied by rural violence. While agriculture has been developing, Brazil has maintained very high levels of income inequality, with one of the world's highest Gini coefficients for income (0.55 in 2009) and one of the worst Gini coefficients for land distribution (0.85 in 2006).[178]
- **Reducing labour opportunities**. Due to increased mechanization, labour opportunities in agriculture are decreasing.[179] Mechanization in the sugarcane sector destroys many of the cane-cutting jobs and leaves thousands unemployed.[180]
- Brazil's agricultural development process has also generated large social costs in the form of deterioration of water and air quality, increased use of toxic chemicals, and changes in nutrient (biogeochemical) cycles.[181]

Greenhouse gas emissions ethanol

In February 2010, the U.S. Environmental Protection Agency (EPA) published the results of an extensive research on the lifecycle greenhouse gas emissions of renewable fuels for the U.S. market. The lifecycle analysis included all aspects of the fuel cycle, from feedstock production to distribution to use, including emissions from international land use changes (ILUC) resulting from increased biofuel demand. According to EPA, it used "the best available models" and incorporated "many modifications to its proposed approach based on comments from the public, a formal peer review, and developing science".[182] The average 2022 Brazilian sugarcane ethanol lifecycle greenhouse gas emissions were found to be 61% lower than the greenhouse gas emissions of the 2005 petroleum gasoline baseline.[183] The concept of ILUC means that the use of fields for growing biofuel crops can lead to increased greenhouse gases as new land will have to be land cleared to grow food crops. According to the Brussels-based NGO Transport & Environment, Shell is lobbying against using ILUC factors in sustainability criteria for biofuels used within the European Union.[184] In its response of October 2010 to a consultation by the European Commission, Shell stated: "Shell does not support any proposal that attributes a quantity of GHG emissions from ILUC."[185] Instead of penalising certain biofuels, Shell is opting for a system of carbon bonuses for low-ILUC fuels. Then, for Shell is would also be easier to comply with the EU fuel quality directive, which requires them to cut the life-cycle emissions of their fuels by 6% by 2020.[186]

Case 5
Fracking unconventional gas

Unconventional gas and high-volume fracking

Not only for oil, but also for gas Shell is resorting to unconventional production methods. In December 2010, Shell-CEO Peter Voser stated: "In recent years, Shell has increased investment in natural gas projects in countries like Qatar, Australia, Russia, the United States and Canada, with a special focus on tight gas, shale gas and coal-bed methane – together these are known as unconventional gas. We're currently exploring the potential for unconventional gas outside North America in countries like China and South Africa, as well as some European countries." The Shell-CEO proceeds: "I know by 2012 Shell will be producing more gas than oil, and, I know, when it comes to natural gas supplies, a revolution is under way. (…) Shell is set for strong growth in tight gas."[187]

Conventional natural gas is usually found trapped in the pore space of rock types like sandstone in underground geologic formations. Compared to unconventional gas, conventional gas flows rather easily to drilled wells. For unconventional gas, often high-volume fracking is used as a technique to get the gas to the surface. Fracking (or hydraulic fracturing) involves injection of water, mixed with sand and chemicals to ease production of natural gas and oil by breaking up rock formations. Fracking has been done around the world for many years. However, high-volume fracking is a rather new phenomenon and causes much more environmental damage and health risks. From this point of view, the revolution that is under way according to Shell-CEO Peter Voser, may in fact be a quite worrying revolution.

Tony Ingraffea, professor of Civil Engineering at the Cornell University in the U.S. State of New York, has conducted much research on fracking. During a radio interview in February 2011, he asked himself the question: "What is high-volume fracking, compared to the traditional historical kind that no one seems to be complaining too much about?" His answer was: "The difference is about a factor of hundred in just about everything, predominantly the amount of fluids that are necessary to do the fracking [including the amount of chemicals; the professor mentions this later in the interview], the amount of fluids and other waste products produced from a high-volume unconventional well that's fracked, the amount of truck traffic, the amount of energy and power that needs to be brought to a well. (….) It's not the issue of fracking, it's the entire system of developing gas from an unconventional resource."[188]

Shell's positions in unconventional gas

Shell is rapidly expanding its positions in unconventional gas (tight gas, shale gas and coal-bed methane). Below its main present positions around the world are listed:

- **North America**. Shell's North American tight gas production amounted to some 140,000 barrels of oil equivalent per day in 2009, an increase of 62% from 2008 levels. Shell expects that its production could double from 2009 to 2015. Its activities in U.S. tight gas began in 2001, with purchases in the Pinedale Anticline in Wyoming State. More recently, Shell secured unconventional gas positions in the Haynesville play in Texas/Louisiana State and in Western Canada (Groundbirch, Deep Basin, Foothills, Klappan). Its 2010 acquisitions are mainly in the Marcellus shale, the biggest natural gas field in the United States, covering most of Pennsylvania state and parts of New York, Ohio and the Virginia states. Another 2010 acquisition was within the Eagle Ford shale play, in South Texas.[189]
- **South Africa**. Shell wants to start shale gas exploration activities within the Karoo eco-region in South Africa. The exploration area would comprise 90,000 square kilometres, more than two times the surface of the Netherlands.[190] Shell has applied for three exploration areas, each comprising 30,000 kilometres. In each area it wants to drill up to eight exploration wells. The formations in the Karoo that are believed to contain recoverable gas are located 1.5 to 4.5 kilometres below the surface.[191]
- **China**. Shell and PetroChina operate Changbei, a tight gas field in the Shaanxi Province of China. Commercial production in Changbei began in March 2007, supplying 3 billion cubic metres of natural gas a year to Beijing and other cities in eastern China. Late 2007, Shell took over a 55% equity interest in a coal-bed methane venture in Shaanxi Province. In the Sichuan province, Shell works together with PetroChina on developing two tight/shale gas reservoirs of each 4,000 square kilometres.[192] Shell provides little information about the environmental impacts of its Chinese operations.
- **Australia**. In August 2010, Shell and PetroChina (major-

ity owned by the state company CNPC, China National Petroleum Corporation) completed their acquisition of the Australian company Arrow Energy. The 50/50 joint venture called CS CSG (Australia) Pty Ltd. now owns coal seam gas assets in Queensland state, domestic power businesses, and a site to build a liquefied natural gas (LNG) plant for export markets. Coal-bed methane is natural gas contained in coal seams. The new joint venture will be the operator of the coal seam gas assets. The gas production assets are in the Surat and Bowen basin. In the Surat basin, there is no fracking done. In the Bowen basin, there might be.[193]

- **Other**. Shell also has unconventional gas positions in Sweden, Germany, Ukraine and Brazil.[194]

Shell: nothing wrong with fracking and unconventional gas

In its communication, Shell makes no difference between conventional and unconventional gas in terms of environmental and health risks. The company generally refers to natural gas as being cleaner-burning than coal in power plants and as being a bridge to a low-carbon energy future.[195]
On fracking, Shell states on its website: "This is a safe and proven technique according to the U.S. Environmental Protection Agency (EPA), which is now carrying out a new study into hydraulic fracturing and its potential impact. Fracturing has been used by oil and gas companies for over 60 years."[196] The company does not mention that there are great differences between the traditional fracking and the present high-volume fracking, that the EPA has been presently accused of hiding some severe impacts of fracking, and that the U.S. government has not been able and/or willing to monitor the booming U.S. shale gas business adequately.

Environmental and health risks caused by unconventional gas extraction

In this section, the environmental and health risks of the present high-volume fracking are considered more in-depth.

1) Enormous water use

According to the U.S. Environmental Protection Agency, the volume of water needed for hydraulic fracturing varies by site and type of formation. Fifty thousand to 350,000 gallons of water may be required to fracture one well in a coal-bed formation, while two to five million gallons of water may be necessary to fracture one horizontal well in a shale formation. A gallon stands for 3.78 litres.[197]

Shell stated in September 2010 that hydraulic fracturing requires 1 to 5 million gallons of water per well and that it re-uses some of the water. For its Groundbirch tight gas operations in British Columbia (Canada) Shell claims to use 5 to 8 million litres per well, sourced locally from the Peace River, fresh water wells and some 20-40% recycled from producing wells. As with most unconventional gas operations presently going on, the Groundbirch operations have just been starting up. As of June 2010 Shell had drilled 103 wells, with almost 3,000 wells yet to come. Shell's future aspiration is to use reclaimed water from a waste treatment plant at Groundbirch, transported via pipelines so the present disposal by trucks can be reduced.[198]

To explore the shale gas possibilities of the Karoo region in South Africa, Shell states it may decide to hydraulically fracture vertical and horizontal exploration wells. It expects to need up to 2.2 million litres of water for hydraulic fracturing a vertical exploration well and up to 6 million litres for an exploratory horizontal well section.[199] Whenever Shell is allowed to explore the Karoo region, and it does find gas it could produce on an economically basis, one wonders how Shell would cope with the enormous amounts of water needed in the semi-desert Karoo region. Shell has not yet shared its thoughts about this.

2) Pollution of water resources

There are several ways in which water could be polluted through high-volume fracking. With shale gas production, the two major pathways to water contamination are activities at the surface and errors below ground:

- Once in the ground, a large portion of the fracturing fluid may be trapped in the target formation. The rest, however, comes back to the surface (flowback), combined with water produced from the formation itself. Both flowback and produced water represent large waste streams. If flowback and produced water are disposed of improperly, waste water may threaten public and environmental health.
- Errors below ground can endanger water resources as well. Improperly cased wells may contaminate penetrated aquifers. Potential shallow pockets of natural gas in formations above the target layer may enter into ground water.
- Trucks transporting water to the site for fracturing and from the site for disposal may stress nearby stream banks, contributing to erosion and adding sediment to surface water.[200]

3) Greenhouse gas emissions

The three main greenhouse gases (GHGs) that are relevant to the petroleum and natural gas industry are methane (CH_4), carbon dioxide (CO_2), and nitrous oxide (N_2O). Methane's chemical lifetime in the atmosphere is approximately 12 years. Its relatively short atmospheric lifetime,

Experiences in Pennsylvania, United States

In February and March 2011, the New York Times published several articles about the pollution caused by drilling in Pennsylvania State, USA. During nine months the newspaper had obtained more than 30,000 pages of documents from state and federal agencies/officials.

The shale gas business is booming in Pennsylvania, sitting atop the enormous reserve called the Marcellus Shale. In 2010, drilling companies were issued roughly 3,300 Marcellus gas-well permits in Pennsylvania, up from just 117 in 2007.[201]

The New York Times estimated that more than 1.3 billion gallons of wastewater was produced by Pennsylvania wells over the past three years. Based on the obtained documents, the newspaper estimated that some 10 to 40 percent of the water sent down the well during hydrofracking returns to the surface, carrying drilling chemicals, carcinogenic materials, corrosive salts and, at times, naturally occurring radioactive material. Most of the wastewater was sent by trucks to treatment plants not equipped to remove many of the materials, and ended up in rivers providing drinking water for millions of people. The U.S. Environmental Protection Agency states that it is dangerous when radioactive wastewater contaminates drinking water or enters the food chain through fish or farming. Once radium enters a person's body, by eating, drinking or breathing, it can cause cancer and other health problems, many federal studies show.[202]

The newspaper was able to map the wastewater released from 149 wells. The federal drinking water standards were exceeded for the carcinogenic benzene (41 wells), gross alpha (128 wells, gross alpha is a type of radiation caused by emissions from uranium and radium), uranium (4 wells), and radium (42 wells).[203] At least 116 wells produced wastewater exceeding the federal standards for radium or other radioactive materials in drinking water more than 100 times.

coupled with its potency as a greenhouse gas, makes methane a candidate for mitigating global warming over the near-term (25 years or so).[204] Methane is about 33 and 105 times more powerful at warming the atmosphere than carbon dioxide (CO_2) by weight, for a 100-year and 20-year horizon respectively.[205]

New estimates U.S. Environmental Protection Agency
Recently, the U.S. Environmental Protection Agency (EPA) has re-estimated the GHG emissions from the petroleum and natural gas industry. It's earlier estimations were from 1996. At that stage methane emissions were not considered to be so powerful at warming the atmosphere. In its new study, published in November 2010, the EPA found that CH_4-emissions had been significantly underestimated. In its new estimate, the U.S. petroleum and natural gas industry emitted 317 million tonnes of greenhouse gases (measured in CO_2 equivalents) in 2006. This is a 57% increase compared to the outdated calculation method. Of the total 317 million tonnes, the natural gas industry accounted for 261 million tonnes CH_4 (measured in CO_2 equivalents). The EPA had revised four emission sources that were believed to be significantly underestimated: well venting for liquids unloading; gas well venting during well completions; gas well venting during well workovers; centrifugal compressor wet seal degassing venting.[206]

The EPA also made a distinction between the GHG emissions of conventional gas wells and unconventional gas wells. For unconventional wells, it estimated that the emission factors for venting during well completions and well workovers exceed emission factors of conventional wells by a factor 200. It was assumed that all unconventional wells were completed with hydraulic fracturing of tight sand, shale or coal bed methane formations. The water that is returning to the surface is accompanied by large quantities of methane. This is the main cause of the greater methane emissions than conventional wells.[207]

Study Cornell University

In a study published in the journal Climatic Change, the Cornell University in New York assesses the likely GHG footprint of natural gas in comparison to coal.[208] The

study builds, among other, upon the recent findings of the EPA. The study acknowledges that natural gas produces less greenhouse gas emissions than coal when burned. However, the authors also take into account the GHG emissions that occur during the production of coal and natural gas. This lifecycle approach of GHG emissions from coal and natural gas presents a different picture. The authors compare the lifecycle GHG emissions of shale gas, conventional natural gas (both with low and high estimates for methane emissions to the atmosphere), coal from surface mines, coal from deep mines and diesel oil.

Largely based upon the recent EPA-study, the authors estimate that 3.6% to 7.9% of the methane from shale gas production escapes to the atmosphere through venting and leaks. This is 1.3 to 2.1 times more than from conventional gas operations. The higher emissions from shale gas occur when wells are hydraulically fractured – as methane escapes from flowback return fluids – and during drill out following the fracturing.

Calculated on the basis of a 20-year horizon, the authors conclude that the lifecycle GHG emissions of shale gas are at least 20% greater than the lifecycle GHG emissions of coal. For conventional natural gas, the emissions of coal fall between the high and low estimate.

The 20-year approach by the authors reflects the need to mitigate climate change in the near-term. As methane is known to have a relative short lifetime in the atmosphere, it especially causes climate change on a short-term. The authors also calculated the lifecycle GHG emissions for a 100-year horizon. Over the 100-year frame, the GHG footprint is comparable to that for coal: the low-end shale-gas emissions are 18% lower than deep-mined coal, and the high-end shale-gas emissions are 15% greater than surface-mined coal emissions.

As for Shell, it is not known how many GHG emissions it releases in the air due to venting and leaking CH_4. The company promotes natural gas (including unconventional gas) as a replacement for coal. Natural gas is seen by Shell as a bridge to a low-carbon energy future, something for the near-term. , However, for unconventional gas the opposite seems true: the GHG emissions increase compared to coal in the near-term.

South Africa: fracking in semi-desert Karoo

Farmers, scientists, NGOs, a Dutch princess, a business tycoon, a long-distance swimmer, a Facebook account with already 6,500 members as of 19 April 2011.[209] Royal Dutch Shell is facing strong opposition to its plans to get an exploration license to seek shale gas in South Africa's semi-desert Karoo region.

The consulting firm Golder Associates, working on behalf of Shell, drafted an Environmental Management Plan (EMP) for three exploration areas, each comprising 30,000 kilometres. Until 5 April 2011, the public was allowed to comment to these plans. The drilling of a maximum of 24 wells was not expected to commence before 2012. Golder stated in its conclusions to the EMPs that there was no material evidence that a small number of exploration wells could result in an unacceptable level of environmental impact, and that therefore the determination of the resource potential of the Karoo shale gas formations not should be prevented or delayed. As long as the siting and management of the wells would be controlled through a rigorous, scientific Environmental Impact Assessment process, it would be unlikely that the construction would result in unacceptable environmental damage, the company continued.[210]

Scientists of the U.S. Environmental Protection Agency (EPA), under this administration and at the direction of U.S. Congress, are currently undertaking a study on the practice of hydraulic fracturing to better understand any potential impacts on drinking water and groundwater. The results of this study are not expected before late 2012.[211] Golder stated that there was no need to wait with handing over an exploration license, because Shell's application did not involve production. Before any licensing of a production well field is considered, the EPA-study should however be considered, according to Golder.

Thousands of comments to the Environmental Management Plan (EMP) of Golder were submitted.[212] The strong public resistance against fracking the Karoo resulted in a moratorium by the government on licenses in the Karoo where fracking is proposed. On Wednesday 20 April 2011, the South African Cabinet endorsed the decision by the Department of Minerals to invoke this moratorium. The Department of Minerals will lead a multi disciplinary team including the Departments of Trade & Industry, Science and Technology, amongst others, to fully research the full implications of the proposed fracking. It was stated that the Cabinet had made it very clear that clean environment together with all the ecological aspects will not be compromised.[213]

The opponents of the exploratory plans are however not re-assured:

- Business tycoon Johann Rupert: "We don't think the legal framework was designed for this fracking method and we are very, very scared about the irreversibility of the ecological damage, should it occur."[214]
- Professor Doreen Atkinson of the Centre for Development Support at the University of Free State (UFS): "There is a prima facie case to put a hold on any decisions around fracking until studies have been done. These studies may take at least 3 to 5 years. It would

also be prudent to first see the results of the American Environmental Protection Agency (EPA) which has embarked on a study. Its results are only expected in late 2012."[215]

- Long-distance swimmer Lewis Gordon Pugh: "Growing up in Grahamstown I learnt how scarce water is in the Karoo. Why on earth would we allow a foreign company to come and drill for gas in a vulnerable ecosystem? Why would we risk contaminating our water supply? It is morally wrong. It also makes poor economic sense. We must look after our water for future generations."[216]
- Dr Anthony Turton, a well-known trans-disciplinary water scientist: "In the absence of certainty, it is prudent to assume the worst and respond accordingly. In the case of fracking, there are many unknowns technologically. At best it is chasing a highly marginal resource. Invariably the costs exceed the benefits if one takes potential environmental damage into consideration. But because the benefits are so few, if things go wrong, there is not enough to pay for environmental remediation."[217]
- Geologist and palaeontologist Professor Bruce Rubidge of the University of Witwatersrand's Bernard Price Institute: "The fact that companies like Shell are saying that they will use sea- and brack- water for the fracking may have unwelcome effects on the salinity of the groundwater. Also in the fracking process there will undoubtedly be some of this sea and brack water which has been contaminated with chemicals and which will spill out on the surface, as has happened in many recorded cases in America. What will it do to the soil?"
- Ernest Pringle, president of Agri-Eastern Cape and a farmer in the Karoo: "I spent all my time trying to pump up more groundwater to keep going. So we want to know with certainty what the effects will be to the underground water supply."[218]
- Mark Botha, head of conservation at environmental group WWF South Africa: "We've got some serious concerns about fracking, it is as yet an unproven technology with unacceptable risks for fresh water abstraction and pollution."[219]
- Derek Light, a lawyer representing a number of Karoo land owners: "We are very concerned about the environmental impact, especially because fracking is not regulated in South Africa."[220]
- Princess Irene of the Netherlands (this sister of the queen owns land in the Karoo): "There are other ways to generate energy, for which we do not exploit nature but cooperate with it. With wind or solar energy nothing gets polluted, nothing gets broken. More companies are recognizing that we are partners of nature. Shell is stuck in its old patterns."[221]
- At the beginning of April 2011, several scientists and consultants responded to Shell's application with an extensive 104-page critical review.[222]

Even in the case that the fracking operations by Shell could be performed without compromising a clean environment together with all the ecological aspects, there is still the issue of where Shell would get the massive amounts of water needed. The company has made a commitment "not to compete with the people of the Karoo for their water needs."[223] One of the options Shell considers is to get water from sea.[224] Shell has also stated it is commuted to provide full compensation to any landowner with evidenced direct negative impact or loss on their land as a result of its activities. This may however seem less re-assuring than it looks like. How do farmers prove that Shell has polluted their lands, what lengths people have to go through to get their rights?

Case 6
Climate change, a business case?

Shell's greenhouse gas emissions

In 2010, Shell emitted 75 million tonnes of greenhouse gases (GHG)[225], surpassing the emissions of countries like Austria, Sweden and Switzerland.[226] Shell reports GHG emissions on a 100% basis for companies and joint ventures where it is the operator. Its 2010 emissions can be broken down as follows:

- downstream (refining, retail, producing petrochemicals etc.) 44
- upstream (extracting oil/gas, liquefying/regasifying natural gas etc.) 28
- shipping 3.[227]

Shell's emissions have been decreasing over the years. In 2010, its emissions were around 25% below its 1990 level and 18% below its 2000 level. In the period 2000 – 2010, the reduction was mainly caused by capturing (and no longer flaring) gas that comes with oil production. Shell does not provide for a further breakdown of its achievements in reducing GHG emissions.[228]

The coming years: increasing emissions

Shell's GHG emissions are expected to climb to coming years, in line with increasing oil/gas production and increasing unconventional oil/gas production. In 2012, Shell expects to produce oil and gas totalling 3.5 million barrels of oil equivalent a day. This is an increase of 11%, compared to the 2009 level.[229] In 2014, Shell expects to produce 3.7 million barrels of oil equivalent, up 12% from 2010.[230]

In its Annual report 2010, Shell stated: "In the future, in order to help meet the world's energy demand, we expect more of our production to come from unconventional sources than at present. Energy intensity of production of oil and gas from unconventional sources can be higher than that of production from conventional sources. Therefore, in the long term, it is expected that both the CO_2 intensity of our production as well as our absolute Upstream CO_2 emissions, will increase as our business grows, for example, from the expansion of oil sands activities in Canada. Also our Pearl GTL project in Qatar is expected to increase our CO_2 emissions when production begins."[231]

In May 2009 – in a report by Oil Change International, PLATFORM, Friends of the Earth International and Greenpeace UK – Shell was found to be the world's most carbon intensive oil company. The company holds more carbon in its resources, per barrel of future oil equivalent, than its competitors Chevron, ExxonMobil and BP. According to the report the average carbon intensity of oil and gas produced by Shell is set to rise dramatically, increasing 85 per cent on the figure for 2008. This sharp increase is caused by Shell's move into tar sands, its reliance on liquefied natural gas (LNG), and its continued gas flaring in Nigeria.[232]

Shell's GHG emissions reporting complete?

