

Corporate Social  
Responsibility Report 2003

# Sharing Our Energies



**TOTAL**



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# Foreword by Thierry Desmarest

Chairman and Chief Executive Officer



**The concept of corporate social responsibility is fairly recent. What does it mean for Total, the world's fourth-largest international oil and gas company?**

**Thierry Desmarest:** Although the way the concept of corporate social responsibility is expressed today is new, the issues involved have been discussed for decades. Theories covering social and societal issues began to be developed in the nineteenth century, with the advent of the Industrial Revolution, and the environmental movement as we know it today began to get organized in the 1960s. Over the last 20 years, the Western world has developed a very comprehensive system of environmental standards and regulations, which means that large corporations have considerable experience with environmental management. But the emergence of new issues, such as global warming, is driving demand for new international measures.

What is more recent, I think, is how environmental concerns are converging with increasing challenges to a social and economic order that is perceived as unfair, a source of instability, and untenable in the longer term. Another major development is the increasing importance of the cultural, financial and political divide between the North and the South, perhaps accentuated since the September 11 attacks in the United States.

The challenges to our growth model and the resultant global imbalances directly impact industrial operations, in particular for a company like Total, which is an energy and chemical concern active in more than 130 countries. We are very directly affected by the challenges to this type of globalization raised by leading governmental and non-governmental organizations.

**What does this mean in practice?**

**Thierry Desmarest:** Civil society expects companies, especially the biggest ones, to manage the environmental impact of their operations and industrial risk, as well as to plan for and manage their direct and indirect social and societal impacts, wherever they are located. In practical terms, that means engaging in broader dialogue with a wide array of stakeholders. But more than that, it means we have to tailor our practices, organization, decision-making processes, and management systems to these new developments. We have to integrate sustainable development parameters as far upstream as possible in the decision-making process, which requires clear procedures that are recognized and accepted across the Group.

**What do you think about these changing expectations?**

**Thierry Desmarest:** In my opinion, discussion of broader corporate responsibilities is a particularly significant development, since it covers areas — employee relations, ethics, the environment, relations with outside partners — that were too often dealt with piecemeal in the past. That's why managing our operations demands a wide overview of the issues that we face daily. Moreover, we didn't wait until broader responsibility gained media coverage to take action in all the areas it covers. Over the years, we've learned to take into account local expectations in conducting our business. However, our commitment to a more structured, formal approach is more recent.

That said, we have to remain vigilant about the real risk of confusing issues. Declining public action in many countries, which sometimes has very serious consequences in the least developed regions, should not result in the private sector assuming public sector responsibilities. In the areas of health care and education for example, this could be counter-productive in the long term, because it would create over-reliance on our presence. A company like Total can and must support initiatives around its facilities, if only for reasons of fairness and social harmony, especially in the most underprivileged regions. But such efforts will only be sustainable if they support a government's vision and actions. Ensuring the sustainability of a societal program launched by a company like us therefore requires genuine partnership with the public authorities, international organizations such as the Global Compact, credible local stakeholders who represent the surrounding population, and NGOs that are rooted in the local social fabric.

**You mention the progress that companies have made in terms of opening up to civil society. Nonetheless, the media and some of the public have a very unflattering opinion of business. Image is the Achilles heel of many large companies, and Total is no exception. How do you explain this problem?**

**Thierry Desmarest:** Clearly, companies have yet to win the battle for legitimacy in the eyes of the general public, particularly in continental Europe. Things are a little different in North America and the United Kingdom, for historical and sociological reasons. It's perfectly natural that we are asked to report on our actions and assume the direct and indirect impact of our operations; it's part of our responsibility as a manufacturer or entrepreneur. This is an incentive to further improve our production, transportation and marketing processes. It's a healthy development, which often stimulates innovation and is beneficial for all stakeholders, starting with the Company and our partners.

On the other hand, automatically stigmatizing business is another matter altogether. I think it's time to highlight the pace of improvement and avoid criticism for criticism's sake, which often goes hand in hand with an overly simplistic take on things. Some people think that all the planet's major problems can be resolved with the wave of a wand. But there are no easy answers in today's complex world, and actions can't be effective until we clear up misperceptions and stop oversimplifying.

### What are Total's main avenues of action?

**Thierry Desmarest:** First, we're continually reducing the environmental footprint of our operations and maintaining our initiatives to effectively manage industrial risk. This is not a new goal, and it's being strengthened every year, as attested by our results and objectives. In the four years from 2002 to 2005, for example, we are spending €500 million on a major program to enhance safety at our sites. For us, it's all about actions, which speak louder than words.

Second, we're constantly developing oil and gas resources, notably by enhancing recovery of resources in place. In this way, we can contribute to a seamless transition to the post-oil energy era, which in large part has yet to be envisaged. This also means working on enhanced energy efficiency, renewable energies and future energies, usually in partnership with international research organizations and private and public energy operators. Our contribution consists of expertise, innovation and technological research.

Other major challenges are more people and ethics-related. They include fostering social and societal equity and equal opportunity, which underpin the harmonious integration of our operations into our host environments.

### There is considerable public debate on financial transparency in the extractive industries. How do you approach this issue at Total?

**Thierry Desmarest:** Clearly, oil and gas revenues, like revenues from other natural resources, do not drive the development they should in a large number of countries. In some cases, there are also shortcomings in governance, which generate tension and suffering for civil society. Greater transparency in managing these revenues would be a decisive growth driver.

That's why I very early advocated measures to make this transparency possible, with the agreement of the governments concerned, for example as part of a supranational organization that would publish consolidated revenue figures related to extractive industries. We support the Extractive Industries Transparency Initiative (E.I.T.I.) adopted by the G8 at the Evian Summit in June 2003 as part of an action plan designed to combat corruption and enhance transparency.

### Total has strong historic roots in Europe, as reflected in the fact that three out of four employees are based there. How does Total intend to meet its corporate social responsibility commitments in emerging countries, in particular in the South?

**Thierry Desmarest:** I would say through integration and diversification. We have to achieve balanced integration in all our host countries, encouraging local and national economic development as much as is practicable.

That's the way to eventually replace oil revenues with diversified, sustainable revenues. In the most disadvantaged countries, at first integration has to pay careful attention to the contrast between our installations, synonymous with wealth, and the often very precarious living conditions of our neighbors. When not carefully managed, this contrast can quickly become a source of tension and conflict that is prejudicial to everyone, local communities and employees alike. This is true now and will be even more sensitive in the future, since most of the potential for growth in our oil and gas production is located in developing countries.

**As you point out, Total has extensive experience operating in both OECD and non-OECD countries. Do you think that the expectations of society concerning Total are different in rich countries and developing countries?**

**Thierry Desmarest:** In part, yes. People in non-OECD countries express fundamental expectations concerning health care, housing and education. In Northern countries, the emphasis is on continuous improvement in the quality of life, accompanied by criticism of any real or imagined negative impact of our business and industrial model. But Westerners are not prepared to give up their material comforts, hence the sometimes paradoxical disconnect between beliefs and actions, between ideal citizenship and consumerism. The problems with implementing the Kyoto Protocol clearly illustrate the conflict between one's conscience and a reluctance to sacrifice a certain standard of living.

**You spoke of the diversity of expectations regarding sustainable development. What about ethics and fundamental human rights?**

**Thierry Desmarest:** Human rights expectations seem to be the same everywhere, since they are deeply rooted in a universal need for recognition of human dignity and the respect people deserve. Of course, these expectations are expressed differently depending on whether you are in Asia, Africa, Europe, or North or South America.

These differences require a real effort to understand them, as well as to teach, explain and promote the values and principles expressed in our Code of Conduct. And just because expectations are expressed differently doesn't mean we should lower standards on the pretext of adapting to local cultures or conditions, either for us or our business partners. Management has to be extremely vigilant in widely varying, challenging environments. Compromise is unacceptable.

**How do your employees perceive and experience this broader corporate social responsibility and these higher ethical standards?**

**Thierry Desmarest:** More than 110,000 people work for Total, bringing with them their rich and diversified experience. They are stakeholders in civil society, with many of them investing in community life. They are just as concerned as any other citizens by core sustainable development issues, such as depletion of resources and preserving ecological balances, which are also increasingly central to their daily work.

The international experience of many of our employees has often made them more aware of the diversity of environments, and has sometimes required them to deal with serious situations. In the area of ethics, awareness has been reinforced, and our actions must match our principles. Ethics and sustainable development are not just expressed outside the company. Our employees share these commitments. To me, this is a critical growth driver.

# Corporate Profile

Total is the world's fourth-largest international oil and gas company. Our operations cover the entire oil and gas chain, from crude oil and natural gas exploration and production to midstream gas, trading, transportation, refining and marketing. We are also a world-class chemicals manufacturer. Consolidated sales totaled €104.7 billion in 2003. Total employs more than 110,000 people in over 130 countries worldwide.

## Upstream

Oil and gas production increased 5% to 2.54 million barrels of oil equivalent per day in 2003. Liquids production was up 5%, thanks to the contribution of Sincor in Venezuela, Cepsa's output in Algeria, the Balal and South Pars fields in Iran, and Amenam in Nigeria. Gas production rose 6%, driven primarily by the Gulf of Mexico, Indonesia, and the North Sea.

Proved oil and gas reserves increased 2% to 11.4 billion barrels of oil equivalent at December 31, 2003. At the current production rate, the reserve life is 12.3 years. The replacement rate for consolidated subsidiaries averaged 145% over the period from 2001 to 2003.

We are also strengthening our position as a top-tier operator in the gas market in transmission, marketing and power generation in Europe, Latin America and the Middle East.

In the area of renewable energies, we inaugurated our first wind farm at the Les Flandres refinery in France.

## Downstream

We are Europe's front-ranking refiner and marketer, operating 13 of the 28 refineries in which we have interests. Our retail network comprises more than 15,800 service stations, mainly in Europe and Africa. We are also a major operator in the lubricant and aviation fuel segments.

In 2003, Total refined 2.48 million barrels of oil per day, up 6%, and sold 3.65 million barrels of petroleum products per day.

Outside Europe, we are focusing on fast-growing markets in Africa, where we are ranked No. 2 in marketing with operations in more than 40 countries, as well as in the Mediterranean Basin and in Southeast Asia.

## Worldwide Locations



## Chemicals

Atofina, our Chemicals business, encompasses base chemicals and commodity polymers related to our refining operations, intermediates and performance polymers, and specialties, which include rubber, resins, adhesives and electroplating.

In 2003, Chemicals was affected by weak demand, high energy and commodity costs, and the fall of the dollar against the euro. In this particularly challenging environment, we are planning to reorganize the business' operations to create a decentralized unit comprising chlorochemical, intermediate and performance product assets. The new, stronger unit will be able to keep pace with market developments by leveraging an organization that is closer to customers, more responsive in its decision-making processes, and aligned in its industrial processes. It will eventually be spun off.

Petrochemicals is continuing to leverage synergies with Refining and restructure its operations in mature regions (Europe and the United States), while stepping up its expansion in Asia.

Specialties is demonstrating its ability to perform satisfactorily despite the tougher environment.

## Sales

(in € million)

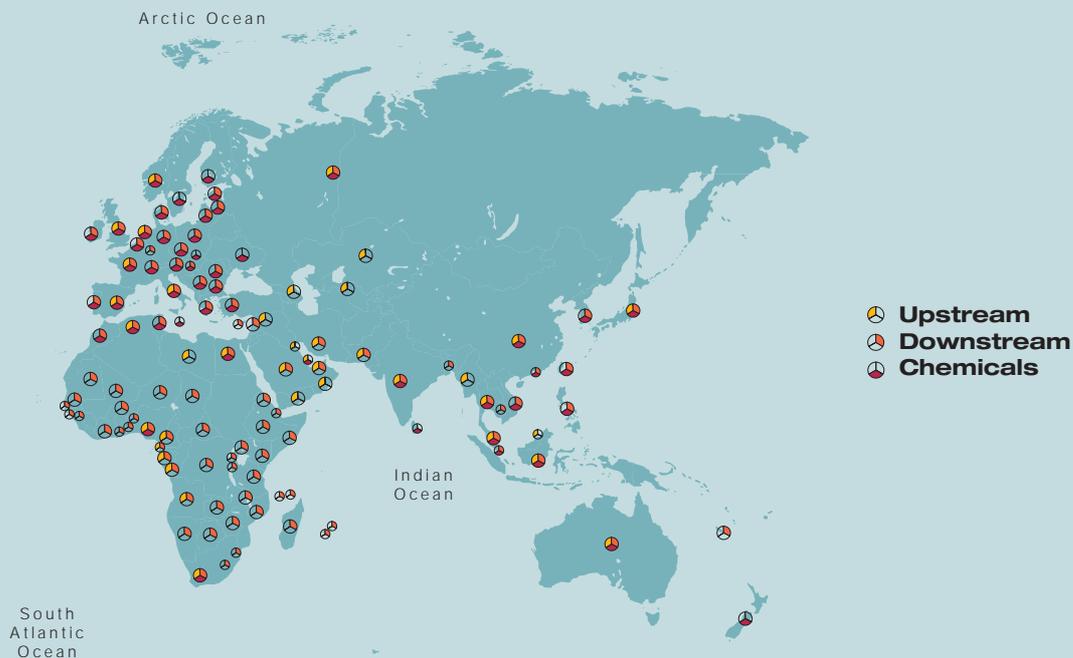
	2001	2002	2003
	105.3	102.5	104.7

## Workforce

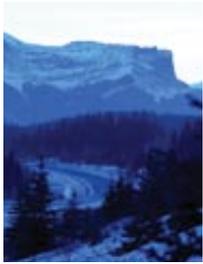
	2001	2002	2003
Upstream	13,870	14,019	14,017
Downstream	35,743	35,054	34,410
Chemicals	71,312	71,268	61,212
Holding Company	1,100	1,128	1,144



For more information about our operations, see the Annual Report, available at [www.total.com](http://www.total.com)



# A Year of Sustainable Development at Total



- Acquisition of a 43.5% interest in the Surmont oilsands lease in the Athabasca region of Alberta, Canada. The potential of these extra-heavy oil resources will increase as technological advances enhance recovery in the future.

- Ethics awareness program launched — 2,000 employees concerned in 2003.



- WHO issues international alert concerning the SARS epidemic in a number of Asian countries. Health crisis for our Asian units. Deployment of crisis units.

- Management and unions sign three memoranda of understanding on employing the disabled, covering hiring, support for sheltered employment, relations with schools, and training. The agreements are valid for a period of three years.
- Social Innovation and Diversity Department created to transpose our corporate social responsibility commitments into human resources policy.

- Taweelah A1 power generation and desalination plant commissioned, Abu Dhabi, United Arab Emirates.
- New visual identity launched.
- First CSR report published.
- OTC 2003 Distinguished Achievement Award for the outstanding offshore expertise demonstrated in Girassol project in Angola.
- Total's HIV/AIDS prevention and treatment principles and actions formalized for employees and their families in sub-Saharan Africa.



- 20<sup>th</sup> anniversary of Total Energie, our solar power subsidiary.
- Technical and scientific cooperation agreement with St. Petersburg Polar Academy in Russia renewed.

## January > February > March > April > May > June >

- Third World Social Forum, Porto Alegre, Brazil.
- World Economic Forum, Davos, Switzerland.



- North Korea withdraws from the Treaty on the Non-Proliferation of Nuclear Weapons, triggering a diplomatic stand-off with the United States.

- 22<sup>nd</sup> France-Africa Summit, Paris ("end of the support system," promotion of a "partnership of equals").



- European Commission proposes strengthening oil spill prevention, in response to the sinking of the *Prestige* offshore Spain on December 19, 2002.
- Crisis in the Niger Delta causes Nigerian oil production to fall.
- Third World Water Forum, Kyoto, Japan.
- International Conference on Financing for Development, Monterrey, Mexico.
- Coalition troops invade Iraq.

- Ten countries sign the European Union accession treaty at the Athens Summit.



- 20<sup>th</sup> anniversary of the discovery of the HIV virus. World Bank publishes a report on the economic impact of the AIDS epidemic. The number of HIV/AIDS sufferers worldwide is estimated at 42 million.
- Earthquake in the Algiers region kills 2,500 and injures 10,000 in Algeria.



- G8 Summit in Evian, France, discusses transparency, in particular in the extractive industries.



- Sustainable Development Week in France.

## 2003 International Retrospective



- Incentive and profit-sharing agreements signed, affecting around 18,500 employees in ten companies in the Oil business.
- Total and Cap Gemini Ernst & Young decide to locate a CGE&Y center in Toulouse for some of our information systems. This activity is expected to create more than 200 jobs over three years.



- Following training programs, Total hands over operation of the production and accommodation platform on Iran's offshore Balal oil field to the National Iranian Oil Company (NIOC), in line with contractual terms.



- Total Energy Committee's missions broadened, with three working groups: Energy Markets, Energy Efficiency and the Environment, and Long-term Energy Outlook.



- Mardyck wind farm commissioned, northern France.

- Photovoltech solar cell production plant commissioned, Tienen, Belgium.



July > August > September > October > November > December

- UNDP Human Development Report 2003; the Human Development Index (HDI) declined in 21 countries.
- Council of Ministers of the European Communities introduces a greenhouse gas emissions trading scheme, which is expected to be implemented on January 1, 2005.

- Charles Taylor, President of Liberia, departs, and Monrovia, the besieged capital, is evacuated by Liberians United for Reconciliation and Democracy forces.



- Drought, fire, heat wave in Europe, health care crisis in France.
- 29-hour power blackout in the northeastern United States.
- Environmental Policy Act weakened to improve energy supply in the United States.

- Political crisis in Bolivia.



- WTO Summit, Cancun, Mexico.
- Follow-up to France's National Energy Debate, publication of the report by a specially-appointed committee of experts.
- Extensive power blackout in Italy.

- World Climate Change Conference, Moscow, Russia.
- Serious instability in Côte d'Ivoire.



- European Social Forum, Paris, France.



- Geneva Accord to resolve the Israeli-Palestinian conflict.

- Earthquake in Bam, Iran.



- Chongqing gas plant explodes in southwestern China.

## Total: From Global to Local

As an international energy and chemical company, Total is directly concerned by major global economic, social and environmental issues, such as governance, transparency, greenhouse gas abatement, and the future of energy. Making headway in these areas entails continuous dialogue and partnership with the relevant public and private institutions, which are often global in scope. This global responsibility must also be tailored in the field to provide practical responses to local stakeholder expectations.



### Global Environmental and Social Contributions

#### Global Social Challenges: Guaranteeing Fundamental Human Rights

- 1 Ensure that human rights are respected in host countries by:
  - Guaranteeing the human rights of employees, suppliers, contractors and local communities.
  - Lobbying to promote high global standards on this issue.
- 2 Implement good governance and foster greater transparency by:
  - Contributing to economic and social development in host countries.
  - Promoting transparent management of oil and gas revenues.
- 3 Promote social equity and diversity of human resources through:
  - Gender diversity.
  - Internationalization.
  - Training.
  - Sharing knowledge and technological skills.

#### Global Environmental Challenges: Helping to Change the Energy System

- 4 Help to reduce the economy's reliance on carbon by:
  - Abating operated greenhouse gas emissions.
  - Encouraging energy conservation.
  - Developing carbon sequestration solutions.
  - Developing hydrogen applications.
- 5 Make the energy system secure by:
  - Optimizing oil and gas resources and increasing their availability.
  - Developing alternative solutions.
- 6 Prevent impacts related to the growth of transportation by:
  - Improving automotive fuel quality.
  - Making land and maritime transportation safer.

Many of the issues covered in this report are central to current discussions on the environment, social change, North-South relations, and the role of multinationals. They challenge received ideas about the benefits of Western development processes and technological change and garner extensive

media coverage at major international governmental and non-governmental meetings, such as summits and social forums.

We do not claim to have exhaustively covered all aspects of these issues — far from it. But the *Sharing Our Energies* 2003 report is

This means that we have to show employees, neighbors, local communities, NGOs and local unions that we are capable of effectively reconciling operational performance with safety and social equity. This global and local responsibility is governed by an ethical requirement based on principles such as respect for employees, a constant dedication to safety and environmental stewardship, and support for the development of host communities. Our engagement is reflected in our support for the UN-sponsored Global Compact, whose nine principles define global corporate citizenship.



## Local Environmental and Social Contributions

### Local Social Challenges: Being a Good Neighbor

- 1 Prevent and manage industrial and work-related incident risks and protect the health of neighbors by:
  - Assessing and managing impacts.
  - Deploying an industrial safety policy and assessing the results.
  - Informing neighbors of the risks associated with installations and communicating transparently in the event of a minor incident or serious accident.
- 2 Contribute to host community development by:
  - Promoting sustainable growth in developing countries and reducing poverty.
  - Supporting the disadvantaged.
  - Encouraging employment.

### Local Environmental Challenges: Reducing Our Footprint

- 3 Reduce our environmental footprint by:
  - Curbing emissions.
  - Preserving air and water quality.
  - Reducing odor, noise and visual disamenities.
  - Reducing the risks of accidental pollution.
- 4 Maintain biodiversity by:
  - Performing environmental impact assessments for ecosystems before investment decisions are made.

our response to widespread, growing global awareness, describing our corporate citizenship initiatives, which are designed to more effectively meet the often-demanding expectations expressed by stakeholders.

**i** We'd be interested in your opinion of this report: [csrreport@total.com](mailto:csrreport@total.com).

# Organized to Meet Stakeholder Expectations

Created in 2002, the Sustainable Development and Environment Department spent 2003 consolidating its network of correspondents in subsidiaries, improving the reporting process, in particular for the environment, and broadening its dialogue with societal rating agencies. The program to strengthen safety policy was also pursued, following on from the action plan introduced in early 2002. In the area of employee relations, 2003 saw the creation of the Social Innovation and Diversity Department, whose role is to transpose our corporate social responsibility commitments into human resources policies.

## ● New Structures

The Social Innovation and Diversity Department:

- Measures and assesses our employee relations practices, by introducing appropriate resources and developing dialogue with our partners.
- Defines our internationalization, diversity and gender diversity policies and applies, monitors and adjusts them.
- Defines our health care policy and coordinates related initiatives.
- Structures and develops university-level partnerships with host countries, in particular enabling students from these countries to study in France.

We strengthened and broadened the missions of the Corporate Energy Committee, an internal network of managers and experts from across our businesses whose main task is to enhance energy performance, particularly in Refining and Chemicals.

Three working groups were created to implement the program defined by the Steering Committee.

- **The Energy Markets group** tracks market developments (mainly in gas and power), contractual and tariff liberalization, and emerging regulatory issues, such as emissions trading.
- **The Energy Efficiency and the Environment group** gathers and compiles statistics related to our energy and CO<sub>2</sub> balances and helps to prepare objectives and implement projects to enhance energy efficiency and reduce emissions of CO<sub>2</sub> and other greenhouse gases. The group also tracks regulatory amendments concerning pollutants, such as SO<sub>x</sub>, NO<sub>x</sub> and particulates.
- **The Long-Term Energy Outlook group** consists of economic and energy forecasting experts, including experts in technological factors that could impact demand, energy efficiency and CO<sub>2</sub> emissions.

## ● Improving Stakeholder Dialogue

### Globally

#### **Institutional Relations: Representation, Dialogue and Coordination**

The Institutional Relations Department represents Total's interests to French institutions and organizations, such as senior national and regional officials, parliament and elected officials, and international institutions and organizations.

The Department also coordinates relations with civil society in France and supports our country subsidiaries in their relations with civil society in host countries. In addition, it coordinates relations with non-governmental organizations and similar governmental organizations, such as the International Committee of the Red Cross (ICRC). Throughout, it focuses on maintaining good relations and ensuring that positions are mutually understood.

### Locally

#### **Regional Development and Corporate Solidarity**

Our Regional Development Department shares our know-how and international partnership experience with small and medium-sized companies with solid business plans capable of creating jobs. Leveraging some 30 years' experience around our industrial sites in France, we have more recently stepped up our support for small and medium-sized French exporters.

In the latest challenge, the Department intends to extend its "corporate solidarity" policy to small businesses in host countries. In 2003, for example, an industrialization initiative was undertaken in Pointe-Noire, Congo, and a campaign was launched to support the road transportation industry in Madagascar (see pages 121 and 130 to 131).

#### **Regular, Structured Dialogue through *Terrains d'Entente/Common Ground*® in the Chemicals Business**

All of Atofina's French facilities joined the *Terrains d'Entente/Common Ground*® process in 2002 and 2003. As a result, more than 30,000 people visited our sites in France and the rest of Europe. The process has included more than 20 open houses in two years, as well as a wide variety of other initiatives, such as industrial classes, newsletters for neighbors, public information meetings, exhibitions, educational partnerships, and science cafés.

*Terrains d'Entente/Common Ground*® initiatives are also being deployed internationally. In Europe, local communication operations are already well established, and the United States is now following suit. The process will be extended to two pilot sites in China in 2004.

## Integrating Corporate Social Responsibility into Management Practices

Article 1 of our *Health Safety Environment Quality Charter* states that "Total considers safety in regard to operations, human health, respect for the environment and customer satisfaction as paramount priorities."

Potential geopolitical, business, financial, technical, environmental, social and industrial safety risks are carefully assessed for all oil and gas projects (exploration, operation, refining) and all chemical projects. In 2003, social and societal factors were examined even more closely in regions where projects are planned. These preparatory studies are designed to anticipate situations that may negatively impact employees, contractors and neighbors, such as failure to respect labor rights and tensions caused by the sudden influx of jobs and financial resources in fragile socio-economic environments. Construction and extension projects are also the subject of a prior impact assessment to identify and prevent health risks.

We pursued our ISO 14001 certification and safety management system deployment policy in 2003. At end-2002, 132 sites had already been ISO-certified. We anticipate that 50% of our major sites will be ISO-certified by 2005, a figure that will increase to 75% by 2007. Major sites are defined as those that account for 80% of impacts, and include upstream production sites, refineries, the main depots, and petrochemicals, chlorochemicals, fertilizer, intermediates and performance product operations. We are committed across our businesses to implementing the ISO 14001 benchmark to deploy environmental management systems. Existing systems will be bolstered to eventually earn ISO 14001 certification.