It should be noted that not all of the fuel Shell sells to its customers is accounted for in Shell's bookkeeping of GHG emissions. For example, in 2010 Shell bought a lot of Russian oil from the biggest Russian oil producer Rosneft, as input for its refineries in Germany.[233] During 2009, Rosneft still flared some one-third of the gas that comes with oil production.[234] Thus, the emissions for producing this oil are probably high. As Shell is not the operator for the oil production, the emissions are not accounted for in Shell's bookkeeping of GHG emissions. In its communications, Shell doesn't mention any policy with regard to responsible sourcing of oil from third parties.

Another incompleteness of Shell comprises the emissions of methane (CH_4). Methane emissions are mainly caused by gas flaring and gas production. Shell reports its methane emissions in line with the Second Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), which has put methane emissions at being 21 times more powerful in warming the atmosphere than CO_2 on a 100-year horizon basis.[235] Shell's CH_4 emissions amounted to around 2.5 million tonnes CO_2 equivalents in 2009 and 2010. There are, however, some specifics about methane Shell doesn't mention in its annual reports and sustainability reports:

- Shell generally refers to natural gas as being cleaner-burning than coal in power plants and as being a bridge to a low-carbon energy future, something for the near-term. Methane's chemical lifetime in the atmosphere is approximately 12 years. Its relatively short atmospheric lifetime, coupled with its potency as a greenhouse gas, makes methane a candidate for miti-

gating global warming over the near-term (25 years or so).[236] Shell's reporting on a 100-year horizon basis, hides the fact that methane emissions are especially causing climate change in the near-term.

- A study published in 2009 in Science magazine calculated methane to be about 33 and 105 times more powerful at warming the atmosphere than carbon dioxide (CO_2) by weight, for a 100-year and 20-year horizon respectively.[237] Thus, Shell's accounting of methane being 21 times worse than CO_2 by weight over a 100-year period, does not follow the latest scientific proceedings. According to these latest scientific proceedings, Shell's methane emissions would be 57% greater over a 100-year horizon and amount to around 4 million tonnes CO_2 equivalents. Calculated on a 20-year horizon, Shell's emissions would even be 12.5 million tonnes CO_2 equivalents.
- Shell does not mention that methane emissions may rise due to its increasing share of unconventional gas in its gas portfolio. Recent studies by the U.S. Environmental Protection Agency and the U.S. Cornell University show that much more methane is leaked than previously thought.[238] This is especially the case for unconventional gas production, which GHG emissions might even surpass the ones for coal production. So far, Shell has provided little information about the methane emissions during its unconventional gas production.

Climate change: Shell's business case

In 2002, Shell's committee of managing directors considered that "essentially the Group's business was not to decarbonise but rather take advantage of opportunities which had arisen as a result of the world's desire to decarbonise." The committee argued that "it was not unreasonable to expect that the Group could pursue decarbonisation as a good business case."[239]

In January 2011, the present Shell-CEO Peter Voser advised policy makers to reduce CO_2 emissions in four ways: energy efficiency (homes, cars etc.); increased use of natural gas; carbon capture and storage projects (CCS); biofuels.[240] Notably, these four areas are also part of Shell's business strategy. In its Annual report 2010, Shell states: "We are seeking cost-effective ways to manage CO_2 and see potential business opportunities in developing such solutions. Our main contributions to reducing CO_2 emissions are in four areas: supplying more natural gas; supplying more biofuels; progressing carbon capture and storage; and implementing energy efficiency measures in our operations."[241]

A statement very much repeated by Shell is that worldwide energy demand will have doubled by 2050, compared to present levels.[242] This statement implies that Shell doesn't expect any government to tackle energy use the coming forty years. For Shell, this statement is a comfortable excuse to extract energy from climate unfriendly sources. In January 2009, Shell-CEO Jeroen van der Veer (now succeeded by Peter Voser) stated in an interview with environmentalist George Monbiot: "Less oil sands in the future means more coal production in the world, and coal is even more CO_2-intensive than oil sands, so we think it is perfect to be in oil sands."[243] The former CEO did not mention that oil sands and coal are not interchangeable, because their end uses are different. Oil sands end up in transport fuels, and coal ends up in power generation.

Natural gas, CCS and biofuels

Presently, Shell is very much into promoting natural gas as an "important bridge to a low-carbon energy future."[244] Shell advocates that there are abundant resources of gas worldwide, and that the capital costs of building gas-fired power plants are well under the costs of building coal-fired plants, nuclear plants, and offshore wind projects.[245] In its communications, Shell makes no difference between the extraction of conventional gas and. In this report, the environmental problems with regard to the extraction of unconventional gas are highlighted in a separate chapter.

Another main feature of Shell's climate portfolio is carbon capture and storage (CCS). CCS is a way to secure Shell's business case of supplying gas (power plants) and oil (refineries) to the developed world, which has already the largest CO_2-footprint per capita. The idea behind CCS is to store the CO_2 emitted by main plants under the ground. The technology, its risks and benefits, are still being tested through pilot plants. The European Commission expects CCS commercial rollout in electricity generation and industrial applications to start after 2020.[246] Storage is also expensive. Shell has lobbied extensively to get financial support from the European Union for CCS-projects. This lobby has been successful. One billion Euros have been already given to CCS projects from the EU Recovery Plan and further funding will be paid out in the third phase of the EU Emissions Trading Scheme (ETS): 4 – 7 billion Euros.[247] Among other, Greenpeace has argued that: a) the CCS-technology uses between 10 and 40% of the energy produced by a power station, b) even very low leakage rates could undermine any climate mitigation efforts, and c) money spent on CCS will divert investments away from sustainable solutions to climate change.[248]

Biofuels do replace oil. Therefore, compared to gas and CCS, biofuels are not so much a feature of Shell's climate portfolio that is clearly in line with its core business. However, governments have mandated a certain use of biofu-

els by oil companies. An example forms the Fuel Quality Directive of the European Union.[249] Shell has an obligation to fulfil governmental demands. Already, Shell is one of the world's largest distributor of transport biofuels. In 2010, it sold 9.6 billion litres of biofuels in petrol or diesel blends.[250] In August 2010, Shell signed binding agreements to form a joint venture in Brazil with Cosan, Brazil's largest sugar and ethanol producer. Shell's most promising advanced biofuel is cellulosic ethanol. Shell's external review committee stated in Shell's Sustainability report 2009 that it would welcome further information on Shell's management of the sustainability impacts within the supply chains of first-generation biofuels.[251] In this report, the social problems with regard to the new Shell ethanol operations in Brazil are highlighted in a separate chapter.

Shell and the lower carbon long-term future

According to Shell's energy scenarios, by 2050 biofuels, wind, solar and other renewables could provide 30% of the world's energy.[252] It expects biofuels to have a market share of 7% to 9% of the world's road transport fuel market in 2030.[253]

Except for biofuels, Shell does not have any major involvement with renewable energy. The company is also not involved with electric cars, though it has a small interest in research for cars with hydrogen as energy carrier. Wind and solar energy are no longer part of Shell's investment portfolio, though it still has some wind farms in the USA. In 2008, Shell pulled out of the London Array project, aimed at building 341 turbines in the Thames Estuary capable of generating 1,000 megawatts of power – enough to power a quarter of London's homes. The company had a 33% share in the project.[254] In March 2009, Shell announced it would no longer invest in wind and solar energy. Linda Cook, Shell's executive director of gas and power, said: "We are businessmen and women. If there were renewables [which made money] we would put money into it."[255] In an October 2010 speech, Shell-CEO Peter Voser even discouraged investments in offshore wind power by the UK government: "So perhaps the country should consider diverting some investment away from new offshore wind farms."[256]

So basically Shell is not investing in fundamentals like wind and solar power needed to achieve a lower carbon long-term future, and might even oppose such fundamentals that are not in its investment portfolio.

Case 7
Interfering with politics

Improper involvement?

Oil and politics have a lot to do with each other. The home states of Royal Dutch Shell are the United Kingdom and the Netherlands. These countries might want to secure their oil/gas imports and the economic benefits of having an international oil company based within their territory. These interests might overpower ethical interests, such as the protection of human rights in countries hosting the oil company. Home states often might have the same business interest than "their" oil companies.

Oil companies may lobby their home states, so these will pay more attention to oil business possibilities. Oil companies may speak kindly of regimes that are in fact abusing human rights. Oil companies might keep their finger on the pulses of home as well as host states, in order to keep informed of the latest political developments.

One of the general policies prescribed by the OECD Guidelines for multinational enterprises is that companies should abstain from any improper involvement in local political activities. The OECD does not have a clear definition of improper involvement. It states that companies might want to ask themselves whether their political activities are transparent; whether they would feel comfortable if these activities were described in detail in the media; and whether their activities are in the best interests of the host country.[257]

In this section some examples are given of cases which could be, to some extent, seen as improper involvement in politics by Shell and/or home states and Shell working together to ensure business. Most of the examples became known through Wikileaks and through journalists/activists making use of the UK Freedom of Information Act.

1) Shell's access to the Nigerian government

In October 2009, Shell's Executive Vice President (EVP) for Shell Companies in Africa, Ms Ann Pickard met with the United States Ambassador to Nigeria. According to the cable from the U.S Embassy in Nigeria, the Shell EVP told the ambassador that the Government of Nigeria "had forgotten that Shell had seconded people to all the relevant ministries and that Shell consequently had access to everything that was being done in those ministries."[258] Following the disclosure of this cable, Shell has stated that the suggestion of infiltration by Shell in the Nigerian government is far from the truth, and that this infiltration would not be in line with Shell's General Business Principles. According to Shell, it has a total of 11 staff seconded to the Nigerian government, mainly technical specialists. Shell stated that it is usual in the oil industry for governments and businesses to keep close contact with each other. The reasons for this would be the importance of energy for society and the fact that governments often directly or indirectly participate in oil and gas activities.[259]

2) Shell's access to the Dutch and UK governments

From Wikileaks it also became more clear to what extent the Dutch government and Shell are cooperating. There is an ongoing program in which a Dutch diplomat works at Shell's headquarters in The Hague and a UK diplomat works at Shell's London offices. For example, in summer 2008, Mr Simon Smits, Director of Economic Cooperation at the Dutch ministry for Foreign Affairs, completed a two-year secondment at Shell where he focused on government relations in the company's hot zones.[260] In November 2008, the Dutch Ministry of the Interior and Kingdom Relations signed an agreement with Shell to exchange senior managers. The exchange would take the form of secondment of public sector managers with Shell and vice versa. The posting would last one or two years.[261]

After questions by parliamentarians, the Dutch ministers of Foreign Affairs and Economic Affairs stated that there is no conflict of interest related to the exchange of personnel by Shell and the Dutch government. In the oil and gas sector, more than in other sectors, the role of foreign governments and state companies is dominant. In this context, oil companies from the West rely on support from their own government to secure their position abroad. The secondment of officials of the ministry of Foreign Affairs at Shell should be seen from this perspective. According to the ministers, it could help to build knowledge and get a better understanding of the sector.[262]

3) Shell drafts letters for the UK government to get Libya deal

In May 2005, Shell signed an agreement to start a joint venture with the Libyan National Oil Corporation. The joint venture would revamp and expand the existing liquified natural gas (LNG) Plant at Marsa el-Brega on the Libyan coast. It would also explore for gas and subsequently develop five areas totalling 20,000 square kilometres located in the heart of Libya's Sirte Basin. Shell was committed to invest USD 637 million in the first phase of the joint venture.[263]

Already in March 2004, Malcolm Brinded, head of exploration and production at Shell, stated: "We were in Libya in the Fifties and we were in Libya in the Eighties for an exploration programme, but for this one we came back in 2001 and so this is the culmination of discussions over that."[264] International sanctions on Libya were lifted in 2003 and 2004.[265] Thus, Shell had been fishing for contracts from Gaddafi a long time before international sanctions were lifted.

In April 2010, documents obtained by the UK newspaper The Times revealed that the former UK prime minister Tony Blair lobbied Colonel Muammar Gaddafi on behalf of Shell. Shell had written a letter in draft form for Mr Blair to write to Colonel Gaddafi. In May 2005, shortly after Mr Blair's official letter was written, Shell secured the deal.

Both letters were released after a lengthy Freedom of Information process. The Cabinet Office of the UK government would release only a part of Mr Blair's official letter. In its draft-letter, Shell tells the Prime Minister to congratulate the Libyan leader on Revolution Day and to comment on the "remarkable year of progress for Libya". In relation to its deal, the draft letter from Shell said: "Understand that all the terms of the agreement have now been negotiated and approved ... now waiting for [Libyan] Cabinet approval." The section on Shell in Mr Blair's official letter sounded very similar to the draft: "I understand that the necessary technical discussions with the relevant authorities in Libya have been completed satisfactorily. All that is needed now are final decisions by the [Libyan] General People's Committee to go ahead." Shell declined to comment to The Times. The journalist of The Times, David Robertson, later characterised Shell's draft-letter "unusually informal or unusually forward in the way that Shell thought it would be able to dictate British foreign policy."[266]

In September 2009, The Times requested all communication between the UK Department for Business and the following companies: BP, BG group and Shell (all oil and gas companies), and defence company BAE Systems. A limited number were released in December 2009. One was an email from Shell to UK Trade & Investment dated September 2004 complaining of slow progress with its Libyan deal. Just months earlier Mr Blair and Colonel Gaddafi had met in a tent outside Tripoli to end Libya's diplomatic isolation.[267]

4) Shell and Dutch government lining up against U.S. Iran sanctions

In January 2011, Wikileaks revealed that during 2009 the Dutch government and Shell maintained the same position with regard to proposed U.S. legislation to impose sanctions on oil companies producing oil/gas in Iran or selling refined products to Iran. They thought this would give Chinese and Russian companies access to Iran's hydrocarbon resources at the expense of U.S. and European competitors, among other Shell.[268] Dutch parliamentarians asked the Dutch ministers of Foreign Affairs and Economic Affairs to inform them on the extent to which the Dutch foreign policy is tailored to the demands of Shell, as seemed to be the case with regard to the position on the U.S. Iran Sanctions Act. The ministers answered that the Netherlands has, within the European Union, always plead for severe sanctions against Iran. However, the Netherlands had also always opposed the extraterritorial impacts of U.S. sanctions, whenever these are stricter than EU and/or UN measures. They would always defend the business interests of Dutch companies when these could be disproportionately affected.[269]

5) Invasion of Iraq: UK and Dutch governments understand Shell's needs

In April 2011, it became publicly known that the exploitation of Iraq's oil reserves was discussed by UK government ministers and oil companies during months before the March 2003 invasion of Iraq, in which the UK took a leading role. Late 2002, at least five meetings were held between civil servants, ministers, BP and Shell. The documents describing these meetings were released under the Freedom of Information Act to oil campaigner Greg Muttitt. "It was a five-year struggle to get them, but they provide evidence of what many of us suspected: that oil was at the centre of the Blair government's thinking on Iraq," he said.[270]

Minutes of a meeting with BP, Shell and BG (formerly British Gas) on 31 October 2002 read: "Baroness Symons [then the UK Trade Minister] agreed that it would be difficult to justify British companies losing out in Iraq in that way if the UK had itself been a conspicuous supporter of the US government throughout the crisis." After another

meeting in October 2002, the Foreign Office's Middle East director at the time, Edward Chaplin, noted: "Shell and BP could not afford not to have a stake in [Iraq] for the sake of their long-term future... We were determined to get a fair slice of the action for UK companies in a post-Saddam Iraq."

Shell has always denied that it has actually sought discussion with the UK government. In March 2003 it stated: "We have neither sought nor attended meetings with officials in the UK Government on the subject of Iraq. The subject has only come up during conversations during normal meetings we attend from time to time with officials."[271]

To the UK government, Shell had always argued that there should be a "level playing field" in the event of post-war development of Iraq's oil fields.[272] Shell had also told the Dutch ministry of Foreign Affairs that it would welcome a lobby by the Netherlands for a "level playing field". There was concern at Shell that certain companies would be favoured. In March 2003, the British ambassador Colin Budd told the Dutch top-official Rob Swartbol that UK prime minister Tony Blair had addressed the concerns of Shell towards U.S. president Bush.[273]

In January 2010, the report of the independent inquiry into the Dutch decision making in 2002/2003 towards political support for the invasion of Iraq was published. The report stated that trade or oil interests didn't seem to have been part of discussions about Iraq in the Dutch Cabinet.[274] However, in March 2002 the former Dutch minister of Foreign Affairs Jozias van Aartsen met with the former U.S. Defence Minister Colin Powell and other people in the Pentagon. There were also discussions about a post-Saddam Iraq. Van Aartsen stated that Shell had never asked him to mediate, but that he "would have been a lousy minister whenever he would not kept those economic interests in mind."[275]

Both the Netherlands and the UK government were among the very few European countries that were in favour of U.S.-dominated military actions against the Iraqi regime of Saddam Hussein. In the case of Iraq, Shell doesn't seem to have interfered with Dutch and UK politics so much. The governments seemed to be already aware of business possibilities of a post-Saddam Iraq.

Presently, Shell is already having a big role in increasing Iraq's oil/gas output:

- December 2009, at an auction by the government, the Majnoon oil field was awarded to a consortium of Shell (45%), the Malaysian Petronas (30%) and Iraq's state-owned Missan Oil Company (25%). The proven reserve of the Majnoon field is a whopping 12.6 billion barrels. The deal intends a 20-year service and development of the field. The project will require tens of billions of dollars over the 20-year period. Shell and Petronas will pay the investment, and after they have their money back they will receive USD 1.39 per barrel. The consortium aims to increase production from 45,000 barrels to 1.8 million barrels of oil per day within seven years. Production from Majnoon involves the continuous flaring of natural gas produced with the oil. The flaring is expected to rise as production increases.[276]
- November 2009, a consortium grouping ExxonMobil and Royal Dutch Shell plc (15% share) won the right to develop the 8.6 billion barrel West Qurna Stage 1 field. Under the terms of the 20-year contract, the two companies aim to increase output from the current 280,000 barrels per day to 2.1 million barrels per day in seven years. The companies will receive USD 1.9 for every barrel they produce.[277]
- In September 2008, Shell signed a Heads of Agreement (HoA) with the Iraqi Ministry of Oil that sets out the commercial principles to establish a joint venture between Shell and the South Gas Company. Iraq's South Gas Company would be the 51% majority shareholder in the joint venture, with Shell holding 44% and Mitsubishi Corporation holding 5%. The joint venture would gather, treat and process raw gas produced from three fields within Basra and sell the processed natural gas (and associated products, such as condensate and LPG) for use in the domestic and export markets. As of March 2011, contract terms are still subject to ongoing discussions with the Iraqi government.[278] Iraq's deal with Shell and Mitsubishi will cover the following oil fields: Rumaila (being developed by BP and CNPC); Zubair (being worked on by ENI, Occidental and KOGAS); West Qurna (stage 1 in the hands of Exxon and Shell, stage 2 in the hand of Lukoil and Statoil).[279] Wikileaks revealed that at a Iraq petroleum conference, held late 2008, participants expressed nearly unanimous concern about the HoA on southern gas between Iraq and Shell. Though the Iraqis present were content with the joint venture arrangement, others cited problems including a lack of transparency; the fact that HoA precludes Iraq from talking to other international oil companies about gas in the coming year, thereby creating a monopoly; the HoA's review of export options when domestic concerns were a priority; and the fact that the HoA dictates that the joint venture must sell Iraqi gas domestically at international market rates.[280] By the end of March 2011, Iraq and Shell were still discussing an obstacle about handling exports, so the USD 12 billion joint-venture deal is still not signed.[281]

Case 8
Drilling plans Alaska's Arctic Ocean

The Beaufort and Chukchi Seas on Alaska's Arctic coast
The marine environments of America's portion of the Arctic Ocean – the Chukchi and Beaufort Seas – are among the least understood in the world. This wide swath of ice-covered ocean waters – circulating between Canada and Russia – is home to one-fifth of the world's polar bears, as well as seals, migratory birds, bowhead whales, several other types of whales, Pacific walrus and much more. The Inupiat people who live on Alaska's North Slope call the Arctic Ocean "their garden." The bowhead whale is the foundation for the Inupiat people's subsistence culture.[282]

Threatened and endangered species

In November 2010, almost 485,000 square kilometres along the north coast of Alaska were designated as "critical habitat" for the polar bear, as a result of a partial settlement in an ongoing lawsuit brought by the Center for Biological Diversity, the Natural Resources Defense Council (NRDC) and Greenpeace against the U.S. federal government. This designation under the Endangered Species Act is intended to safeguard the habitat that is vital to the polar bears' survival and recovery. At the same time, the federal government is considering whether to allow oil companies, especially Shell, to drill for oil and gas in the polar bear's newly designated critical habitat in the Chukchi and Beaufort seas off Alaska.[283]
The polar bear is listed as a threatened species under the U.S. Endangered Species Act. The bowhead whales and several other types of whales occurring in the Chukchi and Beaufort seas are listed as endangered.[284]

Shell wants to drill

In 2008, Shell paid USD 2.1 billion for 275 leasing blocks in the Chukchi sea. The company also has 137 leases in the Beaufort sea, acquired in 2005. If viable reservoirs are discovered through exploratory drilling, Shell would be the main company producing gas and oil in the shallow waters of Alaska's Arctic coast.[285] According to a YouTube-video on its plans, Shell wants to execute "a safe, sustainable drilling program that benefits Alaska and the nation with new jobs, new energy and new life for the TransAlaska pipeline."[286] Shell wants to start drilling exploration wells soon in both the Beaufort and Chukchi sea. After the first exploration activities it will take up to ten years before the production phase is started.[287]
It is estimated that production, mainly by Shell, in the Beaufort and Chukchi Outer Continental Shelf (OCS) could amount to almost 9 billion barrels of oil and 15 trillion cubic feet of gas through 2057.[288]

Shell's incomplete oil spill preparedness

In November 2010, the NGO Pew Environment Group published a technical report about oil spill prevention and response in the Beaufort and Chukchi seas.[289] According to this report, darkness, extreme weather and shifting sea ice could delay efforts to stop an oil well blowout for six months or more, trapping spewed oil in ice for up to a decade. Shell's spill response system was found to be inadequate.[290] The Pew Environment Group concluded that "at present, offshore oil and gas drilling in the Arctic Ocean cannot be undertaken with any level of assurance that the marine environment can be protected from a spill or that industry can respond effectively." Based on the report's technical analysis, the Pew Environment Group documented several recommendations to reform the federal government's approval and oversight of Arctic Ocean oil and gas activities.[291]

Shell submitted an Oil Discharge Prevention and Contingency Plan (C-plan) for the Chukchi sea to the relevant federal agency MMS in May 2009. The MMS approved the C-plan in December 2009.[292] The plan was considered sufficient to clean up a well blowout of 5,500 barrels per day over 30 days. Shell finalized its plan in March 2010.[293]

The authors of the Pew report mention various arguments why Shell's plan is inadequate:
- The uncontrolled well flow may be significantly higher than 5,500 barrels per day. Other North Slope wells have had production rates in excess of 10,000 barrels per day when first drilled.
- The two most recent well blowouts, the Montara platform blowout in the Timor Sea and the Deepwater Horizon blowout in the Gulf of Mexico, involved explosions and fires that damaged the drilling structure. Shell assumes that its Noble Discoverer drillship be undamaged by a well blowout, and could drill its own relief well if a subsea blowout should occur. This is highly unlikely.
- The Montara blowout took more than 70 days to con-

trol, in part because the first four attempts to drill a relief well were unsuccessful. Thus, drilling the relief well may take longer than 30 days.
- Shell assumes that it would contain or recover 90 percent of the oil offshore and another 5 percent nearshore. The much more moderate recovery estimates from the Deepwater Horizon spill (20 percent contained or recovered, 5 percent burned) make the 95 percent assumption highly unrealistic.
- Shell's blowout scenarios fall short of the regulatory requirement to plan for a "worst case discharge under adverse weather conditions". Under this requirement, adverse weather conditions means "weather conditions found in the operating area that make it difficult for response equipment and personnel to clean up or remove spilled oil or hazardous substances. These include, but are not limited to: fog, inhospitable water and air temperatures, wind, sea ice, current, and sea states."[294] In the offshore Chukchi Sea, the combination of wind, waves and dynamic sea ice can severely hamper or even preclude oil spill clean-up.
- A spill that occurs right before fall freeze-up (October or November) might not allow enough time to drill a relief well before sea ice conditions make it unsafe to continue drilling. Under such a scenario, the well could continue to blow out through the winter ice season until well control could be attempted after the spring thaw in May or June. Shell does include a response scenario nine days before freeze-up, but makes a number of assumptions and concludes that at some point, the ice will preclude further response and that it will track the oil until spring. This is not an adequate response. To the contrary of what Shell assumes, an oil spill occurring late in the drilling season could lead to oil trapped under multiyear ice, remaining in the marine environment for many years.[295]

Government to re-assess spill risks

On 4 March 2011, the federal agency Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE, earlier MMS) determined that it would be appropriate to update its spill risk assessment, and include a very large oil spill analysis from an exploration well blowout in the Chukchi sea. BOEMRE has yet to define the volume of such a spill. The agency had received over 150,000 comments on a supplemental Environmental Impact Statement (EIS), which was opened for public comments during late 2010.[296] Due to the Deepwater Horizon oil spill, many commenters requested an analysis that takes into account the possibility of a blowout during exploration. The Environmental assessment conducted by MMS on the Chukchi exploration plans had ignored the risks from a blowout, stating, "the probability of a large spill occurring during exploration is insignificant and, therefore, this [environmental assessment (EA)] does not analyze the impacts of large spills from exploration operations."[297]

BOEMRE anticipates that a final version of the supplemental EIS will be completed by October 2011, after a public comment period. Exploration plans for the Chukchi Sea may be submitted for the year 2012.[298] The supplemental EIS was needed after Alaska Native and conservation groups had won a court case.
According to Leah Donahey, western Arctic and oceans program director for the Alaska Wilderness League, a plaintiff in the court case that is still pending, the initial environmental study lacked information in "hundreds of areas". In a statement she said: "BOEMRE must take into account the fact that there is no known way to clean up a spill in the Arctic's icy, extreme conditions."[299] Curtis Smith, a spokesman for Shell Oil, stated: "We already took into account worst-case discharge when we built a world-class Arctic oil spill response fleet for Alaska, so it's hard to imagine raising the bar even higher than we already have in that arena."[300]

Shell's incomplete air pollution permit

During the open water period from July to October 2011, Shell wanted to send its Noble Discoverer drillship to drill exploration wells in the Beaufort Sea.[301] However, on 30 December 2010 the Environmental Appeals Board of the U.S. Environmental Protection Agency (EPA) ruled that Shell had not provided enough information on air pollution. The permits for both Beaufort and Chukchi were not in line with the U.S. Clean Air Act, and thus cancelled. The Noble Discoverer and its associated fleet of support ships, such as icebreakers and a supply ship, could not run out. Alaska native and conservation groups had challenged the permits.[302] The Environmental Appeals Board received motions for modification and/or clarification from Shell and the regional EPA-office that had earlier issued the permits. On 10 February 2011, the Environmental Appeals Board rejected the requests from Shell. Among other, the permits would not be reinstated and new permits would have to be issued following applicable standards at the time of their issuance.[303] Shell now hopes to get the necessary permits in time to drill in 2012. Brendan Cummings, senior attorney for the Center for Biological Diversity, one of the organisations that had challenged the permits, stated: "If Shell wants to be permitted fast, they need to submit a permit application that actually complies with the law."[304]

Case 9
Sakhalin: the last 130 Western Gray Whales

The Sakhalin-2 project

According to its developers, the Sakhalin-2 project is the world's largest integrated oil and gas project. The capital expenditure for this project amounted to USD 21.3 billion from 2001 through 2009, while total costs exceeded USD 24 billion.[305]

The project is about extracting gas and oil offshore Sakhalin Island, in the Russian Far East. The fields are called Lunskoye (mostly gas) and Piltun-Astokhskoye (mostly oil). The company Sakhalin Energy Investment Company Ltd. (Sakhalin Energy) is the operator of the project. Royal Dutch Shell is a partner and lead technical adviser to the operator. Under the shareholding structure of Sakhalin Energy, Gazprom holds 50% (plus one share), Shell 27.5% (minus one share), Mitsui 12.5% and Mitsubishi 10%.[306]

The field development of the Sakhalin-2 project involved:
- two offshore platforms (Lunskoye-A and Piltun-Astokhskoye-B);
- an 800 kilometres onshore pipeline system to the south of the island;
- offshore pipelines systems;
- an onshore processing facility;
- a liquefied natural gas (LNG) plant;
- offloading terminals for crude oil and LNG.[307]

At the end of 2010 the liquefied natural gas (LNG) plant of Sakhalin Energy reached its full production capacity of 9.6 million tonnes a year. Sakhalin Energy now has a 5% share in the world's LNG market.[308] The entire output is contracted under long-term arrangements (for 20 and more years). Around 65% of the Sakhalin LNG will be supplied to customers in Japan. The rest is intended for consumers in South Korea and North America.[309] In 2009, Sakhalin Energy produced and offloaded over 5.5 million tonnes of oil and condensate. Oil produced from the Molikpaq and the PA-B is blended with gas condensate from the Lunskoye field. The blend of crude is used to produce petrol, kerosene, diesel fuel, and source materials for the petrochemicals industry.[310] Molikpaq (Piltun-Astokhskoye-A) was the first offshore oil platform, installed in 1998 during phase 1 of the Sakhalin 2 project.

Case: the Western gray whale is on the brink of disappearing forever

The offshore gas and oil extraction by Sakhalin Energy interferes with the feeding grounds of the Western gray whale. Western gray whales feast throughout the summer and autumn in the waters off Sakhalin Island. The estimated population size in 2009 was about 130 whales, including only around 30 mature females. The population, which is listed as critically endangered on the IUCN Red List of Threatened Species™, could be driven to extinction by the mortality of just a small number of reproductive females.[311]

In 2006 the International Union for Conservation of Nature (IUCN) created a panel of independent scientists – the Western Gray Whale Advisory Panel (WGWAP) – which provides scientific advice and recommendations on the operational plans and mitigation measures by Sakhalin Energy. On the first day of the 9th meeting of the WGWAP (4-6 December 2010, Geneva, Switzerland) Sakhalin Energy announced a plan to construct another offshore oil and gas platform.[312]

The NGOs World Wildlife Fund (WWF), Pacific Environment, International Fund for Animal Welfare (IFAW) and Sakhalin Environment Watch strongly oppose the construction of a new platform and associated subsea pipeline. Subsequently, they also oppose the seismic survey in preparation for this platform, which is announced by Sakhalin Energy to take place during the summer of 2011.

The NGOs have urged the WGWAP to strongly recommend that Sakhalin Energy will not develop the extra platform. To underpin their statement, the NGOs have put forward several arguments:
- The acoustic pollution due to all platform-related activities near an area of high whale density might scare the whales away from their feeding grounds.
- There are increasing risks that a vessel might strike a whale.
- The risk of a Sakhalin-2 platform-related oil spill and/or additional subsea pipeline accident risk increases by 50%.
- The marine ecosystem may get polluted through drilling.
- The Western gray whales are likely already stressed from major seismic surveys which took place in 2010.

Assessment of the full range of impacts (including impacts to feeding and reproduction) of the 2010 seismic surveys will not be possible until late 2011.

- It is essential to, at first, evaluate the cumulative impacts on the Western gray whales from the variety of different off shore oil and gas activities off Sakhalin Island.
- There is no good reason why the seismic survey needs to happen in 2011, as Sakhalin Energy has reiterated that a decision whether or not to go ahead with building the new platform would not be taken for several years.
- Sakhalin Energy has already put out a tender for the seismic survey and ruled out some design alternatives. The proposed route of the associated subsea pipeline(s) have not been disclosed even in the most cursory form. All this contradicts the repeated call for information on company activities to be presented to the WGWAP and observer organizations in a timely manner.
- The construction of a new platform fundamentally changes the full Sakhalin II project scope. Prior WGWAP recommendations (which are required by lenders) were based on an assumption that a total of two platforms would be built. The same is true of prior lender decisions, and Russian environmental regulatory decisions. Thus, Sakhalin Energy's revelation brings into question whether the WGWAP should review the adequacy of prior recommendations.[313]

Case 10
The risky Kashagan oil field

A huge, expensive project

The Kashagan field is located in the Kazakhstan sector of the Caspian Sea and extends over a surface area of approximately 75 kilometres by 45 kilometres. It is a very large oil field. Some 11 billion barrels are considered recoverable by the oil companies presently working on it. The oil reservoir lies some 4.200 kilometres below the shallow waters of the northern part of the Caspian Sea.[314]

The North Caspian Sea Production Sharing Agreement (NCSPSA) is signed by Shell (16.81% stake), Eni (16.81%), Total (16.81%), ExxonMobil (16.81%), KazMunaiGas (16.81%), ConocoPhillips (8.4%) and Inpex (7.56%). Since January 2009, the joint company North Caspian Operating Company B.V. (NCOC) is formally the operator of the project.

Phase I of the project is estimated to cost USD 38 billion.[315] Eni is responsible for the execution of the development of the first phase. Production during Kashagan's first phase is expected to be about 300,000 barrels per day shortly after the launch at the end of 2012[316], climbing via 370,000 barrels in 2014 to a maximum of 450,000 barrels a day during phase 1.[317]

Shell responsibilities

Shell and KazMunaiGas will be responsible for the production management after the start-up of phase 1.[318] Shell will also be responsible for the offshore development of phase II of the project. The second phase could more than double production to one million barrels per day. In October 2010, Shell had reduced the cost estimate for phase II from USD 68 billion to USD 50 billion.[319] However, the Kazakh oil and gas minister Sauat Mynbayev said late January 2011 that Kazakhstan will not approve an existing proposal to develop the second phase of the Kashagan oilfield due to huge costs: "We are not about to approve a phase that is inefficient from an economic point of view."[320] In July 2010, KazMunaiGas announced that the second phase has been postponed until 2018-2019.

Endangered species

The Kashagan oil field is located in the Northern part of the Caspian Sea, within a nature reserve zone.[321] The Caspian Seal and the giant Beluga sturgeon are the flagship species of the area.[322] In 2008, the International Union for Conservation of Nature (IUCN) listed the Caspian Seal as an endangered species. The seals occur throughout the Caspian Sea, using the winter ice sheets as a surface on which to give birth and nurse pups. Its population has declined by 90 percent over the last 100 years due to unsustainable levels of commercial hunting, habitat degradation and pollution; it is still decreasing. Since 2005 the number of pups born has plummeted by a catastrophic 60 percent to just 6,000-7,000. A low survival rate among pups has led researchers to fear there are barely enough breeding females to keep the population viable.[323] The giant Beluga sturgeon is threatened due to over-fishing and the loss of spawning grounds mainly resulting from dam construction on the major rivers of the Caspian.[324] It is also listed as endangered by IUCN.[325]

Extreme conditions, big risks

The shallow water depths (2-10 meters) and extreme weather conditions (highs of 45 degrees Celsius in the midst of summer, lows of minus 40 degrees Celsius in winter), create a situation in which oil extraction and transport is difficult and bears high risk of causing irreparable environmental devastation. Winter ice floes threaten to overrun the artificial islands constructed for extraction activities and the undersea pipelines that transport the crude to shore. In 2005/2006, construction was forced to stop for four months due to ice movement.[326]

Moreover, the field's reservoir is located at a subsea depth of more than 4,000 metres with pressures reaching high levels of about 700-800 atmospheres. The reservoir fluid contains a high concentration of H_2S (hydrogen sulphide). Combined with high temperatures, the safe handling of crude production becomes extremely difficult.[327] Professor Muftakh Diarov, a member of the National Academy of Sciences and working at the Atyrau Institute of Oil and Gas, states: "We have seen the Caspian Sea polluted with oil products five times over the past few years, when Kashagan starts to be developed, things may get far worse than that. The field is heavily

over-pressurised, temperatures are high, and the hydrogen sulphide content is very high". Diarov recalled an oil blow-out at Tenghiz in the 1990s accompanied by a fire "that took more than 300 days to extinguish". "It would be impossible to contain such spills, and the Caspian Sea might turn into a highly toxic puddle", he said. "Other Caspian nations, including Turkmenistan and Iran, would lodge legal claims against Kazakhstan seeking huge compensation".[328]

A further complicating matter is what to do with the associated gas, which includes the highly toxic hydrogen sulphide. Most of this gas will be re-injected offshore to improve oil recovery rates. According to some Russian and Kazakh scientists, including Professor Diarov, the combined extraction of oil under huge pressure and re-injection of gas under high pressure increases the potential for technogenic earthquakes.[329] Phase I does not foresee to re-inject all the associated gas. Some will be sent to the onshore processing facility where the hydrogen sulphide is removed. The processed, or 'sweetened', gas will be used for onshore and offshore power generation and some will be marketed. Phase I will produce an average of 1.1 millions of tonnes of sulphur per year due to the removal of the hydrogen sulphide. Although the joint venture plans to market the sulphur that is produced, it is recognised that sometimes sulphur will have to be stored.[330] The storage and processing constitute risks of pollution, such as emissions of hydrogen sulphide to the air. According to Shell, a children's party balloon filled with gas from the Kashagan field will, whenever the contents escape into a room of ten by ten meters, directly kill the people in it.[331]

Lack of informing stakeholders

Despite repeated requests from local activists, oil companies including Shell have made little information available with regard to their assessment of the severe risks of the Kashagan project, and how they mitigate any adverse social and environmental risks. A multi-stakeholder approach, as often recommended as an important tool with respect to corporate social responsibility, has not been followed. The public has not even been involved in the development of the project's Environmental Impact Assessment.[332]

Case 11
A toxic legacy in Curaçao

Curaçao and its oil refinery

Curaçao is an island in the southern Caribbean Sea, off the Venezuelan coast. It is a constituent country of the Kingdom of the Netherlands and has a land area of 444 square kilometres. As of January 2010, its population amounted to around 142,000 people. Prior to 10 October 2010, when the Netherlands Antilles were dissolved, Curaçao was administered as the Island Territory of Curaçao, one of five island territories of the former Netherlands Antilles.[333]

From 1918 until 1985, Shell owned and operated the Isla oil refinery in Curaçao. During this period, the refinery has been one of the most important lifelines of Curaçao. For example, in the early fifties it employed more than 12,000 people out of the total island population of 110,000 people. The refinery generated the foreign exchange necessary to finance the imports the island could not produce itself. [334] In the beginning of the eighties, Shell-companies provided for 33% of the island's Gross National Product. Apart from the refinery, Shell had a local sales company, an oil storage/transshipment company, and a shipping company on the island. Shell was very important to Curaçao, and the government of Curaçao treated Shell kindly. In 1980, a former director of Shell declared towards a reporter of the Dutch newspaper NRC: "The Antillean government? We were that government."[335]
Historically, the Isla refinery formed a link in the Shell-chain of Venezuelan upstream oil production and North American downstream activities. The nationalisation of Shell's oil production in Venezuela in 1975 and a change in the U.S.-energy policy towards more independence, left the refinery with supply and demand problems. With the exception of 1979 through 1981, the refinery operated at substantial losses during the ten years before 1985. In 1975, the refinery had 2,800 employees. In 1984, there were still only 1,900 employees.[336]

The Isla-refinery, presently still operated, is located along the Schottegat harbour, in the south of Curaçao, near the capital city Willemstad. The refinery and harbour are surrounded by residential areas.

In 1985, Shell sold its refinery and other companies/assets in Curaçao for the symbolic price of four Netherlands Antillean guilders. The buyers were the legal entities Netherlands Antilles and island territory Curaçao.[337] Subsequently, Curaçao leased the refinery and terminals to the Venezuelan state-owned petroleum company PDVSA. Since 1985 and ongoing, PDVSA operates the refinery.[338]

Yes, Shell created a mess

The agreement in 1985 between Shell and the Netherlands Antilles and Curaçao stated that the buyers had to abstain irrevocably and unconditionally from existing and future claims for pollution or other environmental effects exerted by Shell's companies in the Netherlands Antilles.[339] During 67 years of operation, Shell created a toxic legacy in Curaçao. The refining business has caused massive pollution to air, soil and water.

Several reports describe the pollution:
- The most known pollution comprises the asphalt lake. During World War II, the Isla refinery produced a large quantity of gasoline and aviation fuel for the Allied forces. The market for these light oil products outperformed the market for heavy oil products. Thus, the remainder of the heavy Venezuelan oil (an estimated 1.5 million tonnes of asphalt) was dumped in the Buscabaai next to the refinery. Still, the lake is filled with about one million tonnes of asphalt.[340] According to Shell, during the period 1983-1985 a contractor (Nareco) has scooped 0.5 million tonnes of asphalt for use in the refinery on a financially sound basis for Shell as well the contractor. The contract with the contractor and the asphalt lake were included in the sale by Shell of its Curaçao assets in 1985. The estimate in 1985 was that in the next ten years everything would be cleaned up. The asphalt-sand mix at the bottom of the lake would eventually be burned in an incinerator. After Shell left, the clean-up/processing went on for a few years, but was then stopped.[341]
- A chemical waste lake at the same location of the asphalt lake, is another heritage from Shell. Especially sulphuric acid used during lubricant manufacture was dumped. Asphalt is also found at this lake because since 1942 Shell also used it as a dump for asphalt. The lake comprises about 34,000 tonnes of chemical waste[342] and is also referred to as the acid tar pond.[343]
- At the beginning of 1983, the Dutch governmental agency DCMR also looked at the air pollution and stench caused by the Shell refinery. DCMR dedicated its report to the inhabitants of the residential areas

downwind the refinery: Marchena, Wishi, Gasparitu and Rosendaal. The agency wished "that they may be freed from the ever-present stench and soot".[344] The amount of residents living downwind of the refinery in 1997 was estimated at almost 17,000[345], figures for the period before 1985 could not be found during the course of writing this report.

According to the authors, the high sulphur dioxide (SO_2) concentrations in residential areas were due to: 1) the processing of Venezuelan crude oil, which has a high sulphur content, 2) the burning of residues emitted through low chimneys and 3) the burning of hydrogen sulfide in the gas flares at the refinery site. The measured SO_2-concentrations in residential areas downwind the refinery were found to be four times greater than accepted standards elsewhere in the world, increasing respiratory diseases among the people constantly breathing these concentrations. The authors noted that during the period 1973-1978 the air pollution was even worse. Through the building of higher chimneys and the emittance of less SO_2, the concentrations had gone down since that period. The completion of new chimneys during 1983 would further decrease the SO_2-concentrations.