As well, units are continuing to deploy safety management systems based on internationally recognized industry benchmarks. Chemicals and Refining & Marketing selected the International Safety Rating System® (ISRS®) and continued to deploy it in 2003. Eleven Total-operated refineries worldwide have now achieved level 8 in the ISRS®, out of a scale of ten. In Chemicals, the first phase of deployment at all European Seveso-classified sites has been completed, while the program is continuing for all hazardous sites in the United States and Asia. The MAESTRO system, similar to the ISRS®, has been widely used in Exploration & Production since 2002.

### Ethical Audits

In 2002, Total signed a contract with U.K.-based GoodCorporation to assess application of the Code of Conduct using 76 evidence points. In 2003, GoodCorporation, which works with leading audit firms, such as KPMG, PricewaterhouseCoopers and Bureau Veritas, continued its ethical profiling program at 13 subsidiaries (see pages 111 and 112).

### Seminars Incorporating Corporate Social Responsibility Issues

Group, trade and business meetings and seminars often offer an opportunity to discuss corporate social responsibility and sustainable development issues.

### Corporate Social Responsibility at Senior Management Seminars

Issues of financial transparency, cohabitation between hazardous plants and cities, and taking community expectations into account in non-OECD host countries were discussed at the Senior Management Seminar in spring 2003, while in October 2003 senior managers took part in a round table attended by Nicole Notat, Chairman of French rating agency Vigeo, and Thierry Desmarest, Chairman and CEO of Total, on the changing expectations of civil society and the work of societal rating agencies.

### Ethics Seminar

To ensure that the principles expressed in our Code of Conduct are understood and effectively applied, in early 2003 we launched a program of ethics seminars. These traveling seminars are conducted in all our strategic regions, bringing together, on a single site, employees from Exploration & Production, Refining & Marketing and Chemicals working in the region concerned.

The day-and-a-half-long seminar, combining lectures and discussion, was inaugurated in January 2003 in Paris and has since been extended to some 15 countries that are particularly important for us, including Angola, Gabon, Nigeria, Norway and South Africa. In 2003, 2,000 employees — lawyers, human resource specialists, operational managers, and others — had an opportunity to talk to members of the Ethics Committee, discuss issues related to ethics in operations, and share their experiences and solutions.

### Seminars to Share Our Policies and Best Practices

The Sustainable Development and Environment Department and the Industrial Safety Department regularly hold international seminars on specific topics to increase awareness of our policies in their respective areas and to encourage the sharing of best health, safety and environmental practices. Similar meetings are held within our businesses.

With the help of specialized consultants, we are enhancing our ability to accurately and reliably verify, within three to five years, quantitative safety and environmental indicators. In the case of the last indicator, the priority will be on greenhouse gases.

The Social Innovation and Diversity Department met throughout the year with a number of stakeholders specialized in employee relations to learn what they thought of and expected from the employee relations aspects of the *Sharing Our Energies* 2002 report, and the report in general. People from a wide variety of disciplines with an extensive interest in human resources issues, such as academics, union leaders, NGOs, and representatives of industry organizations, were able to share their perceptions, criticisms and expectations for the 2003 report. Generally speaking, they want to see more quantified data and practical systems for implementing, monitoring, checking and verifying Total's corporate social responsibility commitments. They also want to see clear objectives embraced by all.

This dialogue, which will continue in 2004, makes our processes and reporting more reliable and provides a clearer perception of trends in employee relations.

## ● Reporting Consolidation

In 2003, Total continued to consolidate non-financial reporting systems and examined the gradual implementation of a system enabling independent outside parties to verify quantitative social, environmental and industrial safety data.

A new social reporting information system has been undergoing operational testing since December 2003, enhancing reliability and offering new possibilities for processing data provided by our units.

# Key Figures: Environmental, Safety, Human Resources and Societal Indicators

Operations	2001	2002	2003	% change 2002/2003
Oil and natural gas production (in millions of barrels of oil equivalent per day)	2.20	2.42	2.54	+ 5%
Proved reserves (in billions of barrels of oil equivalent)	10.98	11.20	11.40	+ 2%
Refinery throughput (in millions of barrels per day)	2.47	2.35	2.48	+ 6%

Environmental Indicators			2001	2002	2003
NOx	'000 metric tons/year	Upstream	49.6	43.0	49.5
		Downstream	25.8	23.2	24.9
		Chemicals	12.6	12.7	12.4
SO <sub>2</sub>	'000 metric tons/year	Upstream	37.6	42.3	46.6
		Downstream	106.6	96.9	98.1
		Chemicals	14.6	18.2	12.0
VOCs	'000 metric tons/year	Upstream	113.8	105.1	95.5
		Downstream	20.7	20.8	30.7
		Chemicals	26.8	24.6	24.5
Water releases (excluding cooling water)	Mcu. m/year	Upstream	67.2	72.3	73.5
		Downstream	54.6	53.6	49.0
		Chemicals	67.4	57.6	42.5
Suspended solids releases	'000 metric tons/year	Downstream	0.7	0.8	0.8
		Chemicals	6.7	5.6	5.2
Chemical oxygen demand (COD) releases	'000 metric tons/year	Downstream	3.6	4.4	4.7
		Chemicals	8.3	8.2	7.3
Hydrocarbon releases	metric tons/year	Upstream	5,024	4,640	2,749
		Downstream	88.3	92.7	122.0
		Chemicals	25.6	40.1	31.7
E&P oil spills	ppm	Upstream	101	88	46
		number	215	165	286
		in metric tons	11,076	284	162
Greenhouse gases	MTCDE per year	Upstream	32.9	29.8	29.3
		Downstream	22.7	21.3	22.4
		Chemicals	18.6	16.8	14.2
Energy consumption	Mtoe per year	Upstream	2,276	2,306	2,617
		Downstream	7,778	7,293	7,575
		Chemicals	6,731	6,811	7,079
Hazardous waste production (treated offsite)	'000 metric tons per year	Upstream	10.5	15.3	25.2
		Downstream	54.0	58.0	111.1
		Chemicals	143.9	148.5	153.6

Safety Indicators			2001	2002	2003
Group and contractor employee work-related incidents	TRIR*	Exploration & Production	10.0	5.1	3.8
		Gas & Power	13.8	9.0	5.9
		Refining & Marketing	16.0	10.8	7.9
		Integrated Chemicals & Specialties	22.4	18.9	16.8
		<b>Group average (all businesses)</b>	<b>15.4</b>	<b>11.8</b>	<b>9.5</b>
		<b>Oil and Petrochemicals average</b>	<b>12.6</b>	<b>7.9</b>	<b>6.0</b>
Group and contractor employee work-related incidents	LTIF**	Exploration & Production	4.0	1.5	1.2
		Gas & Power	4.7	3.3	4.3
		Refining & Marketing	7.8	7.4	5.9
		Chemicals	9.9	8.6	7.8
		<b>Group average (all businesses)</b>	<b>7.7</b>	<b>5.9</b>	<b>5.0</b>
		<b>Oil and Petrochemicals average</b>	<b>5.5</b>	<b>4.3</b>	<b>3.4</b>
Group and contractor employee fatalities		41 ***	14	11	

\* TRIR: Total recordable incident rate (number of incidents with or without lost time per million man-hours worked).

\*\* LTIF: Lost time incident frequency (number of lost time incidents per million man-hours worked).

\*\*\* Of which 21 related to the AZF explosion in Toulouse.

Human Resources Indicators		Upstream	Downstream	Chemicals	Holding Company	Total
Workforce	2003	14,017	34,410	61,212	1,144	110,783
	2002	14,019	35,054	71,268	1,128	121,469
	2001	13,870	35,743	71,312	1,100	122,025
Workforce by age bracket (%)		< 25	25-35	35-45	45-55	> 55
	2003	7	25	29	28	11
	2002	6	24	29	31	10
Women in each age bracket (%)		< 25	25-35	35-45	45-55	> 55
	2003	33	31	27	23	19
	2002	31	28	26	22	16
Women managers in each age bracket (%)		< 25	25-35	35-45	45-55	> 55
	2003	28	27	18	12	7
	2002	35	27	19	12	6
Average number of training days per employee by region		Africa	Asia Middle East Pacific DOM-TOM*	Europe (excluding France)	France	Americas
	2003	10.0	4.4	4.2	3.8	3.4
	2002	8.1	4.1	3.0	3.4	2.6
Workforce by region		France	Europe (excluding France)	Americas	Africa	Asia Middle East Pacific DOM-TOM*
	2003 (%)	44.8	27.2	14.1	6.6	7.3
	2002 (%)	43.6	30.9	13.0	5.8	6.7
		52,915	37,584	15,848	7,020	8,102

\* French overseas departments and territories.

Societal Indicators	Total	Economic development	Good neighbor	Health care and social support	Education and youth	Training
Voluntary external spending by type of initiative (in € million)						
Total amount non-OECD in 2003	57	17.2	10.6	11.7	4.6	12.9
Total amount non-OECD in 2002	75	23.2	15.8	10.5	6.8	18.8

Expressed in U.S. dollars, 2003 societal spending was unchanged from 2002.





# Enhancing Performance to Meet Expectations More Effectively

Interview with Jean-Michel Gires

Senior Vice President, Sustainable Development and Environment, Member of the Management Committee



## Was Total's concern with environmental issues prompted by growing pressure from civil society?

**J.-M. Gires:** A straight yes or no answer would be oversimplifying, of course. Total has had an organized Environment process for 30 years, which has become increasingly sophisticated as we have grown. Our plants, businesses and parent company have long been focused on enhancing our environmental performance. Our commitment to the environment is not new.

What has changed, however, is stakeholder awareness of this issue. The very demanding expectations that a company like Total faces today are naturally lifting our own environmental standards and encouraging us to take our performance to a new level. Leveraging the system already in place, we have raised our sights and deployed additional initiatives throughout 2003. We reviewed our main environmental challenges and prioritized them to set new, measurable targets. We also defined action plans whose results will be assessed using a quality reporting system.

## What were the highlights of your environmental policy in 2003?

**J.-M. Gires:** In 2003, much of our work focused on climate change, which will come as no surprise at a time when the European Union has decided to apply, perhaps too unilaterally, the Kyoto Protocol recommendations. The Directive approved in July 2003 on greenhouse gas emissions trading — concerning the reduction of CO<sub>2</sub> emissions over the 2005-2007 period, and probably all six greenhouse gases over the 2008-2012 period — clearly concerns us, since we are Europe's leading refiner, one of its top-ranked chemical producers, and a major North Sea oil and gas producer.

But the Directive didn't catch us off guard. In 2002, we announced quantified targets for 2005. We tightened these targets in 2003 for Exploration & Production, where we are now targeting a reduction of not 20% but 30% per operated metric ton produced in 2005, compared with 1990 levels.

The Directive's requirements have also prompted us to make our emissions tracking even more reliable. In 2003, we introduced a stringent verification process that will be fully up and running in 2005. We have already improved our results in areas where significant progress can be achieved by optimizing installations, for instance to reduce flaring and abate emissions of fluorine gas and nitrogen oxygen.

In addition, the 1997 Kyoto Protocol included flexible mechanisms enabling the creation of emissions trading markets. The European Union Directive approved in July 2003 introduces this type of market in 2005. We're looking very closely at how to be sufficiently present to buy and sell, depending on whether we are above or below our allowances. Applied industry-wide, this process should prove beneficial since it will deliver an overall performance that would be harder for each company to achieve individually.

At the same time, we are again examining the issue of energy efficiency. We're launching audits to measure where we are and then identify opportunities to significantly improve our performance. We hope that this effort will generate sufficient projects in 2005 to enable us to deliver enhanced CO<sub>2</sub> performance in 2008-2012.

In addition to work on climate change, in 2003 we decided to extend the application of the ISO 14001 management system. We already had environmental management systems, of course, but they were in-house systems that had been developed by our three founder companies. Implemented in our plants, they have produced significant results, but have the drawback of not being known, verified or certified by outside organizations. Given existing stakeholder expectations, we felt it was necessary to opt for an international benchmark that is clear and understood by all. We therefore chose ISO 14001 as the environmental management system for our main plants.

We had already initiated the process, since 159 of our plants were ISO 14001-certified at end-2003, or more than one-quarter of the total and more than one-third of our major sites. But now we have to extend the system to all our major sites. Our target is to have 50% of them certified by 2005 and 75% by 2007. In the meantime, existing management systems will remain in place to enable us to continue to deliver satisfactory environmental performance.

**Environmental protection involves a number of restrictions, but do you think it also offers opportunities for Total?**

**J.-M. Gires:** Having to take into account regulatory requirements helps us to develop ways to enhance our environmental performance. Our emissions are directly related to our processes, which combine equipment, such as furnaces, boilers and turbines, a series of physical, chemical or catalytic reactions, and several raw materials. These processes produce petroleum products or chemicals, along with by-products, releases and discharges.

We therefore have to understand that downstream environmental performance reflects upstream industrial performance: the two have to be linked if we are to be effective. Generally speaking, it's much more expensive to resolve environmental problems by working on releases and discharges — through fume, water or waste treatment — than to reduce emissions at source.

This means acting first on the process. But that requires strengthening dialogue between specialists from two different organizations — operations on the one hand and environment on the other — who have a tendency to stick to their own areas of expertise. That's why we've set up cross-functional structures such as the Energy Committee, which is a forum for multidisciplinary cooperation on issues such as managing greenhouse gas emissions.

When you approach things in this way, you uncover myriad opportunities to conserve energy, water and raw materials, more efficiently regulate processes, and foresee possible incidents. This will have an impact on the reliability of your industrial operations, with your environmental performance as a direct result.

**In a report published in June 2003, the OECD expressed reservations about the effectiveness of voluntary regulation by companies. What's your response?**

**J.-M. Gires:** For things to get better, all stakeholders have to assume their responsibilities. What's the right environmental standard? What are the real problems and the desirable performance level for CO<sub>2</sub>? Companies shouldn't be the only ones to answer these questions. National and international communities have to look at these concerns and provide a degree of regulation. During these discussions or once a framework has been set by the public authorities, companies can provide assistance, make proposals and even, on a voluntary basis, make a certain amount of progress.

Everyone has a role to play and we believe in balance, a fit between the contributions of the various players to find the most efficient paths to improvement.

# Combating Climate Change

## ● A Global Issue

From the Far North, where the Arctic ice pack is shrinking, to the Far South, where the world's biggest iceberg split in two in the Antarctic, and from east to west, 2003 was a year of extremes, with the permanently frozen layer of permafrost melting in Siberia, scorching heat waves in India in May and June and in Western Europe in August, devastating drought-spawned fires in Australia and California, more frequent storms and hurricanes over the Atlantic, and a record number of tornados in the United States in May. Experts lack the historical data needed to formally confirm that these phenomena are indeed becoming more frequent. Nonetheless, they are being widely interpreted as signs of climate change, whose origins and development have preoccupied the international scientific community for the past 15 years.

Although uncertainty remains, the assumption most widely accepted by the international experts of the Intergovernmental Panel on Climate Change (IPCC) has established a relationship between greenhouse gas emissions from human activity and the average, non-uniform increase in temperatures on Earth.

The greenhouse effect is a natural temperature control phenomenon that occurs when some of the infrared solar radiation captured by gas and clouds in the atmosphere is radiated back to the ground. It maintains the Earth's surface at an

average temperature of around 15°C, or around 33°C more than on the moon. Most of the effect comes from water vapor, which accounts for close to 60% of all greenhouse gas emissions.

The greenhouse effect is amplified by the accumulation in the atmosphere of large amounts of greenhouse gases generated by human activity. These gases mainly comprise carbon dioxide (CO<sub>2</sub>) generated by the combustion of fossil fuels, but also methane, nitrous oxide, and fluorine-containing gas (see sidebar). The atmosphere's CO<sub>2</sub> content, for example, has increased from 280 to 370 parts per million (ppm) since the Industrial Revolution began, accompanied by global warming of around 0.6°C in the twentieth century.

According to the IPCC experts, if greenhouse gas emissions are not abated, there will be further global warming of 1.5 to 6°C in the twenty-first century, with a variety of consequences for humankind and ecosystems. The experts are actively working to fill in the blanks in their forecasting models. For instance, a large number of international research programs are examining the impact of solar activity on phenomena observed in the twentieth century, the importance of carbon sinks (reabsorption of CO<sub>2</sub> by oceans or land-based ecosystems), and the role of aerosols.

Considering it best to err on the side of caution, the international community has begun taking action even before the results of analyses are available, starting with the Rio Earth Summit in 1992 and continuing with the signature of the Kyoto Protocol in 1997 (as well as the finalization of the implementation procedures at the Eighth Conference of Parties to the UN Framework Convention on Climate Change (COP 8) in New Delhi in 2002 and COP 9 in Milan in 2003).

### **Kyoto at a Glance**

The Kyoto Protocol will enter into force after it has been ratified by not less than 55 Parties to the Convention, including Annex I (industrialized) countries accounting for at least 55% of the total carbon dioxide emissions for 1990 from that group. When this report was prepared in February 2004, the Protocol had been ratified by 120 countries accounting for 44.2% of emissions. Since the United States has decided not to ratify the Protocol, some proponents are hoping that Russia, which accounted for 17.4% of 1990 emissions, will confirm its support. So far, however, their hopes have been disappointed. Emissions from industrialized nations that have ratified the Protocol are steadily declining as a percentage of the worldwide total.

### **The Six Greenhouse Gases**

The six greenhouse gases addressed by the Kyoto Protocol are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF<sub>6</sub>). Their effect depends on their global warming potential over 100 years, expressed in tons of CO<sub>2</sub> equivalent (for example, CH<sub>4</sub>: 21, N<sub>2</sub>O: 310, HFCs: 650 to 11,700).

Under the Protocol, all signatory industrialized countries have made a binding commitment to reduce emissions of the six greenhouse gases by 5.2% from 1990 levels over the period from 2008-2012.

The European Union, which ratified the Protocol in May 2002 and today accounts for just under 20% of global emissions, has committed to an 8% reduction, shared among Member states. In July 2003, it approved a directive that for some industry segments is the first significant step in implementing an international process to limit greenhouse gas emissions.

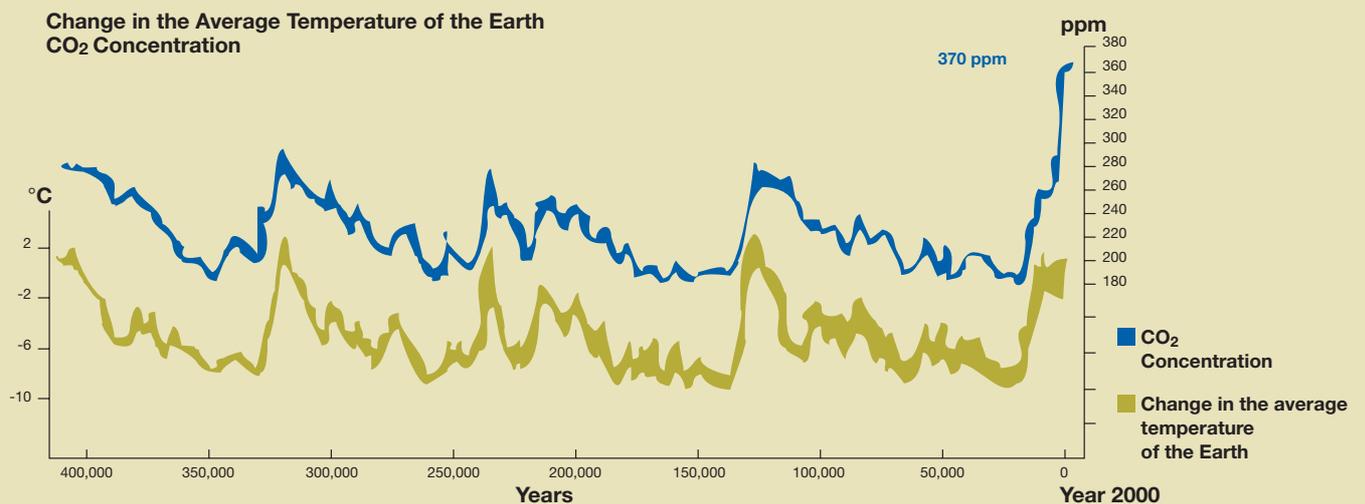
Published on October 13, 2003, the Directive establishes a scheme for greenhouse gas emission allowance trading to encourage industry to reduce CO<sub>2</sub> emissions over the 2005-2007 period, followed by all six greenhouse gases over the 2008-2012 period. This measure is applicable to specific target industries, including energy, until 2007, and is expected to be extended to other industries from 2008.

### Greenhouse Gas Emissions Trading

The greenhouse gas emission allowance trading scheme is a means of control that sets the target to be met by each authorized installation and allows trading to ensure that quotas are respected at the lowest cost for the manufacturers concerned. Simply speaking:

- The Directive assigns restrictive emissions allowances under a business as usual scenario, with emissions declarations verified by national authorities. It provides for financial penalties of €40 per metric ton of carbon dioxide equivalent in excess emissions in 2005-2007, rising to €100 per metric ton in 2008-2012.
- European Union Member states will implement these quotas through national allocation plans that were to have been in place by March 2004. Operators will be allocated allowances under these plans, which will take into account pre-existing voluntary commitments for the industries concerned, such as the Energy Efficiency Benchmarking Covenant in the Netherlands and France's Association of Businesses to Reduce the Greenhouse Effect (AERES).

Total's Refining business has been a member of the Energy Efficiency Benchmarking Covenant since 1999 and, with the Chemicals business, joined AERES when it was created in 2002. AERES is an association of companies whose voluntary individual commitment can be audited and which are subject to penalties in the event of non-compliance. The methods for setting targets were examined by an advisory committee on which the public authorities were represented.



Source: Intergovernmental Panel on Climate Change (IPCC).

### Emissions Allowance Trading

Introducing allowances is becoming the standard method for reducing atmospheric emissions. Because of the high cost of implementing internal solutions, some operators may find it difficult to meet their obligations, while others can leverage less expensive solutions to remain under the acceptable thresholds. Hence the development of emissions trading, a flexible mechanism included in the Kyoto Protocol and the European Union Directive that enables everyone to meet their commitments more cost effectively and helps drive a specific overall decrease in global emissions.

In addition, the Clean Development Mechanism, also defined in the Protocol, promotes the implementation of the best technologies in developing countries while entitling the industrialized countries that finance them to benefit from certified emission reductions that they can use to meet their home country obligations. A third mechanism, Joint Implementation, is also available.

Emissions trading describes the market in which operators can buy or sell assigned amount units or certified emission reductions.

A European Union emissions trading market will be created in early 2005, in line with the provisions of the Directive. Total is already preparing to meet the related challenges by:

- Identifying improvement drivers as clearly as possible, in particular in the area of energy efficiency (see section on The Future of Energy).
- Preparing procedures to ensure that the emissions can be verified and recorded in the national registries that will be set up to ensure accurate accounting.
- Introducing the necessary accounting and financial procedures to monitor these new financial flows.
- Examining the creation of internal trading structures to facilitate compliance with site thresholds, satisfy inter-business trading needs, and manage declarations related to transfers of allowances.
- Determining the appropriateness of clean development mechanisms for new projects in developing countries where we operate.

### A Focus on Curbing Greenhouse Gas Emissions

Total has not waited until the 2005 application of the European Union Directive on greenhouse gases to implement reduction initiatives: operated emissions declined by 23% from 85.9 million tons of CO<sub>2</sub> equivalent (MTCDE) in 1990 to 66 MTCDE in 2003. Over the same period, Exploration & Production's operated production increased by nearly 70%, refining throughput by 26%, and petrochemicals throughput by 15%.

But we have no intention of resting on our laurels; our 2005 targets are to reduce emissions from 1990 levels as follows:

- On an operated unit basis, by 30% for Exploration & Production and 20% for Refining per metric ton of operated oil produced or refined.
- On an absolute operated basis, by 45% for Chemicals.
- On the basis of Total's share of the asset base, to 375 kg CDE/MWh for Gas & Power.

This assertive process entails the implementation of dedicated drivers to reduce emissions at source, including through enhanced energy efficiency (see section on The Future of Energy).

A significant effort to identify sources and to measure, report and verify operated greenhouse gas emissions (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O and HFCs, expressed in CDE) has been undertaken for each of the sites concerned. In addition, various measures have already been deployed by each of our businesses to reduce their emissions.

#### Reducing Upstream Emissions

In Exploration & Production, the two main sources of greenhouse gases are associated gas from oil production and gas used to generate the power required for production facilities. Until now, associated gas that could not be developed locally because there was no market or because there was insufficient gas to warrant the construction of a liquefaction plant or pipeline to export it to consumer areas was flared, generating significant amounts of CO<sub>2</sub>.

In 2002, Total became an active member of the Global Gas Flaring Reduction Partnership (GGFR), an initiative launched by the World Bank in late 2001 to support national governments and the petroleum industry in reducing flaring of gas from Exploration & Production operations.

In 2000, we decided to eliminate routine flaring of gas in all new projects, in particular by developing or reinjecting associated gas when the reservoir properties are suitable. We are also reducing flaring on existing fields, by optimizing equipment and identifying new markets.

The Amenam/Kpono project in Nigeria, described in the case study on pages 142 to 145, illustrates the progress made, which will continue with the ongoing search for new technological solutions.

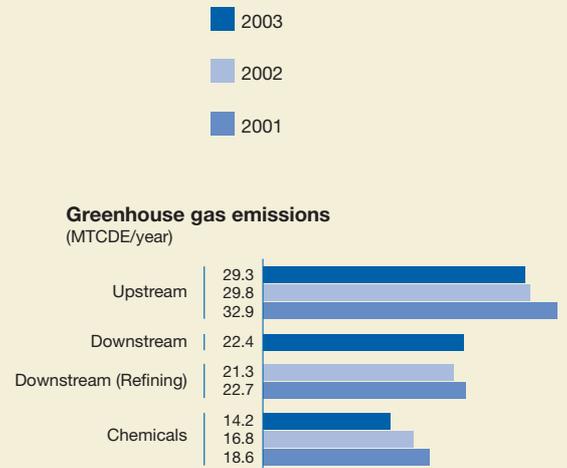
### CO<sub>2</sub> Capture and Geological Sequestration

Exploration & Production's R&D teams are participating in a variety of studies on CO<sub>2</sub> capture and geological sequestration.