The population downwind of the refinery experienced soot as the biggest nuisance. A combination of soot and SO_2 has a greater impact on public health than the two components separately, the authors wrote. Soot was also emitted through the chimneys and the gas flares. Stench was mainly caused by the discharge of process water, leakages, and drain- and venting operations. In general, the authors attributed the environmental impact to a combination of outdated, poorly maintained equipment and insufficient attention by the operating personnel.[346]

- In 1992, the Dutch Ministry of Transport, Public Works and Water Management advised the Curaçao Ports Authority about the pollution of the Schottegat harbour. The ministry stated that the refinery site was saturated with crude oil, petroleum products, impurities in the crude oil, and substances used in the production process. The groundwater was thought to be severely polluted. Over large areas of the refinery site, a thick scum of oil was assumed to be present on the groundwater. Cruising along the quays of the refinery, a continuous flow of oil from the ground could be seen seeping through the quay structures, especially at the west-side of the Schottegat harbour. The refinery site also comprises ditches and canals, through which oil was expected to seep out.[347]
- In 1983, the Dutch governmental agency DCMR conducted an environmental study with regard to the refinery. At the time of ownership change in 1985, also an environmental audit has taken place. According to the Dutch Ministry of Transport, Public Works and Water Management, it could be deduced from these reports that there have been many direct discharges in the Schottegat harbour. These were caused by a large number of oil spills, leaking tanks, and an outdated refinery lacking facilities considered normal in the Netherlands. The discharge of cooling water (about 3,500 m^3 per hour) at the west of the Schottegat harbour caused much pollution and stench. The sediment in the western part of the harbour was found to be severly polluted with oil. According to Dutch standards, the sediment sludge should be classified as chemical waste.[348]
- Near the Valentijn bay, Shell has contaminated around four hectares of ground due to the dumping of barrels filled with sulphur, catalyst and other toxic substances. Similar waste was also dumped into sea at the south side as well as north side of Curaçao.[349]

Evaluating the sale, ten years after

In 1996, a documentary on the environmental legacy from Shell's operations in Curaçao was shown on Dutch television. Interviewed were: Ms. Maria Liberia Peters (prime minister of the Netherlands Antilles during the deal in 1985), Mr. Errol Cova (member for Curaçao in the negotiation team during 1985), Mr. Bart de Beer (director general affairs Shell Netherlands during 1996), Mr. R. Gonesh (a former technical supervisor for Shell Curaçao) and Mr. Edgar Leito (a former environmental chief at Shell Curaçao).

The interviewees provide some insight in why the environmental legacy had been included to the deal between Shell, The Netherlands Antilles and Curaçao:

- Mr. Cova stated that, during the negotiations, Shell had brought forward that the asphalt lake would be beneficial to Curaçao. This was confirmed by others. The discussions during the deal were never about cleaning up pollution, it was about exploitation of the lake. Later on, it turned out that the lake was too polluted, and that it was not economically justified to process it.
- Ms. Peters stated that, during the negotiations, it was thought that cheap fuel could be processed from the lake, while at that time the island used expensive fuel for water production. She also claimed that in 1985 Curaçao didn't really have a choice to make. It could have decided to take legal action against Shell. Then it would have to close down the refinery and defy all social and economic consequences. The other choice was to keep the business going, so that the island could diversify its economy, but obviously with the risk that it might later end up with certain environmental consequences. She also stated that, in order to submit a claim against Shell, the island would have needed millions to hire expensive consultants to quantify the damage. Certainly with the perspective of refinery closure, the country could not afford such expensive consultants.

- According to Mr. Gonesh, the people on the Curaçao side of the negotiation table had not kept any records. Shell had however kept records, as a well-documented and bright company. Shell knew what it had put in the ground. It knew about the asphalt lake and the ground-water problems due to oil leaks. Mr. Gonesh took the view that Shell had handled in a criminal way, by transferring the pollution to simpletons which did not have the resources and know-how for a clean-up.
- Mr. De Beer stated that he could hardly imagine that people from Curaçao would feel cheated by the deal. In fact, Curaçao acquired the main economic engine of the island for free. Curaçao was very happy with the results of the agreement, according to De Beer. The Dutch government, which advised Curaçao, was also very happy with it. Mr. de Beer could not explain why the acid tar lake, which he thought to be originating from about the fifties, was not cleaned up earlier by Shell. According to him, it was envisaged that an incinerator would be built, after processing the asphalt lake. This incinerator could be used to burn the remains of the asphalt lake (the tar sandy mix at the bottom of the lake) and the acid tar.[350]

Shell to be held liable?

The government of Curaçao is currently reconsidering the future of the Isla refinery.[351] As of April 2011, the refinery is still causing severe air pollution. In December 2009, the Dutch parliament adopted a resolution, ordering an investigation on the possibilities to recover the costs associated with the remediation of the damage from, among other, Shell.[352] In the same month, the parliament of the Netherlands Antilles adopted a similar resolution, stating that Shell should be held liable for "the serious damage caused to the earth and sea bed, groundwater, seawater and inland waters of Curaçao."[353] In a civil case, Shell could still be held liable for negligence at the cost of the environment and the health of people.

Case 12
Philippines: an oil depot amidst a crowd of people

Pandacan

Pandacan is a residential neighbourhood of the city of Manila, Philippines. It has a population of about 84,000 people. Together with the oil companies Chevron Philippines and Petron, Shell's subsidiary Pilipinas Shell Petroleum Corporation (from here: Shell) owns a massive oil depot within Pandacan. The oil depot comprises about 36 hectares.[354] According to Shell, the oil depot supplies "50% of the country's total demand for fuel, 90% of lubricant requirements, and 25% of chemical needs nationwide, including strategic industries such as aviation and shipping."[355]

Removal of the oil depot

For many years a large number of citizens have demanded that Shell should remove its oil depot from the neighbourhood of Pandacan, for health and safety reasons. Already in November 2001, the city of Manila passed ordinance number 8027 requiring Shell, Chevron and Petron to relocate their oil depots outside of Manila city limits. However, over the years Shell has been able to get court orders and city ordinances overruled. In February 2011, the company reiterated its intention to stay in Pandacan.[356]

OECD complaint

On 15 May 2006, the Netherlands-based Milieudefensie (Friends of the Earth Netherlands) and Friends of the Earth International, together with Philippines-based The Fenceline Community For Human Safety and Environmental Protection, filed a complaint against Shell at the Dutch National Contact Point for upholding the OECD Guidelines for multinational enterprises. According to the complainants, Shell had violated several sections of the OECD Guidelines. The groups accused Shell of improper political involvement, insufficient communication with local communities, and violation of health and safety standards in the period 2002-2006.[357] In July 2009, the Dutch NCP issued its final statement. Although the NCP concluded that it could not find evidence for improper political involvement, it raised several areas of concern with regard to Shell's operations in Pandacan:

- The NCP strongly recommended Shell to expand its community information program to other potentially affected Pandacan communities, and not limit the program to the three communities immediately adjacent to the oil depot.
- Community members were generally unaware of specific plans by Shell to mitigate hazards or respond to emergencies, according to the NCP.
- Between 2003 and 2006, Shell implemented several measures to enhance the health, safety, security and environment of neighbouring communities.[358] The NCP took the view that Shell did not make the adjustments as a matter of good practice, as recommended in the OECD Guidelines. Instead, they were imposed by ordinances of the City Council. The NCP also noted that it had not been able to check the health and safety situation before the adjustments were made.
- The Dutch agency DCMR, invited by the NCP, concluded after an assessment that the present operations were in accordance with internationally accepted health and safety criteria. Shell only allowed the NCP to view the most general conclusions of the DCMR report. The NCP concluded that the high standards for disclosure of environmental reporting, as encouraged by the OECD Guidelines, had not been met in this specific occasion.
- A newly designed oil depot with a concomitant amount of traffic similar to the Pandacan site would be inconceivable in the Netherlands, according to the NCP.
- The NCP stated that Shell has not been able to avoid the impression of having a secondary agenda in its contacts with the local chiefs, the Barangays. Under politicized circumstances "community support" may be perceived by opponents as "bribery" or "undue involvement in local decision making".
- The NCP was surprised by (and regretted) Shell's reluctance to share more information with its stakeholders.[359]

Press releases

In a press release, Shell welcomed the final statement of the NCP as a 100% victory. It claimed that the NCP had stated that Shell was not involved in bribery or corruption, engaged appropriately with local politics, had made efforts to engage the local community and that the Dutch NCP had dismissed all allegations of the complainants.[360] All these statements have never been made by the NCP, thus the press release did not show any respect for the findings of the NCP. The complainants issued a more nuanced press release, and sharply criticized Shell's reluctance to fully engage in the NCP-process. Vladimir Cabigao from the Philippine NGO Social Justice Society stated: "Shell completely disrespects both the NCP and its neighbours. They were obstructive all through the process." Anne van Schaik of Friends of the Earth Netherlands stated: "This case proves that voluntary OECD Guidelines do not work. The NCP was powerless towards the whims of a corporation like Shell."[361] According to Social Justice Society there was also deception committed by the oil companies, as they were telling people that if they would be moved out, the fenceline communities would also be moved out.

Moving out may still happen

In March 2007, the Philippine Supreme Court ordered that ordinance number 8027 of November 2001 should be implemented, and that, subsequently, Shell should leave Pandacan. Shell appealed. In February 2008 the Supreme Court reconfirmed its decision, adding that Shell should come up with a relocation plan within 90 days.

In May 2009, however, the Manila City Council approved a new Ordinance (7177). This ordinance repealed Ordinance 8027 and superseded the Supreme Court order. The oil companies were allowed to continue operations in Pandacan. The ordinance faced opposition from a number of Pandacan and other Manila residents. Among other, there were protests in front of the oil depot, a march to city hall led by church groups and statements by Catholic church leaders.[362]

Social Justice Society and former Manila Mayor Lito Atienza had been standing against each other in Supreme Court during 2007 and 2008. Now they jointly contest the latest city Ordinance 7177 for being illegal and unconstitutional. Their petition is still pending resolution before the Supreme Court.[363] The oil companies have moved to intervene, which was granted by the court. In the meantime, the oil company Petron has announced that it will have relocated from Pandacan in the beginning of 2016. Shell has stated that removing would induce extra costs, which it would have to pass on to the market.

Endnotes

1 Royal Dutch Shell plc, "Financial and Operational Information 2005–2009", May 2010, <http://www.faoi.shell.com/2009/servicepages/downloads/files/all_shell_faoi_09.pdf>, page 65.
Royal Dutch Shell plc, "Annual report and form 20-F for the year ended December 31, 2010", µµ15 March 2011, <http://www-static.shell.com/static/investor/downloads/financial_information/reports/2010/2010_annual_report_20f_01.pdf>, page 31

2 Profundo, report (in Dutch) "Winsten uit Shell's olie- en gaswinning in Nigeria, een onderzoeksrapport voor Zembla", June 2010, <http://zembla.vara.nl/fileadmin/uploads/VARA/be_users/documents/tv/pip/zembla/2010/Winsten_Shell_Nigeria_Zembla_100611.pdf>

3 Shell operates Nigeria's largest oil and gas joint venture, the Shell Petroleum Development Company (SPDC), on behalf of the government-owned Nigerian National Petroleum Corporation (55%), Shell (30%), Total (10%) and Agip (5%). The other two main businesses of Shell in Nigeria include the 100% Shell-owned Shell Nigeria Exploration & Production Company (SNEPCo). SNEPCo is the operator and 55% owner of the offshore deep-water Bonga field, and also owns part of the offshore Erha field. The third main business comprises Shell's 25.6% interest in Nigeria Liquefied Natural Gas Limited (NLNG), which exports LNG around the world. Royal Dutch Shell plc, "Sustainability report 2009", May 2010, <http://sustainabilityreport.shell.com/2009/servicepages/welcome.html>, page 22.

4 Niger Delta Development Commission, "Niger Delta Regional Development Master plan", Chapter 1, 2006, <http://www.nddc.gov.ng/NDRMP%20Chapter%201.pdf>

5 Shell in Nigeria, briefing note "Shell interests in Nigeria", April 2011, <http://www-static.shell.com/static/nga/downloads/pdfs/briefing_notes/shell_interests.pdf>

6 United Nations Development Programme (UNDP), 'Human Development Index (HDI) – 2010 Rankings', 4 November 2010, <http://hdr.undp.org/en/statistics>

7 Transparency International, '2010 Corruption Perceptions Index (CPI), 26 October 2010, <http://www.transparency.org/policy_research/surveys_indices/cpi/2010/results> The index score is on a scale from 0 (perceived to be highly corrupt) to 10 (perceived to have low levels of corruption). Nigeria scores 2.4 points.

8 United Nations Development Programme (UNDP), "Human Development Report Nigeria. 2008 – 2009, Achieving growth with equity", November 2009, <http://hdr.undp.org/en/reports/national/africa/nigeria/name,14593,en.html>

9 The Federal Republic of Nigeria, "USD 500,000,000 6.75 per cent. Notes due 2021", 26 January 2011, <http://www.rns-pdf.londonstockexchange.com/rns/1261A_1-2011-1-26.pdf>

10 Amnesty International, report "Petroleum, Pollution and Poverty in the Niger Delta", June 2009, <http://www.amnesty.org/en/library/asset/AFR44/017/2009/en/e2415061-da5c-44f8-a73c-a7a4766ee21d/afr440172009en.pdf>

11 Amnesty International, press release "Nigeria: Amnesty International says pollution has created human rights tragedy in the Niger Delta", 30 June 2009, <http://www.amnesty.org/en/for-media/press-releases/nigeria-amnesty-international-says-pollution-has-created-human-rights-tr>.

12 Shell in Nigeria, briefing note "Environmental Performance – oil spills", April 2011, <http://www-static.shell.com/static/nga/downloads/pdfs/briefing_notes/env_perf_oilspills.pdf>

13 Shell Petroleum Development Company of Nigeria (SPDC), brochure "Nigeria brief, the environment", May 1995, not available on the internet.

14 Professor Richard Steiner, Anchorage, Alaska USA, report on behalf of Friends of the Earth Netherlands "Double standard, Shell practices in Nigeria compared with international standards to prevent and control pipeline oil spills and the Deepwater Horizon oil spill", November 2010, <http://www.milieudefensie.nl/publicaties/downloads/20101109%20rapport%20Double%20Standard.pdf>, Appendix A. A barrel is equal to 159 litres.

15 Professor Richard Steiner, Anchorage, Alaska USA, report on behalf of Friends of the Earth Netherlands "Double standard, Shell practices in Nigeria compared with international standards to prevent and control pipeline oil spills and the Deepwater Horizon oil spill", November 2010, <http://www.milieudefensie.nl/publicaties/downloads/20101109%20rapport%20Double%20Standard.pdf>, Appendix A.
Shell in Nigeria, briefing note "Environmental Performance – oil spills", April 2011, <http://www-static.shell.com/static/nga/downloads/pdfs/briefing_notes/env_perf_oilspills.pdf>

16 Shell, "Doing business in Nigeria: challenges and questions, Session Transcript", 23 July 2009, <http://www.shelldialogues.com/sites/default/files/NigeriatranscriptV2_0.pdf>, page 10.
BBC News, "Shell should end Nigeria 'abuse'", 30 June 2009, <http://news.bbc.co.uk/2/hi/8126353.stm>
Shell in Nigeria, briefing note "Environmental performance, managing oil spills", May 2009, not available on the internet.

17 Shell in Nigeria, briefing note "Environmental Performance – oil spills", May 2010, not available on the internet.

18 Shell Nigeria, "Oil spills in the Niger Delta – Monthly Data", <http://www.shell.com.ng/home/content/nga/environment_society/respecting_the_environment/oil_spills/monthly_data.html>

19 Shell in Nigeria, briefing note "Environmental performance, managing oil spills", May 2009, not available on the internet.
Shell in Nigeria, briefing note "Environmental Performance – oil spills", May 2010, not available on the internet.

20 Shell in Nigeria, briefing note "Environmental Performance – oil spills", April 2011, <http://www-static.shell.com/static/nga/downloads/pdfs/briefing_notes/env_perf_oilspills.pdf>
Shell Nigeria, "Oil spills in the Niger Delta – Monthly Data", <http://www.shell.com.ng/home/content/nga/environment_society/respecting_the_environment/oil_spills/monthly_data.html>

21 Amnesty International and Friends of the Earth International, "Complaint to the UK and Dutch National Contact Points under the Specific Instance Procedure of the OECD Guidelines for Multinational Enterprises", 25 January 2011, <http://oecdwatch.org/cases/Case_197>

22 OECD, "Member countries, accession candidate countries, enhanced engagement countries", <http://www.oecd.org/countrieslist/0,3351,en_33873108_33844430_1_1_1_1_1,00.html> as viewed on 15 March 2011.

23 OECD (Organisation for Economic Co-operation and Development), "OECD Guidelines for Multinational Enterprises", 2008, <http://www.oecd.org/dataoecd/56/36/1922428.pdf>

24 Friends of the Earth Netherlands, "Documents on the Shell legal case", <http://www.milieudefensie.nl/wat-wij-doen/themas/internationaal/projecten/shell/olielekkages/documents-on-the-shell-legal-case>

25 Friends of the Earth Netherlands, "Documents on the Shell legal case", <http://www.milieudefensie.nl/wat-wij-doen/themas/internationaal/projecten/shell/olielekkages/documents-on-the-shell-legal-case>

26 Royal Dutch Shell, "Shell Sustainability Report 2006", <http://www.shell.com/static/envirosoc-en/downloads/sustainability_reports/shell_sustain_report_2006.pdf>, page 33.

27 Christian Aid, report "Behind the mask, The real face of corporate social responsibility", January 2004, <http://www.scribd.com/doc/38236692/Behind-the-Mask>, page 30.

28 Professor Richard Steiner, Anchorage, Alaska USA, report on behalf of Friends of the Earth Netherlands "Double standard, Shell practices in Nigeria compared with international standards to prevent and control pipeline oil spills and the Deepwater Horizon oil spill", November 2010, <http://www.milieudefensie.nl/publicaties/downloads/20101109%20rapport%20Double%20Standard.pdf>, page 35.

29 Environmental Rights Action/Friends of the Earth Nigeria, factsheet "harmful gas flaring in Nigeria", November 2008. <http://www.foe.org/pdf/GasFlaringNigeria_FS.pdf>

30 The World Bank, Global Gas Flaring Reduction, "Estimated Flared Volumes from Satellite Data", <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTOGMC/EXTGGFR/0,,contentMDK:22137498~menuPK:3077311~pagePK:64168445~piPK:64168309~theSitePK:578069,00.html> as viewed on 15 February 2011 (2005-2009) and 22 April 2011 (2006-2010).

31 The World Bank, Global Gas Flaring Reduction, "Estimated Flared Volumes from Satellite Data, 2005-2009", updated 15 February 2011, <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTOGMC/EXTGGFR/0,,contentMDK:22137498~menuPK:3077311~pagePK:64168445~piPK:64168309~theSitePK:578069,00.html>
U.S. Energy Information Administration, "Top World Oil Producers, 2009", <http://www.eia.doe.gov/countries/>

32 It should be noted that, according to the study at the request of the European Commission, oil production from Canadian tar sands is even worse than Nigerian oil. For oil sands, the well-to-tank emissions – the climate emissions that can be influenced by oil companies – are almost 2.5 times higher than the average fuel used in the European Union. For Nigerian oil, the emissions are around two times higher than the average fuel used in the European Union. Source: Adam R. Brandt, Department of Energy Resources Engineering, Stanford University, USA, "Upstream greenhouse gas (GHG) emissions from Canadian oil sands as a feedstock for European refineries", 18 January 2011, <https://circabc.europa.eu/d/d/workspace/SpacesStore/db806977-6418-44db-a464-20267139b34d/Brandt_Oil_Sands_GHGs_Final.pdf>, pages 37 and 40.

33 Jacobs Consultancy and Life Cycle Associates LLC, prepared for the Alberta Energy Research Institute, report "Life Cycle Assessment Comparison of North American and Imported Crudes", July 2009, <http://www.albertainnovates.ca/media/15753/life%20cycle%20analysis%20jacobs%20final%20report.pdf>, page 206. It should be noted that the calculation is based on gas flaring levels in Nigeria in 2004: 23 billion m3 gas versus 2,332,000 barrels oil production per day.

34 Calculations are based on Nigerian flaring levels in the early 2000s. National Energy Technology Laboratory, "An evaluation of the extraction, transport and refining of imported crude oils and the impact on life cycle greenhouse gas emissions", 27 March 2009, <http://www.netl.doe.gov/energy-analyses/pubs/PetrRefGHGEmiss_ImportSourceSpecific1.pdf>
Adam R. Brandt, Department of Energy Resources Engineering, Stanford University, USA, "Upstream greenhouse gas (GHG) emissions from Canadian oil sands as a feedstock for European refineries", 18 January 2011, <https://circabc.europa.eu/d/d/workspace/SpacesStore/db806977-6418-44db-a464-20267139b34d/Brandt_Oil_Sands_GHGs_Final.pdf>, page 37 (107.3 grams of CO2 per megajoule, versus 87.1 grammes).

35 Adam R. Brandt, Department of Energy Resources Engineering, Stanford University, USA, "Upstream greenhouse gas (GHG) emissions from Canadian oil sands as a feedstock for European refineries", 18 January 2011, <https://circabc.europa.eu/d/d/workspace/SpacesStore/db806977-6418-44db-a464-20267139b34d/Brandt_Oil_Sands_GHGs_Final.pdf>, page 37 (107.3 grams of CO2 per megajoule, versus 87.1 grammes).

36 United Nations Development Programme, "Niger Delta human development report", 2006, <http://web.ng.undp.org/reports/nigeria_hdr_report.pdf>, page 11.

37 Federal High Court, Benin judicial division, "Suit no. FDC/B/CS/53/05, Mr Jonah Gbemre (for himself and as representing Iwherekan Community in Delta State, Nigeria) versus Shell Petroleum Development Company Nigeria Ltd., Nigerian National Petroleum Corporation and the Attorney General of the Federation", 14 November 2005, <http://www.climatelaw.org/cases/case-documents/nigeria/ni-shell-nov05-judgment.pdf>

38 Vanguard, "Nigeria loses USD 150 bn to gas flare in 36 yrs", 15 July 2008, statistics released by the President of the Nigerian Gas Association (NGA), <http://www.energy-pedia.com/article.aspx?articleid=130140>

39 Climate Justice Programme and Environmental Rights Action / Friends of the Earth Nigeria, report "Gas flaring in Nigeria: a human rights, environmental and economic monstrosity", June 2005, <http://www.climatelaw.org/cases/country/nigeria/cases/case-documents/nigeria/gas-flaring-in-nigeria.pdf>

40 Shell in Nigeria, briefing note "Gas flaring", April 2011, <http://www-static.shell.com/static/nga/downloads/pdfs/briefing_notes/gas_flaring.pdf>

41 The Federal Republic of Nigeria, "USD 500,000,000 6.75 per cent. Notes due 2021", 26 January 2011, <http://www.rns-pdf.londonstockexchange.com/rns/1261A_1-2011-1-26.pdf>

42 Royal Dutch Shell plc, "Sustainability report 2010", 14 April 2011, <http://sustainabilityreport.shell.com/2010/servicepages/welcome.html>, page 29.