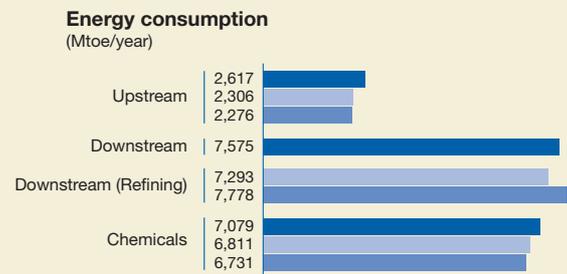
In the area of capture, Exploration & Production has deployed a research and investigation program on managing CO<sub>2</sub> from steam generation during production of heavy oil on projects such as Sincor and Surmont (see section on The Future of Energy). One of the capture methods being assessed by Exploration & Production, in cooperation with France's Air Liquide, is a promising technology known as oxycombustion (asphalt combustion with oxygen) that should be accessible in the near medium term.

In the area of sequestration, Exploration & Production is involved in:

- Various subcontracting or cooperation partnerships with universities, laboratories and France's National Scientific Research Center (CNRS) to examine issues related to the sustainability and integrity of storage reservoirs and injection structures such as wells. These issues include the geomechanical behavior of caps during CO<sub>2</sub> injection, fault activation, carbonate rock damage, and aging of cements.
- The French Oil and Gas Technological Network's (RTPG) PICOR project on CO<sub>2</sub> sequestration in reservoirs, specifically the geochemical interactions and thermodynamic parameters affecting injection and storage potential. The *Institut Français du Pétrole* (IFP) is managing the project, in partnership with the French Geological and Mining Research Bureau (BRGM), Géostock, the Saint-Etienne Mining School and the universities of Bordeaux, Montpellier, Grenoble and Toulouse.
- A Statoil-led project on pilot CO<sub>2</sub> stores, divided into two main parts. The first is an extension of the Saline Aquifer CO<sub>2</sub> Storage (SACS) project, storing one million metric tons of CO<sub>2</sub> a year from the West Sleipner field, in which Total has an interest, in the Utsira formation. The second entails feasibility studies



Emissions continued to decline in 2003, primarily due to reduced flaring in West Africa in Exploration & Production and the closure of the Wichita fluorinated product plant in the United States in Chemicals. The Refining increase stemmed from higher capacity utilization. These results are in line with our 2005 targets.



The figures given for Chemicals correspond to assets owned by Total.

for four pilot capture and sequestration facilities in Germany, the United Kingdom, Norway and the Netherlands.

- A pilot enhanced oil recovery (EOR) project to sequester near-pure CO<sub>2</sub> in the EnCana-operated mature Weyburn field in Saskatchewan, Canada. The CO<sub>2</sub> comes from an American coal gasification plant located 300 kilometers south of the reservoir.

As well, Total participates in Club CO<sub>2</sub> with French public research institutes, the European Carbon Dioxide Thematic Network (CO<sub>2</sub>NET), and the International Energy Agency Greenhouse Gas (IEAGHG) R&D Program.

### Reducing Refining Emissions

Cars are in the front line when it comes to reducing greenhouse gas emissions. Automotive fuels with ever more demanding specifications are being developed to meet the requirements of the latest-generation engines, designed to reduce the environmental impact of vehicle emissions. This trend complicates operations for Refining, which has to tailor its industrial facilities accordingly, in particular to reduce the sulfur content of automotive diesel and gasoline.

After successfully tailoring their processes since the 1980s to eliminate lead and then reduce the benzene content of gasoline to 1%, refiners are now having to meet the challenge of reducing the sulfur content of automotive fuels. Although it has declined steadily (from 1,000 ppm in 1993 to 500 ppm in 1995 and 150 ppm in 2000), the sulfur content of gasoline now has to be further reduced to a maximum of 50 ppm in 2005 and 10 ppm in 2008. This will enable new engines to be designed that emit no more than 140 grams of CO<sub>2</sub> per kilometer, the figure pledged by the European Automobile Manufacturers Association (ACEA), representing a decline of 25% from 1995 (185 g CO<sub>2</sub>/km). But processes to remove sulfur from products use more hydrogen, thereby increasing refiners' CO<sub>2</sub> emissions.

Nonetheless, the results have been very positive, with the decrease in vehicle CO<sub>2</sub> emissions significantly exceeding the extra emissions produced by refineries.

### Constant Interaction with Carmakers

Technological advances in vehicles and the related changes in automotive fuel specifications affect the investment decisions of the refining industry, whose installations have a life cycle of some 30 to 50 years. That's why we constantly interact with carmakers to jointly study the automotive fuels of the future and then adjust our industrial facilities accordingly. Although the Leuna refinery in Germany, completed in 1997, can already meet the new specifications, our other European refineries have been or will be upgraded during major turnaround maintenance operations, which are performed every five or six years in compliance with applicable legislation. These periodic shutdowns last around five weeks and are used to perform maintenance, thereby enhancing operational safety.

### Reducing Chemicals Emissions

Although it is not directly concerned by the 2005-2007 period of the European Union Directive approved in July 2003, the Chemicals business is already helping to abate CO<sub>2</sub> emissions by enhancing the energy efficiency of its facilities (see section on The Future of Energy). It is also focusing on reducing emissions of other major greenhouse gases, such as nitrous oxide (N<sub>2</sub>O), which is generated during fertilizer production, and fluorocarbons such as hydrofluorocarbons (HFCs). The business is committed to reducing N<sub>2</sub>O emissions from nitric acid units by testing new catalysts and to curbing HFC emissions by incinerating HFCs at the Pierre-Bénite plant in France.

The challenge of curbing greenhouse gas emissions is also part of our preparations for the future of energy (see pages 44 to 59).

### CO<sub>2</sub> Cycle Research: Partnership with the *Institut de Physique du Globe* in Paris

Total does not claim to have the necessary expertise to make a meaningful contribution to the debate on the exact causes of climate change. But we support projects coordinated by the French National Scientific Research Center (CNRS) and are taking part in a research program on the natural CO<sub>2</sub> cycle (mineral and fluid interactions) with the *Institut de Physique du Globe* in Paris, financed over four years in partnership with Schlumberger.

# Improving Air Quality

In addition to curbing greenhouse gas emissions, which has an impact on the entire planet, we also have to reduce emissions of certain gaseous pollutants that could damage local air quality.

## ● Reducing Emissions of Volatile Organic Compounds (VOC)

In the presence of nitrogen oxide (NOx) and solar radiation, volatile organic compounds (VOCs) encourage the formation of ozone. In the oil and chemical industries, most VOC emissions come from product storage, loading installations, and solvent use. In recent decades, their abatement has been the subject of such major initiatives as installing floating roofs on storage tanks, atmospheric control, pinpointing fugitive emissions, installing dedicated intake systems at sensitive points, and oxidizing VOCs in catalytic incinerators.

Systems have been installed in all our petroleum product depots, refineries and service stations to recover vapor emitted during petroleum product loading and offloading (tanker trucks and railcars). We have also begun equipping pumps at some service stations with nozzles to recover hydrocarbon vapors released during fueling. In France, these systems have been installed at 170 Total-branded retail outlets, including all older ones with gasoline throughput of more than 3,000 cubic meters a year and all new ones with throughput of 500 cubic meters a year.

Atofina has also made significant progress in the area of VOCs, initially focusing on 16 priority substances likely to present certain hazards. After reducing these emissions by 33% between

1990 and 2002, it is targeting a further reduction of 20% for all VOCs by 2007. The company is also working to reduce VOCs in acrylic, vinyl, copolymer and terpolymer compounds for glues, paints and adhesives. VOC-free and low-aromatic Craymul® emulsions, introduced in 2003 by Cray Valley, Atofina's resins business, deliver an effective solution for the formulation of decorative interior paints and mastics.

Based in Montargis, France, the Hutchinson research center set up a working group to help the production units prepare for stricter VOC emission standards. Hutchinson is targeting an overall VOC emission reduction in line with the regulatory requirements to be phased in by 2005-2007. That's why it has developed a new line of water-based varnishes to replace silicone solvent-based varnishes, whose evaporation during drying generates VOCs. The Hutchinson plant in Moirans, France, is one of the first facilities to use these new high-performance varnishes, marketed under the Tekskin® brand, which correspond perfectly to carmaker specifications.

In 2002, the Hutchinson plant in Palamos, Spain, deployed a new manufacturing process for brake hoses in which the organic solvents previously applied to textile braids to ensure adhesion of the hose layers have been replaced by water-based solutions. This method significantly reduces VOC emissions caused by solvent evaporation, while enhancing product performance.



1

Based in Montargis, France, the Hutchinson research center specializes in developing new materials, products and processes, analytical chemistry, scientific calculations, vibrational mechanics and acoustics.

## Reducing Nitrogen Oxide (NOx) and Particulate Matter Emissions

Nitrogen oxide (NOx) emissions produced during combustion processes can contribute to soil acidification and, in the presence of volatile organic compounds, the formation of ozone. Carmakers and oil companies have therefore undertaken joint programs to more effectively manage combustion conditions and reduce the formation of these compounds. Technical improvements to engines and clean fuels (see page 29) have driven significant progress since 1990, but the European Union has significantly toughened its standards on reducing all toxic substances emitted by commercial diesel vehicles. The Euro 4 and Euro 5 standards, which come into force in 2006 and 2009 respectively, will require a further decrease in emissions (see table) that additional optimization of engine combustion will not be able to deliver. Exhaust gas treatment will be necessary. Makers of light commercial vehicles are looking to selective catalytic reduction (SCR) technology to make it possible to meet the new requirements.

### E.U. Standards for Light Commercial Vehicle Emissions

	<b>Euro 3</b> 2000/2001	<b>Euro 4</b> 2005/2006	<b>Euro 5</b> 2008/2009
Nitrogen oxides (NOx)	5.00	3.50	2.00
Carbon monoxide (CO)	2.10	1.50	1.50
Hydrocarbons	0.66	0.46	0.46
Particulates	0.10	0.02	0.02

### SCR: A Decisive Breakthrough

Previously used primarily to treat exhaust gas in power plants, selective catalytic reduction is a process in which ammonia reacts with nitrogen oxide and converts it into two non-toxic substances, nitrogen and water. Applied to light commercial vehicles, SCR will reduce emissions of toxic substances, such as nitrogen oxide and particulates, as well as diesel consumption, by as much as 6% in relation to Euro 3 vehicles, for equivalent engine performance.

However, the ammonia used as a catalyst is a hazardous substance that should not be introduced as is on the roads. This is why SCR technology for the automotive industry will use urea in an aqueous solution, which, when injected into the exhaust gas, releases ammonia as it is heated. Urea is a non-toxic, odorless substance used in the cosmetic and pharmaceutical industries that is easy to dose accurately in an aqueous solution of 32.5% pure urea in deionized water.

Well ahead of the regulatory timetable, Total and DaimlerChrysler have teamed up to jointly conduct full-scale testing of the AdBlue urea solution. After a series of stringent internal tests, trucks equipped with SCR technology will undergo practical tests under real-life conditions using pilot filling stations in Berlin (the first of their kind in the world, inaugurated on October 10, 2003) and Stuttgart. The facilities are equipped with two side-by-side pump meters — one for diesel and one for AdBlue — enabling drivers, who fill up using two different nozzles, to check progress on both tanks.

In addition to this first in the area of transportation, which emits more NOx than any other industry, in 2004 we will identify all our emissions in order to define and rank avenues of progress in all our operating units.

### Clean Fuels

To reduce emissions, Total's service station network meets stricter standards as soon as possible, offers more cost-effective, cleaner fuels by using specific additives, and promotes the use of alternative fuels, such as automotive LPG (liquefied petroleum gas) and the EcoDiesels line, for municipal and corporate fleets. For instance, our northern European service stations distribute products that already meet the European Union specifications for 2005, while our German subsidiary goes even further, offering since January 2003 "sulfur-free" gasoline and diesel that meet standards that will not come into force until 2009.

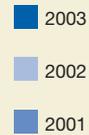
We are actively developing the EcoDiesels line, which comprises three innovative, complementary products that do not require engine modifications:

- Xéol, a very low sulfur fuel (0.005%) that reduces unburned components by more than 90% when combined with a particulate filter.
- Rapeseed diesels containing between 5 and 30% rapeseed oil methyl ester, a biofuel (see section on The Future of Energy, page 54).
- Aquazole, a stable water-diesel emulsion containing between 9 and 15% water that reduces emissions of NOx by up to 30%, of particulate matter by 10 to 60%, and of black smoke by up to 80%. Its advantages have been recognized by the California Air Resources Board (CARB), which sets the most stringent environmental standards for automotive fuel in the United States.

### Reducing Sulfur Dioxide (SO<sub>2</sub>) Emissions

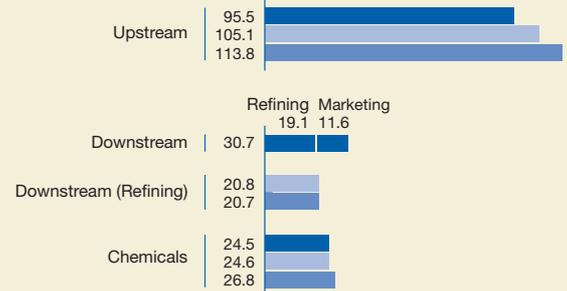
Sulfur dioxide (SO<sub>2</sub>) emissions have to be curbed because they contribute to acidification of the atmosphere and soil. The sulfur content of refinery and chemical plant fuels is therefore being adjusted accordingly, and desulfurization/sulfur production units optimized.

Pilot units were launched in 2003 at the Provence and Les Flandres refineries in France to reduce SO<sub>2</sub> peaks through enhanced control of sulfur recovery units. A significant improvement is expected in 2004, and the experience will then be extended to our other refineries.



#### VOC emissions

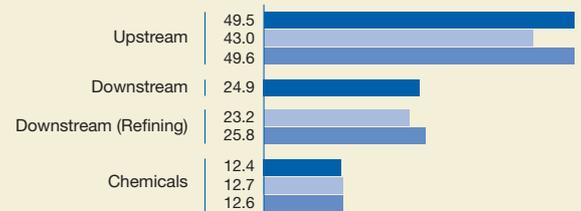
(thousands of metric tons/year)



In 2003, the Downstream result includes Marketing data for the first time. As part of initiatives to continuously improve reporting, programs are underway to more accurately estimate VOCs and NOx, which could result in an upward revision of the figures in 2004.

#### NOx emissions

(thousands of metric tons/year)



#### SO<sub>2</sub> emissions

(thousands of metric tons/year)



Today, the use of heavy fuel oil is subject to increasingly stringent emissions regulations. In particular, the European Union Directive on the Sulfur Content of Certain Liquid Fuels has been gradually transposed into French law by ministerial orders covering combustion facilities depending on their capacity, commissioning date and location. The ceiling of 1,700 milligrams of SO<sub>2</sub> per standard cubic meter (mg/Ncu.m) of fumes is now mandatory wherever sulfur cannot be removed from fumes. As a result, very low sulfur (less than or equal to 1%) heavy fuel oil is now used widely.

A top-tier supplier in the French market, Total informs customers about regulatory changes and advises them when the sites concerned have to be upgraded. We constantly anticipate developments and leverage the expertise of our research centers to improve existing products, for example through reformulation or the use of additives. In this way, we have developed a new line of products that meet specific environmental protection requirements.

Our low-emission very low sulfur fuels (known by the French acronym TBTS FE) reduce dust emissions to less than 50 mg/Ncu.m at 3% O<sub>2</sub>. Our TBTS 21S fuel reduces NO<sub>x</sub> emissions to less than 450 mg/Ncu.m at 3% O<sub>2</sub>, as well as dust emissions. Our very very low sulfur fuels (TTBTS - sulfur content less than or equal to 0.55%) comply with regulations in the special protection area in the Paris and Ile-de-France region, where the limit value of emissions in SO<sub>2</sub> equivalent has been 900 mg/Ncu.m at 3% O<sub>2</sub> since January 1, 2004.

### Reducing Carbon Disulfide

By optimizing the manufacturing process for Spontex cellulose sponges at the Beauvais site in France, the amount of carbon disulfide used was decreased by 20%, resulting in a corresponding reduction of close to 150 metric tons a year in sulfur emissions. This was achieved without modifying the production equipment, but by more closely controlling process parameters such as temperature and duration of the sulfidization reaction. This innovation, which will be extended to other Mapa-Spontex plants, such as the one in Saint-Hippolyte, France, enables Hutchinson to meet tougher sulfur emissions regulations ahead of the regulatory deadline. Meanwhile, research is continuing to develop alternative processes that will completely eliminate the use of carbon disulfide.

### A Traveling Lab

An air quality unit was set up in 1990 at the Solaize Research Center near Lyon, France, to deepen knowledge of Total's emissions. A mobile lab truck measures pollutants onsite, either during emission or in the atmosphere. Accredited for emissions analysis in 2001 by the French Accreditation Committee (Cofrac), the Center gained accreditation in 2003 to measure work-related exposure to benzene, a potentially toxic compound, using specialized equipment.

The Center has also broadened its expertise in modeling photochemical pollution and is expanding its activities to include aerosol simulation. This work is conducted under the European Union Auto Oil and Clean Air For Europe (CAFE) programs.

### Improving water releases on the Grondin platform, offshore Gabon

Thanks to the installation of a plate-type precipitator and hydrocyclones, the platform has made the transition from barely treated effluent (bottle on the left) to effective removal of residual hydrocarbons and the release of water containing less than 40 mg/l of hydrocarbons (bottles on the right).



# Conserving Water

Although the oil and chemical industry does not consume a lot of water compared with farming and agribusiness, our plants are sometimes located in environments where this resource is scarce — either chronically, as in Africa and the Middle East, or seasonally, when a facility neighbors cornfields for example. Efficiently managing water consumption is therefore a priority for Total, in particular by identifying improvements that could be made in areas where our operations compete for water with other local applications, such as farming. Accordingly, we will be preparing a more detailed audit of our water use, and each of our core businesses will conduct at least one test to optimize water consumption at a number of sites in 2004.

## ● Optimizing Consumption and Releases

Efficient water management also involves recycling wherever possible. In some cases, effluent can be recycled, opening up new avenues of sustainable local development.

In oil operations, more than a barrel of water is produced for each barrel of oil, a proportion that increases with the age of the field. This production water is treated before being discharged or reinjected in the field. Another solution, when the water properties are suitable, could be to recycle it as irrigation water in arid and semi-arid regions in the Middle East and Latin America.

We are working on this possibility, examining two applications, one in Yemen and one in Venezuela. To remove trace hydrocarbons, which adversely affect desalination, a reed-based phytoremediation process is being studied. In 2003, a technical study was conducted in a greenhouse, in which production water was treated by percolation through beds of two varieties of reed (*Phragmites australis* and *Scirpus maritimus*). The tests confirmed the effectiveness of this process on Middle Eastern salt water, since the water obtained after treatment had a very low residual hydrocarbon content, less than 0.15 mg/l. The treated water was then used to grow ornamental plants that could be sold; we deliberately chose plants that were not edible. The results demonstrated how effectively the process removed hydrocarbons from salt water, allowing us to consider the possibility of cultivation in isolated environments.

Further tests are being performed by the Lacq Research Group (GRL) to validate the feasibility of the treatment for water at a Venezuelan site. The results will determine whether or not a pilot is launched at an industrial site in 2004.

In addition to recycling, closed or semi-closed cooling water systems also contribute to efficient water management, as illustrated by two examples, one in Refining and one in Chemicals.

Until 2000, the open cooling systems at the Provence Refinery used 4,500 cubic meters of water an hour, or around 40 million cubic meters a year, taken from a nearby lake, Etang de Berre. This amount was nearly halved with the September 2000 commissioning of a semi-closed treated freshwater system in the eastern part of the site. The same principle was applied to the western part of the site in early 2003, reducing the plant's water consumption by 90% from pre-2000 levels. The system also offers two other major advantages. First, it prevents accidental releases of hydrocarbons through a detection system associated with a bypass/storage system. Second, it prevents heat pollution; previously, the temperature of the water released into the Marseille Canal to the Rhone River was determined by the open cooling systems because of their high flowrates.

### An Example of Water Treatment

Commissioned in 1995, the Hutchinson plant in Rokycany in the Czech Republic produces low-pressure fluid transfer systems for the automotive industry. In July 2002, a unit to recycle and treat industrial effluent using membrane separation technology was installed. The effectiveness of this process was demonstrated in the first year of operation, with a 56% recycling rate for the treated water and a reduction in total water consumption of around 25,000 cubic meters.

## ● Reducing Hydrocarbon Content

Downstream from oil production separation chains (oil, gas and water), reducing the hydrocarbon content of wastewater is critical to offshore Exploration & Production environmental performance. A major improvement program has therefore been launched to enable every subsidiary to achieve a content of less than 40 mg/l in 2005. The spectacular progress

made in 2003 in Gabon after the water treatment installations were upgraded augurs well for the future.

For Refining & Marketing refineries and depots, the hydrocarbon content of wastewater usually does not exceed 15 to 20 mg/l and is not therefore a problem.

# Improving Prevention of Freshwater and Seawater Pollution

With the completion of the waste treatment program in December 2003, Total fulfilled the three commitments made after the sinking of the *Erika*. However, we remain as dedicated as ever to preventing oil spills and other forms of water pollution, as we continue to meet our commitment on the job every day (see section on Safety, pages 67 to 70).

The Atlantic Coast Fund was set up to ensure that these three commitments were fulfilled. With a budget of more than €200 million, up to 800 people worked on the different sites. At the same time, our Shipping business stepped up its cooperation with the French Transportation Ministry, shipping industry operators, and European Union authorities to amend tanker safety legislation, while also tightening our own vessel vetting criteria.

## ● *Erika*: Meeting Our Commitments

On December 12, 1999, the *Erika*, an Italian-owned tanker carrying 30,884 metric tons of heavy fuel oil owned by a Total subsidiary, broke in two off the coast of Brittany. The crew was rescued by the Regional Rescue and Surveillance Operational Center (CROSS). On the same day, the Polmar Mer offshore plan was triggered by the Atlantic Region Maritime Prefect to organize pollution control; an emergency unit was set up at Total to assist the authorities responsible for managing the consequences of the accident and leverage available expertise to help the parties concerned.

In the days and weeks following the sinking, a spill moved toward the French Atlantic coast. Total offered to provide practical assistance in three areas where our technical expertise makes us particularly efficient:

- Helping to clean up and restore the coastline.
- Pumping out the cargo from the *Erika*.
- Storing and treating waste recovered on the beaches.

### **First Atlantic Coast Fund commitment: helping to clean up and restore the coastline**

The local prefects began implementing the Polmar Terre onshore emergency plans on December 22. Total provided significant logistics and equipment resources, such as helicopters, cranes, high-pressure washers, and screeners. We also removed waste and stored it at some 30 intermediate sites.

Throughout 2000, several dozen coastal cleaning sites were coordinated by the Atlantic Coast Fund, especially in the Loire-Atlantique and Morbihan regions, which were hardest hit by the spill. Particular attention was paid to the most sensitive environments, such as islands. All the work was performed under the supervision of the French public authorities and in constant contact with local elected officials.

Once the coastal cleanup was completed, in line with the pledge made on December 23, 1999 by Thierry Desmarest, we began restoring ecological balances, in cooperation with environmental protection associations and public organizations (see page 42, the Atlantic Coast Fund, created in 2000).

**Second commitment: pumping out the cargo**

Following the failure of the shipowner to take action, Total offered its offshore expertise to the public authorities to pump out the cargo from the *Erika* so as to avoid any further risk of pollution along the coast.

On January 26, 2000, Total and the General Secretary for the Sea signed a memorandum of understanding covering the project. After examining a number of options, Total recommended pumping, a solution that was ratified by the French Transportation Minister in late February 2000.

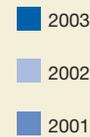
Costing €76 million, the pumping operations took place between July and August 2000, with the assistance of seven deep-sea vessels. On September 6, a discharge concerning the end of pumping was signed by representatives of the State and Total, signifying that we had fulfilled our second commitment.

**Third commitment: waste treatment**

In the months that followed the sinking of the *Erika*, coastal cleanup operations collected nearly 270,000 metric tons of waste, ranging from heavy fuel oil in a seawater emulsion, sand and stones to collection equipment, nets, driftwood and plastic bags. However, most of the recovered waste was sand.

Total offered to take responsibility for all the treatment, as well as cleaning up the intermediate storage sites. A memorandum of understanding formalizing this proposal was signed on September 13, 2000 with the State. At a cost similar to the pumping operation, the waste was treated over a three-year period, from early 2001 to end-2003. After an international tender, a specialized company was chosen to manage the treatment operations, using a safe, environmentally sensitive process that capitalized on the nearby Donges refinery to treat the recovered oil.

This treatment phase was constantly monitored both by the authorities and by a Local Information and Monitoring Commission comprising government representatives, elected officials, neighbors and environmental protection associations. Waste treatment was completed in December 2003, marking the fulfillment of the third commitment made by Total.

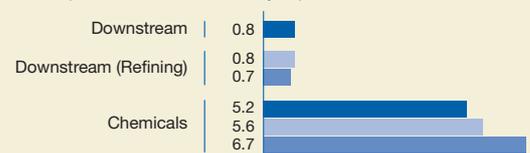


**Water releases, excluding cooling water**  
(millions of cubic meters/year)

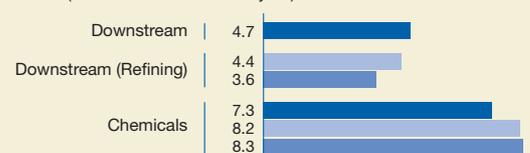


The above figures do not include water from open systems.

**Suspended solids releases**  
(thousands of metric tons/year)

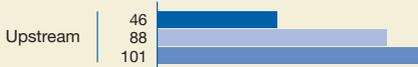


**Chemical oxygen demand (COD) releases**  
(thousand of metric tons/year)

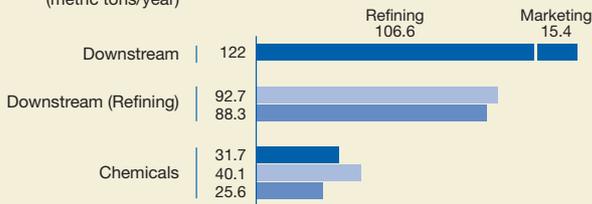




**Hydrocarbon releases: Upstream**  
(ppm)



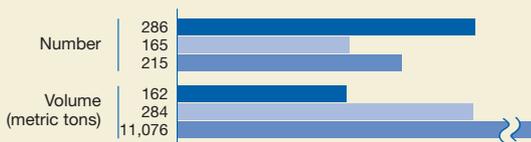
**Hydrocarbon releases: Downstream, Chemicals**  
(metric tons/year)



The 2003 Downstream result includes figures from the Marketing business.

The 2001 and 2002 Chemicals results have been adjusted for the sale of SigmaKalon in 2003.

**Exploration & Production oil spills**



The reporting process has been broadened in the Upstream, which explains the increase in the number of occurrences reported in 2003. This change is being extended to the other businesses. Refining experienced a spill of 350 metric tons at the Donges refinery in France. The 2001 figures include 10,800 metric tons from two pipeline breaks and a loading buoy incident in West Africa.

**Update on Legal Proceedings**

A number of legal proceedings are in progress:

- On December 17, 1999, at the request of Total, the Dunkirk Commercial Court appointed a group of experts to determine the causes of the sinking of the *Erika*. The experts are continuing their work, in particular analyzing pieces of the wreck that were raised at their request.
- A judicial investigation is underway in the Paris High Court to determine liability for the sinking. Total, in its capacity as a legal person, and five Group employees have been charged. However, we intend to demonstrate that neither the company nor our employees were at fault.
- On December 12, 2002, Total filed suit in the Rennes Commercial Court to protect our rights in the event that one or more third parties are declared liable for the sinking by the judicial authorities. This suit does not challenge the principle, with which Total fully agrees, that priority will be given to individuals, companies, local communities and the State in the International Oil Pollution Compensation (IOPC) Funds compensation process.

**The Post-*Erika* Era**

Today, around 30 external research teams are studying the consequences of maritime pollution on marine ecosystems. At the initiative of the French Research Institute for Exploitation of the Sea (IFREMER), a "Post-*Erika* Era" conference brought together nearly 200 scientists, members of environmental protection associations and environmental managers on November 20 and 21, 2003 in Nantes, France. Total's teams are monitoring this research and working with scientists on a number of initiatives aimed at analyzing the environmental impact of the *Erika* sinking and creating a reference base to better understand the follow-up to accidental offshore oil spills.

## ● Total's Pollution Control Resources

Total's pollution control resources are coordinated by Corapol, an in-house team of 25 experts from every business that meets several times a year to assess emergency response techniques and strategies.

Pollution control equipment is pre-positioned and maintained on a large number of sites, while emergency response resources are based in Marseille for the Fast Oil Spill Team (FOST). We are also a member or partner of leading industry pollution control organizations based in the United Kingdom (Oil Spill Response Limited - OSRL), Florida (Clean Caribbean Cooperative - CCC) and Singapore (East Asia Response Limited - EARL).

Spill drills are held regularly in each business, in some cases involving actual deployment of internal and external teams and equipment. Organized in cooperation with the national authorities, these drills are conducted regularly to test practices and organization.

Parapol, our offshore emergency response plan that enables us to respond to spills anywhere in the world, was revised at the end of 2003. Under the plan, an emergency response team can be sent to a spill site at the request of a subsidiary or industrial facility. A drill to validate the team's operations is scheduled for 2004.

Total also works in close cooperation with specialized national and international organizations, such as:

- The International Petroleum Industry Environmental Conservation Association (IPIECA), in which we play a particularly active role in leading the working group on petroleum pollution.
- CEDRE, a French organization that conducts research into accidental water pollution. Our long-term cooperation continued in 2003, with CEDRE performing new aging tests on our crude oils, our financing of a technology watch, and preparation of emergency plans for some of our subsidiaries.

Although not involved in the sinking of the *Prestige*, Total also supplied pollution control equipment in the form of coastal booms under requisition. In addition, we helped the French and Spanish authorities with pumping and waste treatment operations, in particular by providing expertise.

### Some Pollution Control Drills in 2003

- Shipping: October 7 and 8 in Toulon and Marseille, France, the Antipol 2003 drill, supervised by and in cooperation with the Mediterranean Maritime Prefecture and the Southeastern Defense Area Prefecture, using FOST and OSRL resources (40 people, chartering of the *Alexander* tanker, and a C-130 plane from OSRL).
- Exploration & Production: Onshore and offshore pollution control drill in Nigeria on October 28.
- Gas & Power: Drill on January 10, simulating a bulk carrier in distress off Le Havre.
- Refining & Marketing: Marketing France drill on November 21, simulating a spill in the port of Douarnenez.
- Chemicals: Crisis drills on October 2 and 24, simulating accidents involving a barge carrying vinyl chloride monomer on the Rhone downstream from Lyon and a ship carrying benzene departing the port of Le Havre.

# Managing Waste and Rehabilitating Industrial Sites

## Waste

In line with our commitment to reducing the ultimate waste generated by our operations, programs are underway to identify opportunities for reducing waste at source and potential recycling/reuse options.

Exploration & Production has largely phased out conventional oil-based drilling mud and replaced it with water-based mud or oil-based mud using special dearomatized fluids (see page 37). In addition to reducing drill cuttings at source, it is examining long-term storage options, disposal using biotreatment or incineration, and possible reuse in asphaltting or spreading. Like Exploration & Production, Refining is examining ways of optimizing treatments for oil-based muds.

In 2001, our petrochemicals, chlorochemicals, fertilizers, intermediates and performance product operations stopped using internal landfills, while increasing recycling and minimizing — through more efficient process management — the amount of ultimate waste to be stored offsite. Specialty Chemicals (adhesives, resins, rubber processing) has set the same objective for 2007.

These initial measures will be strengthened across all businesses in 2004 with the preparation of waste management plans and verification of final disposal conditions.

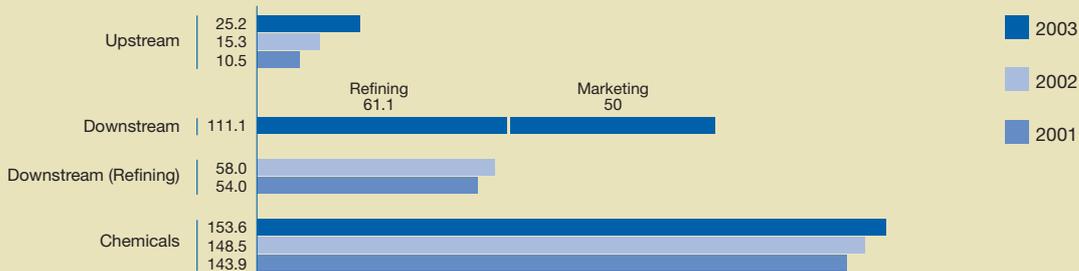
### Resource Recovery: A U.S. Case Study

At the recently-built American Acryl complex in Bayport, Texas, Atofina Chemicals manufactures butyl acrylate and, in partnership with NA Industries, acrylic acid, both of which processes generate petrochemical by-products. When the complex was commissioned in June 2002, the by-products were sent offsite to be incinerated as waste in cement kilns and acid regeneration plants. The amounts totaled a truckload a day of by-products from the acrylic acid unit and three truckloads a week from the butyl acrylate unit.

Treatment was expensive, and an internal team began seeking a more cost-effective alternative that would:

- Reduce variable transportation and waste disposal costs.
- Reduce expenses related to Texas taxes on waste.
- Identify regulatory requirements affecting the alternative resource recovery scenarios.
- Integrate the project into a longer-term study on using an alternative energy source onsite.

**Hazardous waste treated offsite**  
(thousands of metric tons/year)



The 2003 Downstream results includes Marketing values. The figures given above cover the amount of hazardous waste treated offsite. They do not include waste treated onsite for Chemicals as published in the previous report.

Laboratory analyses conducted over several months demonstrated that the two petrochemical by-products could substitute for commercial products commonly used in the Houston region of Texas. These by-products, which modify viscosity, can be used in crude oil refining and marketing. The many petrochemical complexes in Texas offered a ready-made market. An additional study was conducted to ensure that regulatory requirements could be met.

Product sheets and material safety data sheets were then prepared. The former by-products from the acrylic acid unit were named Baycryn® Extend 1902; those from the butyl acrylate unit, Norsocryn® Extend 1901. Marketing began in 2003.

Thanks to the reduction in transportation and waste disposal costs and the revenue generated by the sale of these two products, the initiative has been very positive from an energy, environmental and financial standpoint.

## ● Rehabilitation

When operations are shut down on an industrial site, the site condition must not pose a hazard for people or the environment. Potential hazards are often related to historical soil contamination. The right thing to do may not be to remediate the soil immediately, but rather to carry out a risk assessment study using the source, transfer and target method. The results of the analysis and the final use of the site (for example, construction of a new industrial facility or rehabilitation for commercial or residential use) will determine whether remediation is necessary and to what extent.

Most of the soil contamination that we have to deal with today was either already present on sites that were previously owned and operated

by other industries or else stems from previously acceptable practices that are no longer tolerated in light of current knowledge. As a result, a large number of depots and service stations designed back when containment measures were less stringent are being rehabilitated.

The Chemicals business is also concerned by this issue. It has the most extensive experience in rehabilitation, through work performed over the past 20 years in the United States by Atofina Chemicals and Atofina Petrochemicals. As for water treatment, we have internal capabilities at the Lacq Research Center that enable us to develop innovative treatments and help supervisory teams verify that they are deployed correctly.

### Rehabilitation of the Granville Site in France

Following the gradual shutdown of operations at the Soferti plant in Granville, Normandy, founded in 1832 to manufacture fertilizers, the site has been under rehabilitation since September 2003. The operation began in the 1990s with studies to assess the residual impact of earlier activities. Precautionary measures were soon introduced to protect the environment. This was followed by the awarding of a contract to a specialized engineering firm to design a comprehensive reclamation plan for the site.

A detailed report highlighted the complexity of the subsurface and the presence of underground water, making more extensive studies necessary. A number of boreholes were drilled to determine the hydrogeology, geology and condition of the groundwater.

### Environmentally-Friendly Drilling Fluids

For more than ten years, Total's Specialty Fluids Department has been producing drilling fluids for oil-based muds, which are mainly used offshore to lubricate and cool drillbits, bring cuttings up to the surface, and balance pressure between the reservoir and the surface.

Responding to extreme drilling requirements, such as very deep water, high pressures and high temperatures, new fluids have been developed in close partnership with Exploration & Production researchers. To meet environmental and safety standards, they were also designed in close cooperation with environmental authorities to ensure that they are as biodegradable as possible, have low ecotoxicity and a minor environmental impact, and comply with labor legislation. These advantages enabled the new fluids to quickly win over leading operators and dominate the market.

This survey was the basis for a set of recommendations, and after consultation with the municipal authorities of Granville and Donville-les-Bains and the Regional Industry, Research and Environment Directorate (DRIRE), an extensive site rehabilitation plan was launched, covering:

- Downstream excavation of contaminated soil.
- Secure upstream storage of the excavated soil.
- Efficient, sustainable containment of the stored soil.
- Returning clean water to this environment.

To provide comprehensive information and respond to any concerns, neighbors were sent a document detailing the type and timetable of the work, which is scheduled for completion in 2005.

## Developing the Best Remediation Processes

Total has forged extensive experience in stimulating and controlling hydrocarbon biodegradation, i.e. using microorganisms to decompose hydrocarbons into simple molecules, such as carbon dioxide and water.

We are helping to develop controlled natural attenuation, the least aggressive method of soil and groundwater remediation. Based on the natural breakdown of hydrocarbons in the soil, this technique consists of ensuring that the necessary conditions are in place and will remain so throughout the remediation process.

Relatively rare in Europe but widespread in the United States, this method's many advantages include its in-situ, non-invasive, reversible nature and its financial and technical advantages. Convinced of its benefits, Total is conducting research with the *Ecole Polytechnique de Montréal* and France's South Aquitaine Environmental

Association (APESA). We are also a member of the Network for Industrially Contaminated Land in Europe (NICOLE), which brings together ten or so volunteer manufacturers to share their experience and methodology in the area of natural attenuation.

Total has tested natural attenuation on two sites to demonstrate its validity. One was a petroleum product depot in Le Mans, France, that leaked gasoline into the sandy subsoil; the other, a decommissioned service station on Ashley Road in the London suburbs, whose buried tanks have contaminated groundwater. In both cases, natural attenuation proved effective, resulting in the gradual, spontaneous elimination of light cuts and BTEX (benzene, toluene, ethylbenzene, xylene). The results of the Ashley Road test were presented in November 2003 at a conference at Sheffield University attended by organizations associated with the project, the Environment Agency of England and Wales, Leeds University, Waterloo University and Shell Global Solutions.

When the amounts of hydrocarbons to be treated are too great or climate conditions too harsh, nature needs assistance in the form of artificial stimulation of biodegradation. Total, which has long studied this problem, has developed and manufactures the Inipol range of products to accelerate the biodegradation process by encouraging the proliferation of microorganisms, in particular by providing the nutrients needed to ensure optimum biodegradation of hydrocarbons.

Inipol was recently demonstrated in the Komi Republic, Russia, in a trial to remediate a vast area of tundra polluted by oil (see also the *Sharing Our Energies 2002* report). We used Inipol +, the product best suited to the prevailing harsh climate. The first phase of the treatment, begun in summer 2002, has produced satisfactory results. Soil pollution measured over a depth of

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View of a unit at the Provence refinery in La Mède, France.



20 centimeters decreased by 76% between August 2002 and September 2003. Our Russian partner company is planning to continue the treatment, through a transfer of our expertise and technology.

This work, performed and monitored in cooperation with Greenpeace Russia and a number of other NGOs, also involves the State Polar Academy in St. Petersburg, with which we have been cooperating since 2001. The technical and scientific cooperation agreement between Total and the Polar Academy was renewed in June 2003 for another two years. By training highly qualified environmental specialists and conducting environmental and social studies, we hope to create a network of environmentally aware stakeholders in Russia in the near future.

## ● Promoting Prevention

While managing legacy problems and learning from them, we are also deploying prevention initiatives during construction of new units and upgrading of existing ones. Initiatives include eliminating identified causes of chronic pollution (for instance, single-wall tanks and pipes are gradually being phased out of our European service station network), upgrading equipment that could potentially cause pollution on sites (for example, by enhancing containment), and examining what steps could be taken to prevent pollution in future installations.

### Exploration & Production: Interactive Pollution Control Plans

**Our Exploration & Production subsidiaries have prepared pollution control plans that describe the people and equipment to be deployed in different incident scenarios. These plans were originally printed documents, which created updating problems. In 2003, therefore, Total created a prototype**

**interactive plan posted on subsidiaries' intranets, which means that all participants have access to the same version in the event of a crisis. The prototype has been used successfully since March 2003 by Total E&P Indonesia and is now offered alongside the "paper" version to subsidiaries when they update their plans.**

## ● Decommissioning Offshore Platforms

The end of life of oil fields and what happens to decommissioned installations is another major issue for the industry, as illustrated by the planned July 2004 shutdown of production from the Frigg field in the North Sea (see the *Sharing Our Energies 2002* report).

The field, which has been in production for more than 25 years, is reaching the end of its life. The decommissioning of its structures is one of the biggest operations of its type ever performed, covering six platforms in a water depth of more than 100 meters, straddling the U.K. and Norwegian sectors of the North Sea. In 2000, Total began a wide-ranging consultation process involving the U.K. and Norwegian public authorities and some 40 stakeholders, including national agencies, scientific institutions, universities, environmental organizations, and fishermen's associations. An action plan was then prepared that takes into account the comments made at each stage of the project. The decommissioning work, which will begin in the second half of 2004, will continue until end-2012, a timeframe that reflects the amount of work involved.

This project is a major environmental and safety challenge. Built in the 1970s, the Frigg installations were not designed to be removed, which is now required by the OSPAR 98/3 decision, which stipulates that decommissioned

## Refining: A Major Census

In 2003, Refining decided to analyze its sites using the internal Environmental Risk Assessment method. Worldwide, 14 Total refineries and two refineries\* for which we provide technical support were visited during the year to assess risks related to the history of each site (chronic pollution) and its sensitivity in the event of a major environmental accident (acute pollution). The study will be followed by verification and consolidation work that will form the basis for an action plan to be prepared in 2004 after validation by each site. This assertive approach is already having a positive impact, encouraging exchanges of experience among refineries in different countries.

\* The facilities were located in Belgium (Antwerp), Cameroon (Sonara), France (Donges, Feyzin, Les Flandres, Grandpuits, Normandy, Provence), the French West Indies (Sara), Gabon (Sogara), Germany (Leuna), Italy (Rome), the Netherlands (TRN), the United Kingdom (Lindsey Oil Refinery, Milford Haven), and the United States (Port Arthur).

offshore installations must be dismantled and brought onshore. However, derogations can be obtained on a case-by-case basis, notably for concrete platforms and the lower section of steel structures.

After a detailed examination of the technical and human risks associated with each solution considered, an environmental impact assessment (EIA) with a socio-economic section, and a cost analysis — all audited by independent organizations — and three years of public consultation, the recommended dismantling program is as follows.

- The three concrete structures will remain in place, since their removal presents significant technical and safety problems; specific measures will be introduced to protect marine activities, such as navigation and fishing. The signatories of the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention) were consulted concerning the recommendation to leave the three structures, which have never been used to store oil, where they are. The consultation process was completed without objections in January 2003.

- The metal superstructures and substructures will be removed and taken onshore to be reused or recycled wherever possible.
- The 20-centimeter layer of drill cuttings at the foot of the platforms will remain in place, since the study demonstrated that this was the least environmentally damaging solution.
- All pipelines and cables within a radius of 500 meters that have not been buried will be removed.

The Norwegian and U.K. authorities approved the Frigg decommissioning plan on September 26 and November 18, 2003 respectively, with the exception of the TCP 2 concrete substructure, located in Norwegian waters, on which the Norwegian Parliament will decide in spring 2004.

## Promoting Environmental Management

In 2003, the Sustainable Development and Environment Department consolidated its network of correspondents in the subsidiaries, improved reporting processes, especially for the environment, and in agreement with the businesses set demanding short and medium-term environmental objectives that demonstrate our commitment in this area.

Systems specifically tailored to each of our businesses have long been in place to manage our environmental performance, as well as safety and quality performance. These systems underpin the five-stage continuous improvement process that consists of setting objectives, implementing initiatives, measuring results, monitoring performance, and reporting data.

In addition, this voluntary process, which is based on information, feedback, dialogue, awareness and training for all, is being bolstered by certification to ISO 14001 standards, an international benchmark for the introduction of environmental management systems.

Certification also represents external recognition of these systems by an outside party, because it is earned on the basis of independent compliance audits performed every three years.

Initiated in 1997, the certification process was actively pursued in 2003. At year-end, a further 34 sites had earned ISO 14001 certification, raising the total to 159, taking into account the sale or closure of seven sites in 2003.

**We anticipate that 50% of our major sites will be ISO 14001-certified by 2005, a figure that will rise to 75% by 2007. Major sites are defined as those accounting for 80% of impacts, such as the main upstream production sites, refineries, large depots, and principal chemical plants.**

# Maintaining Biodiversity

Still relatively unknown just a few years ago, the concept of biodiversity has today become a major global concern. The oil and gas industry is in the front line, since it operates in contact with a wide variety of fragile ecosystems, such as deserts, mangrove forests, tropical forests, tundra, and deltas. Total has long recognized the importance of biodiversity.

Our environmental assessments examine the potential impact of projects on biodiversity, which is a key criterion for project approval by management committees at the most senior level.

We are currently strengthening and broadening our commitment to biodiversity. We prefer to work closely with other stakeholders. We actively participate in industry forums, such as the International Petroleum Industry Environmental Conservation Association (IPIECA), that promote exchanges of experience. We are also identifying the sites where our operations could adversely affect vulnerable ecosystems and protected areas, such as World Conservation Union (IUCN) areas and wetlands covered by the Ramsar Convention, and will strengthen management systems where appropriate.

As well, the Total Corporate Foundation has helped to broaden our knowledge of biodiversity for more than ten years.

## ● Environmental Studies

The environmental baseline study (EBS) establishes an environmental baseline for a site before a project begins, so that the real environmental impact of operations can subsequently be assessed. Total has extensive experience in conducting EBSs, especially with regard to deepwater biodiversity, thanks to the BioZaire program offshore Gabon and Angola (see below).

In March 2003, a study of this type was performed on the Moho Bilondo field in the Congo (water depth of 550 to 850 meters). Another was performed in August 2003 in Nigeria along the route of the planned 150-kilometer gas pipeline between the Akpo and Amenam fields.

Another EBS, this time onshore, was carried out in Timimoun in the southern Sahara desert in 2003, after an exploration license was awarded to Total E&P Algeria and partners Sonatrach and Cepsa. The study surveyed sensitive areas, including the Timimoun and Tiberrhamine palm groves, assessed the impact of previous drilling on the soil and water, and inventoried fauna and flora, some of which are included on the IUCN Red List of Threatened Species.

### **The BioZaire Program**

Focused on biological research, the BioZaire program is being conducted in partnership with the French Research Institute for Exploitation of the Sea (IFREMER). It aims to enhance our knowledge and understanding of deepwater (500 to 1,500 meters) ecosystems, which are among the most astounding and least known in terms of biodiversity. The program, begun in 1999, covers a vast area offshore Angola and Gabon. In 2001, the BioZaire 1 and 2 expeditions described the benthos (organisms living on the sea bottom and depending on it for their subsistence) and its environment. In late 2003-early 2004, the BioZaire 3 expedition expanded on its predecessors by integrating a survey of megafauna in its sampling program and a hydrological survey near the Zaire Channel.

The environmental impact assessment (EIA) identifies a project's potential environmental impact and defines measures to minimize it. As part of the late-2002 extension of the GasAndes pipeline, which links the Neuquén basin in Argentina to Caletones, 74 kilometers south of Santiago in Chile, various environmental protection measures were deployed in line with the environmental impact assessment. For example, excavations helped preserve archeological resources. Special attention was paid to watering points for cattle, streams crossed by the trail, and the preservation of fragile sites such as the plains. In addition, to contain the pipeline's impact on flora, vegetation was replanted, thereby preserving endangered species such as the red cactus and certain trees specific to the region.

In the same way, an EIA was conducted before the 2002 seismic survey in Libya's Murzuq Basin to gather oil exploration data. After the assessment, a number of environmental measures were introduced to limit the impact of seismic acquisition in the basin, home to exceptional archeological treasures and remarkably diverse flora and fauna. A control study indicates that these measures prevented the seismic survey from having a significant impact on the environment, archeological sites and landscape. The seismic data confirmed the block's oil potential, and two exploratory wells will be drilled in 2004. The drilling program's environmental baseline study and environmental impact assessment have been conducted (rig location, access roads, etc.) and an onsite mission is planned to check that the measures recommended in the studies are being respected.

## The Total Corporate Foundation

Created in 1992, the Total Corporate Foundation contributes to our environmental stewardship, particularly in the area of maintaining biodiversity. Its initiatives focus on expanding scientific knowledge, protecting endangered species and ecosystems, especially offshore, and informing and raising public awareness.

### Expanding Scientific Knowledge

The Foundation participates in and finances a number of marine research programs, reflecting our extensive offshore operations. The Coral Reef Biodiversity program continued in 2003, and the main findings will be presented at the Tenth International Coral Reef Symposium in Okinawa, Japan, in June 2004. (For more details on this international research program, see the *Sharing Our Energies* 2002 report, page 31.)

In 2003, the Foundation also stepped up its partnership with the Salmon Foundation to protect salmon in France's Loire basin, conducting a study on young salmon survival rates.

### Protecting Our Natural Heritage

In 2003, the Foundation renewed its partnership with the French Federation of Regional Natural Parks, enabling the Parc de l'Avesnois, the Parc des Marais du Cotentin et du Bessin, the Parc des Boucles de la Seine Normandie, and the Parc Loire-Anjou-Touraine to undertake biodiversity-related projects.



#### 1

The Foundation supports the Porquerolles National Botanical Conservatory, affiliated with the Port-Cros National Park, in identifying and preserving specific, rare and endangered plant species in the Mediterranean basin.

The Foundation supported a number of projects in 2003 through the Atlantic Coast Fund, created in 2000 to restore ecosystems along France's Atlantic seaboard:

- Continued development of the center to clean birds contaminated with oil in the Parc de la Chantrerie, in partnership with the National Veterinary School in Nantes.
- Restoration of islets in Brittany to provide nesting grounds for seabirds, in cooperation with the *Conservatoire National du Littoral*, a public body that protects the French coastline. Sites treated included Les Glénans archipelago, the Quémènes islands, Cézembre, Tomé, and the Ile aux Chevaux.
- Preparation of an airborne laser (Lidar) topographical survey along the western seaboard and creation of the Reben national network for observing coastal biodiversity, in partnership with the French Research Institute for Exploitation of the Sea (IFREMER).

### Enhancing Public Awareness and Information

The Foundation emphasizes initiatives to enhance public awareness of the challenges of biodiversity. Sponsored by the Foundation, in partnership with IFREMER, the World Conservation Union and the Port-Cros National Park, the Entretiens de Port-Cros Symposium was held in September on the island of Porquerolles in France, on the topic of fishing and biodiversity. The symposium offered a forum to discuss positive and negative experiences in different countries, recognize the fragility of the ecosystems harboring natural resources, and recommend actions. CD-ROMs, DVDs and other reports are being prepared.