43 Royal Dutch Shell plc, "Sustainability report 2010", 14 April 2011, <http://sustainabilityreport.shell.com/2010/servicepages/welcome.html>, page 19.

44 Royal Dutch Shell plc, "Sustainability report 2009", May 2010, <http://sustainabilityreport.shell.com/2009/servicepages/welcome.html>, pages 22 and 23.

45 Royal Dutch Shell plc, "Sustainability Report 2008", May 2009, <http://sustainabilityreport.shell.com/2008/servicepages/downloads/files/entire_shell_ssr_08.pdf>, page 29.

46 Shell Companies in Nigeria, briefing note "Gas flaring", April 2011, <http://www-static.shell.com/static/nga/downloads/pdfs/briefing_notes/gas_flaring.pdf>

47 Shell Nigeria, "Shell Nigeria Annual Report 2006", 2007, <http://narcosphere.narconews.com/userfiles/70/2006_shell_nigeria_report.pdf>

48 Shell Companies in Nigeria, briefing note "Harnessing Nigeria's gas", May 2009, no more available on the internet.

49 U.S. Embassy Abuja, Nigeria, cable "Shell MD discusses the status of the proposed petroleum industry bill", 20 October 2009, <http://213.251.145.96/cable/2009/10/09ABUJA1907.html>

50 Royal Dutch Shell plc, "Sustainability report 2010", 14 April 2011, <http://sustainabilityreport.shell.com/2010/servicepages/welcome.html>, page 19.

51 Shell Companies in Nigeria, briefing note "Gas flaring", April 2011, <http://www-static.shell.com/static/nga/downloads/pdfs/briefing_notes/gas_flaring.pdf>

52 Shell Nigeria, news release "SPDC Announces Gas Flaring Reduction Projects", 19 May 2010, <http://www.shell.com.ng/home/content/nga/aboutshell/media_centre/news_and_media_releases/2010/flaring_reduction.html>

53 Shell Companies in Nigeria, briefing note "Gas flaring", April 2011, <http://www-static.shell.com/static/nga/downloads/pdfs/briefing_notes/gas_flaring.pdf>

54 Royal Dutch Shell plc, "Sustainability report 2010", 14 April 2011, <http://sustainabilityreport.shell.com/2010/servicepages/welcome.html>, page 29.

55 Royal Dutch Shell plc, "Financial and Operational Information 2005–2009", May 2010, <http://www.faoi.shell.com/2009/servicepages/downloads/files/all_shell_faoi_09.pdf>, page 65.
Royal Dutch Shell plc, "Annual report and form 20-F for the year ended December 31, 2010", 15 March 2011, <http://www-static.shell.com/static/investor/downloads/financial_information/reports/2010/2010_annual_report_20f_01.pdf>, page 31

56 Olubayo Oluduro, PhD candidate, University of Ghent, Belgium, "Bureaucratic Rhetoric of Climate Change in Nigeria: International Aspiration versus Local Realities", 7 December 2010, <http://www.iucnael.org/index.php?searchword=Nigeria&ordering=&searchphrase=all&Itemid=6&option=com_search&lang=en>
Paul Samual Tamuno, LLM Oil & Gas Law, University of Aberbeen: Assistant Lecturer, Rivers State University of Science and Technology, Port Harcourt, Nigeria, "Legal response to Gas Flaring in Developed and Developing Countries, a comparative analysis of Nigeria, United Kingdom and Norway", November 2010, <http://www.dundee.ac.uk/cepmlp/gateway/index.php?category=44>

57 Shell, "response to AI report Petroleum, Pollution and Poverty in the Niger Delta", 8 July 2009, <http://www.business-humanrights.org/Documents/ShellNigeria>

58 WAC Global Services, working paper for SPDC "Peace and security in the Niger Delta, Conflict Expert Group baseline report", December 2003, <http://www.shellnews.net/2007/shell_wac_report_2004.pdf>

59 WAC Global Services, working paper for SPDC "Peace and security in the Niger Delta, Conflict Expert Group baseline report", December 2003, <http://www.shellnews.net/2007/shell_wac_report_2004.pdf>

60 WAC Global Services, working paper for SPDC "Peace and security in the Niger Delta, Conflict Expert Group baseline report", December 2003, <http://www.shellnews.net/2007/shell_wac_report_2004.pdf>

61 Financial Times, "Shell gives Nigerian work to militants' companies", 27 April 2006, <http://www.ft.com/cms/s/0/0237da00-d58a-11da-93bc-0000779e2340.html#axzz1FYFlSOtt>
Africa Confidential, "Stealing, fighting, seeking power", 17 March 2006, <http://www.africa-confidential.com/article-preview/id/1728/No-Title>

62 U.S. Embassy Abuja, Nigeria, cable "Nigeria: Shell claims production unaffected by recent attacks; comments on growing violence in the delta", 19 September 2008, <http://213.251.145.96/cable/2008/09/08LAGOS368.html>

63 Royal Dutch Shell plc, "Code of conduct; Helping you live by our Core Values and our General Business Principles", 2010, <http://www-static.shell.com/static/aboutshell/downloads/who_we_are/code_of_conduct/code_of_conduct_english_2010.pdf>

64 Royal Dutch Shell plc, "Sustainability report 2009", May 2010, <http://sustainabilityreport.shell.com/2009/servicepages/welcome.html>, page 6.

65 U.S. Embassy Abuja, Nigeria, cable "Nigeria: Shell briefs ambassador on oil gas issues", 20 February 2009, <http://213.251.145.96/cable/2009/02/09ABUJA259.html>

66 U.S. Department of Justice, Office of Public Affairs, press release "Oil Services Companies and a Freight Forwarding Company Agree to Resolve Foreign Bribery Investigations and to Pay More Than $156 Million in Criminal Penalties", 4 November 2010, <http://www.justice.gov/opa/pr/2010/November/10-crm-1251.html>

67 Royal Dutch Shell plc, "Annual report and form 20-F for the year ended December 31, 2010", µµ15 March 2011, <http://www-static.shell.com/static/investor/downloads/financial_information/reports/2010/2010_annual_report_20f_01.pdf>, page 15.

68 Royal Dutch Shell plc, "Sustainability report 2010", 14 April 2011, page 7, <http://sustainabilityreport.shell.com/2010/servicepages/welcome.html>

69 Shell Nederland B.V., magazine Shell Venster "Geglobaliseerde boetes", January/February 2011, <http://www-static.shell.com/static/nld/downloads/venster_2011/venster_jan_feb.pdf>

70 The Sunday Times, "Governor 'hid stolen GBP20m' in UK banks", 18 November 2007, <http://www.timesonline.co.uk/tol/news/uk/article2890961.ece>

71 Financial Times, "Chevron and Shell payments to Nigeria-owned company probed", 17 November 2007, <http://www.ft.com/cms/s/0/191175a0-94b1-11dc-9aaf-0000779fd2ac.html?nclick_check=1#axzz1CqK7UALQ>

72 Nigerian Army Intelligence Corps, "Investigation report into the theft and sale of arms to Niger Delta gunrunner by an officer and some soldiers of the 1 base ordnance depot Kaduna", November 2007, <http://www.saharareporters.com/sites/default/files/uploads/Azazi.pdf>

73 The Telegraph, "Nigerian politician faces extradition to Britain on money laundering charges", 14 May 2010, <http://www.telegraph.co.uk/news/worldnews/africaandindianocean/nigeria/7720634/Nigerian-politician-faces-extradition-to-Britain-on-money-laundering-charges.html>
Sahara Reporters, " Text of Justice Marcel Awokulehin's $5 million-dollar "Kangaroo ruling" that discharged Ibori of 170-count charges of corruption, stealing and abuse of office", 17 December 2009, <http://www.saharareporters.com/report/text-justice-marcel-awokulehins-5-million-dollar-kangaroo-ruling-discharged-ibori-170-count-c>

74 The Telegraph, "WikiLeaks cables: Nigeria pressured UK to drop charges against politician", 4 February 2011, <http://www.telegraph.co.uk/news/worldnews/wikileaks/8303381/WikiLeaks-cables-Nigeria-pressured-UK-to-drop-charges-against-politician.html>
U.S. Embassy London, UK, cable "Nigeria: an on-going UK priority", May 2009, <http://www.telegraph.co.uk/news/wikileaks-files/london-wikileaks/8305255/NIGERIA-AN-ON-GOING-UK-PRIORITY.html>

75 The Goldman Environmental Prize, "2005 recipient Ken Saro-Wiwa", <http://www.goldmanprize.org/node/160>

76 Center for Constitutional Rights and EarthRights International. "The case against Shell", <http://wiwavshell.org>
EarthRights International, "Wiwa v. Royal Dutch/Shell", <http://www.earthrights.org/legal/wiwa-v-royal-dutchshell> as viewed on 8 April 2011.

77 The Independent on Sunday, Andy Rowell and Eveline Lubbers "Ken Saro-Wiwa was framed, secret evidence shows", 5 December 2010, <http://www.independent.co.uk/news/world/africa/ken-sarowiwa-was-framed-secret-evidence-shows-2151577.html>
Scribd, "Deposition of Boniface Ejiogu", May 2004, <http://www.scribd.com/doc/44608946/Wiwa-Versus-Shell-Deposition-Highlights>

78 Greenpeace Brazil, report "contamination in Paulínia by aldrin, dieldrin, endrin and other toxic chemicals produced and disposed of by Shell Chemicals of Brazil", 24 April 2001, <http://archive.greenpeace.org/toxics/reports/shellreport.pdf>

79 Friends of the Earth (FOE); Advocates for Environmental Human Rights; Coletivo Alternative Verde; Community Inpower Development Association; Concerned Citizens of Norco; Environmental Rights Action (FOE Nigeria); Global Community Monitor; GroundWork (FOE South Africa); Humane Care Foundation Curaçao; Louisiana Bucket Brigade; Niger-Delta Project for the Environment, Human Rights and Development; Pacific Environment Watch; Sakhalin Environment Watch; Shell to Sea; South Durban Community Environmental Alliance; and United Front to Oust Oil Depots, report "Lessons Not Learned, The Other Shell Report 2004", June 2005, <www.foe.co.uk/resource/reports/lessons_not_learned.pdf>

80 Procuradoria Regional do Trabalho 15a Região, imprensa noticias "Shell e Basf são condenadas ao pagamento de indenizações que ultrapassam RUSD 1 bilhão; empresas devem pagar tratamento de saúde de ex-trabalhadores", 19 August 2010, <http://www.prt15.mpt.gov.br/site/noticias.php?>

81 Greenpeace Brazil, report "contamination in Paulínia by aldrin, dieldrin, endrin and other toxic chemicals produced and disposed of by Shell Chemicals of Brazil", 24 April 2001, <http://archive.greenpeace.org/toxics/reports/shellreport.pdf>

82 Greenpeace Brazil, report "contamination in Paulínia by aldrin, dieldrin, endrin and other toxic chemicals produced and disposed of by Shell Chemicals of Brazil", 24 April 2001, <http://archive.greenpeace.org/toxics/reports/shellreport.pdf>

83 World Health Organization, "Chemical hazards in drinking-water – aldrin and dieldrin", 2003, <http://www.who.int/water_sanitation_health/dwq/chemicals/aldrindieldrin/en/>

84 Environmental Health Fund, Book "Riding The Dragon, Royal Dutch Shell & The Fossil Fire", author Jack Doyle, 2002, <http://gcmonitor.org/section.php?id=19>

85 Reuters, "Shell called negligent in Brazil toxic waste case", 8 November 2001, <http://www.theglobalreport.org/issues/148/environment.html>

86 June Maria Passos Rezende, Tese de Doutorado apresentada à Pós-Graduação da Faculdade de Ciências Médicas da Universidade Estadual de Campinas para obtenção do título de Doutor em Saúde Coletiva, área de Epidemiologia, "Caso Shell/Cyanamid/BASF: epidemiologia e informação para o resgate de uma precaução negada", approved 23 February 2005, <http://cutter.unicamp.br/document/?code=vtls000366157>

87 Instituto Observatório Social, "Justiça obriga Shell e Basf a pagar plano de saúde vitalício para trabalhadores expostos à contamina" 14 January 2009, <http://www.observatoriosocial.org.br/portal/index.php?option=content&task=view&id=3500&Itemid=112>

88 American Public Health Association, "Occupational Health & Safety Section, Annual Awards Luncheon", 10 November 2009, <http://www.apha.org/NR/rdonlyres/5C95520C-5665-4F05-8EED-8E3CC0C586D4/0/AwardsProgram2009.pdf>
American Public Health Association, "News Release", 23 October 2009, <http://www.defendingscience.org/upload/OHS-Awardee-News-Release-FINAL-2009.pdf>

89 Exchange rate at 19 August 2010: one Brazilian real is 0,44601 Euro, <http://www.exchange-rates.org/HistoricalRates/E/BRL/8-19-2010>

90 Procuradoria Regional do Trabalho 15a Região, imprensa noticias "Shell e Basf são condenadas ao pagamento de indenizações que ultrapassam BRL 1 bilhão; empresas devem pagar tratamento de saúde de ex-trabalhadores", 19 August 2010, <http://www.prt15.mpt.gov.br/site/noticias.php?mat_id=10362>

91 Procuradoria Regional do Trabalho 15a Região, imprensa noticias "Shell e Basf são condenadas ao pagamento de indenizações que ultrapassam RUSD 1 bilhão; empresas devem pagar tratamento de saúde de ex-trabalhadores", 19 August 2010, <http://www.prt15.mpt.gov.br/site/noticias.php?mat_id=10362>

92 Reuters, "Shell and BASF to appeal ruling on pollution in Brazil", 22 August 2010, <http://www.reuters.com/article/idUSTRE67L0WY20100822>

93 Bloomberg, "Shell, Basf Ordered to Pay USD 354 Million in Brazil Plant Contamination Case", 20 August 2010, <http://www.bloomberg.com/news/2010-08-20/shell-basf-ordered-to-pay-354-million-in-brazil-plant-contamination-case.html>

94 Procuradoria Regional do Trabalho 15a Região, imprensa noticias "Tribunal mantém condenação de Shell e Basf ao pagamento de BRL 1 bilhão; custeio de tratamento de saúde continua obrigatório", 4 April 2011, <http://www.prt15.gov.br/site/noticias.php?mat_id=11011>

95 Royal Dutch Shell plc, "Annual report and form 20-F for the year ended December 31, 2010", 15 March 2011, <http://www-static.shell.com/static/investor/downloads/financial_information/reports/2010/2010_annual_report_20f_01.pdf>, page 141

96 Government of Alberta, "Inventory of Major Alberta Projects", December 2010, <http://www.alberta-canada.com/documents/SP_MajorAlbertaProjects.pdf>, page 3.
Exchange rate at 31 December 2010: one Canadian USD is USD 1.002, <http://www.exchange-rates.org/HistoricalRates/A/CAD/12-31-2010>

97 Royal Dutch Shell, "Shell and the Canadian oil sands, 2009 factbook", <http://www-static.shell.com/static/can-en/downloads/aboutshell/aosp/unique_resource/shell_oil_sands_factbook.pdf>

98 Royal Dutch Shell, "Shell oil sands expansion now on-stream", 15 September 2010, <http://www.shell.com/home/content/investor/news_and_library/2010_media_releases/oil_sands_expansion_on-stream_15092010.html>
Shell, "Oil Sands Performance Report, Muskeg River Mine & Scotford Upgrader, November 2010, <http://www-static.shell.com/static/can-en/downloads/aboutshell/our_business/oil_sands/oil_sands_performance_report.pdf>

99 Royal Dutch Shell, presentation Marvin Odum, Director Upstream Americas, "Upstream Americas: Profitable growth in Shell Heartland", 28 September 2010, <http://www-static.shell.com/static/investor/downloads/presentations/2010/na_visit/marvin_odum_na_visit_transcript_28092010.pdf>
Royal Dutch Shell plc, North America investor visit, presentation John Abbott, executive vice president heavy oil, "Heavy oil in Shell", 30 September 2010, <http://www-static.shell.com/static/investor/downloads/presentations/2010/na_visit/john_abbott_na_visit_presentation_30092010.pdf>

100 Royal Dutch Shell, presentation Marvin Odum, Director Upstream Americas, "Upstream Americas: Profitable growth in Shell Heartland", 28 September 2010, <http://www-static.shell.com/static/investor/downloads/presentations/2010/na_visit/marvin_odum_na_visit_transcript_28092010.pdf>
Shell Canada, "Peace River In Situ Expansion Carmon Creek Project, public disclosure", November 2009, <http://www-static.shell.com/static/can-en/downloads/aboutshell/our_business/e_and_p/carmon_creek_disclosure_nov_09.pdf>

101 Government of Alberta, "Inventory of Major Alberta Projects", December 2010, <http://www.alberta-canada.com/documents/SP_MajorAlbertaProjects.pdf>

102 Royal Dutch Shell, presentation Marvin Odum, Director Upstream Americas, "Upstream Americas: Profitable growth in Shell Heartland", 28 September 2010, <http://www-static.shell.com/static/investor/downloads/presentations/2010/na_visit/marvin_odum_na_visit_transcript_28092010.pdf>
Royal Dutch Shell plc, North America investor visit, presentation John Abbott, executive vice president heavy oil, "Heavy oil in Shell", 30 September 2010, <http://www-static.shell.com/static/investor/downloads/presentations/2010/na_visit/john_abbott_na_visit_presentation_30092010.pdf>

103 Adam R. Brandt, Department of Energy Resources Engineering, Stanford University, USA, "Upstream greenhouse gas (GHG) emissions from Canadian oil sands as a feedstock for European refineries", page 37, 18 January 2011, <https://circabc.europa.eu/d/d/workspace/SpacesStore/db806977-6418-44db-a464-20267139b34d/Brandt_Oil_Sands_GHGs_Final.pdf> (107.3 grammes of carbon dioxide (CO2) per megajoule of energy versus 87.1 grammes).

104 Royal Dutch Shell plc, North America investor visit, presentation John Abbott, executive vice president heavy oil, "Heavy oil in Shell", 30 September 2010, <http://www-static.shell.com/static/investor/downloads/presentations/2010/na_visit/john_abbott_na_visit_presentation_30092010.pdf>

105 Royal Dutch Shell, "Report on Royal Dutch Shell plc & oil sands", March 2010, <http://www-static.shell.com/static/investor/downloads/news_and_library/report_royaldutch-shell_oil_sands_march2010.pdf>
IHS Cambridge Energy Research Associates (IHS CERA), Report "Oil Sands, Greenhouse Gases, and US Oil Supply: Getting the Numbers Right", September 2010, <https://www.cera.com/aspx/cda/client/knowledgeArea/serviceDescription.aspx?KID=238>

106 Adam R. Brandt, Department of Energy Resources Engineering, Stanford University, USA, "Upstream greenhouse gas (GHG) emissions from Canadian oil sands as a feedstock for European refineries", 18 January 2011, <https://circabc.europa.eu/d/d/workspace/SpacesStore/db806977-6418-44db-a464-20267139b34d/Brandt_Oil_Sands_GHGs_Final.pdf>, page 37 (107.3 grammes of carbon dioxide (CO2) per megajoule of energy versus 87.1 grammes).