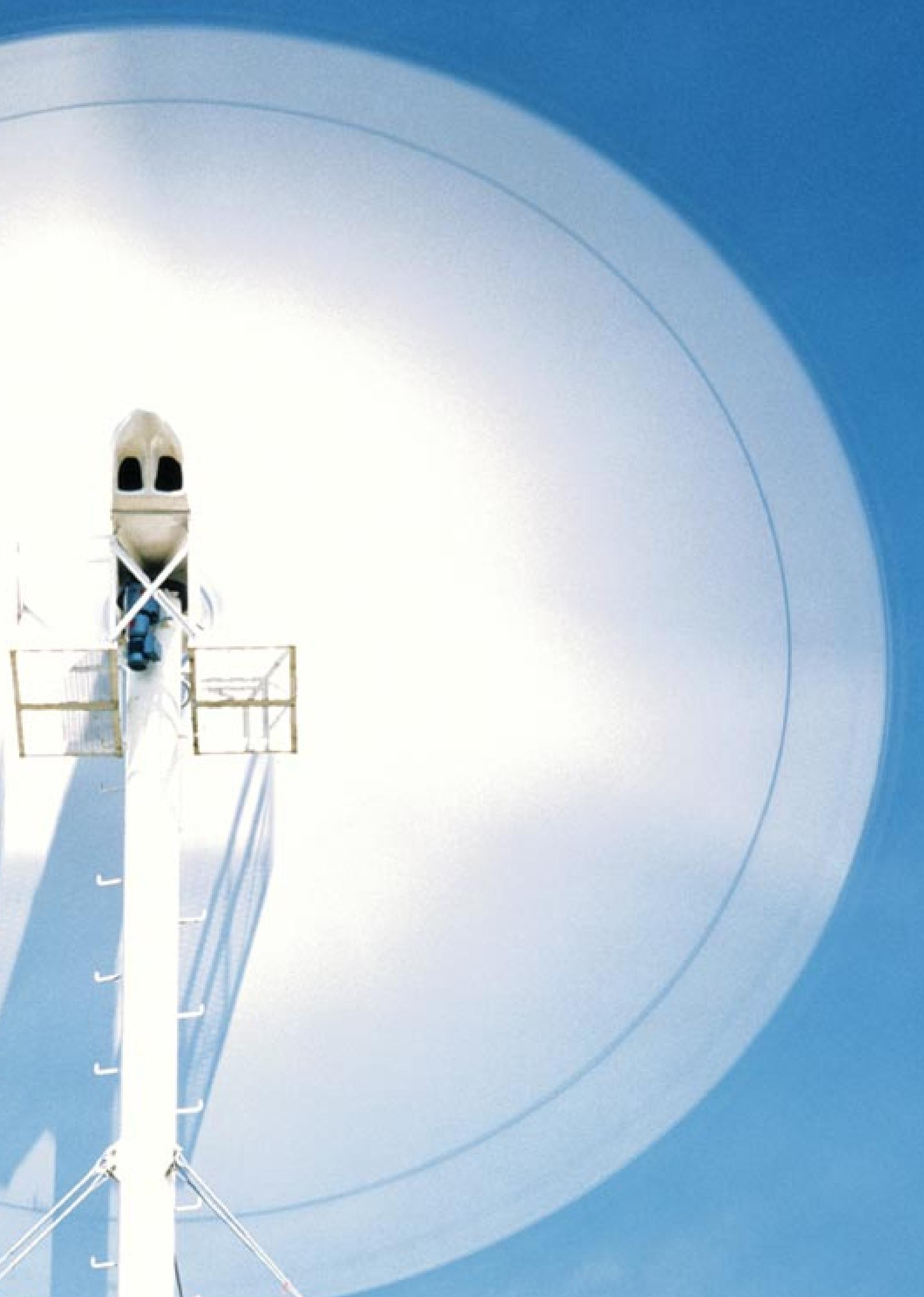
A partner of the Port-Cros National Park and the Porquerolles National Botanical Conservatory since 1992, the Foundation in 2003 helped to improve the park's visitor reception facilities (display boards at the Agricultural Village, plant labels, etc.) and supported a number of publications, such as an educational book-game on marine biodiversity for children aged 7 to 15, 3D digital maps of diving sites in the port, the reprinting of the Port-Cros National Park Atlas, and the preparation of a book to mark the anniversary of the park.

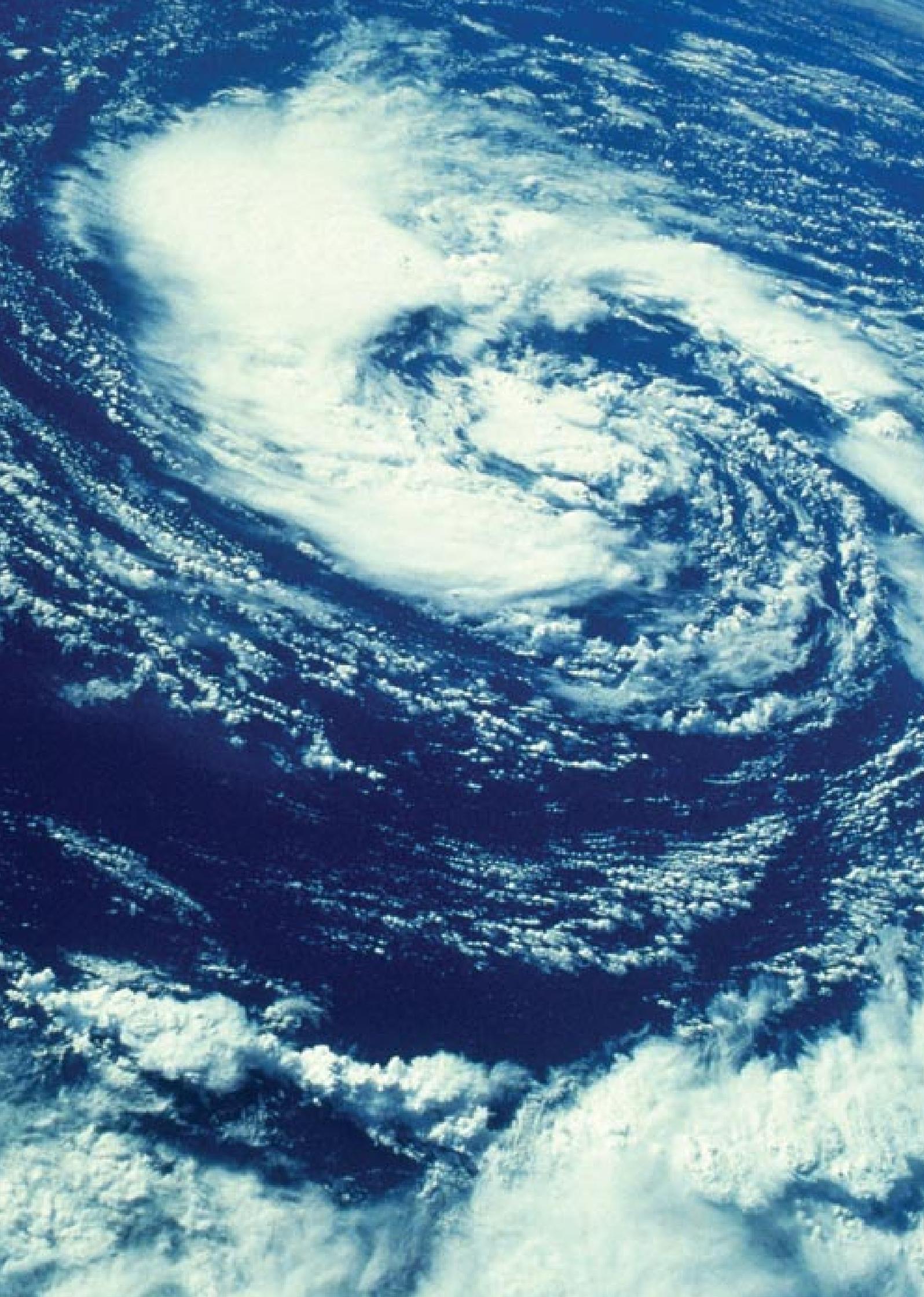
### Other Initiatives

The Foundation also subsidizes employee initiatives and supports actions deployed by subsidiaries or units. For example, the Foundation is supporting a Total E&P Bolivia employee's project to replant an endangered orchid species. Our Moroccan subsidiary, which signed an agreement with the city of Essaouira in 2002, worked on the planned urban park in summer 2003. Supported by the Foundation, the park is designed to protect the biodiversity of the Essaouira dunes and lagoons, currently threatened by urban development. A pedestrian area of 2,000 square meters was created, incorporating wooden walkways and observation platforms, and protected by a system restricting access to the lagoon area.

In 2003, Total Pacific, in partnership with the Center for Environmental Initiation, distributed 15,000 brochures on mangrove protection through Total's 32 service stations in New Caledonia. An instructional leaflet on the same subject was also published for schoolteachers, in order to enhance children's awareness of the critical nature of this fragile ecosystem, which is under threat from urban development.

Biodiversity initiatives are also conducted outside the Foundation. For example, Total Eco Challenge, an ambitious five-year reforestation program, was launched in Kenya in 2003, as part of a major national reforestation program. One hundred tree centers at our service stations offer customers low-cost saplings, enabling 100 million trees to be planted each year. The initiative is being conducted in partnership with horticultural labs and centers, as well as NGOs and local communities involved in similar projects.





# Finding Successors and Alternatives to Oil and Gas

Interview with Yves-Louis Darricarrère

President, Gas & Power, Member of the Executive Committee



**Thirty years ago, some experts were predicting that the oil era would be ending now. What's the reserves situation today?**

**Y.-L. Darricarrère:** Those experts didn't make sufficient allowance for technological advances, which have partially offset the impact of sustained economic growth. So not only do we still have oil in 2004, but we have enough for another 40 or so years. The most pessimistic assumptions today put the watershed oil production peak at between 2005 and 2010, and the most optimistic at between 2020 and 2030. These are the most widely-accepted ranges, but expert opinion is divided on this issue, and other dates have been advanced. Here at Total, we put it at around 2020 to 2030.

**Why are you relatively optimistic?**

**Y.-L. Darricarrère:** The forecast end of the oil era is continually being pushed back by advances in identifying resources and enhancing recovery. Not so long ago, developing new non-conventional resources such as extra-heavy crude oil and deepwater and ultra-deepwater fields was something straight out of science fiction, but is now an everyday reality for Total. We produce extra-heavy crude oil in Venezuela's Orinoco Belt for upgrading into light synthetic crude, and we recently brought on stream Angola's offshore Girassol and Jasmim fields, which lie in 1,400 meters of water. We are also using our technological proficiency to enhance the recovery of ultimate resources in place. That's where things stand for oil.

After oil, there's natural gas, with an estimated reserve life of around 60 years in the current state of technology. World natural gas demand is increasing faster than demand for other fossil fuels, spurred by gas' environmental properties: no unburned components are produced during combustion and the high hydrogen content of its main component, methane, means that it releases fewer greenhouse gases. This is a major argument in gas' favor in the face of climate change.

Gas currently accounts for 34% of Total's hydrocarbon production, and this percentage is growing, to the extent that we may one day be more gas than oil-oriented. In response, we are stepping up our activities across the gas chain, from identifying and optimizing resources to pipeline transmission and LNG transportation to retailing. For example, in May 2003 we inaugurated one of the world's largest cogeneration plants, which produces power and freshwater, in Abu Dhabi in the United Arab Emirates. And in a first for us, we have also acquired a stake in a regasification terminal project, in Mexico.

**So, according to you, there's no need to worry?**

**Y.-L. Darricarrère:** You can't be that categorical. Even though we're working to postpone an uncertain deadline, oil and gas reserves will be depleted one day. At present, they account for half of global energy needs, and energy demand is constantly rising, especially in countries experiencing strong demographic and economic growth, such as India and China. Our longer-term challenge will be to balance world oil and gas supply and demand. This major challenge affects both industry and citizens, and is also a critical political issue, because of the economic,

technological, geopolitical and social issues inevitably associated with our energy model. Not to mention the important environmental stakes, in particular climate change. We're not going to shirk our responsibility as an energy supplier, which is to find successors and alternatives to fossil fuels. We are therefore heavily involved in research on the energies of the future, which will all play an important role in tomorrow's energy supply.

#### **What are the energies of the future, in your opinion?**

**Y.-L. Darricarrère:** Nuclear power is bound to experience a revival, because it offers two major advantages: it doesn't generate any greenhouse gases and it is cost competitive. But efficient responses will have to be found to concerns related to installation safety and waste treatment. This will probably entail stricter management of production processes and even more effective management of the downstream.

Coal will continue to play a substantial role, but it generates large amounts of greenhouse gas. CO<sub>2</sub> sequestration research programs should overcome this handicap.

Renewable energies will also play an increasing role. They have undeniable advantages in the fight against climate change, but are difficult to capture, concentrate and process efficiently and reliably for end users. We will first have to identify, in cooperation with the public authorities and other stakeholders, a viable business model that can be developed on a large scale. We can probably count on further technological advances to drive enhanced installation productivity and profitability.

Two other promising alternatives are biomass, whose technology has already been mastered, and fuel cells, which offer interesting prospects.

#### **What are you doing to promote renewable energies?**

**Y.-L. Darricarrère:** Along with French national electric utility Electricité de France (EDF), we are partners in Total Energie, which was created in 1983 and today is a world leader in designing, assembling and installing photovoltaic systems. It is currently implementing large-scale rural electrification programs in isolated regions of Morocco and South Africa. Photovoltech, which we founded with Belgium's Electrabel and microelectronics lab Imec, has been producing advanced photovoltaic cells in Tienen, Belgium, since late 2003. In addition, we are highly committed to biofuels derived from biomass, which we are developing with farmers.

In the area of wind power, we are focusing on understanding wind, wind turbine structures, and the interaction between wind farms and the power grid. In November 2003, we inaugurated our first wind farm, at our Mardyck refinery near Dunkirk, France. Five latest-generation wind turbines with a combined capacity of 12 MW are meeting the domestic electricity needs of 15,000 people, while foreshadowing major developments in the future, especially offshore.

At Total, renewables are a long-term industrial process.

Other technologies that we are examining include fuel cells, which are capable of continuously converting a mixture of oxygen and hydrogen into electricity. We are active in this area through our Chemicals business — Atofina is conducting research on the possibility of using its polymers in the fuel cell core — as well as through our fuel production and retailing operations. We have created a hydrogen skills center in Berlin, where we opened one of Europe's very first hydrogen service stations in October 2002.

#### **Do you think that renewable energies will ever replace conventional energies?**

**Y.-L. Darricarrère:** Renewable energies other than biomass accounted for 2.7% of the world's primary energy demand in 2000. In a generation's time, they are forecast to account for a still modest, but much more significant share, with hydroelectricity, wind power and solar power as the main contributors. But in 2030, we will still be relying on oil and gas to satisfy a large portion of the planet's energy demand.

# Extending the Life of Oil and Natural Gas Resources

According to the International Energy Agency (IEA), world oil demand is forecast to increase from 3.5 billion metric tons a year in 2000 to 5.5 billion metric tons a year in 2020, with the transportation industry's share rising from 50 to 56% over the period.

Estimates of world reserves now stand at approximately 40 years for oil and 60 years for gas, but these calculations are somewhat elastic. Proved reserves refer to the amount of oil and gas that can be recovered using currently available technologies, but continuous improvements and active exploration worldwide will uncover new supplies, which means that the life of resources could be significantly extended. Two decisive drivers in this process are optimizing producing fields and exploring non-conventional fields.

## ● Optimizing the Potential of Mature Fields

We are pursuing our efforts to grow existing field reserves by enhancing recovery of ultimate resources, thereby extending the production life of mature fields whose output has begun declining in Gabon, Cameroon, the North Sea and the Middle East.

The economic stakes are high, considering that more than 60% of the oil in place is untapped in an end-of-life field.

But constant technological developments now let us meet challenges that seemed insurmountable just a decade ago. A host of innovations — including 4-D seismic, numerical flow simulation, horizontal and extended reach wells and multi-drain drilling, reentry into existing vertical wells to drill horizontal drains and enhanced recovery processes — has made it easier to identify and locate potential reserves and to access and develop them cost effectively.

## ● Developing Non-Conventional Resources

We are also extending our reserves by developing non-conventional resources, a category that encompasses specific types of oil or gas or reservoirs with extreme locations or properties. Technological advances mean that fields previously undeveloped because they weren't technically or economically viable are now offering new opportunities to Exploration & Production. Total leads the industry in three segments characterized by their extreme conditions: extra-heavy oil (less than 12°API), deepwater (500 to 1,500 meters) and ultra-deepwater (1,500 to 3,000 meters) fields, and high-pressure, high-temperature reservoirs.

### Extended Reach Wells

Horizontal drilling has become increasingly widespread since the mid-1980s. Although horizontal wells cost more to drill than vertical ones, they can be three times as productive.

Seismic surveys are now so accurate that they can define the exact configuration of a reservoir to within roughly 15 meters. The challenge is to land the well optimally to connect the one to five-meter-thick oil-bearing layers over a two-kilometer length, at a depth of up to 4,000 meters and a distance of eight to 11 kilometers.

Extended reach horizontal wells (with a five kilometer-plus horizontal extension) are ideal for ecologically sensitive regions, populated areas and offshore drilling. They reduce the number of platforms, and in some cases eliminate them altogether by making it possible to drill offshore fields from the coast. One example is the Ara field in Tierra del Fuego, Argentina, which is 11 kilometers offshore.

### Heavy Crude Oil

The Orinoco Belt in Venezuela and the Athabasca region in Western Canada contain vast amounts of heavy, viscous oil that is nearly immobile in the reservoir, making it difficult to recover. With a 47% interest, Total is the leader of Venezuela's Sincor project, which began crude production on schedule in December 2000 and upgrading in March 2002. Some 200,000 barrels a day of viscous 8.5°API crude are extracted from the sandy reservoirs and diluted with naphtha to 16°API before being piped 200 kilometers to the Jose facility on the Caribbean coast. There, an upgrader converts the extra-heavy oil into Zuata Sweet, a high-grade light (32°API) synthetic crude with less than 0.1% sulfur that is exported to the United States.

Barely tapped, extra-heavy oil reserves will begin to deliver their enormous potential over the next few years as new technology enhances recovery. In view of the tremendous stakes, we leveraged our experience with the Sincor project to acquire a 43.5% interest in the Surmont lease in Canada's Athabasca region on January 6, 2003 and gave the go-ahead for the first phase of extraction on December 15, 2003. The project will use Steam Assisted Gravity Drainage (SAGD), a technology in which steam is injected directly into the oilsands to heat the heavy crude, which can then be recovered in a semi-liquid state and pumped to surface installations for processing.

### Deepwater Resources

The bringing on stream of the Girassol field in 1,400 meters of water offshore Angola in December 2001, followed by Jasmim in December 2003, illustrates our proficiency in the sophisticated technologies required to develop major deepwater fields. Located in the prolific Block 17, which Total operates with a 40% interest, Girassol and Jasmim are the first of the 15 fields discovered there to begin production, and will be followed by Dalia in 2006.

Our expertise extends to gas production as well. Total operates the 92-kilometer Canyon Express pipeline system that gathers gas from the offshore Aconcagua, Camden Hills and King's Peak fields in the very deepwater Gulf of Mexico. Lying at a depth of 2,198 meters, it sets a world record for deepwater pipelines. Its construction entailed the development of cutting-edge subsea technology, including deepwater multiphase meters to measure well production.

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**With the Girassol production platform in Angola, Total uses state-of-the-art technology to tap a deep offshore oil field lying in 1,400 meters of water.**



## Developing Natural Gas Resources

Demand for natural gas is growing faster than for other fossil fuels, due to its high energy yield, lower carbon content, and estimated reserves in the neighborhood of 60 years, making it a natural successor to oil.

A wide array of challenges remains to be met, such as developing gas reserves in Tierra del Fuego, Azerbaijan and Kazakhstan, as well as the associated gas from oil fields in Angola.

### ● A High-Pressure, High-Temperature Development

The Elgin & Franklin development in the U.K. sector of the North Sea is a prime example of high-pressure, high-temperature (HP/HT) technological prowess. Elgin came on stream in March 2001, followed by Franklin in September. Located about five-and-a-half kilometers apart, the two fields have similar wellhead platforms tied into a shared production platform. The development is an unprecedented technical achievement for the oil industry. In addition to being the deepest North Sea fields in production (approximately 5,500 to 6,000 meters), Elgin and Franklin are also the largest HP/HT development anywhere in the world (1,100 bar/200°C, compared with 600 bar/120°C typical at this depth). In 2003, the fields produced the equivalent of 225,000 barrels of oil a day, comprised of 15 million cubic meters of gas and 125,000 barrels of condensate.

When the decision was made to launch the project in 1997, some of the equipment, as well as certain drilling and production techniques, had yet to be tested in real-life conditions.

As operator with a 46.2% interest, we had to develop, qualify and test new procedures and equipment along the way, drawing on our prior HP/HT experience with the Lacq field in southwestern France in the 1950s.

### ● Natural Gas Transmission

Transporting gas from production sites to consumer areas is a very different matter from gas production. The most readily available — and easiest — solution is pipeline transmission. Total is a partner in the Interconnector, a 235-kilometer pipeline linking the U.K. and Belgium. We also operate and have a majority interest in GasAndes, the 463-kilometer pipeline that supplies Chile with Argentinean gas. It began operating in 1997 and was extended a further 94 kilometers in 2003 to serve Zone VI, south of Santiago, Chile.

In southern France, Total has extensive experience in gas transmission and marketing through our Gaz du Sud-Ouest (GSO) subsidiary, which operates Lacal, the only interconnector between France and Spain, the Cruzy-Lias section of the Midi pipeline from Fos to Toulouse, and the link between Lussagnet and Captieux in the Landes region. Our list of projects for 2005-2010 includes the Euskadour pipeline between France and Spain.



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Photovoltaic panels like the one shown here provide electricity to 3,000 homes in KwaZulu/Natal province, South Africa. By end-2006, 15,000 households and more than 90,000 people will have access to electricity.

## A Strategic Position in Liquefied Natural Gas

When pipeline transmission is technically or economically unfeasible because of distance, terrain or geopolitical conditions, the gas is transported as liquefied natural gas (LNG).

The LNG chain comprises three stages:

- Liquefaction.
- Shipping in dedicated carriers at a temperature of -160°C.
- Regasification at receiving terminals located near consumer regions.

A pioneer in the LNG industry, Total is a major operator with interests in five of the world's 17 liquefaction plants, accounting for nearly 40% of global capacity.

In October 2003, we signed an agreement with a Royal Dutch/Shell subsidiary to acquire a 25% interest in the Altamira LNG regasification terminal project on Mexico's east coast, our first such investment. Regasification terminals are a critical link in the LNG chain, and this project marks a new stage in our midstream deployment.

Reducing LNG chain costs is critical to developing major projects currently under study. We are exploring a number of research avenues, such as increasing liquefaction train unit size in large capacity facilities and developing floating plants.

# Developing Renewable Energies

## Photovoltaic Solar Energy

There are currently two types of solar energy system: photovoltaic panels that generate electricity from sunlight and solar collectors that transform sunlight into heat. Our involvement in solar energy dates back to 1983 and the creation of Total Energie, a joint subsidiary in which we and Electricité de France (EDF) each own a 35% interest. The company is a global leader in the design, installation and operation of photovoltaic power systems for business applications (mainly telecommunications), subsidized grid connections, domestic applications, and water pumping systems in isolated areas. Subsidized grid connection systems are primarily being developed in Germany, Spain and Japan to provide green electricity for consumer and business applications.

Photovoltaic panels transform 12 to 15% of the solar energy captured and are especially suited for decentralized rural electrification projects. Total Energie is a partner in two large-scale electrification projects, one in Morocco and one in South Africa.

In Morocco, subsidiary Temasol — jointly owned by Total Energie (35.6%) and Total Maroc and EDF (32.2% each) — is under contract to provide 16,000 rural homes southeast of Rabat and Casablanca with photovoltaic equipment by 2005.

### Photovoltaic Pumping in Madagascar

For the last three years, Total — via *Fondation Energie pour le Monde* (Fondem) — has provided a €40,000 annual subsidy to fund part of a photovoltaic pumping project in Madagascar to supply drinking water to about 10,000 people. Equipment for the program is purchased from Total Energie's local Tenema subsidiary. Today, Total Energie pumping systems have been installed in more than 2,000 wells and boreholes in Africa and provide drinking water to some 5 million villagers.

Fondem was created in 1990 by Total in partnership with a number of French ministries, the French Environment and Energy Conservation Agency (ADEME), Electricité de France, Gaz de France, and the Renewable Energy Observatory (Observ'ER).

From 4,000 in 2003, the number of equipped households is expected to increase to 7,000 in 2004. The contract awarded to Terasol by state-owned electric utility Office National d'Electricité (ONE) in May 2002 encompasses installation of the equipment and its operation and maintenance for a period of ten years. The 50, 75 or 100-watt system is designed to meet basic rural domestic needs in terms of lighting (four, six or eight light bulbs) and a 12V outlet to plug in a television, radio or cell phone battery charger.

The entire investment comes to €12.8 million, with 63% financed by an €8.1-million subsidy from ONE, which in turn received €5 million in assistance from German development bank Kreditanstalt für Wiederaufbau (KfW). The remaining funds will come from user connection fees (€1.6 million), shareholder equity and loans (€2.5 million), and cash flow (€500,000).

In South Africa, KES, a joint subsidiary of Electricité de France (65%) and Total (35%), is involved in a similar project to install equipment in 15,000 homes in KwaZulu/Natal province by end-2006. From 3,000 in 2003, the number of equipped homes is expected to rise to 4,000 in 2004. The contract signed with the South African government and electric utility Eskom in August 2002 includes the provision of maintenance and customer service by KES for 20 years following start-up. Total Energie's South African subsidiary Tenesa assembles the photovoltaic panels at its local facility (which has an 8 MW annual capacity) and installs them.

Total and Electricité de France will fund 39% of the €8.1-million project, the South African government 59% (in the form of a 3,500-rand subsidy for each user equipped with a photovoltaic system), and customers will cover the remaining 2% (via a 100-rand connection fee). In 2003, the average exchange rate was 7.54 rand to one euro.

These electrification projects are fully consistent with sustainable development objectives.

They provide remote populations with access to energy, create local jobs (thereby helping to stem the rural exodus and urban concentration), and promote the use of environmentally-friendly technology.

### Rural Electrification Equipment in Morocco and South Africa

In order to produce power, each house must be equipped with a generator comprising a photovoltaic panel and a battery, as well as an electronic controller. The panel converts 12 to 15% of the captured sunlight into electricity, which is then stored in the battery where it can be drawn on day and night. The controller automatically controls battery charging and discharging. Since the battery can store enough energy for five days, the system can run continuously all year round, even if the sun isn't out for a couple of days. What's more, users are guaranteed sustainable power supply, since a local subsidiary is responsible for the system's upkeep.

In addition to Total Energie, we created the Photovoltech joint venture in December 2001, in which we have a 42.5% stake alongside Belgian utility Electrabel (42.5%) and Imec (15%), Europe's largest independent microelectronics research center, based in Leuven, Belgium. Photovoltech makes polycrystalline silicon-based photovoltaic cells and modules and employs Imec-licensed technology that is more efficient and less expensive than existing processes.

Located in Tienen, Belgium, Photovoltech started production in early November 2003 with a 3 MW-peak capacity that is scheduled to reach 10 MW-peak in second-half 2004. The initial €10-million investment is in line with both Electrabel's and our goal of supporting the application of new technologies and assertively pursuing a renewable energy resources strategy in the field of power generation.



#### 1

In 2003, Total inaugurated its first wind farm, with an installed capacity of 12 MW, at the Mardyck refinery, near Dunkirk, France.

### Mardyck Key Figures

#### Civil Engineering, Roads and Earthworks

- 1,600 cubic meters of concrete poured
- 192 metric tons of reinforcements installed
- 188 piles representing a total steel weight of about 450 metric tons
- More than 20,000 metric tons of surfacing material
- 5 kilometers of road
- 5 crane platforms (600 square meters on average)

#### Transportation and Installation

- 60 special convoys
- 95% of the equipment delivered to site in a one-week period
- 3 weeks for the five wind turbines
- 1 crane of 800 metric tons used to full capacity
- 5 telescopic cranes of 80 to 300 metric tons used in support

### Photovoltaic Electrification of a Fishing Station in Senegal

Photovoltaic energy is an attractive alternative to generators for providing electricity for extremely remote fishing stations. With this in mind, Total Senegal funded a project to electrify the Rufisque fishing station in the suburbs of Dakar in 2003. The €7,500 investment covered the installation of eight 1.237-meter x 0.556-meter photovoltaic panels, 12 2V/460 Ah batteries, an inverter, and accessories to supply electricity to the fishing station and its two fuel pumps. In partnership with the *Office National des Phares et Balises*, we provided the pilot site with a lighted beacon and power supply (€5,600), as well as two additional panels and accessories (€1,500). At the end of the trial period, we plan to deploy this solution in other isolated fishing stations and, as in the case of Rufisque, supply the local population with any surplus energy.

## ● Wind Power

Since our initial commitment to solar energy more than 20 years ago, Total has gradually branched out into other renewable energies. On November 14, 2003, we inaugurated our first wind farm, at the Mardyck refinery, near Dunkirk, France. With an installed capacity of 12 MW a year, equivalent to the domestic consumption of 15,000 people, the five imposing, latest-generation wind turbines (40 to 50-meter blades mounted on 80 to 95-meter masts) combine high electrical output, a small footprint and low noise levels.

The wind farm features three different types of turbine: a General Electric model with a rated capacity of 3 MW (one of the biggest and most powerful in the world and the first of its kind to be installed), two Nordex turbines with a rated

capacity of 2.5 MW, and two Vestas with a rated capacity of 2 MW. Testing and comparing the three different technologies on the pilot farm will help us prepare future onshore and offshore developments for 50 MW-plus plants.

The Mardyck wind power plant is not just a full-scale test. It has been designed to supply electricity — which is sold to EDF and distributed to end users in compliance with specific wind power regulations — for several decades and must therefore blend into the regional fabric. Detailed studies concerning the environment, noise, visual integration, safety and local economic activity were conducted in cooperation with the main regional stakeholders and authorities concerned. Regular information meetings have been held since the project was launched and newsletters are sent to neighbors at each project milestone.

This roughly €15-million investment in the innovative Mardyck project demonstrates the depth of our commitment to wind power and our determination to help authorities achieve the September 2001 E.U. Directive target of increasing the share of electricity generated from renewable energy sources in Member states to 22% in 2010 from 14% in 1997.

### Wind Farm Control System

Each of the Mardyck wind turbines is equipped with an individual control system for specific automated processes and safety devices. In addition, Total has devised a central system that not only controls the turbines individually in accordance with operating requirements, but also monitors the entire installation, from production parameters to alarm system management and system shutdown in the event of a problem.

Although the facility was built to withstand gusts of more than 215 kilometers an hour, it is designed to automatically shut down when the wind reaches 90 kilometers an hour. Operating data is available at all times in three different places: the control room of the local maintenance provider chosen by Total, a display in the refinery's monitoring room, and our Paris offices.

## Biofuels

Biomass, which consists of organic matter from the land or sea, is another renewable energy source with considerable potential. The most common biomass resource is wood, traditionally used for heating and cooking, but biofuels can also be produced from oilseeds (rapeseed, sunflowers or soybean), sugar crops (sugar beets and sugarcane) and cereals (wheat and corn).

We are exploring two main types of biofuel: ethyl tertiary butyl ether (ETBE), which is synthesized from isobutylene, a refining by-product, and sugarbeet or cereal-origin ethanol; and vegetable oil methyl esters (VOME), or biodiesels, obtained by methanol reaction with oil from oilseeds (mainly rapeseed in France).

ETBE can be blended with gasoline at a concentration rising to as much as 15%. It has a high octane number, low volatility and reduces carbon monoxide emissions and unburned components. We are the only company in France to produce ETBE, manufacturing 219,000 metric tons a year at our Les Flandres, Normandy and Feyzin refineries. In Spain, our local partner Cepsa plans to produce 110,000 metric tons of ETBE a year at its Algeciras plant and a second unit currently under construction at the Huelva refinery. Total Deutschland's PCK Schwedt refinery participated in that country's fledgling ETBE production, and our subsidiaries in the United Kingdom and Belgium are studying the feasibility of converting sections of the Lindsey and Antwerp refineries respectively into ETBE units.

When added to diesel, vegetable oil methyl ester enhances lubricating power, which is necessary for injection systems to perform efficiently, and reduces emissions of black smoke. Although we do not manufacture VOMEs, we blend them with the diesel fuel sold at our service stations.

We buy up to 70% of France's annual VOME output of 220,000 metric tons, blending it in concentrations of less than 5% with diesel produced at our six French refineries, or in concentrations of up to 30% for captive fleets such as municipal bus fleets. Our Italian subsidiary also produces biodiesel, and Total Deutschland is planning to follow suit now that the government has given its approval.

The European Union Directive of May 8, 2003 encourages increased use of pure or blended biofuels, and sets ambitious targets for 2005 and 2010. As a committed pioneer with more than ten years' experience with biofuels, Total is carefully monitoring this situation and contributing to biofuel research in Europe. We are also exploring new avenues for the future, tailored to advances in engine technology, in particular synthetic fuels obtained from biomass gasification.

### A Web-Based Tool for Farmers

As a major agricultural supplier concerned with managing the life cycle of our products, we teamed up with the French Farmers' Union (SAF) to develop a free online self-diagnostic tool for farmers. Available on the Internet at [www.club-agriculture.com](http://www.club-agriculture.com) since December 2003, the Agricultural Safety and Environment Diagnostic Application (ADESA) allows users to check their farms for compliance with safety (for people and installations) and environmental requirements and to consult applicable regulations in France. ADESA is user friendly, tailored to different kinds of farms and consistent with sustainable agriculture goals.



#### 1

To reduce greenhouse gas emissions and diversify energy sources, Total manufactures biofuels from oilseeds such as rapeseed.

# Exploring New Technologies

## Hydrogen Fuel Cells

Due to the progress made in recent years, the hydrogen fuel cell is positioned as a promising alternative source of energy for at least three major applications: powering portable devices, decentralized power generation for home or business use, and powering automobiles. Both the solid oxide fuel cell (SOFC) and polymer electrolyte membrane fuel cell (PEMFC) technologies are based on an electrochemical reaction that continuously converts a hydrogen/oxygen mixture into electricity and produces water in liquid and vapor form. The primary appeal of these systems is that hydrogen can be produced from many different sources, including hydrocarbon reforming, synthesis gas from biomass, coal and oil residues, and water electrolysis using wind, hydro, nuclear, fossil fuel and other forms of power.

In the near term, fuel cell technology is expected to expand most quickly in portable applications (2005-2008), followed by low and medium-voltage stationary installations (2008-2012). However, fuel cells are not yet commercially attractive for the transportation industry, since they are far more expensive than traditional vehicle propulsion systems.

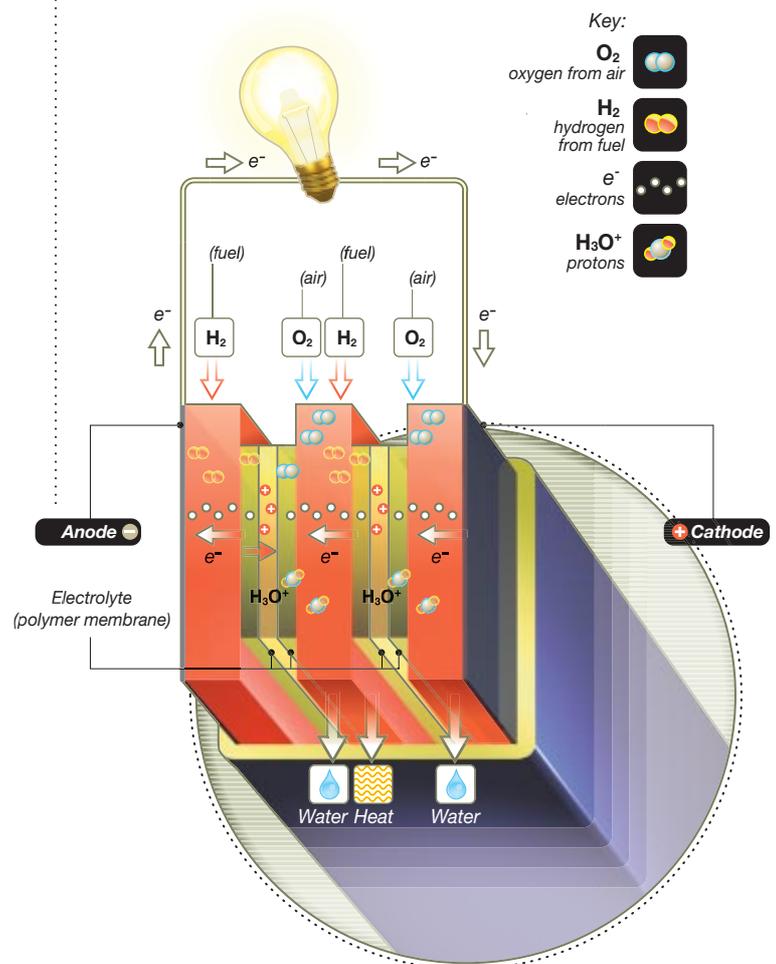
Total is exploring hydrogen fuel cell technology through a number of programs. As a producer and retailer of automotive fuels and a specialty chemicals manufacturer, we have adopted a comprehensive approach that includes gradually expanding our fuel line, manufacturing fuel cell materials, and assessing the technology's impact on our retail network. We are a partner in the Hydrogen Competence Center in Berlin, which comprises demonstration areas and a pilot hydrogen station that will supply captive public transportation fleets.

We are also working with Renault to determine the viability of reforming conventional fuels in onboard power generation applications and applications to supply propulsion cells. We performed a complete life cycle assessment across the fuel chain to measure the environmental effects of reforming more accurately.

In late 2003, we signed a framework cooperation agreement with Delphi, a leading global automotive equipment manufacturer, to jointly develop new equipment, fuel and petroleum products. This accord has further strengthened our already close collaboration in SOFC research, which began in 2001.

### Fuel Cell Basics

When hydrogen atoms in a fuel cell come into contact with the anode, they split into electrons and protons. The protons pass through the membrane to the cathode. The electrons travel to the cathode through an external circuit created by a charge imbalance between the positive and negative side, generating an electric current along the way. At the cathode, the electrons, protons and oxygen from the air combine to form water vapor.



## Energy Efficiency

Total is both a producer of primary and final energy and a major energy consumer. Our production facilities consume 17 million metric tons of oil equivalent per year. In response to this dual position, in 2000 we created the Corporate Energy Committee, an internal network of managers and experts from across our businesses to focus on energy use issues.

In 2003, we strengthened and broadened the Committee's missions to adapt to changes in the international energy situation and contribute more directly to enhancing our energy performance. We set up working groups focused on three key challenges.

The Energy Markets group tracks market developments (mainly in gas and power), liberalization and its effect on prices. The group also studies the economic impact of new European Union regulations, such as emissions trading.

The Energy Efficiency and the Environment group examines the environmental impact of energy use. It prepares our energy and CO<sub>2</sub> balances and explores ways to reduce emissions. It also tracks regulatory amendments concerning environmental protection, such as NO<sub>x</sub>, SO<sub>2</sub> and VOC emissions, and their probable impact on production processes, energy consumption and total energy costs.

The Long-Term Energy Outlook group consists of economic and energy forecasting experts. In response to growing demand, Total must broaden and diversify its energy sources, as well as examine energy trends in order to identify the structural and technical changes that are shaping the industrial environment.

In 2003, the three working groups focused on the effects of deregulation and new environmental restrictions (greenhouse gases) on electricity prices, the best energy audit practices for a production hub, and the importance of capturing and sequestering CO<sub>2</sub> by 2050.

Every year, the Energy Committee organizes a seminar for the managers, economists and technical experts who deal with these issues. The 2003 seminar was held in mid-October to discuss key issues such as greenhouse gases, cogeneration, the hydrogen market, and European Union environmental regulations.

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**Taweelah A1 in Abu Dhabi, United Arab Emirates, is one of the world's largest gas-fired cogeneration facilities.**



## ● Cogeneration

Cogeneration is a process that simultaneously produces power and another form of energy — usually heat. The development of combined heat and power systems addresses the need for more efficient, cost-effective energy management.

A cogeneration plant harnesses the heat from turbine exhaust gases and directs it to a generator to produce steam. The steam can be directly utilized by an onsite industrial process or used to feed a district heating system. In the case of a combined cycle plant, it can also be partially reconverted into electricity via expansion in a steam turbine. These techniques have an energy efficiency of 55 to 60%, in some cases more than 80% for the most advanced cogeneration units that capture heat from low-pressure steam. In comparison, the efficiency of a gas turbine, like that of a thermal engine, is between 30 and 35%. Because cogeneration and combined cycle plants utilize less primary energy, they release fewer greenhouse gases (CO<sub>2</sub>) than separate production of the same amounts of energy.

Total already deploys cogeneration technology at some of its sites and is currently installing a system at the Normandy refinery. When the 250 MW unit is commissioned in second-quarter 2004, it will supply the refinery with 375 metric tons of steam per hour, and the electricity will be sold to the national grid. In addition to satisfying our internal needs, cogeneration and combined cycle technology is being developed and promoted by Gas & Power as a commercial solution.

A benchmark example is the Taweelah A1 plant in the United Arab Emirates, which was inaugurated in May 2003 and is one of the

world's largest gas-fired cogeneration facilities. As a result of extensive upgrading and expansion of existing installations, the plant's gross power generating capacity has been lifted to 1430 MW. The low-pressure steam from the turbines feeds the desalination units, which produce 385,000 cubic meters of freshwater per day (see below). The upgraded unit produces six times more power and three times more water than it did previously and has reduced CO<sub>2</sub> and NOx emissions per kWh by 50% and 90% respectively, thanks to latest-generation equipment.

Gas & Power is currently involved in a number of similar projects throughout the world, particularly in the Middle East, reflecting our commitment to developing local gas resources and satisfying local water and energy needs.

## ● Energy-Saving Products

As part of our product life cycle management policy, we are working with Renault to develop innovative fuel-saving lubricants. Our Fuel Economy lubes help reduce friction, thereby lowering fuel consumption and subsequent CO<sub>2</sub> emissions. The results of our life-cycle analysis show that the fuel economy is equivalent to practically 30 times the energy needed to produce the lubricant.

Atofina also manufactures products aimed at increasing energy efficiency. Two such products with industrial and building applications are described below.

### **Taweelah A1**

Taweelah A1 in the United Arab Emirates is owned by Gulf Total Tractebel Power Company (GTTPC), whose shareholders are the Abu Dhabi Water and Electricity Authority (ADWEA - 60%), Total (20%) and Tractebel (20%). The facility produces heat and power, with the heat being used for seawater desalination.

The technical configuration is as follows:

- The fuel gas is burned in gas turbines that drive generators to produce electricity.
- The exhaust gas from the gas turbines is used to generate high-pressure steam in the heat recovery steam generators, thereby maximizing energy efficiency.
- The high-pressure steam is expanded in the extraction turbines, driving generators.
- The low-pressure steam from the turbines feeds the desalination units, which condense it.
- The energy supplied during condensation is used to produce freshwater from seawater by vaporization and condensation.
- At the desalination unit outlets, the condensed low-pressure steam is returned to the recovery steam generators, which transform it into high-pressure steam again, thereby closing the steam loop.

Plastic pipes are generally an extremely effective solution for reliable distribution networks. Polyethylene in particular is well suited for transporting gas and water, since pipes made from this material can be up to 50 meters long — compared with five to seven for steel, cast iron and PVC — thereby reducing the number of joints by almost 90% and lowering the risk of leakage. New fabrication processes enable us to produce polyethylene grades with enhanced properties. For instance, Atofina has developed a bimodal polyethylene, Finathene®, that is ideal for extra-large diameter pipes that are strong enough to carry pressurized water and gas.

In the building industry, Atofina's Certincoat® glass coatings considerably reduce the heat flow from the inside of a window to the outside, while at the same time enhancing solar energy transmission. The coatings improve comfort and generate a 30% gain in the energy used for heating and cooling. Marketed by Atofina's Additives unit, the products comply with Energy Star criteria set by the U.S. Department of Energy.

In addition to bringing energy-saving products to the market, Total is intent on achieving maximum energy efficiency at production sites. Two examples — one in Refining and one in Chemicals — illustrate this approach.

The La Mède refinery in France's Provence region utilizes liquid and gas fuel (gas produces less nitrogen oxide and sulfur dioxide emissions). Although the refinery has its own gas grid, a safety requirement making it necessary to have two independent sources of fuel meant that it had to adjoin auxiliary liquid fuel units to its boilers. A decision to hook up to the Gaz de France network in 2003 not only allowed the plant to remove the additional liquid fuel units, but also provided a backup system to its own gas supply in the event a spike in pollution forces it to cut air-borne emissions produced by the installations.

At Rokycany in the Czech Republic, the Hutchinson plant has achieved significant energy savings by recovering heat from steam released by the autoclave furnaces. The energy is primarily used to heat production facilities and administrative buildings, to heat process water used to clean equipment, such as fluid transfer hoses, and to preheat boilers. The production units' ventilation systems are also equipped with heat recovery systems. Thanks to all these measures, the plant has lowered its annual gas consumption by 400 MWh (out of a total of 22,900 MWh) and its power consumption by 120 MWh (out of a total of 6,900 MWh).

## ● Liquefied Petroleum Gas

Worldwide consumption of liquefied petroleum gas (LPG) is rising steadily. It grew 3.3% between 1990 and 2000 and is expected to increase another 3.2% between 2000 and 2010. As one of the cleanest fuels, LPG is used in the industrialized world for residential, commercial, and even industrial applications. Stored in bottles, LPG is equally destined to have a major environmental impact in emerging countries, notably by replacing wood as a cooking fuel and thereby limiting deforestation. But deforestation is not just related to domestic applications, since wood is used for light and craft industry applications, and here again LPG represents a viable option, as the following example illustrates.

The village of Bat Trang, around ten kilometers from Hanoi in northern Vietnam, has been a center of pottery-making for five centuries. Today, 1,000 small-scale potteries employ roughly 5,000 people and export 80% of their production worldwide, especially to the United States, Europe and Japan. Until recently, they used wood and coal to heat their kilns. These traditional fuel sources were first replaced by LPG in 1993 in response to government efforts to halt deforestation. Cleaner than wood and much cleaner than coal, LPG is also superior in terms of energy efficiency, reducing the amount of time needed to fire a batch of pottery from three or four days to just 12 hours. The time saved and reduced pollution are not the only advantages, however: with LPG, potters can adjust the heat more precisely and obtain better quality products. Today, 40% of the craftsmen have converted to LPG.

Total Gas Haiphong, which regularly inspects the equipment and supplies the LPG — either in 45-kilogram bottles or in bulk, delivered by tanker truck — instructs potters on how to use and handle the product safely.

### Gas-to-Liquids Technology

Gas-to-liquids (GTL) technology is a chemical process that converts natural gas to liquids to produce automotive fuel, lubricant bases, waxes and paraffins, and high-grade petrochemical bases. These products are very pure and clean, since they contain zero sulfur or aromatic hydrocarbons.

There are a number of processes for synthesizing liquids from gas:

- Conventional GTL technology mainly converts natural gas into naphtha and diesel fuel. The disadvantages of the Fisher-Tropsch process are low energy efficiency — the subsequent production of large quantities of CO<sub>2</sub> makes the process less environmentally-friendly — and high cost. Nevertheless, we are keeping an eye on developments in this field, since it is still a potentially promising outlet for our natural gas production.
- The dimethyl ether (DME) process converts natural gas into a fuel similar to LPG that can also be used in diesel engines and gas turbines. Total has partnered with a number of Japanese companies to build a pilot plant on the island of Hokkaido that successfully came on stream at end-2003 and is producing 100 metric tons of DME per day. Tests will continue for several months before a decision is made on whether to proceed with commercial production.
- Biomass GTL is an avenue of research that we are beginning to explore.





# Enhancing Safety, A Continuous Process

Interview with Pierre Guyonnet

Senior Vice President, Industrial Safety, Member of the Management Committee



**How does an oil, gas and chemical company manage industrial risk? What kind of organization does Total have to respond to this major challenge?**

**P. Guyonnet:** Safety has always been central to Total's businesses, because our operations involve manufacturing and handling flammable, explosive and toxic products. All three founder companies had their own risk management policies, which were harmonized following the mergers, in a process that retained the best practices offering the most effective protection for people and installations.

In particular, this harmonization was reflected in the signature by Chairman and CEO Thierry Desmarest of the *Health Safety Environment Quality Charter* in 2001, which expresses our fundamental principles concerning industrial safety, environmental stewardship, health, and the quality of our products and services. Its application is supported by our Health Safety Environment (HSE) organization, which has been strengthened at all levels. For example, an independent Industrial Safety Department was created at the holding company in January 2002 to implement and promote our industrial safety policy.

**How do you see your role? Can a company like Total be said to have a safety culture?**

**P. Guyonnet:** Industrial risk is inherent in our oil, gas and chemical operations. The people who work on our platforms and sites are on the front line and are fully aware of the critical importance of safety. Their culture makes them attentive to anything that can enhance and strengthen safety. Furthermore, it's our duty to do all we can to minimize risk. Enhancing safety must be a continuous process.

**You say that safety must be, and is, continuously improved. Yet you have had to deal with two major incidents, the *Erika* sinking and the AZF explosion. How did Total respond to these two exceptional situations?**

**P. Guyonnet:** We worked hard to learn as much as we could from these two events, as quickly as possible. We would have failed in our responsibilities if we had not done so. You're right to bring these incidents up. The sinking of the *Erika*, which profoundly affected people inside and outside the company, spurred us to further tighten our vessel vetting process, which is one of the toughest in the industry.

The AZF disaster in Toulouse was painful not just for everyone directly affected, but also for all Total employees. Because we still don't know what caused the explosion, we're systematically exploring every possible way to enhance safety. In January 2002, Mr. Desmarest clearly expressed his commitment to taking safety to a new level. And we're doing it. We have set ambitious Group-wide targets for improving technological risk management and workplace safety. We're targeting a more than 60% reduction in work-related incidents over the four years from 2002 to 2005.

### How will you achieve these targets?

**P. Guyonnet:** In early 2002, we approved a safety action plan designed to improve our performance in this area. For example, one component of the plan is updating facility risk assessment across the Group, which entails identifying and analyzing hazards, defining measures to reduce risk at source, and introducing efficient prevention and protection measures. Priorities are set in line with these assessments, which are supported by a four-year, €500-million investment program.

More generally, in a large group like Total, identifying and sharing best practices is a critical improvement driver, whatever the risk being considered. This is mainly done through skills networks bringing together line employees active in key safety areas across our businesses. The people who ensure safety on oil platforms, at refineries and in petrochemical plants have things to tell each other and share. Experience is also shared with other companies, within specialized committees of exploration and production, refining, marketing, chemical and other industry organizations. In addition, analyses of each accident also provide valuable lessons for everyone in the industry, not just a single company.

From an organizational standpoint, safety management systems are in place or being introduced in all our units, based on or adapted from a shared internationally recognized benchmark, the International Safety Rating System® (ISRS®).

### How far along is your safety action plan?

**P. Guyonnet:** At end-2003, thanks to initiatives undertaken in all our businesses, our results were in line with the reduction target for the total recordable incident rate (TRIR), which is the number of incidents with or without lost time per million man-hours worked by Total and contractor employees combined. The TRIR has declined 38% since 2001, exceeding the target of 30%, an outstanding result equivalent to 3,580 incidents averted in 2002 and 2003.

In the area of preventing technological risks, risk assessment studies have led to major programs to blastproof control rooms, protect units, and make hazardous materials storage and transportation safer, in particular in France and the rest of Europe.

At the local level, we work daily to strengthen dialogue on risk management with elected officials, neighbors and associations by opening our sites and encouraging wide-ranging discussion within local structures and institutions.

These initiatives are described in detail in the following pages.

### Total operates in countries whose regulations are less stringent than France's. How do you make sure that operations there meet the same demanding safety standards?

**P. Guyonnet:** That's a very important question. There's no such thing as a double standard in safety. Wherever we operate, we apply comparable standards for our own employees and for contractors, whose operations are sometimes more hazardous, such as plant construction, drilling operations, and subsea work.