107 Government of Alberta, "Alberta moves to forefront in carbon capture and storage", 8 October 2009, <http://www.alberta.ca/acn/200910/270703512366B-9522-07D4-3AD4E71EE1B8F5A7.html>

108 Royal Dutch Shell plc, North America investor visit, presentation John Abbott, executive vice president heavy oil, "Heavy oil in Shell", 30 September 2010, <http://www-static.shell.com/static/investor/downloads/presentations/2010/na_visit/john_abbott_na_visit_presentation_30092010.pdf>

109 Blue Source Canada ULC, "Quantifying the GHG Reduction Benefits from the Quest Carbon Capture and Storage (CCS) Project", November 2010, <http://www-static.shell.com/static/can-en/downloads/aboutshell/our_business/oil_sands/quest/12_quest_vol_1_appx_k_ghg_reduction_benefits.pdf>

110 Royal Dutch Shell plc, North America investor visit, presentation John Abbott, executive vice president heavy oil, "Heavy oil in Shell", 30 September 2010, <http://www-static.shell.com/static/investor/downloads/presentations/2010/na_visit/john_abbott_na_visit_presentation_30092010.pdf>

111 Royal Dutch Shell, "Report on Royal Dutch Shell plc & oil sands", March 2010, <http://www-static.shell.com/static/investor/downloads/news_and_library/report_royaldutchshell_oil_sands_march2010.pdf>

112 Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl, and Zn. United States Environmental Protection Agency (EPA), "Priority pollutants", <http://water.epa.gov/scitech/swguidance/methods/pollutants.cfm>

113 Proceedings of the National Academy of Sciences of the United States of America, Erin N. Kelly, David W. Schindler, Peter V. Hodson, Jeffrey W. Short, Roseanna Radmanovich, and Charlene C. Nielsen, "Oil sands development contributes elements toxic at low concentrations to the Athabasca River and its tributaries", 2 July 2010, <http://www.pnas.org/content/107/37/16178>

114 Pembina Institute, Briefing Note "Canadian Aboriginal Concerns With Oil Sands, A compilation of key issues, resolutions and legal activities", September 2010, <http://pubs.pembina.org/reports/briefingnoteosfntoursep10.pdf>

115 Cosan, "Cosan and Shell announce Raízen", 14 February 2011, <http://www.cosan.com.br/cosan/web/index_en.html>

116 Shell and Cosan, press release "Shell and Cosan sign joint venture", 25 August 2010, <http://www.cosan.com.br/cosan2009/web/arquivos/Press%20release%20ingles.pdf>
Cosan, "Cosan and Shell announce Raízen", 14 February 2011, <http://www.cosan.com.br/cosan/web/index_en.html>
Thomson Reuters, "Cosan and Shell Joint Venture Conference Call (English)", 25 August 2010, <http://www.alacrastore.com/research/thomson-streetevents-COSAN_S_A_INDUSTRIA_E_COMERICO_Cosan_and_Shell_Joint_Venture_Conference_Call_English-T3325526>
Cosan, "Annual report 2010", September 2010, <http://www.cosan.com.br/cosan2009/web/arquivos/PDF_Cosan_RA_ING%5B1%5D.pdf>
Royal Dutch Shell, Presentation Evandro Gueiros to socially responsible shareholders on the proposed Shell and Cosan Downstream & Biofuels JV in Brazil, 9 November 2010, <http://www-static.shell.com/static/investor/downloads/presentations/2010/cosan_evandro_gueiros_09112010.pdf>

117 Shell and Cosan, press release "Shell and Cosan sign joint venture", 25 August 2010, <http://www.cosan.com.br/cosan2009/web/arquivos/Press%20release%20ingles.pdf>
Cosan, "news", 23 February 2011, <http://www.mzcenter.com.br/Arquivos/345521.pdf>
Reuters, "UPDATE 1-Cosan to buy Zanin cane mill for USD 224.7 mln", 7 January 2011, <http://af.reuters.com/article/energyOilNews/idAFN0722878820110107?pageNumber=2&virtualBrandChannel=0&sp=true>

118 UNICA, Brazilian Sugarcane Industry Association, book "From Alcohol to Ethanol: a Winning Trajectory", November 2010, <http://english.unica.com.br/multimedia/>

119 Shell and Cosan, press release "Shell and Cosan sign joint venture", 25 August 2010, <http://www.cosan.com.br/cosan2009/web/arquivos/Press%20release%20ingles.pdf>

120 Cosan, "Annual report 2010", September 2010, <http://www.cosan.com.br/cosan2009/web/arquivos/PDF_Cosan_RA_ING%5B1%5D.pdf>

121 NovAmérica, "Sustainability Report 2008", August 2008, <http://www.novamerica.com.br/institucionalen/shared/docs/Sustainability_report_2008.pdf>, page 49.

122 Federal Prosecutor in Mato Grosso do Sul, "Note of clarification", 18 May 2010, <http://www.prms.mpf.gov.br/servicos/sala-de-imprensa/noticias/2010/05/nota-de-esclarecimento/?searchterm=Cosan>

123 Projeto Excelências Transparência Brasil, "José Roberto Teixeira", <http://www.excelencias.org.br/@candidato.php?id=9320&cs=12>

124 Cosan, "Sustainability report 2010", 23 September 2010, <http://www.cosan.com.br/cosan2009/web/arquivos/Cosan_Sustainability_Report_2010_English.pdf>, page 77.

125 Canasat Project, "sugarcane maps", <http://150.163.3.3/canasat/mapa/>

126 Deputado Zé Teixeira of Mato Grosso do Sul, "Polêmica sobre demarcação expõe procurador a duras críticas", 13 May 2010, <http://www.zeteixeira.com/site/noticias/?id=821&>

127 Survival International, report to the UN Committee on the Elimination of Racial Discrimination (UN CERD) "Violations of the rights of the Guarani of Mato Grosso do Sul state, Brazil", March 2010, <http://assets.survival-international.org/documents/207/Guarani_report_English_MARCH.pdf>

128 Brazil, Ministério da Justiça, Fundação Nacional do Índio (Funai) , "Portaria Nº 3.219", 7 October 2009, <http://www.funai.gov.br/licitacao/2010/anexos/Guyraroka_portaria.pdf>

129 Conselho Indigenista Missionário (CIMI), "Newsletter 884: Limits of one Guarani-Kaiowá area published", 9 October 2009, <http://www.cimi.org.br/?system=news&action=read&id=4197&eid=275>

130 Amnesty International, report " 'We know our rights and we will fight for them' indigenous rights in Brazil – the Guarani-Kaiowá", November 2010, <http://www.amnesty.org/en/library/info/AMR19/014/2010/en>

131 United Nations, Human Rights Council, special Rapporteur on the situation of human rights and fundamental freedoms of indigenous people, James Anaya, "Report on the situation of human rights of indigenous peoples in Brazil", 19 August 2009, <http://unsr.jamesanaya.org/docs/countries/2009_report_brazil_en.pdf>

132 Canasat Project, "Área de Cana Safra e Reforma na Região Centro-Sul", <http://150.163.3.3/canasat/eng/tabelas.php> The Canasat project provides information about the spatial distribution of cultivated sugarcane area in Central-South States of Brazil using remote sensing satellite images. The project is an initiative of the National Institute for Space Research (INPE), and, among other, the sugarcane producer association Unica.

133 Cosan, Investor and Analyst Presentation "Renewable Energy for a Better World", 26 August 2008, <http://www.cosan.com.br/cosan2009/web/arquivos/Cosan_Apresentacao_APIMEC_20080826_en.pdf>, page 16.
Ministério da Agricultura, Pecuária e Abastecimento, "Zoneamento Agroecológico da Cana de Açúcar", 2009, <http://www.cnps.embrapa.br/zoneamento_cana_de_acucar/1BR_ZAE_Cana.pdf>

134 NGO Repórter Brasil, "Brazil of Biofuels – Impacts of Crops on Land, Environment and Society – Sugarcane 2009", January 2010, <http://www.reporterbrasil.org.br/documentos/brazil_of_biofuels_v6.pdf>

135 Cosan, "Sustainability report 2010", 23 September 2010, <http://www.cosan.com.br/cosan2009/web/arquivos/Cosan_Sustainability_Report_2010_English.pdf>

136 Folha.com, article "Acordo mina programa de combate a trabalho escravo", 28 February 2011, <http://www1.folha.uol.com.br/poder/881861-acordo-mina-programa-de-combate-a-trabalho-escravo.shtml>
Blog do Leonardo Sakamoto, among other coordinator of the NGO Repórter Brasil "Acordo mina programa de combate a trabalho escravo", 28 February 2011, <http://blogdosakamoto.uol.com.br/2011/02/28/acordo-mina-programa-de-combate-a-trabalho-escravo/>

137 NGO Repórter Brasil, "Brazil of Biofuels – Impacts of Crops on Land, Environment and Society – Sugarcane 2009", January 2010, <http://www.reporterbrasil.org.br/documentos/brazil_of_biofuels_v6.pdf>

138 Ministério do Trabalho e Emprego, "Trinta e oito mil trabalhadores escravos resgatados", 3 January 2011, <http://www.mte.gov.br/sgcnoticia.asp?IdConteudoNoticia=7561&PalavraChave=escravo>

139 Ministério do Trabalho e Emprego, "Portaria do MTE cria cadastro de empresas e pessoas autuadas por exploração do trabalho escravo", <http://portal.mte.gov.br/trab_escravo/portaria-do-mte-cria-cadastro-de-empresas-e-pessoas-autuadas-por-exploracao-do-trabalho-escravo.htm> as viewed on 14 March 2011.

140 U.S. Consulate São Paulo, Brazil, cable "Sugar, ethanol, charges of slavery, and tip strategy in Brazil", 8 August 2008, <http://213.251.145.96/cable/2008/08/08SAOPAULO432.html>

141 Agência BOM DIA, "MPT flagra condições degradantes de trabalho", 26 July 2010, <http://www.redebomdia.com.br/Noticias/Dia-a-dia/26002/MPT+flagra+condicoes+degradantes+de+trabalho>

142 Cosan, "Sustainability report 2010", 23 September 2010, <http://www.cosan.com.br/cosan2009/web/arquivos/Cosan_Sustainability_Report_2010_English.pdf> Cosan states that the wage threshold stands at BRL 529.00 to BRL 582.00, depending on the region. This relates to EUR 237 respectively EUR 261. Exchange rate at 1 September 2010: one Brazilian real is EUR 0,44850, <http://www.exchange-rates.org/HistoricalRates/E/BRL/9-01-2010>

143 Cosan, "Sustainability report 2010", 23 September 2010, <http://www.cosan.com.br/cosan2009/web/arquivos/Cosan_Sustainability_Report_2010_English.pdf>

144 NGO Repórter Brasil, "Brazil of Biofuels – Impacts of Crops on Land, Environment and Society – Sugarcane 2009", January 2010, <http://www.reporterbrasil.org.br/documentos/brazil_of_biofuels_v6.pdf>

145 NGO Repórter Brasil, "Brazil of Biofuels – Impacts of Crops on Land, Environment and Society – Sugarcane 2009", January 2010, <http://www.reporterbrasil.org.br/documentos/brazil_of_biofuels_v6.pdf>

146 Ministério Público do Trabalho em Campinas, "Por descumprimento de acordo, grupo COSAN fará doação de BRL 26 mil para entidades de Araçatuba", 18 June 2010, <http://www.pgt.mpt.gov.br/noticias/noticias-das-prts/por-descumprimento-de-acordo-grupo-cosan-fara-doacao-de-26-mil-para-entidades-de-aracatuba.html>

147 Ministério Público do Trabalho em Campinas, "COSAN doa BRL 2,5 milhões para entidades da região de Araçatuba por descumprir acordo", 5 July 2010, <http://www.pgt.mpt.gov.br/noticias/noticias-das-prts/cosan-doa-25-milhoes-para-entidades-da-regiao-de-aracatuba-por-descumprir-acordo.html>

148 NGO Repórter Brasil, "Cosan viola acordos trabalhistas e aceita desembolsar BRL 3,4 milhões", 3 August 2010, <http://www.reporterbrasil.org.br/agrocombustiveis/exibe.php?id=137>

149 NGO Repórter Brasil, "Cosan viola acordos trabalhistas e aceita desembolsar BRL 3,4 milhões", 3 August 2010, <http://www.reporterbrasil.org.br/agrocombustiveis/exibe.php?id=137>

150 NGO Repórter Brasil, "Cosan viola acordos trabalhistas e aceita desembolsar BRL 3,4 milhões", 3 August 2010, <http://www.reporterbrasil.org.br/agrocombustiveis/exibe.php?id=137>

151 Cosan, Vasco Dias, CEO Raízen, presentation "Synergies of the JV with Shell", 2 March 2011, <http://www.cosan.com.br/cosan2009/web/arquivos/2011_03_02-Sinergias_Shell_vf_ingles.pdf>

152 UNICA, Brazilian Sugarcane Industry Association, book "From Alcohol to Ethanol: a Winning Trajectory", November 2010, <http://english.unica.com.br/multimedia/>

153 Cosan, Vasco Dias, CEO Raízen, presentation "Synergies of the JV with Shell", 2 March 2011, <http://www.cosan.com.br/cosan2009/web/arquivos/2011_03_02-Sinergias_Shell_vf_ingles.pdf>

154 UNICA, Brazilian Sugarcane Industry Association, book "From Alcohol to Ethanol: a Winning Trajectory", November 2010, <http://english.unica.com.br/multimedia/>
Cosan, Vasco Dias, CEO Raízen, presentation "Synergies of the JV with Shell", 2 March 2011, <http://www.cosan.com.br/cosan2009/web/arquivos/2011_03_02-Sinergias_Shell_vf_ingles.pdf>

155 UNICA, Brazilian Sugarcane Industry Association, book "From Alcohol to Ethanol: a Winning Trajectory", November 2010, <http://english.unica.com.br/multimedia/>
Cosan, Vasco Dias, CEO Raízen, presentation "Synergies of the JV with Shell", 2 March 2011, <http://www.cosan.com.br/cosan2009/web/arquivos/2011_03_02-Sinergias_Shell_vf_ingles.pdf>

156 Cosan, "Sustainability Report 2010", 23 September 2010, <http://www.cosan.com.br/cosan2009/web/arquivos/Cosan_Sustainability_Report_2010_English.pdf>, page 27 and 33

157 Cosan, press release "Comunicado ao Mercado", 28 August 2008, <http://www.acionista.com.br/home/cosan/280808_constituicao_subsidiaria.pdf>
Ministerio da Fazenda, Brazil, "Ato de concentracao no. 08012.009447/2008-82, Cosan S.A. Industria e comercio e Mansilla Participacoes Ltda.", 25 september 2008, <http://www.cade.gov.br/temp/t111201114054332.pdf>

158 Teachers Insurance and Annuity Association of America, "Audited Statutory – Basis Financial Statements as of December 31, 2009 and 2008 and for the three years ended December 31, 2009", 12 April 2010, <http://www.tiaa-cref.org/ucm/groups/content/@ap_ucm_p_tcp/documents/document/tiaa01007823.pdf>

159 Cosan, presentation Ricardo Mussa (Radar) at Cosan Day, New York, 26 October 2010, <http://www.mzweb.com.br/cosan2009/web/arquivos/Cosan_Radar_Propriedades_Agricolas_20101209_en.pdf>

160 Shell and Cosan, press release "Shell and Cosan sign joint venture", 25 August 2010, <http://www.cosan.com.br/cosan2009/web/arquivos/Press%20release%20ingles.pdf>
Cosan, "news", 23 February 2011, <http://www.mzcenter.com.br/Arquivos/345521.pdf>
Reuters, "UPDATE 1-Cosan to buy Zanin cane mill for USD 224.7 mln", 7 January 2011, <http://af.reuters.com/article/energyOilNews/idAFN0722878820110107?pageNumber=2&virtualBrandChannel=0&sp=true>

161 UNICA, Brazilian Sugarcane Industry Association, book "From Alcohol to Ethanol: a Winning Trajectory", November 2010, <http://english.unica.com.br/multimedia/>

162 Canasat Project, "sugarcane tables", <http://www.dsr.inpe.br/laf/canasat/tabelas.html>

163 Canasat Project, "sugarcane tables", <http://www.dsr.inpe.br/laf/canasat/tabelas.html>

164 Government of Brazil, "Sugarcane Agroecological Zoning: To Expand Production, Preserve Life and Ensure a Future", September 2009, <http://www.unica.com.br/download.asp?mmdCode=8A1CFBDE-9A8B-4419-8986-47A8B8F-8DEA6>

165 NGO Repórter Brasil, "Brazil of Biofuels – Impacts of Crops on Land, Environment and Society – Sugarcane 2009", January 2010, <http://www.reporterbrasil.org.br/documentos/brazil_of_biofuels_v6.pdf>

166 Government of Brazil, "Sugarcane Agroecological Zoning: To Expand Production, Preserve Life and Ensure a Future", September 2009, <http://www.unica.com.br/download.asp?mmdCode=8A1CFBDE-9A8B-4419-8986-47A8B8F-8DEA6>

167 Institute for International Trade Negotiations (ICONE), Sao Paulo, Brazil, email to the European Commission, "Consultation on Indirect Land Use Change Impacts of Biofuels, comments by Institute for International Trade Negotiations (ICONE)", 31 October 2010, <http://www.iconebrasil.org.br/arquivos/noticia/2135.pdf>, page 23.

168 FAO Stat, "Crops", <http://faostat.fao.org/site/567/DesktopDefault.aspx?PageID=567#ancor> as viewed on 23 March 2011.

169 FAO Stat, "Livestock Primary", <http://faostat.fao.org/site/569/default.aspx#ancor> as viewed on 23 March 2011.

170 FAO Stat, "TradeSTAT, Crops and livestock products", <http://faostat.fao.org/site/535/DesktopDefault.aspx?PageID=535#ancor> as viewed on 23 March 2011. Categories: Total Meat + (Total); Soy beans; Sugar Raw Centrifugal; Soybean oil; Sugar Refined.

171 Ministério da Agricultura, Pecuária e Abastecimento (MAPA), "Projeções do Agronegócio. Brasil, 2009/10 a 2019/20", March 2010, <http://www.cifeijao.com.br/downloads/projecoes_agronegocio.pdf>

172 Friends of the Earth Europe, "From forest to fork, How cattle, soy and sugar are destroying Brazil's forests and damaging the climate", December 2010, <www.foeeurope.org/agriculture/FromForestToFork.pdf>

173 Environmental Science & Technology, Christel Cederberg, U. Martin Persson, Kristian Neovius, Sverker Molander, and Roland Clift, article "Including Carbon Emissions from Deforestation in the Carbon Footprint of Brazilian Beef", 31 January 2011, <http://pubs.acs.org/doi/pdf/10.1021/es103240z>

174 Brazilian government, "Transcript of President Lula's address in Copenhagen", 17 December 2009, <http://www.cop-15brazil.gov.br/en-US/?page=noticias/pres-lula-speech>

175 National Institute for Space Research (INPE), "Amazon deforestation has been decreased 14% INPE estimates 6,451 km2 for 2009/2010 periods", 1 December 2010, <http://www.inpe.br/ingles/news/news_dest154.php>

176 Brasil Ministério do Meio Ambiente (MMA), "MMA divulga queda no desmatamento nos biomas Amazônia e Cerrado", 6 April 2011, <http://www.mma.gov.br/sitio/index.php?ido=ascom.noticiaMMA&codigo=6602>

177 Brasil Ministério do Meio Ambiente (MMA), "Plano de Ação para Prevenção e Controle do Desmatamento e das Queimadas no Cerrado", September 2010, <http://www.mma.gov.br/estruturas/182/_arquivos/ppcerrado_15set_impressao_sem_crditos_182.pdf>

178 Agricultural Systems, Martinelli, L.A., et al, "Sugar and ethanol production as a rural development strategy in Brazil: Evidence from the state of São Paulo. January 2011, <http://iis-db.stanford.edu/pubs/23132/AS_Martinelli,_Garrett,_Ferraz,_Naylor_-_Sugar_cane_and_development_-_Agricultural_Systems_-_2011.pdf>

179 Institute for Agriculture and Trade Policy, "Land and power in Brazil", March 2011, <http://iatp.typepad.com/thinkforward/2011/03/land-and-power-in-brazil.html>

180 U.S. Consulate São Paulo, Brazil, cable "Sugar, ethanol, charges of slavery, and tip strategy in Brazil", 8 August 2008, <http://213.251.145.96/cable/2008/08/08SAOPAULO432.html>

181 Agricultural Systems, Martinelli, L.A., et al, "Sugar and ethanol production as a rural development strategy in Brazil: Evidence from the state of São Paulo. January 2011, <http://iis-db.stanford.edu/pubs/23132/AS_Martinelli,_Garrett,_Ferraz,_Naylor_-_Sugar_cane_and_development_-_Agricultural_Systems_-_2011.pdf>

182 U.S. Environmental Protection Agency, regulatory announcement "EPA Lifecycle Analysis of Greenhouse Gas Emissions from Renewable Fuels", February 2010, <http://www.epa.gov/oms/renewablefuels/420f10006.pdf>

183 U.S. Environmental Protection Agency, report "Renewable Fuel Standard Program (RFS2) Regulatory Impact Analysis", February 2010, page 477, <http://www.epa.gov/oms/renewablefuels/420r10006.pdf>

184 Transport & Environment, "Commission delays action that will determine best biofuels", 11 February 2011, <http://www.transportenvironment.org/Printer/News/2011/2/Commission-delays-action-that-will-determine-best-biofuels/>

185 European Commission, Public consultation indirect land use change and biofuels "Contributions from Registered Organisations, Shell", <http://ec.europa.eu/energy/renewables/consultations/2010_10_31_iluc_and_biofuels_en.htm>

186 ENDS Europe, "EU executive postpones action on ILUC impacts", 6 January 2011, <http://www.endseurope.com/index.cfm?go=25318>

187 Financial Times, "Shell's Peter Voser answers your questions – Part Two", 17 December 2010, <http://blogs.ft.com/energy-source/2010/12/17/shells-peter-voser-answers-your-questions-part-two/>

188 Science Cabaret on Air, radio interview "To Frack or Not to Frack? – Guest: Tony Ingraffea", 5 February 2011, <http://sciencecabaret.podomatic.com/player/web/2011-02-07T09_48_38-08_00>

189 Royal Dutch Shell plc, "Royal Dutch Shell plc acquires new positions in US tight gas", 28 May 2010, <http://www.shell.com/home/content/media/news_and_media_releases/archive/2010/shell_acquires_new_positions_us_tight_gas_28052010.html>
Shell USA, "Wyoming – Pinedale Anticline Project Area (PAPA)", <http://www.shell.us/home/content/usa/aboutshell/projects_locations/wyoming/>
Royal Dutch Shell plc, "Shell to sell gas fields in South Texas to OXY USA, Inc.", 10 December 2010, <http://www.shell.com/home/content/media/news_and_media_releases/archive/2010/shell_to_sell_gas_fields_south_texas_09122010.html>
Royal Dutch Shell plc, "New growth for Shell in Upstream Americas", 28 September 2010, <http://www.shell.com/home/content/media/news_and_media_releases/archive/2010/new_growth_upstream_americas_28092010.html>

190 The surface of the Netherlands, including inland water, amounts to 41,528 square kilometres.

191 Golder associates, "Proposed South Western Karoo Basin Gas Exploration Project by Shell Exploration Company B.V.", <http://www.golder.com/af/en/modules.php?name=Pages&sp_id=1236>

192 Shell China, "Shell and China National Petroleum Corp. announce natural gas cooperation", 23 March 2010, <http://www.shell.com.cn/home/content/chn-en/aboutshell/media_centre/news_and_media_releases/archive/2010/natural_gas_cooperation.html>
Shell China, "Shell joins China coalbed methane project", 27 December 2007, <http://www.shell.com.cn/home/content/chn-en/aboutshell/media_centre/news_and_media_releases/archive/2007/ep_coalbed_methane_jv_20071227.html>

193 Royal Dutch Shell plc, "Shell and PetroChina complete Arrow Energy acquisition", 23 Augustus 2010, <http://www.shell.com/home/content/media/news_and_media_releases/archive/2010/arrow_acquisition_complete_240810.html>
Arrow, "Acquisition Scheme booklet", 7 June 2010, <http://www.arrowenergy.com.au/content/Document/Acquisition%20Scheme%20Booklet.pdf>
Royal Dutch Shell plc, "Agreement reached to acquire Arrow Energy Limited", 21 March 2010, <http://www.shell.com/home/content/media/news_and_media_releases/archive/2010/agreement_arrow_energy_limited_22032010.html>

194 Royal Dutch Shell, "Tapping into tightly trapped gas, map with Shell's global tight gas positions", <http://www-static.shell.com/static/innovation/downloads/innovation/world_map_with_legend.pdf>

195 Royal Dutch Shell, "Tapping into tightly trapped gas", <http://www.shell.com/home/content/innovation/meeting_demand/gas/tightly_trapped_gas/>, viewed on 10 March 2011.
Royal Dutch Shell plc, "Sustainability report 2009", May 2010, <http://sustainabilityreport.shell.com/2009/servicepages/welcome.html>
Shell Nederland B.V., magazine Shell Venster, backpage, "Let's Go, advertisement", March/April 2011, <http://www-static.shell.com/static/nld/downloads/venster_2011/venster_march_april.pdf>

196 Royal Dutch Shell, "Tapping into tightly trapped gas", <http://www.shell.com/home/content/innovation/meeting_demand/gas/tightly_trapped_gas/> as viewed on 10 March 2011.