For a very large multinational company, one of the main safety challenges is ensuring that methods and practices are consistent. This is not always easy, given that different cultures take different approaches to managing safety. Education and discipline are the keys.

### How do things work in practice?

**P. Guyonnet:** We apply the same criteria and the same ambitions in all our 130 host countries, aligning ourselves with best industry practices. Meeting our demanding standards requires sustained training and supervision of local employees. This transfer of expertise and knowledge contributes to the development of host countries, which is always appreciated by the local authorities.

# Managing Technological Risks

Total's technological risk management policy is based on risk assessment studies, whose findings help shape initiatives to prevent risks and to minimize the consequences of incidents when they do occur. Dialogue with outside parties is a critical element in this process.

On July 30, 2003, France passed the Technological Risk Prevention Act introducing a host of new provisions, especially regarding the management of urban growth around hazardous sites and dialogue with the public. The legislation also includes a significant labor relations component aimed at increasing participation in risk management issues by our own and contractor employees at Seveso-classified sites.

We contributed to the preparation of the Act, leveraging our experience as a multinational. At end-December 2003, we had 102 facilities classified "Seveso upper tier" in France, out of a total of 650, as well as a number of Seveso or Seveso-like sites in Europe and the rest of the world. We are therefore heavily impacted by the new legislation and intend to play a major role in its application.

## ● Reducing Risks at Source, Prevention and Protection Measures

In addition to the safety spending already integrated into industrial projects, in early 2002 Total approved a specific plan to strengthen risk management measures globally, entailing investments of €500 million over four years. The plan supports the usual safety expenditure with projects to reduce risk at source and initiatives to improve employee and equipment safety. Investments are selected in line with the priorities identified during risk assessment studies. Significant progress had been made in implementing the plan by end-2003.

### Chemicals

The Chemicals business spent €70 million in 2003 to build new blastproof control rooms, at the Carling plant for example, and to make the supply chain safer by reducing the amount of products stored, especially on sites manufacturing chlorine products or fertilizers. In addition to this plan-related capital expenditure, further investments will be made in the area of access control and site renovation (around €50 million over five years) and process safety.

Following talks with the French Ministry of Ecology and Sustainable Development concerning liquefied petroleum gas (LPG) storage, the industry has adopted a comprehensive policy of reducing risks that includes reconfiguring sites and covering spherical LPG tanks with earth when they are located in sensitive areas near cities.

Over the past decade, subsidiaries Totalgaz and Stogaz have covered the LPG tanks at six of their 13 sites in France. Other tanks will be covered between 2004 and 2008. In addition, detection equipment and spray systems will be installed at railcar and truck loading and offloading stations, while anti-intrusion and remote monitoring systems will be introduced to further enhance safety.

### Refining & Marketing

Investments in 2003 under the four-year safety action plan amounted to €46 million, with spending allocated to strengthening the control and plant rooms at the Donges refinery, protecting alkylation units at the Lindsey Oil Refinery, and preparing to remove a liquefied petroleum gas storage tank at the Antwerp facility.

### Exploration & Production

France's Lacq site prepared a plan to enhance plant safety after updating its risk assessment studies in 2002. The plan, deployed in 2003 and 2004, is reducing the amount of hazardous materials stored, installing additional equipment to detect and contain any leaks, and creating a new control room on the outskirts of the installations. The total cost of these safety enhancement measures is around €13 million.

Examples of projects being carried out under the plan in 2004 include reconfiguring the control rooms at the Normandy refinery in France and the Leuna refinery in Germany, improving fire-fighting systems in petroleum product and liquefied petroleum gas depots in France and the rest of Europe, and building a new control room at the Atofina plant in Gonfreville.

## From Risk Assessment to External Prevention Plans

The French Act of July 30, 2003 expanded existing legal provisions with a new resource for managing urban development around hazardous sites. Technological Risk Prevention Plans (PPRTs) prepared for each plant enable the existing habitat to be gradually altered area by area, depending on the type and degree of risk. It will also enable appropriate urban development regulations to be introduced for the future. The Act sets out the principles for financing these urban development plans, which will involve the government, the community and industry on a case-by-case basis. The prevention plan will be prepared and tracked in cooperation with Local Information and Dialogue Committees (see page 66).

The scope of the prevention plan will be determined by risk assessment studies, required for the first time by legislation. The Act stipulates that these analyses will take into account the probability, severity and kinetics of potential accidents. In a June 2003 circular, prepared in cooperation with industry and research organizations, the Ministry of Ecology and Sustainable Development provided a detailed description of a method for assessing risks based on a comprehensive analysis of plausible accident scenarios.

This specifically French policy, which is in line with the objectives of the recently amended European Union Seveso II Directive, represents a very proactive approach to existing conditions that sets France apart from other Member states. Meetings are being organized to harmonize approaches and extend best practices from each country. Total's contribution to this work consists of sharing our viewpoint and experience as a multinational.

1

Earth-covered spherical tank at the Totalgaz depot in Merlerault, France.



## Broader Dialogue

Total is developing broader dialogue with stakeholders around its hazardous sites worldwide. For instance, one way to develop transparency and dialogue on safety issues is to open industrial facilities to neighbors, which is one reason why in July 2002 the Chemicals business launched the *Terrains d'Entente/Common Ground*<sup>®</sup> initiative. In the past two years, 25 open houses have been organized under this initiative, enabling nearly 35,000 people to visit workshops, control rooms, laboratories and other facilities where installations and processes are presented by the people who work there. These encounters encourage the development of a safety culture shared by neighbors and site employees.

A wide variety of programs are regularly conducted to foster sustainable dialogue, including exhibitions, site tours, debates, and newsletters. The sites are also involved in educational outreach programs, such as Atofina UK's partnership with West Hill School in Stalybridge, the Industrial Class in Pierre-Bénite, and the Open School in Jarrie. The two French programs welcomed an entire class to the plant for a week, where they attended dedicated chemistry courses.

Lastly a dedicated Common Ground<sup>®</sup> Web site ([www.commonground.atofina.com](http://www.commonground.atofina.com)) has provided information on these local initiatives since fall 2003.

In 2003, more than 6,000 neighbors of 12 Atofina plants in Europe were surveyed, following on from perception surveys performed in France in 2002. In the United States, chemical plants began restructuring their already highly developed local outreach programs around the Common Ground<sup>®</sup> initiative.

More specifically in France, the Act of July 30, 2003 created Local Information and Dialogue Committees to promote regular, sustainable local dialogue on risks and risk prevention with Seveso-classified site stakeholders, including elected officials, neighbors, associations, manufacturers and governments. Total intends to participate fully in achieving this dialogue and transparency.

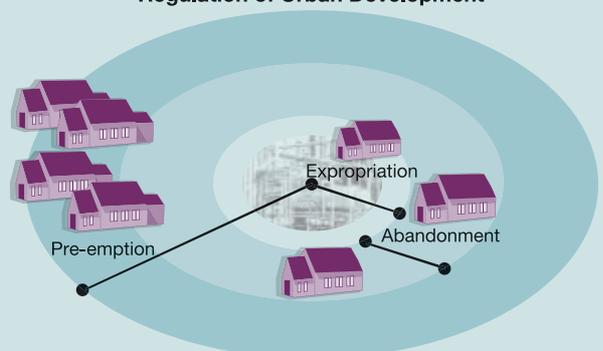
A July 2002 circular from the French Ministry of Ecology and Sustainable Development was sent to local authorities, recommending that committees be set up before the deadline, which meant that a number were created in 2003. This was the case, for example, around petroleum product depots, and represented a somewhat innovative approach for this type of installation. The stakeholders had an opportunity to get to know each other better and to more clearly understand each other's challenges and concerns. From an industrial standpoint, the initial meetings allowed us to present the installations, discuss their economic and regional benefits, and explain why they are located where they are. In addition, the depot managers clearly described the risks associated with petroleum product storage and distribution and explained the actual and planned investments aimed at reducing these risks.

Total has offered to test the provisions of the Act of July 30, 2003 on Technological Risk Prevention at three pilot sites in France, in partnership with the regulatory authority. The studies performed will identify the measures to be implemented at these sites to prevent and protect against risks. They will then be integrated into the assessment of the outcomes of each accident scenario.

The selected scenarios will be used to define the scope and content of prevention plans, such as areas to be expropriated, areas where homes put up for sale should be gradually repurchased (pre-emption by the town or abandonment by the owners), areas where existing buildings need to be reinforced, and the future regulation of urban development.

Each stage of the process is discussed by industry, the government and local elected officials.

### Regulation of Urban Development



At the first meeting of the committee in Cournon-d'Auvergne, near Clermont-Ferrand, France, in November 2003, the manager of the petroleum product depot presented recent investments to enhance safety and environmental protection. These included reconfiguring exterior access for trucks and painting tanks after discussions with the municipal engineering department. He also described the role of safety equipment, such as hydrocarbon detectors, overspill sensors and floating screens, as well as prevention processes related to organization. In this way, participants established a dialogue that will continue over time on very practical aspects of managing the risks associated with petroleum product storage.

Similar initiatives to inform local elected officials and neighbors are also encouraged at all Refining & Marketing sites outside France.

For sites where information and dialogue are a long-established practice, local information and dialogue committees will formally recognize and sustain these relationships.

The Atofina plant in Lavera, southern France, and the Naphtachimie, Oxochimie and Appryl subsidiaries take part in three types of local meeting:

- Meetings held at the initiative of the Municipality of Martigues to discuss safety and environmental issues (most recently, flares and fumes).

- Meetings that are more specific to the Lavera site, bringing together, at their initiative, local manufacturers and representatives of local neighborhood associations.
- Meetings called by the local authorities in preparation for the future local information and dialogue committees.

In 1990, the prefecture and industry operators set up a network to quickly provide information on plant events that could have an external impact. Depending on the severity and perception of the event, assessed using a predefined grid, information is faxed to the municipal authorities, the Regional Industry, Research and Environment Directorate, emergency services, and other concerned stakeholders.

## Safely Transporting Hazardous Materials

Risks also have to be managed during offsite transportation of hazardous materials. Our operations use a wide range of transportation modes, including marine, inland waterway, road, rail, pipeline and air.



**1**  
Class visit during an open day at the Atofina Jarrie site in France in October 2003.

In the United States, Community Advisory Panels are recognized as one of the best channels for communication between industrial plant managers and neighbors. Most of Atofina Chemicals Inc.'s production facilities have set up Community Advisory Panels that consist of the plant manager or his/her representative, neighbors, and representatives of the various public and private business and social organizations. The panel meetings are an opportunity for the plant manager to learn what neighbors expect, especially with regard to health, safety and the environment. For example, in 2003, the Carollton plant in Kentucky helped to set up a telephone alert system for county residents in the event of a chemical incident or a tornado warning. And the Crosby plant in Texas donated land to build a station for the Crosby Volunteer Fire Department (CVFD), in a location that will optimize firefighter response.

### Shipping Safety

Enhancing shipping safety continues to be a core requirement. As confirmed recently by worldwide statistics compiled by the International Tanker Owners Pollution Federation Limited (ITOPF), the number of accidents and spills at sea has been declining steadily for many years. This is the result of combined initiatives by oil industry operators, in which Total actively participates, and which should be pursued without letup.

Shipping is subject to national, European Union and international regulations, in particular concerning safety from vessel design to operation, including registration, certification, condition and maintenance. Before a company considers chartering a vessel, a wide variety of organizations have already intervened upstream, inspecting, certifying and insuring the vessel, as well as checking crew conditions and training.

In this complex environment, Total acts through industry organizations such as the Oil Companies International Marine Forum (OCIMF) or in conjunction with European Union authorities to improve the effectiveness of the system and regulations. In addition, we have our own charter policy and rules that allow us to exercise additional control to make transportation even safer.

In shipping, a core component of our safety strategy is to improve the management of a significant proportion of our fleet through time charters. We sign medium or long-term contracts with shipowners, which enhances our familiarity with time-chartered vessels. This means that we have a carefully managed fleet whose average age is much lower than that of the world fleet.

**On January 20, 2004, Total announced the signature of a time charter agreement with Sweden's Stena group. Construction of two P-MAX tankers, an entirely new concept, has begun, with delivery scheduled for 2005 and 2006.**

**The P-MAX concept supports our focus on controlling our fleet. As a result of the stricter safety requirements incorporated into these two ultra-modern vessels, we will enjoy state-of-the-art safety standards for the duration of the time charter.**

**These innovative tankers have two engine systems, double rudders and double propellers for maximum maneuverability and safety, an ergonomic bridge offering a 360° view, a double hull and enhanced structural strength. While their loading capacity is close to that of 70,000-ton Panamax vessels, their draft is nearer that of a 45,000-ton vessel, giving them outstanding operating flexibility.**

However, because time charters cannot meet all petroleum product transportation needs, capacity has to be topped up with spot charters. These charters can cope with a wide variety of routes and market needs, such as different products, sources of supply, technical requirements, and the specific features of certain routes or ports (channel width, shallow draft, ice, etc.).

In all cases, the vessels are selected on the basis of:

- National and international regulations, including the results of inspections by the flag country, the port country, and ship classification societies.
- Inspections by oil companies during stopovers in ports.

For product shipping, oil companies pool their information through computerized databases, such as the OCIMF's Ship Inspection Report (SIRE) system. Based on the information in these databases, oil companies apply their own vetting rules.

At Total, all charters are subject to the same vetting criteria and inspected by internal Oil or Chemical teams, depending on the product carried. Our vetting process is among the toughest in the industry. It comprises a wide range of requirements, including age limits on the vessels that can be chartered. These rules are reviewed regularly.

To carry petroleum products, Total will not charter tankers that are:

- Over 25.
- Over 20 for vessels over 30,000 metric tons.
- Over 15 for heavy fuel oil.

Atofina applies a similar approach for the transportation of chemicals. The Chemicals business has defined a vessel vetting policy that contains strict criteria and is based on the database operated by the Chemical Distribution Institute (CDI), an international organization that accredits independent inspectors and was created at the initiative of chemicals majors through their European industry association.

### Land Transportation Safety

In overland transportation of hazardous materials, initiatives are being pursued to achieve optimum safety by selecting the safest methods of transportation, improving them, closely supervising transportation-related operations on industrial sites, and ensuring central coordination. In addition, we participate in initiatives by national and international industry organizations to improve the entire hazardous material transportation system.

Initiatives launched or expanded in 2003 included pipeline transportation and road transportation projects. In the area of pipeline transportation, dedicated safety management systems have been developed by Atofina (chemicals) and Gaz du Sud-Ouest (GSO - gas) in France. At GSO, for example, the focus in 2003 was on holding safety meetings prior to fieldwork. In addition, Refining & Marketing prepared a set of safety rules for managing its pipelines, covering risk assessment, inspection and surveillance resources, safety equipment, and organizational procedures. These recommendations are intended to be applied widely across the Group.

Enhancing road transportation safety is based mainly on vetting carriers, training operators, strengthening the application of loading and offloading procedures, and auditing service providers.

We continued to deploy the PATROM program in our operations in Africa, the Mediterranean rim, the Caribbean and the Pacific, training drivers, assessing carriers and enhancing vehicle fleets (see case study on page 121).

To date, around 50 employees have been trained to act as instructors in the subsidiaries where they work. Most of the 55 Overseas Marketing subsidiaries are taking part in the process. In Kenya, 75% of drivers have received the initial training, while in Tunisia, 90% of full-time drivers have been trained. A partnership has also been formed with the Tunisian government to develop a hazardous materials driver vocational certificate.

In the area of vehicle inspection, most subsidiaries have inspected their entire fleet. Action plans have been deployed or are underway; in some cases, vehicles have been replaced. In addition, new contracts with stricter safety requirements are being signed with carriers. For instance, 90% of contracts in Burkina Faso have been restructured.

#### 1

**Truck driver training at the APTH center in Le Creusot, France, specialized in hazardous materials transportation safety.**



The internal Corporate Transportation Safety skills network is actively pursuing its work. In 2003, the coordination structure, which brings together around 100 professionals from the different units, extended its scope to ports and terminals and driving safety (see pages 77 and 78). It organized two specialized seminars, on pipeline safety and integrity and the role and tasks of transportation safety advisors and correspondents.

The new position of Transportation Safety Advisor, instituted by regulations, was gradually introduced at all European sites. The advisors monitor operations closely, thereby contributing to a significant improvement in safety.

## Occupational Safety

### Occupational Incident Rates Reduced in Line with Our Objectives

One occupational safety indicator that Total monitors in particular is the total recordable incident rate (TRIR), or the number of incidents with or without lost time recorded for our own and contractor employees, expressed per million man-hours worked. This indicator allows us to monitor trends and to set improvement objectives by business.

The criteria used by our businesses to classify accidents are similar to widely-used international benchmarks, such as those of the Occupational Safety and Health Administration (OSHA), the International Association of Oil & Gas Producers (OGP), and the European Chemical Industry Council (CEFIC). The consolidated results shown in the graph on the opposite page encompass all Total-operated activities worldwide.

The safety action plan approved in early 2002 is targeting a 60% reduction in the total recordable incident rate over four years. That would lower the rate from 15.4 incidents per million man-hours at end-2001 to six at end-2005.

Midway through implementation of the plan, and for the second year in a row, results are in line with this objective. The total recordable incident rate was 9.5 at end-2003 (versus a target of 10.8), down 38% since the beginning of 2002. This is a significant result, equivalent to 3,580 incidents averted. For a scope equivalent to that of other oil majors (oil and petrochemical operations only), our 2003 rate was six recordable incidents per million man-hours worked, down 52% from 2001.

Each business contributed to the overall improvement. The reduction in the TRIR in 2003 was 62% in Exploration & Production, 57% in Gas & Power, 51% in Refining & Marketing, and 30% in Chemicals, excluding SigmaKalon.

Lost time incident frequency (LTIF) can also be used to assess safety performance. This frequency has declined across Total, from 7.7 lost time incidents per million man-hours in 2001 to five in 2003. Gas & Power is the only business that has not posted a steady decline over the period, because of the change in scope between 2001 and 2003. Everywhere else, in particular in Exploration & Production, significant progress has been made. For a scope equivalent to that of other oil majors (oil and petrochemical operations only), our 2003 rate was 3.4 lost time incidents per million man-hours worked, down 38% from 2001.

Certain subsidiaries and plants have recorded substantial improvements in the past two years, reporting reductions of 50 to 80% in incidents. This is the case, for example, of our Russian, U.K. and Angolan exploration and production subsidiaries, of the Provence, Les Flandres, Grandpuits and Milford Haven refineries, of Marketing Europe's U.K. and Italian subsidiaries, and of Hutchinson's U.K. and Italian sites.

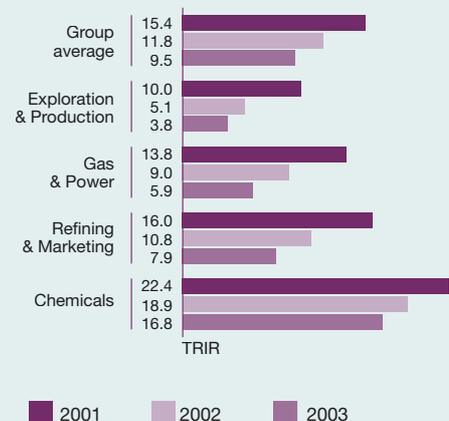
Safety initiatives and achievements in 2002 earned outside recognition from industry organizations and governments in 2003. In addition, internal awards encourage the sites that recorded the best safety performance. For example, the Chemicals business distributed its Atofina Safety Awards for the second year in a row. The 2002 distinctions went to four plants: Chatom (Sartomer USA), Bécancour (Atofina Canada), Barrow (Bostik Findley UK), and Livingston (Hutchinson USA).

## ● Incident Processing and Analysis

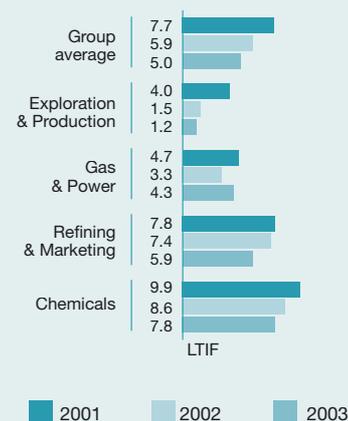
### Serious Accidents

Eleven fatalities due to work-related accidents were reported in 2003. Of this total, nine involved contractors. Six were due to road accidents (see page 77). These accidents were the subject of detailed analysis that resulted in action plans. Serious accidents are subject to cause tree analysis to work back to the underlying technical, organizational and behavioral causes. This approach was extended in 2003 to a certain number of significant, often complex events with a high severity potential.

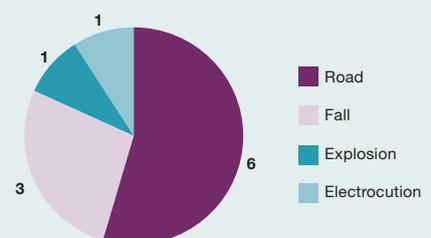
**Total Recordable Incident Rate (TRIR)**  
Group and contractor employees  
(number of incidents with or without lost time per million man-hours worked)



**Lost Time Incident Frequency (LTIF)**  
Group and contractor employees  
(number of lost time incidents per million man-hours worked)



**11 fatalities in 2003**



**Total Recordable Incident Rate (TRIR)**

**Group employees**

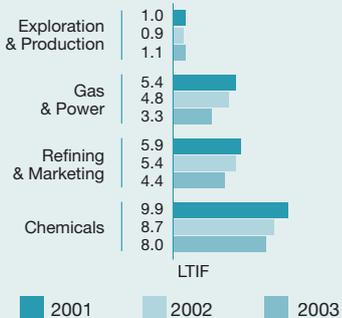
(number of incidents with or without lost time per million man-hours worked)



**Lost Time Incident Frequency (LTIF)**

**Group employees**

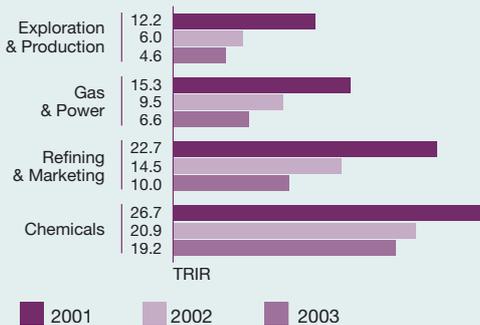
(number of lost time incidents per million man-hours worked)



**Total Recordable Incident Rate (TRIR)**

**Contractor employees**

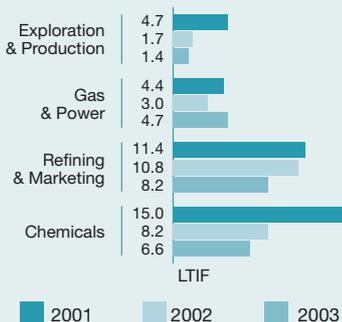
(number of incidents with or without lost time per million man-hours worked)



**Lost Time Incident Frequency (LTIF)**

**Contractor employees**

(number of lost time incidents per million man-hours worked)



**Incident Processing**

After being inventoried, incidents are processed using a method tailored to their real or potential severity. The aim is to learn from incidents and anomalies in order to reduce their frequency and avert serious incidents. The process of continuously reducing the number of incidents is therefore based on reporting anomalies and hazardous situations and on collecting effective feedback.

In 2003, we issued specific guidelines on harmonizing how accidents and incidents are processed and analyzed across all businesses. In addition, the businesses share their experiences through Safety Feedback Notices that describe the circumstances of an incident or significant near-miss, the immediate and underlying causes, and the related recommendations. More than 50 such notices were prepared in 2002 and close to 100 in 2003, which we consider to be a reasonable level. They are now also available on our intranets.

**Contractor Safety**

The safety of contractor employees working on our sites is a major concern. In France, occupational accident statistics show that, overall, the chemical and refining industries experience relatively fewer accidents than other industries. In 1999, the lost time incident frequency averaged 12 in the chemical industry, compared with 58 in construction (building and public works), 40 in transportation, and 24 across all economic sectors (French National Health Insurance data).

Contractors from all these industries work for us on our sites. We have to hire specialized companies, for example, for exploration and production operations that require specific capabilities and equipment or when temporary peaks occur during construction phases. Major turnaround maintenance shutdowns also require the participation of a large number of specialized contractors.

The graphs opposite give the total recordable incident rate (TRIR) and the lost time incident frequency (LTIF) respectively for Group employees and contractor employees.

Our priorities are to ensure that contractor and Total employees working on a site all embrace the same demanding safety standards and to significantly reduce the number and severity of occupational accidents. To do this, in 2003 we introduced a dedicated policy applicable to contractors to ensure a high standard of safety for all operations, whether performed by our employees directly or by contractors, based on:

- Coordinating our safety management systems and those of contractors.
- Restricting subcontracting.
- Developing partnerships and retaining the best companies.

The safety criterion is applied at all stages of the principal/contractor relationship, from preparing lists of approved contractors, issuing calls for tenders and shortlisting to training, coordinating and supervising work, and subsequent assessment.

### Turnaround Maintenance Shutdowns

General maintenance and upgrading are performed during turnaround maintenance shutdowns. Although the preparation process is long and painstaking, the work is performed quickly and requires the assistance of a large number of specialized contractors.

These operations, which shut down units and start them up again, require a wide variety of trades to work onsite at the same time, and all too often result in an increase in work-related accidents.

In 2002 and 2003, turnaround maintenance operations in Refining were the subject of a wide-ranging field analysis to define the ingredients of good safety performance and to identify and share best practices. For example, best practices for the Provence turnaround maintenance shutdown in early 2003 included:

- Very thorough technical preparation well ahead of time.
- Contractor qualification through in-house audits and inclusion of quantified and qualitative safety objectives in contracts, discussed beforehand with the contractors.
- Teamwork between principals and contractors to prepare hazardous work, ensuring that the installations would be available.
- Safety induction, training about site hazards, supervision of the work and subsequent assessment of results, in partnership with the contractors.