197 U.S. Environmental Protection Agency, Factsheet "Hydraulic fracturing research study", June 2010, <http://www.epa.gov/safewater/uic/pdfs/hfresearchstudyfs.pdf>
1 gallon [US, liquid] = 3.78541178 litres. Source: <http://wiki.answers.com/Q/How_many_liters_equal_one_gallon>

198 Royal Dutch Shell plc, presentation by Russ Ford, Executive Vice President Onshore Gas – Americas "North America investor visit, North America tight gas update", 29 September 2010, <http://www-static.shell.com/static/investor/downloads/presentations/2010/na_visit/russ_ford_na_visit_presentation_29092010.pdf>
Royal Dutch Shell plc, presentation by Manuel Willemse, development manager Groundbirch, "North America investor visit, Groundbirch presentation", 11 June 2010, <http://

www-static.shell.com/static/investor/downloads/presentations/2010/na_visit/manual_willemse_na_visit_presentation_29092010.pdf>

199 Golder associates, "Proposed South Western Karoo Basin Gas Exploration Project by Shell Exploration Company B.V., draft environmental management plans", <http://www.golder.com/af/en/modules.php?name=Pages&sp_id=1236>

200 WorldWatch Institute, Emily Grubert and Saya Kitasei, briefing paper "How Energy Choices Affect Fresh Water Supplies: A Comparison of U.S. Coal and Natural Gas", November 2010, <http://www.worldwatch.org/system/files/NGSEIBriefingPaper2.pdf>

201 New York Times, topic "Drilling Down", <http://topics.nytimes.com/top/news/us/series/drilling_down/index.html>, as viewed on 8 March 2011.

202 New York Times, "Regulation Lax as Gas Wells' Tainted Water Hits Rivers", 26 February 2011, <http://www.nytimes.com/2011/02/27/us/27gas.html?pagewanted=1&ref=drillingdown>

203 New York Times, "Toxic Contamination From Natural Gas Wells", 26 February 2011, <http://www.nytimes.com/interactive/2011/02/27/us/natural-gas-map.html?ref=us>

204 U.S. Environmental Protection Agency, "Methane", <http://www.epa.gov/methane/scientific.html>

205 Science Magazine, article by Drew T. Shindell, Greg Faluvegi, Dorothy M. Koch, Gavin A. Schmidt, Nadine Unger, Susanne E. Bauer, NASA Goddard Institute for Space Studies and Columbia University, New York, "Improved Attribution of Climate Forcing to Emissions", 30 October 2009.

206 U.S. Environmental Protection Agency, "Greenhouse gas emissions reporting from the petroleum and natural gas industry, background technical support document", November 2010, <http://www.epa.gov/climatechange/emissions/downloads10/Subpart-W_TSD.pdf>, pages 6 to 10 and appendix B.

207 U.S. Environmental Protection Agency, "Greenhouse gas emissions reporting from the petroleum and natural gas industry, background technical support document", November 2010, <http://www.epa.gov/climatechange/emissions/downloads10/Subpart-W_TSD.pdf>, pages 6 to 10 and appendix B.

208 Climatic Change journal, Robert W. Howarth, Renee Santoro, Anthony Ingraffea (all Cornell University), "Methane and the greenhouse-gas footprint of natural gas from shale formations, a letter", 13 March 2011, <http://www.springerlink.com/content/e384226wr4160653/fulltext.pdf>

209 Facebook, "chase SHELL OIL out of the Karoo!", <http://www.facebook.com/home.php?sk=group_185633661460206> as viewed on 19 April 2011.

210 Golder associates, "Proposed South Western Karoo Basin Gas Exploration Project by Shell Exploration Company B.V., conclusions of the EMPs", <http://www.golder.com/af/en/modules.php?name=Pages&sp_id=1236>

211 The U.S. Environmental Protection Agency, "Hydraulic Fracturing", <http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/index.cfm>

212 Golder associates, "Proposed South Western Karoo Basin Gas Exploration Project by Shell Exploration Company B.V., comment and response report", <http://www.golder.com/af/en/modules.php?name=Pages&sp_id=1236>

213 Republic of South Africa, "Statement on the Cabinet meeting held on 20 April 2011", 21 April 2011, <http://www.gcis.gov.za/newsroom/releases/cabstate/2011/110421.htm>

214 Moneyweb, "Special Report Podcast: Johann Rupert – chairman, Remgro", 2 February 2011, <http://www.moneyweb.co.za/mw/view/mw/en/page299360?oid=527741&sn=2009+Detail>

215 Karoo Space Magazine, "Fracking worries scientists", 16 February 2011, <http://www.karoospace.co.za/karoo-space-magazine/talking-point/101-fracking>

216 Karoo Space Magazine, "Fracking worries scientists", 16 February 2011, <http://www.karoospace.co.za/karoo-space-magazine/talking-point/101-fracking>

217 Karoo Space Magazine, "Fracking the Karoo? People say No", 31 January 2011, <http://www.karoospace.co.za/karoo-space-magazine/talking-point/101-fracking>

218 Karoo Space Magazine, "Fracking worries scientists", 16 February 2011, <http://www.karoospace.co.za/karoo-space-magazine/talking-point/100-fracking-the-karoo-the-people-say-no>

219 Reuters, "South Africa farmers oppose Shell's shale gas plans", 3 February 2011, <http://uk.reuters.com/article/2011/02/03/safrica-shell-idUKLDE7111TW20110203>

220 Reuters, "South Africa farmers oppose Shell's shale gas plans", 3 February 2011, <http://uk.reuters.com/article/2011/02/03/safrica-shell-idUKLDE7111TW20110203>

221 NRC Handelsblad, article (in Dutch) "Shell zit nog in het oude stramien", 10 February 2011, <http://archief.nrc.nl/index.php/2011/Februari/10/Economie/15/%27Shell+zit+nog+in++het+oude+stramien%27/check=Y>

222 Havemann Inc, compiled by Dr L Havemann, Prof J Glazewksi and Ms Susan Brownlie, "A critical review of the application for a Karoo gas exploration right by Shell Exploration Company B.V.", 5 April 2011, <http://royaldutchshellplc.com/wp-content/uploads/2011/04/Karoo4.pdf>

223 Golder associates, "Proposed South Western Karoo Basin Gas Exploration Project by Shell Exploration Company B.V., comment and response report", <http://www.golder.com/af/en/modules.php?> as viewed on 10 March 2011.

224 Dutch ministers for Foreign Affairs and Economic affairs, Agriculture and Innovation, answers to questions from the parliamentarians Dikkers and Timmermans "betrokkenheid Shell bij gasboring in Karoo, Zuid-Afrika", 8 March 2011, <http://www.rijksoverheid.nl/documenten-en-publicaties/kamerstukken/2011/03/08/antwoorden-kamervragen-betrokkenheid-shell-bij-gasboring-zuid-afrika.html>

225 The measurement is in CO2-equivalents. Royal Dutch Shell plc, "Sustainability report 2010", 14 April 2011, <http://sustainabilityreport.shell.com/2010/servicepages/welcome.html>

226 United Nations Statistics Division, "Environmental Indicators; GHGs", July 2010, <http://unstats.un.org/unsd/environment/air_greenhouse_emissions.htm>

227 Royal Dutch Shell plc, "GHG emissions", <http://www.shell.com/home/content/environment_society/environment/climate_change/greenhouse_gas_emissions> as viewed on 15 April 2011

228 Royal Dutch Shell plc, "Sustainability report 2010", 14 April 2011, <http://sustainabilityreport.shell.com/2010/servicepages/welcome.html>
Royal Dutch Shell plc, "Sustainability report 2009", May 2010, <http://sustainabilityreport.shell.com/2009/servicepages/welcome.html>

229 Royal Dutch Shell plc, "Sustainability report 2009", May 2010, <http://sustainabilityreport.shell.com/2009/servicepages/welcome.html>

230 Royal Dutch Shell plc, "Sustainability report 2010", 14 April 2011, <http://sustainabilityreport.shell.com/2010/servicepages/welcome.html>

231 Royal Dutch Shell plc, "Annual report and form 20-F for the year ended December 31, 2010", March 2011, <http://www.shell.com/home/content/investor/news_and_library/2011_media_releases/2010_annual_report_20f_15032011.html>

232 Oil Change International, Friends of the Earth (International, Europe, U.S. and The Netherlands), PLATFORM, and Greenpeace UK, "Shell's Big Dirty Secret: Insight into the world's most carbon intensive oil company and the legacy of CEO Jeroen van der Veer", June 2009, <http://priceofoil.org/wp-content/uploads/2011/01/OCIShellsBigDirtySecret0609.pdf>

233 Reuters, "Med Crude-Urals digests Shell tender win, freight jump", 1 December 2010, <http://af.reuters.com/article/energyOilNews/idAFLDE6B022V20101201>
Reuters, "REFILE-Shell wins Rosneft's Urals, first ever Druzhba tender", 27 October 2010, <http://www.reuters.com/article/2010/10/27/rosneft-druzhba-tender-idUSLDE69Q1Z620101027>
Automated Trader, "CORRECT: Rosneft Awards Urals Tenders To Shell, Gunvor, Statoil", 9 September 2010, <http://www.automatedtrader.net/real-time-dow-jones/15666/correct-rosneft-awards-urals-tenders-to-shell-gunvor-statoil>

234 Rosneft, Sustainability report 2009, <http://www.rosneft.com/attach/0/10/92/rn_report_2009.pdf>

235 Royal Dutch Shell, "Carbon Disclosure 2010 Response", September 2010, <https://www.cdproject.net/Sites/2010/12/16012/Investor%20CDP%202010/Pages/DisclosureView.aspx>

236 U.S. Environmental Protection Agency, "Methane", <http://www.epa.gov/methane/scientific.html>

237 Science Magazine, article by Drew T. Shindell, Greg Faluvegi, Dorothy M. Koch, Gavin A. Schmidt, Nadine Unger, Susanne E. Bauer, NASA Goddard Institute for Space Studies and Columbia University, New York, "Improved Attribution of Climate Forcing to Emissions", 30 October 2009.

238 U.S. Environmental Protection Agency, "Greenhouse gas emissions reporting from the petroleum and natural gas industry, background technical support document", November 2010, <http://www.epa.gov/climatechange/emissions/downloads10/Subpart-W_TSD.pdf>, pages 6 to 10 and appendix B.
Climatic Change journal, Robert W. Howarth, Renee Santoro, Anthony Ingraffea (all Cornell University), "Methane and the greenhouse-gas footprint of natural gas from shale formations, a letter", 13 March 2011, <http://www.springerlink.com/content/e384226wr4160653/fulltext.pdf>

239 Shell, "Minutes meeting of the Committee of Managing Directors", London, 22/23 July 2002.

240 Bloomberg, "Shell Chief Executive Says 'Clock is Ticking' to Mitigate Climate Change", 17 January 2011, <http://www.bloomberg.com/news/2011-01-17/climate-change-demands-action-now-shell-s-chief-executive-says.html>

241 Royal Dutch Shell plc, "Annual report and form 20-F for the year ended December 31, 2010", March 2011, page 50, <http://www.shell.com/home/content/investor/news_and_library/2011_media_releases/2010_annual_report_20f_15032011.html>

242 Royal Dutch Shell plc, "Sustainability report 2009", May 2010, <http://sustainabilityreport.shell.com/2009/servicepages/welcome.html>

243 Guardian, video "George Monbiot meets ... Jeroen van de Veer", 6 January 2009, <http://www.guardian.co.uk/environment/video/2009/jan/06/george-monbiot-jeroen-van-de-veer>

244 Shell, "response to the 2010 Carbon Disclosure Project", September 2010, <http://www-static.shell.com/static/environment_society/downloads/environment/climate_change/cdp_september_2010.pdf>

245 Peter Voser, Chief Executive Officer, Royal Dutch Shell plc, Speech at the Oil & Money Conference in London, UK, "Natural gas: key to green energy future", 12 October 2010, <http://www.ordons.com/opinion/op-ed-contributors/7744-peter-voser-natural-gas-is-a-key-to-green-energy-future.html>

246 European Commission, "Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, "Energy infrastructure priorities for 2020 and beyond – a Blueprint for an integrated European energy network", 17 November 2010, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SPLIT_COM:2010:0677%2801%29:FIN:EN:PDF>

247 Corporate Europe Observatory / Spinwatch, report "EU Billions to keep burning fossil fuels", December 2010, <www.corporateeurope.org/system/files/files/article/CCS.lobbying.pdf>

248 Greenpeace, "False Hope, why carbon capture and storage won't save the climate", May 2008, <http://www.greenpeace.org/international/Global/international/planet-2/report/2008/5/false-hope-executive-summary.pdf>

249 Official Journal of the European Union, "Fuel Quality Directive", 5 June 2009, <http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0088:0113:EN:PDF> In this directive oil companies, the suppliers of fuel, are targeted to reduce their well-to-wheel emissions. A 6% reduction per liter should be obtained through the use of biofuels, alternative fuels, and reductions in flaring and venting at production sites. Subject to a review, it should comprise a further 2% reduction obtained through the use of environmentally friendly carbon capture and storage technologies

and electric vehicles and an additional further 2% reduction obtained through the purchase of credits under the Clean Development Mechanism (CDM) of the Kyoto Protocol.

250 Royal Dutch Shell plc, "Sustainability report 2010", 14 April 2011, <http://sustainabilityreport.shell.com/2010/servicepages/welcome.html>

251 Royal Dutch Shell plc, "Sustainability report 2009", May 2010, <http://sustainabilityreport.shell.com/2009/servicepages/welcome.html>

252 Royal Dutch Shell plc, "Sustainability report 2009", May 2010, <http://sustainabilityreport.shell.com/2009/servicepages/welcome.html>

253 Peter Voser, Chief Executive Officer, Royal Dutch Shell plc, Speech at the Oil & Money Conference in London, UK, "Natural gas: key to green energy future", 12 October 2010, <http://www.shell.com/home/content/media/speeches_and_webcasts/2010/voser_london_12102010.html>

254 Financial Times, "Shell pulls out of key wind power project", 30 April 2008, <http://www.ft.com/cms/s/0/e2a5b99c-16ea-11dd-bbfc-0000779fd2ac.html#ixzz1DkiVwxGQ>

255 Guardian, "Shell dumps wind, solar and hydro power in favour of biofuels" 17 March 2009, <http://www.guardian.co.uk/business/2009/mar/17/royaldutchshell-energy>

256 Peter Voser, Chief Executive Officer, Royal Dutch Shell plc, Speech at the Oil & Money Conference in London, UK, "Natural gas: key to green energy future", 12 October 2010, <http://www.ordons.com/opinion/op-ed-contributors/7744-peter-voser-natural-gas-is-a-key-to-green-energy-future.html>

257 OECD, "Glossary of statistical terms", 23 July 2007, <http://stats.oecd.org/glossary/detail.asp?ID=7250>

258 U.S. Embassy Abuja, Nigeria, cable "Shell MD discusses the status of the proposed petroleum industry bill", 20 October 2009, <http://213.251.145.96/cable/2009/10/09ABUJA1907.html>

259 Shell Nederland B.V., letter to the Dutch parliamentary committee on Economic Affairs, Agriculture and Innovation, 21 January 2011, <http://www.voeks.nl/docs/brief%20RT%20MVO.PDF>

260 U.S. Embassy The Hague, Netherlands, cable "Netherlands: Shell discusses business in Iran", 2 January 2009, <http://213.251.145.96/cable/2009/01/09THEHAGUE2.html>

261 Dutch Ministry of the Interior and Kingdom Relations, press release (in Dutch) "Shell en rijksoverheid gaan managers uitwisselen", 18 November 2008, <http://www.rijksoverheid.nl/documenten-en-publicaties/persberichten/2008/11/19/shell-en-rijksoverheid-gaan-managers-uitwisselen.html>

262 Dutch minister of Foreign Affairs (Mr Rosenthal) and the minister of Economic Affairs, Agriculture and Innovation (Mr Verhagen), answers to questions from parliamentarians (in Dutch) "vragen over buitenlandse beleid dat is afgestemd op Shell", 7 February 2011, <www.rijksoverheid.nl/bestanden/documenten-en-publicaties/kamerstukken/2011/02/08/antwoorden-shell/antwoorden-shell.pdf>

263 Enterpreneur, APS Review Gas Market Trends, "Libya – the Shell Deal, 16 July 2007, <http://www.entrepreneur.com/tradejournals/article/166414696.html>

264 The Independent, "Shell first off blocks in race to cash in on UK's new friendship", 26 March 2004, <http://www.independent.co.uk/news/business/news/shell-first-off-blocks-in-race-to-cash-in-on-uks-new-friendship-567680.html>

265 BBC News, "EU lifts weapons embargo on Libya", 11 October 2004, <http://news.bbc.co.uk/2/hi/3732514.stm>
CNN, "U.N. votes to lift Libya sanctions", 12 September 2003, <http://edition.cnn.com/2003/WORLD/africa/09/12/libya.france/>
CNN, "U.S. lifts most sanctions against Libya", 23 April 2004, <http://www.cnn.com/2004/WORLD/africa/04/23/us.libya.sanctions/>

266 VPRO, documentary (in Dutch) "Onze dierbare dictators", 21 March 2011, <http://beta.uitzendinggemist.nl/afleveringen/10816900>

267 The Times, article "Shell drafted letter Tony Blair sent to Gaddafi while Prime Minister", 27 April 2010, <http://business.timesonline.co.uk/tol/business/industry_sectors/natural_resources/article7108957.ece#cid=OTC-RSS&attr=797084>

268 U.S. Embassy The Hague, Netherlands, cable "Netherlands: scene setter for special envoy Morningstar's visit to the Hague", 2 October 2009, <http://213.251.145.96/cable/2009/10/09THEHAGUE596.html>

269 Dutch minister of Foreign Affairs (Mr Rosenthal) and the minister of Economic Affairs, Agriculture and Innovation (Mr Verhagen), answers to questions from parliamentarians (in Dutch) "vragen over buitenlandse beleid dat is afgestemd op Shell", 7 February 2011, <www.rijksoverheid.nl/bestanden/documenten-en-publicaties/kamerstukken/2011/02/08/antwoorden-shell/antwoorden-shell.pdf>

270 Spinwatch, "Exclusive: How Blair and BP "Lied" Over Iraqi Oil", 18 April 2011, <http://www.spinwatch.org/-articles-by-category-mainmenu-8/51-iraq/5431-exclusive-how-blair-and-bp-lied-over-iraqi-oil>

271 The Independent, "Secret memos expose link between oil firms and invasion of Iraq", 19 April 2011, <http://www.independent.co.uk/news/uk/politics/secret-memos-expose-link-between-oil-firms-and-invasion-of-iraq-2269610.html>

272 BBC News, "Oil firms 'discuss Iraqi stake'", 12 March 2003, <http://news.bbc.co.uk/2/hi/business/2842315.stm>

273 Commission Davids (in Dutch), "Report independent commission of Inquiry on Iraq", 12 January 2010, <http://www.rijksoverheid.nl/onderwerpen/irak/documenten-en-publicaties/rapporten/2010/01/12/rapport-commissie-davids.html>

274 Commission Davids (in Dutch), "Report independent commission of Inquiry on Iraq", 12 January 2010, <http://www.rijksoverheid.nl/onderwerpen/irak/documenten-en-publicaties/rapporten/2010/01/12/rapport-commissie-davids.html>

275 NRC Handelsblad, "Oliebelang speelt rol in politiek", 22 February 2003, <http://vorige.nrc.nl/geslotendossiers/irak/achtergrond_analyse/article1610226.ece/Oliebelang_speelt_rol_in_politiek?service=Print>

276 Royal Dutch Shell plc, "Iraq and Shell consortium sign the Majnoon Oilfield contract", 17 January 2010, <http://www.shell.com/home/content/media/news_and_media_releases/archive/2010/majnoon_contract_17012010.html>
Wikipedia, "Majnoon oil field", <http://en.wikipedia.org/wiki/Majnoon_oil_field> as viewed on 20 April 2011.
Magazine Shell Venster, article "Olie uit het Hof van Eden", November/December 2010, <http://www-static.shell.com/static/nld/downloads/venster_2010/venster_nov_dec_2010.pdf>
Royal Dutch Shell plc, "Sustainability report 2010", 14 April 2011, <http://sustainabilityreport.shell.com/2010/servicepages/welcome.html>

277 Associated Press, "Exxon, Dutch Shell Win Iraq Oil Contract", 5 November 2009, <http://www.cbsnews.com/stories/2009/11/05/business/main5533028.shtml>

278 Royal Dutch Shell plc, "Annual report and form 20-F for the year ended December 31, 2010", March 2011, <http://www.shell.com/home/content/investor/news_and_library/2011_media_releases/2010_annual_report_20f_15032011.html>

279 Reuters, "Final draft for $12 bln deal to be completed in 10 days", 26 November 2010, <http://www.reuters.com/article/2010/11/26/iraq-oil-shell-idUKLDE6AP0S620101126?type=companyNews>

280 U.S. Embassy London, cable "Iraq petroleum conference 2008: dialogue, cautious optimism on opportunities in Iraq's oil sector", 19 December 2008, <http://cablesearch.org/cable/view.php?id=08LONDON3186&hl=Royal+Dutch+Shell>

281 Wall Street Journal, "Iraq, Shell Resolve Last Obstacle To $12 Bln Gas Deal -Official", 29 March 2011, <http://online.wsj.com/article/BT-CO-20110329-708771.html>

282 Alaska Wilderness League, "National Oil Spill Commission Recommendations on the Arctic Ocean", January 2011, <http://www.alaskawild.org/wp-content/files/Fact_Sheets/OilSpillCommArcticOceanFS_Jan11.pdf>

283 Center for Biological Diversity, Greenpeace, Natural Resources Defense Council, "187,000 Square Miles Designated as Polar Bear Critical Habitat in Alaska", 24 November 2010, <http://www.biologicaldiversity.org/news/press_releases/2010/polar-bear-11-24-2010.html>
U.S. federal government, Department of the Interior's (DOI), U.S. Fish & Wildlife Service, "Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Polar Bear in the United States", 7 December 2010, <http://www.gpo.gov/fdsys/pkg/FR-2010-12-07/pdf/2010-29925.pdf#page=1>

284 U.S. federal government, Department of the Interior's (DOI), U.S. Fish & Wildlife Service, "Species reports, listings and occurrences for Alaska", <http://ecos.fws.gov/tess_public/pub/stateListingAndOccurrenceIndividual.jsp?state=AK&s8fid=112761032792&s8fid=112762573902> as viewed on 12 March 2011

285 Shell Alaska, Pete Slaiby, Vice President, "Shell Beaufort and Chukchi Sea Program Update", January 2011, <http://www.aoga.org/wp-content/uploads/2011/01/7.-Slaiby-Offshore.pdf>

286 Shell, video "Shell Arctic Exploration Program: The Next Chapter in Alaska's Oil and Gas History", November 2010, <http://www.youtube.com/watch?v=DciyZ05SExw&feature=channel>

287 Shell in Alaska, "Development and production", <http://www.shell.us/home/content/usa/aboutshell/projects_locations/alaska/development_production/>

288 Northern Economics, Inc. and Institute of Social and Economic Research, prepared for Shell Exploration & Production, "Potential National-Level Benefits of Alaska OCS Development", February 2011, <http://www.northerneconomics.com/pdfs/ShellOCS/National%20Effects%20Report%20FINAL.pdf>

289 Nuka Research and Planning Group and Pearson Consulting (preparation), U.S. Arctic Program of Pew Environment Group (commissioning), report "Oil spill prevention and response in the U.S. Arctic Ocean: Unexamined Risks, Unacceptable Consequences", November 2010, <http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Protecting_ocean_life/PEW-1010_ARTIC_Report.pdf>

290 Pew Charitable Trusts, press release "New Report Finds Oversight Lacking for Oil Drilling in U.S. Arctic Ocean", 10 November 2010, <http://www.pewtrusts.org/news_room_detail.aspx?id=61744>

291 Pew Environment Group, report "Oil Spill Prevention and Response in the U.S. Arctic Ocean, policy recommendations", 10 November 2010, <http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Protecting_ocean_life/PEW-1010_ARTIC_Policy_Recs.pdf>

292 U.S. federal government, Department of the Interior's (DOI), Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE, earlier MMS), "Shell Gulf of Mexico Inc. – Chukchi Sea Project", <http://alaska.boemre.gov/ref/ProjectHistory/2009_Chukchi_Shell/Chukchi_2009.HTM>

293 Shell U.S., "Chukchi Sea Regional Exploration Oil Discharge Prevention and Contingency Plan", March 2010, <http://www-static.shell.com/static/usa/downloads/2010/alaska/plan_chukchi_sea_c-plan_2010_final.pdf>

294 U.S. federal government, General Printing Office, "Code of Federal Regulations, part 254 – oil-spill response requirements for facilities located seaward of the coast line", 1 July 2009, <http://www.gpo.gov/fdsys/pkg/CFR-2009-title30-vol2/xml/CFR-2009-title30-vol2-part254.xml>, §254.26(d) and §254.6. Adverse weather conditions do not refer to conditions such as a hurricane, under which it would be dangerous or impossible to respond to a spill.

295 Nuka Research and Planning Group and Pearson Consulting (preparation), U.S. Arctic Program of Pew Environment Group (commissioning), report "Oil spill prevention and response in the U.S. Arctic Ocean: Unexamined Risks, Unacceptable Consequences", November 2010, <http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Protecting_ocean_life/PEW-1010_ARTIC_Report.pdf>

296 U.S. federal government, Department of the Interior's (DOI), Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE, earlier MMS), "Chukchi Sea Lease Sale 193", <http://alaska.boemre.gov/cproject/Chukchi193/Chukchiindex.htm>

297 U.S. federal government, Department of the Interior's (DOI), Minerals Management Service (MMS), "Environmental Assessment Shell Gulf of Mexico, Inc. 2010 Exploration Drilling Program Burger, Crackerjack, and SW Shoebill Prospects Chukchi Sea Outer Continental Shelf, Alaska", December 2009, <http://alaska.boemre.gov/ref/EIS%20EA/2009_Chukchi_2010EA/2009_EA2010_Chukchi_EP.pdf>

298 Federal Defendants, "Status Report Pursuant to Court's Order of September 2, 2010 [Dkt. #171], Native Village of Point Hope, et al. v. Salazar, et al., No. 1:08-cv-00004-RRB", 4 March 2011, <http://www.eenews.net/assets/2011/03/07/document_gw_01.pdf>
New York Times, "Interior to Assess Effects of Possible Arctic Oil Spill", 7 March 2011, <http://www.nytimes.com/gwire/2011/03/07/07greenwire-interior-to-assess-effects-of-possible-arctic-51349.html>

299 Alaska Wilderness League, press release "BOEMRE to consider large oil spill impact in Arctic's Chukchi Sea", 4 March 2011, <http://www.alaskawild.org/wp-content/files/Press_Releases/2011-3-4_ChukchiSpillImpact.pdf>

300 Anchorage Daily news, article from the Associated Press "Spill analysis planned for offshore leases", 5 March 2011, <http://www.adn.com/2011/03/05/1739038/spill-analysis-planned-for-offshore.html#ixzz1GNc2R5UB>

301 Shell Alaska, Pete Slaiby, Vice President, "Shell Beaufort and Chukchi Sea Program Update", January 2011, <http://www.aoga.org/wp-content/uploads/2011/01/7.-Slaiby-Offshore.pdf>

302 U.S. Environmental Protection Agency, Environmental Appeals Board, "in Re Shell Gulf of Mexico, Inc. & in Re Shell Offshore, Inc. (Frontier Discovery Drilling Unit), OCS Appeal Nos. 10-01 through 10-04", 30 December 2010, <http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Published%20Decisions%20By%20Citation/41B37138DABA5A54852578090072B80A/USD File/Denying%20and%20Remanding....pdf>

303 U.S. Environmental Protection Agency, Environmental Appeals Board, "in Re Shell Gulf of Mexico, Inc. & in Re Shell Offshore, Inc. (Frontier Discovery Drilling Unit), order on motions for reconsideration and/or clarification", 10 February 2011, <http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Recent~Additions/C3B20D5A2F97CB42852578330073DF25/$File/Order%20on%20Motions%20Reconsideration...98.pdf>

304 Reuters, "Shell loses Alaska air-quality permit appeal", 11 February 2011, <http://www.reuters.com/article/2011/02/12/oil-shell-idUSN1114246920110212>

305 Bloomberg, "Gazprom, Shell Sakhalin Gas Venture Reports Unexpected Profit on Shipments", 16 July 2010, <http://www.bloomberg.com/news/2010-07-16/gazprom-shell-sakhalin-gas-venture-reports-unexpected-profit-on-shipments.html>

306 Website Sakhalin Energy, <http://www.sakhalinenergy.ru>

307 Sakhalin Energy, "Explore Sakhalin-2 Project", <http://www.sakhalinenergy.ru/en/project.asp?p=explore_phase2>

308 Sakhalin Energy, "Message from the Chief Executive Officer, Andrey Galaev", <http://www.sakhalinenergy.ru/en/aboutus.asp?p=aboutsakhalin>
Royal Dutch Shell, "Sustainability report 2009", <http://sustainabilityreport.shell.com/2009/servicepages/downloads/files/all_shell_sr09.pdf>

309 Gazprom in questions and answers, <http://eng.gazprom-questions.ru/?id=7>

310 Sakhalin Energy, "Annual review 2009", page 19, <http://www.sakhalinenergy.ru/en/documents/Sakhalin_Energy_2009_Eng.pdf>

311 International Union for Conservation of Nature (IUCN), factsheet "Western gray whale", <http://cmsdata.iucn.org/downloads/western_gray_whale_fact_sheet.pdf>

312 IUCN, "New oil platform off Sakhalin – whale scientists will have a say", 7 January 2011, <http://www.iucn.org/wgwap/?6753/New-oil-platform-off-Sakhalin--whale-scientists-will-have-a-say>

313 WWF, Pacific Environment, International Fund for Animal Welfare, Sakhalin Environment Watch, "NGO Statement on proposed construction of new Sakhalin II oil & gas platform off Sakhalin Island (Southern Piltun)", January 2011, <http://assets.panda.org/downloads/ngo_statement_on_construction_of_new_oil_platform_on_piltun_final.pdf>

314 North Caspian Operating Company B.V., "2009 Annual Activity report", <www.ncoc.kz/en/docs/annual_report_2009_en.pdf>

315 Reuters, "Kashagan development cost rises by USD 7 bln-KasMunaiGas", 7 October 2009, <http://www.reuters.com/article/2009/10/07/kazakhstan-kashagan-cost-idUKL758464220091007>

316 Silk Road Intelligencer, "Kashagan to begin commercial production in 2012 – Mynbayev", 7 December 2010, <http://silkroadintelligencer.com/2010/12/07/kashagan-to-begin-commercial-production-in-2012-mynbayev/>

317 Eni, "Eni in the world, Kazakhstan", <http://www.eni.com/en_IT/eni-world/eni-world.shtml>

318 North Caspian Operating Company B.V., website "Roles and responsibilities", <http://www.ncoc.kz/en/ncoc/role_and_responsibility.aspx>

319 The Telegraph, "Shell slashes USD 18bn from Kashagan costs", 25 October 2010, <http://www.telegraph.co.uk/finance/newsbysector/epic/rdsb/8084057/Shell-slashes-18bn-from-Kashagan-costs.html>

320 Reuters, "Kazakhstan eyes lower costs for Kashagan expansion", 31 January 2011, <http://www.reuters.com/article/2011/01/31/kazakhstan-kashagan-idUSLDE70U1E420110131>

321 Protectedplanet.net, "Northern Part Of Caspian Sea State Natural Protected Zone", <http://protectedplanet.net/sites/Northern_Part_Of_Caspian_Sea_State_Natural_Protected_Zone>

322 Caspian Environment Programme (CEP), "An Introduction to the Caspian Sea and the Caspian Environment Programme", 2005, <http://www.caspianenvironment.org/newsite/Public-Promotional-Items.htm>

323 IUCN Red List of Threatened Species. Version 2010.4, "Härkönen, T. 2008, Pusa caspica", 2010, <www.iucnredlist.org>
International Union for Conservation of Nature (IUCN), "Photo Gallery & Case Studies", <http://www.iucn.org/about/work/programmes/species/red_list/2008_threatened_species_photo_gallery___case_studies/>

324 Caspian Environment Programme (CEP), "An Introduction to the Caspian Sea and the Caspian Environment Programme", 2005, <http://www.caspianenvironment.org/newsite/Public-Promotional-Items.htm>

325 IUCN Red List of Threatened Species. Version 2010.4, "Sturgeon Specialist Group 1996. Huso huso (Caspian Sea stock)", 2010, <www.iucnredlist.org>

326 BankTrack, "Kashagan oil project – Kazakhstan", <http://www.banktrack.org/show/dodgydeals/kashagan_oil_project>

327 Institut Français des Relations Internationales (Ifri), "The Kashagan Field: A Test Case for Kazakhstan's Governance of Its Oil and Gas Sector", October 2008, <http://www.ifri.org/files/Energie/Kashaganbis.pdf>

328 Central Asia Online, "Kashagan oil field development could harm health of Caspian Sea", 24 May 2010, <http://central-asiaonline.com/cocoon/caii/xhtml/en_GB/features/caii/features/main/2010/05/24/feature-02>

329 Friends of the Earth Europe, Friends of the Earth France, CEE Bankwatch, Campaign for the Reform of the World Bank Italy, report "Kashagan oil field development", December 2007, <http://www.foeeurope.org/publications/2007/KashaganReport.pdf>, page 7.

330 North Caspian Operating Company B.V., website "H2S and sulphur management", <http://www.ncoc.kz/en/kashagan/h2s.aspx>

331 Magazine Shell Venster, article "Kashagan-olieveld: lastige reus", November/December 2009, <http://www-static.shell.com/static/nld/downloads/venster_2009/shell_venster_nov_dec_09.pdf>

332 BankTrack, "Kashagan oil project – Kazakhstan", <http://www.banktrack.org/show/dodgydeals/kashagan_oil_project>

333 CIA, "CIA World Fact Book, Curaçao", last updated 23 March 2011, <https://www.cia.gov/library/publications/the-world-factbook/geos/cc.html>

334 Hans de Boer, prepared for The Governmental Fact Finding Committee on the Issue of Shell Curaçao N.V.-oilrefinery, "Curaçao with or without its oilrefinery, a socio-economic analysis", April 1985.

335 Onze Wereld, article Rudie Kagie "Curaçao in de greep van Shell", July 1981.

336 Hans de Boer, prepared for The Governmental Fact Finding Committee on the Issue of Shell Curaçao N.V.-oilrefinery, "Curaçao with or without its oilrefinery, a socio-economic analysis", April 1985.

337 Shell Curaçao N.V., Shell Nederlandse Antillen Verkoopmaatschappij N.V. (SNAV), N.V. Curaçaose Scheepvaart Maatschappij (CSM), Curaçao Oil Terminal N.V. (COT), rechtspersoon de Nederlandse Antillen, rechtspersoon het Eilandgebied Curaçao, "Overeenkomst betreffende verkoop van Shell Curaçao's raffinaderij, SNAV's verkoopbedrijf, CSM's sleepbedrijf, COT's overslagbedrijf", 1 October 1985.

338 Refineria di Korsou N.V., "history", <http://www.refineria-dikorsou.com/main/history1.aspx> as viewed on 31 March 2011.

339 Shell Curaçao N.V., Shell Nederlandse Antillen Verkoopmaatschappij N.V. (SNAV), N.V. Curaçaose Scheepvaart Maatschappij (CSM), Curaçao Oil Terminal N.V. (COT), rechtspersoon de Nederlandse Antillen, rechtspersoon het Eilandgebied Curaçao, "Overeenkomst betreffende verkoop van Shell Curaçao's raffinaderij, SNAV's verkoopbedrijf, CSM's sleepbedrijf, COT's overslagbedrijf", 1 October 1985.

340 investCuracao, "project opportunities, asphalt lake", <http://www.investcuracao.com/02c02.html> as viewed on 20 April 2011.

341 Shell Persdienst, letter "Overdracht Shell Raffinaderij op Curaçao in 1985", November 1999.

342 investCuracao, "project opportunities, asphalt lake", <http://www.investcuracao.com/02c02.html> as viewed on 20 April 2011.

343 Ministerie van Verkeer en Waterstaat, "Problematiek vervuild havenslib haven Willemstad Curaçao", Oktober 1991 / Januari 1992, <http://www.scribd.com/doc/45419000/Problematiek-vervuild-havenslib-haven-Willemstad-Curacao-advies-inzake-de-aanpak-van-de-problematiek>

344 DCMR (Dienst Centraal Milieubeheer Rijnmond), on behalf of the government of the Island Territory of Curaçao, report (in Dutch) "Milieuonderzoek Shell Curaçao, situatiebeschrijving en aanbevelingen ter vermindering van de milieuoverlast", Maart 1983.

345 Tebodin B.V. and Tauw B.V., report on behalf of the Environmental Service of Curaçao "Environmental Study Downwind of Schottegat", April 2001.

346 DCMR (Dienst Centraal Milieubeheer Rijnmond), on behalf of the government of the Island Territory of Curaçao, report (in Dutch) "Milieuonderzoek Shell Curaçao, situatiebeschrijving en aanbevelingen ter vermindering van de milieuoverlast", Maart 1983.

347 Ministerie van Verkeer en Waterstaat, "Problematiek vervuild havenslib haven Willemstad Curaçao", Oktober 1991 / Januari 1992, <http://www.scribd.com/doc/45419000/Problematiek-vervuild-havenslib-haven-Willemstad-Curacao-advies-inzake-de-aanpak-van-de-problematiek>

348 Ministerie van Verkeer en Waterstaat, "Problematiek vervuild havenslib haven Willemstad Curaçao", Oktober 1991 / Januari 1992, <http://www.scribd.com/doc/45419000/Problematiek-vervuild-havenslib-haven-Willemstad-Curacao-advies-inzake-de-aanpak-van-de-problematiek>

349 Antilliaans Dagblad, opinion article by Jules Eisden, chairman of Fundashon na Vanguardia di Rekursonan di Kòrsou (Fuvareko) "Olie en gas, het motief", 11 August 2010.

350 VPRO TV, documentary (in Dutch) "Gedane zaken", 1996, <http://www.youtube.com/user/gachitu>

351 Minister President Gerrit Schotte van Curaçao, brief aan de Nederlandse minister van Binnenlandse Zaken en Koninkrijksrelaties Piet Hein Donner "Isla raffinaderij", 31 January 2011, <https://zoek.officielebekendmakingen.nl/dossier/32500-IV/blg-99348?resultIndex=23&sorttype=1&sortorder=4>

352 Tweede Kamer der Staten-Generaal, behandeling van het wetsvoorstel Vaststelling van de begrotingsstaat van Koninkrijksrelaties (IV) voor het jaar 2010, "motie-Van Gent c.s., nr. 17 (32123-IV)", December 2009, <https://zoek.officielebekendmakingen.nl/handelingen/TK/2009-2010/34/h-tk-20092010-34-3271?resultIndex=1&sorttype=1&sortorder=4> and <https://zoek.officielebekendmakingen.nl/dossier/32470/kst-32123-IV-17.html>

353 Amigoe, "Staten unaniem achter motie tegen Shell", 19 December 2009.

354 The Fenceline Community For Human Safety and Environmental Protection, Milieudefensie (Friends of the Earth Netherlands) and Friends of the Earth International, "Complaint on the violations of Pilipinas Shell Petroleum Corporation (PSPC), pursuant to the OECD guidelines for multinational enterprises", 15 May 2006, <http://oecdwatch.org/cases/Case_93>
abs-cbnNEWS.com, "Petron to leave Pandacan oil depot by 2016", 28 January 2011, <http://www.abs-cbnnews.com/nation/metro-manila/01/28/11/petron-leave-pandacan-oil-depot-2016>

355 Pilipinas Shell Petroleum Corporation, advertisement in Philippine newspaper "Pandacan Oil Depot Issue", April 2009.

356 Philippine Daily Inquirer, "Shell to stay in Pandacan depot despite proposed Manila Bay hub", 9 February 2011, <http://business.inquirer.net/money/breakingnews/view/20110209-319401/Shell-to-stay-in-Pandacan-depot-despite-proposed-Manila-Bay-hub>

357 The Fenceline Community For Human Safety and Environmental Protection, Milieudefensie (Friends of the Earth Netherlands) and Friends of the Earth International, "Complaint on the violations of Pilipinas Shell Petroleum Corporation (PSPC), pursuant to the OECD guidelines for multinational enterprises", 15 May 2006, <http://oecdwatch.org/cases/Case_93>

358 Shell, "Pandacan Scale Down Project", 2006, <http://www-static.shell.com/static/phl/downloads/society_environment/pandacan_scale_down_project.pdf>

359 Dutch NCP, "Final statement of the Dutch NCP on the "Complaint (dated 15 May 2006) on the violations of Pilipinas Shell Petroleum Corporation (PSPC), pursuant to the OECD Guidelines for Multinational Enterprises", 14 July 2009, <http://oecdwatch.org/cases/Case_93>

360 Pilipinas Shell Petroleum Corporation (PSPC), "OECD experts confirm safety of Shell facilities at Pandacan Oil Depot, Manila", 2 September 2009, <http://www.shell.com.ph/home/content/phl/aboutshell/media_centre/news_and_media_releases/archive/2009/oecd_confirm_safety.html>

361 Social Justice Society, Milieudefensie (Friends of the Earth Netherlands) and Friends of the Earth International, press release "Shell violates OECD Guidelines in the Philippines", 31 August 2009, <http://www.foei.org/en/media/archive/2009/shell-violates-oecd-guidelines-in-the-philippines>

362 Dutch NCP, "Final statement of the Dutch NCP on the "Complaint (dated 15 May 2006) on the violations of Pilipinas Shell Petroleum Corporation (PSPC), pursuant to the OECD Guidelines for Multinational Enterprises", 14 July 2009, <http://oecdwatch.org/cases/Case_93>

363 abs-cbnNEWS.com, "Petron to leave Pandacan oil depot by 2016", 28 January 2011, <http://www.abs-cbnnews.com/nation/metro-manila/01/28/11/petron-leave-pandacan-oil-depot-2016>

Milieudefensie – Friends of the Earth Netherlands
Postbus 19199
1000 GD Amsterdam
servicelijn: 020 6262 620

service@milieudefensie.nl
www.milieudefensie.nl