In 2003, Gaz du Sud-Ouest (GSO) introduced an action plan to enhance contractor safety on pipelaying projects. Detailed specifications were prepared, covering such areas as working hours, worksite reception, restrictions on subcontracting, and the organization of team meetings. The specifications also provided for site inspections and practical safety training for worksite personnel. GSO worked in partnership with a reputable prevention organization to create a “passport” of basic instructions for performing hazardous work and assessing performance.

1

Work at height during the turnaround maintenance shutdown at the Provence refinery in France.

2

GSO: Pipe welding operation, France.



All these factors combined to deliver significant results for the Provence Refinery, which reported no lost time incident for 600,000 man-hours worked by an average of 1,500 people onsite per day. Results were equally satisfactory for the Antilles Refinery in Martinique (with no lost time incident for 125,000 man-hours worked) and the Lindsey Oil Refinery in England (three minor lost time incidents for 410,000 man-hours worked). On a smaller scale, the turnaround shutdowns at the Oudalle plant in Normandy (no lost time incident for 60,000 hours worked) and Lacq (no incident with or without lost time for 50,000 man-hours worked) were flawless from a safety standpoint.

These operations were characterized by very thorough technical preparation, very strong management commitment, and stringent application of safety rules, including penalties (exclusion from the site) for employees or contractors who failed to respect fundamental rules, such as wearing individual safety equipment.

## Organizations and People

### Effective Organizations: Safety Policies and Safety Management Systems

In 2003, we introduced Group Safety Guidelines, which shape the documents specifying the requirements of our different businesses.

In particular, the guidelines provide more detail on some of the components of the *Health Safety Environment Quality Charter* signed by Chairman and CEO Thierry Desmarest in 2001.

Intended to be transposed and implemented by each business according to its needs, the guidelines are prepared in close cooperation with unit safety managers, as well as the relevant internal experts (from human resources, insurance, etc.) and external experts (France's *La Prévention Routière* road safety organization, for example). They cover key safety issues, organizational issues and topics identified as critical after accident analyses. Those issued in 2003 covered accident and incident processing, driving safety, work in confined spaces, and contractor safety policy.

As well, units are continuing to deploy safety management systems (SMS), which are a set of procedures and organizational principles that enable safety policy to be constantly tailored to results and changes in the environment. They generate a continuous improvement loop by defining objectives, deploying action plans, conducting performance appraisal audits, and monitoring corrective actions.

### Upstream

Developed for our exploration and production businesses, the MAESTRO safety management system has been extended across the Upstream since 2002. It is adapted from the International Safety Rating System® (ISRS®).

Gas & Power continued to deploy safety management systems in its units in line with their specific features. In 2003, the annual National Occupational Safety in South Africa (NOSA) audit, the internationally recognized benchmark for the mining industry, confirmed the five-star rating earned by Total Coal South Africa in 2002. The hydroelectric division of our Argentinean power subsidiary received Occupational Health and Safety Assessment Series (OHSAS) 18000 certification.

### Downstream

Refining pursued the policy begun in the 1990s of extending the ISRS® across all refineries. In 2003, audits performed by Det Norske Veritas (DNV) rated the Donges, Leuna and Antilles refinery safety management systems at level eight out of a scale of ten, taking to 11 the number of refineries with such a high rating. Eight DNV certification audits are planned in 2004.

Marketing units continued to deploy a version of the ISRS® tailored to the size of their sites. DNV performed the first reference audits in three plants and 27 depots in Europe: 21 achieved level three and nine achieved level two, on a scale of four.

## Chemicals

The global implementation of the ISRS® audit system begun in 2002 is a priority for the business. In 2003, introduction was successfully completed at all European Seveso-classified sites and the first audits of Atofina Chemicals in the United States were performed. The audit protocol is being extended to all hazardous sites in the United States and Asia.

## Emergency Response Organization

Preparing for emergency situations is one aspect of safety management systems. Despite all the precautions taken, we need to be prepared if an exceptional situation arises, which means that we have to have the necessary resources and an effective organization to handle and contain it.

Our crisis management organization is based on creating a local unit to manage the internal teams and liaise directly with specialized players in the field. The unit handles the event onsite until normal conditions are restored. It is assisted by the business' centralized crisis management unit, which comprises health, safety, environment, technical, insurance, legal, communications, human resource and other experts. Where necessary, a strategy unit examines potential scenarios at a distance, and supports the operational units.

The way in which this organization works was demonstrated during an accident that occurred in September 2003 on Route Nationale 112

between Mazamet and Béziers in France. A truck carrying thioglycolic acid, a product used in cosmetics, went off the road and plunged 70 meters down a ravine, in the process losing 60 of the 80 200-liter drums it carried.

The first priority was rescuing the driver, who was slightly injured. Atofina, which had manufactured the acid, activated its crisis management unit immediately. The unit quickly sent a response team to the accident scene and provided information on product toxicity to the authorities conducting the emergency operation. A manager on the scene liaised with local participants, such as firefighters, the police and the local authorities, as well as with the central unit.

The subsequent stages consisted of recovering the product safely (using protective equipment) and monitoring the resultant pollution. Atofina contacted the Lacq Research Center, received assistance from the Sanofi laboratory in Montpellier, and prepared a sampling plan to continuously monitor the thioglycolic acid content of the streams affected. This allowed us to quickly determine that the product was highly biodegradable in this environment.

Our organization proved capable of managing the accident and its consequences, combining front-line actions with cutting-edge expertise in toxicology and ecotoxicology. We were able to study the accident afterwards and draw lessons, both internally and in cooperation with the public authorities.



**1**  
Firefighting drill  
at the Carling,  
France, facility.

In 2003, crisis management was the subject of around ten Group-level training courses and another 15 in the various businesses.

The training was supported by around 50 drills in the Paris-La Défense business district. Sites around the world also conducted a large number of drills to test and improve emergency response plans, some in cooperation with public authorities. Examples include a drill for the liquefied petroleum gas storage center in Hauconcourt, France, and exercises at the LPG storage facility in Haiphong, Vietnam.

### The Heat Wave in France

The heat wave that swept France in summer 2003 did not have any serious repercussions for our operations and did not require activation of the centralized crisis management system. Units at our hazardous facilities are designed to operate under extreme temperature conditions, while large sites also have their own water reserves that can be used to provide continuous cooling. This allowed the Carling site, for example, to spray the intermediate peroxide storage facilities to cool them, as a precaution.

The main heat wave-related risks for Totalgaz were forest fires that could reach its customers' tanks. To prevent this, Totalgaz set up a watch unit that inventoried the tanks located in fire zones, inspected them and, where necessary, deployed protective measures.

Also, in agreement with Electricité de France, Atofina voluntarily reduced its power consumption at some sites to ease the pressure on the national grid during the heat wave.

## Promoting a Safety Culture

In addition to more effective organizations, safety is achieved through responsible behavior and the engagement of all employees.

Employees are made aware of their personal role in enhancing safety through different methods, such as internal newsletters, brochures, information campaigns and training.

A number of internal newsletters and educational brochures have been published by the units.

For example, Marketing France's logistics department published the first two issues of its *Vigilance* magazine, in which it explained how the new French legislation on technological risk prevention applies to petroleum product depots, reminded employees of the importance of wearing safety equipment, and reported on safety for projects in progress. At Hutchinson, a comprehensive safety brochure — *Managing Safety Daily in Production* — was distributed to all employees. In late 2003, Exploration & Production printed *Ten Key Site Safety Rules* in its businesses. A wide array of initiatives is underway across our businesses and regions to enhance the awareness of everyone, whatever their position, of the safety component of our operations.

Training related to operational safety covers risk assessment, preparing for hazardous situations, accident studies, safety management, and behavior. We intend to expand our initiatives in these areas and develop new ones, such as an internal auditor and training for HSE positions.

In the area of recruiting, after a trial period Atofina extended situational testing to the hiring process at 19 of its sites in France. These tests, designed to reflect the company's business and corporate culture, put people in work situations using short videos and then require them to make a series of decisions. Their responses are used to assess whether they have the necessary safety reflexes for the job. The tests bring an added dimension to the recruiting process, which is primarily based on conventional procedures. They also make future employees more aware of safety requirements during the recruitment phase.

Awareness programs proliferated in 2003. Refining & Marketing's "Safety First" campaign was launched in 2002 and continued last year, with the dedicated logo also used for Exploration & Production's "Human Dimension" campaign and for Gas & Power programs.

Chemicals introduced a communications plan in late 2003 comprising a number of components, including standardization of visitor videos and discussion of safety issues during site seminars, backed by informative videos. Topics change every two months, and range from individual protective equipment and workshop cleanness to how all employees should set an example.

Refining also initiated a process concerning individual behavior. For refineries rated ISRS® level 8 or higher (see page 74, safety management systems), continuous improvement is primarily driven by initiatives to change behavior. A number of refineries have launched trials that began with a review of current conditions, with employee input. The objective is to identify risky behavior and find appropriate solutions, such as further training or reorganization. The U.K. Exploration & Production subsidiary developed a similar approach, based on individual appraisals and daily task analysis, the Safe and UnSafe Acts (SUSA) method.

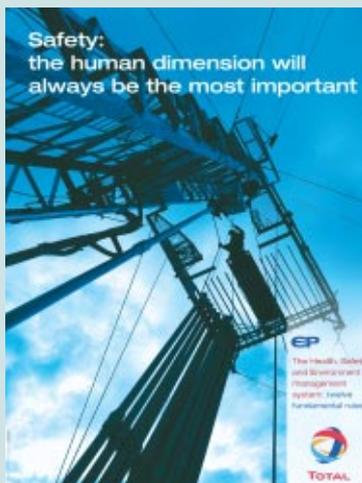
### Driving Safety: A Question of Behavior

Road accidents are the leading cause of work-related fatalities at Total, accounting for six out of 11 deaths in 2003 and nearly 40% of fatalities in the last six years. Improving road safety is critical in those countries where traffic conditions are particularly challenging or where there is no culture of driving safety. Some 750,000 to 800,000 people die in traffic accidents every year, of which 85% in developing countries, even though they account for just 30% of all vehicles on the road worldwide. The Asia-Pacific region alone accounts for 42% of road fatalities, and deaths by this cause are on a rising trend in the region (Global Road Safety Partnership data).

In response, last year we began deploying a global driving safety policy for Total and contractor employees. In May 2003, we issued a Group Safety Guideline on driving safety, which emphasizes the responsibility of both drivers and management. Anyone driving for Total must comply with five cardinal rules: wear a seat belt, respect speed limits, not drive under the influence of alcohol or any substance that might affect their attention, have the appropriate driver's license, and drive an appropriate vehicle in good condition. Total also asks employees not to use cell phones, even with hands-free kits, when vehicles are moving. In this, we are following the recommendations of the *La Prévention Routière* association, the French Transportation Ministry, and the French National Health Insurance Organization. This requires significant changes in working habits, especially for sales and marketing staff.

In addition, management has been asked to introduce driving improvement programs that cover travel preparations, vehicle equipment and maintenance, training, accident analysis, and carrier selection.

We will maintain our strong commitment in this area in 2004 and monitor the related performance indicators.



1 Exploration & Production employee safety awareness campaign.



2 Gas & Power employee safety awareness campaign.

Deployment of the Group Safety Guideline on driving safety is continuing across our businesses. In terms of travel management, Refining & Marketing has bolstered its version of the guideline by restricting the number of kilometers that can be driven in a day on main roads and highways, as well as how much time can be spent behind the wheel. For example, Marketing Europe's Belgian subsidiary (petroleum product depots and distribution) tailored this policy by defining the concept of "regular driver" and setting up a training program for people falling into this category. It set limits on the distances traveled daily, in order to prevent fatigue-related accidents. In addition, the transportation department analyzes accidents, identifies accident black spots, and finds the safest routes.

Programs underway in various units are tailored to local conditions and risk factors. Our Russian subsidiary has set up a satellite surveillance system for vehicles traveling on the access road to the Kharyaga field in Siberia, and conducts routine alcohol checks, with a zero tolerance policy. Our Nigerian subsidiary has equipped its 300 vehicles with black boxes to monitor speed, sudden acceleration or deceleration, and other parameters, enabling the 350 drivers to assess their own performance. This reduced the number of accidents to a single lost time incident in 2003. This type of system, primarily intended for regular drivers, is being tested in a number of subsidiaries worldwide. At Gaz du Sud-Ouest in France, all employees undergo one-day training and awareness courses, while a road safety procedure covers subjects ranging from travel orders to vehicle maintenance and performance indicator tracking.

## Safety Partnerships

Pursuing our driving safety initiatives, a three-year partnership agreement was signed with France's *La Prévention Routière* road safety association in June 2003. It includes an employee program, with expertise and support for initiatives to improve employee driving safety, and a number of corporate citizenship initiatives designed to enhance public awareness of road safety. A series of Total-sponsored TV programs on safe driving practices, entitled "Danger Free," was broadcast by the TF1 and LCI channels throughout the summer, presented by French Formula 1 driver Hubert Auriol. These initiatives are being extended to Total customers, with baby kits in service stations with safety advice, Web-based advice, and information in Club Total's customer magazine.

As well, subsidiaries in French overseas departments have introduced special operations, such as distributing breathalyzer tests in La Réunion, and broader initiatives with *La Prévention Routière*, such as Total Pacific's signature of a three-year partnership in New Caledonia comprising school outreach programs, instructional leaflets, and help with driver training for towns that do not have driving schools.

Partnerships are being forged locally with public safety organizations such as firefighters and the police. In Turkey, for example, our gas storage subsidiary formed a partnership with Firefighters without Borders. After analyzing hazards related to LPG storage in the Korfez area, the partnership will provide the results to the local authorities and, in cooperation with them, introduce measures to prevent risks and protect the population, emergency response plans, and firefighter training.



1

**Preventive training for people who drive regularly as part of their jobs, at the Beltoise Evolution center in Trappes, France.**

In the areas of training and research, Total helped found the Industrial Safety Culture Institute (ICSI) in 2003 and sits on the non-profit association's orientation and assessment committee, which defines policy and budget. The ICSI is a center for training, research, information and communication focusing on technical and human issues related to industrial safety. Its purpose is to provide a forum for sharing experience and expertise among manufacturers, elected officials, associations, researchers and academics. The Board of Directors met twice in 2003. The first meeting served to ratify the creation of the Institute and the second one approved the training and research programs to be developed. The programs will address such topics as industrial process technology, the societal and human approach to organizations, legal responsibility, and communication.

Total advocates driver awareness for everyone, including occasional drivers. This type of initiative, offered widely, should also modify non-business driving habits and encourage the beneficiaries to share their knowledge.

A road safety forum was held for headquarters employees at the Tour Coupole in the Paris-La Défense business district in June 2003. Rollover and collision demonstrations highlighted the importance of seat belts. Similar events were also held on sites or during internal seminars for employees from around the world.





# Seeking a Fair, Innovative Response to Employee Expectations

Interview with Jean-Jacques Guilbaud

Senior Vice President, Human Resources and Corporate Communications, Member of the Management Board



**In your opinion, what do you see as the major challenges for human resources management in a group like Total?**

**J.-J. Guilbaud:** Historically, Total is a European company, but our geographic expansion has stepped up significantly in the last 15 years in Latin America, Africa, the Middle East and Asia. We now operate in more than 130 countries, with one in five employees working in emerging or developing countries. This means that social and cultural situations and references are widely varied, as are their transposition into legislation and regulations. This can create fairly complex issues in such areas as equitable career management, health care monitoring, compensation, and training. Meeting our commitments requires discipline and creativity in contexts that can be shifting and sensitive, as is often the case in many emerging countries.

In developed countries, although the environment is generally more favorable and the fundamental principles of social equity are better assured, we are nonetheless facing issues that require substantive examination over the long term. One of the challenges we face in Europe is reconciling our image as a prosperous company with the need to adjust our industrial base to the competitive environment while taking into account what that means in terms of jobs. Two other major issues are longer careers and the need to fight discrimination.

**In recent years, there's been a lot of talk about the growing expectations of civil society with regard to companies, and the corresponding broadening of corporate responsibilities. Have these external developments affected your human resources strategy, which primarily concerns employees?**

**J.-J. Guilbaud:** Of course. These new expectations are driving higher aspirations for openness, dialogue, transparency, and gender diversity in our organization, which has a direct, major impact on team management. They're affecting every aspect of human resources management. In response, special training courses have been developed to help our managers to recognize broader responsibility as a critical component of their mission, on an equal footing with professionalism and technical proficiency. As well, the new situation has been factored into our hiring policies and our programs to identify high potential employees and diversify employee profiles.

There's something else I feel is important, the "external developments" that you mentioned. I don't think that you can make such a clear-cut distinction between internal and external stakeholders. Our employees in Europe, Africa, Asia and the Americas have a life outside Total as citizens, consumers, members of the social fabric. That means that they, too, convey the expectations of civil society. For this reason alone, human resources cannot ignore this underlying societal trend.

**Total is committed to complying with international labor conventions. How do you reconcile this commitment with the diversity of situations encountered?**

**J.-J. Guilbaud:** That question is mainly applicable to countries with serious social, economic and political problems, where practices may exist that do not comply with certain international conventions and, as a result, breach our commitments.

Our position is clear: these very challenging environments must not undermine our standards or professionalism in the area of human resources. This is a critical challenge for a multinational company striving to act responsibly with regard to its employees, contractors, and host communities.

In response, we've set up processes that allow us to respect our commitments and engage in fairer practices. This is an area that has to be dealt with on a case-by-case basis. We have to be attentive in our own units, but also with regard to contractor practices, even though the larger contractors are aware of these issues and sometimes have their own codes of conduct. We have engaged these processes in full cooperation with our local partners, who are usually aware of the link between economic progress and social progress.

**The diversity of situations that you describe has a strong impact in the area of health care. How do you handle this, especially in developing countries?**

**J.-J. Guilbaud:** Human Resources coordinates Total's health care policies in three main areas: occupational health, the impact of our operations and products on health, and the health environment of our facilities. These policies are applied in the field in line with local priorities. On these issues, we work extensively with public authorities, experts, other multinationals and the competent organizations. One of our main projects in emerging countries is introducing a policy to combat HIV/AIDS, in particular in sub-Saharan Africa. Its components include information and prevention, free, confidential testing, and treatment for our employees and their families.

**You say that Total has made commitments in a number of areas, including labor standards, internationalization and health care. But in practice, how do you monitor and assess the deployment of these principles?**

**J.-J. Guilbaud:** Quality reporting is an essential prerequisite. This is a recent commitment, and we still have a way to go for the process to reach the desired level of professionalism.

**By definition, human resources is an area whose management and understanding varies widely, depending on the country, legal framework, and local sensitivity to labor issues. How do you ensure that the themes and issues on which you report are understood in the same way?**

**J.-J. Guilbaud:** That's a key point. For instance, time spent on training is not always accounted for in the same way, even in close neighbors such as France and Belgium. Issues such as insurance and compensation are highly technical and subject to legal standards that vary from one country to another. Not all regions are equally interested in measuring gender diversity.

Accurate reporting requires benchmarks that are understood and shared by the entire network of human resource professionals in all our units. That takes time, understanding and instruction. But we are making progress and gaining a clearer picture of practices across Total.

**Are you ready to submit this process of identifying and measuring our employee relations practices to outside scrutiny?**

**J.-J. Guilbaud:** We began in 2003 with the publication our first corporate social responsibility report, *Sharing Our Energies*. The process of identifying our employee relations practices is being discussed with academics, which enables us to share points of view and compare practices with other major companies in Europe and internationally. This could eventually lead to a certification process. These external contributions are essential to driving improvement.

# Key Human Resources Indicators

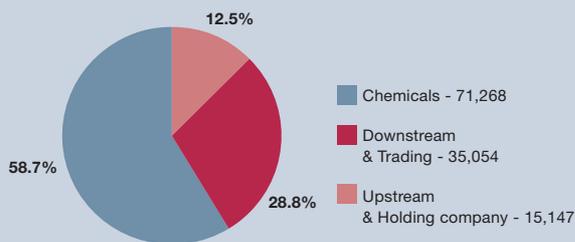
## Workforce Profile

In 2003, the consolidated workforce declined 8.8% to 110,783 employees, mainly due to the divestment of SigmaKalon, our paints business, in February. The disposal had a significant impact on the breakdown of our workforce by core business and region, with a shift back toward oil operations and a considerable reduction in the percentage

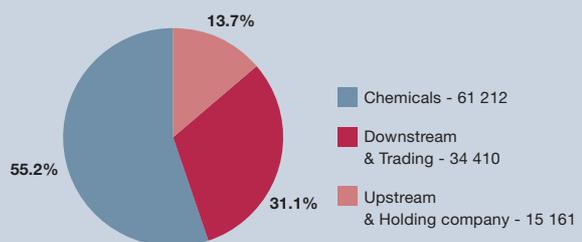
of employees based in Europe. The number of employees declined in all regions, with the exception of Africa.

The total workforce is close to 128,000 for the managed base, which includes all the subsidiaries in which one or more Group companies owns at least a 50% interest.

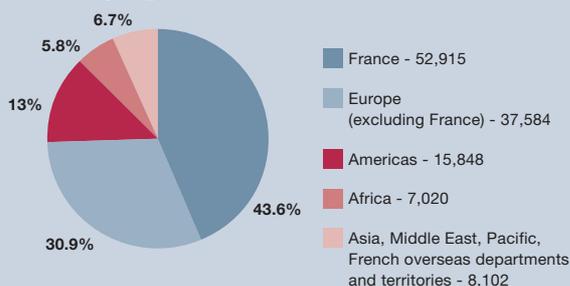
Breakdown by business (worldwide) in 2002



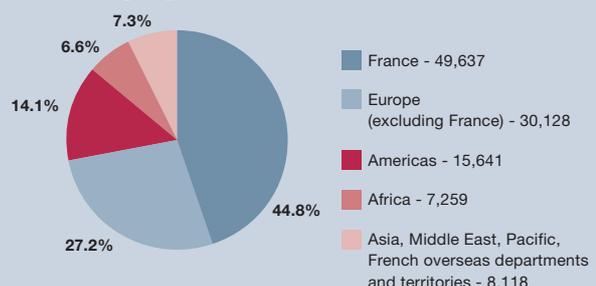
Breakdown by business (worldwide) in 2003



Breakdown by region in 2002



Breakdown by region in 2003



For more information about the employee statistics in this report, see page 103.

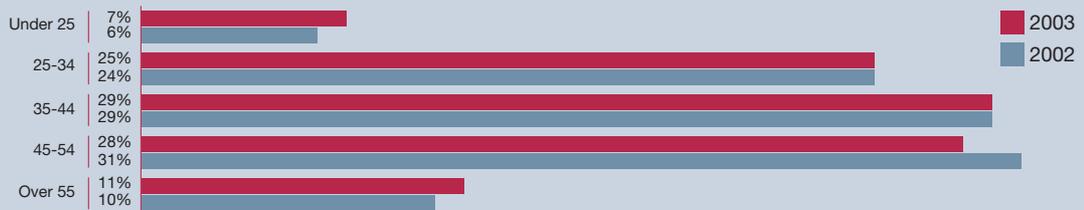
The proportion of women increased to 26% of the consolidated workforce from 24% in 2002, while that of managers rose to 23% from 22%. The percentage of female managers has also climbed, to 17% from 16%. This figure, which varies considerably depending on the business, is 36% at the holding company and 13% in the Upstream (Exploration & Production and Gas & Power). The percentage of female senior executives is 4%. Enhancing gender diversity is a priority.

Although there is no set quota, a practical plan is being deployed, supported by specific objectives related to the management of hiring and careers. Regular reports will be published on the progress made.

The age pyramid remained stable overall, although there was a 2% decrease in the 45 to 55 bracket and a slight increase, to 11% from 10%, in the over-55 bracket.

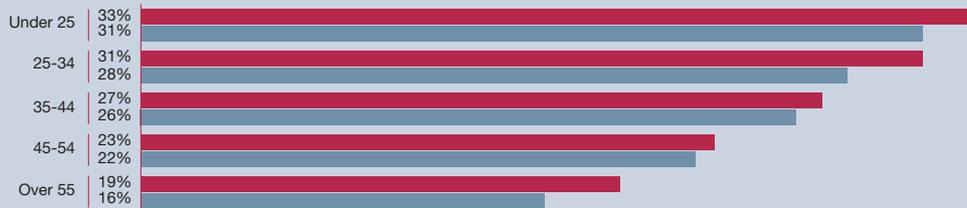
2.8% of the total workforce in France had fixed-term contracts.

**Employees by age bracket (worldwide)**



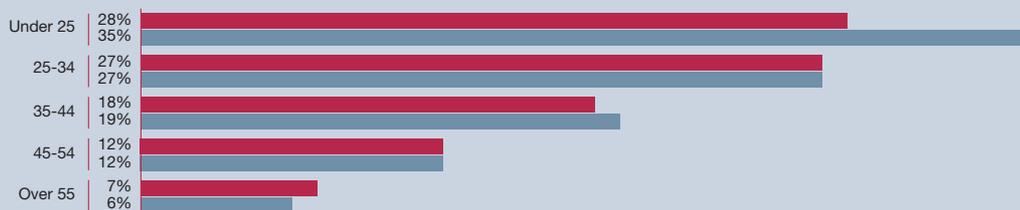
Source: Global Workforce Analysis, end-2003.

**Female employees by age bracket (worldwide)**



Source: Global Workforce Analysis, end-2003 (33% of employees under 25 are women).

**Female managers by age bracket (worldwide)**



Source: Global Workforce Analysis, end-2003 (in 2003, 18% of managers aged 35 to 44 were women). Consolidated workforce.

# Driving Diversity through Managed Recruitment

## ● Internationalizing Teams

We hired 6,000 new employees in 2003, accounting for 5.4% of the consolidated workforce. For the managed base, which covers all subsidiaries in which the Group or one or more member companies owns at least a 50% interest, the figure was 8,300, which was lower than in 2002. A large number of new employees were hired in emerging countries in Africa, Latin America and Asia. This trend promotes the international diversity of our teams, because the hiring is organized by subsidiaries from the local talent pool.

To further enhance international diversity, Total is exploring three avenues: recruiting more non-French nationals in corporate departments, better identifying international high potential employees in host countries, and encouraging mobility.

## ● A Commitment to Gender Diversity

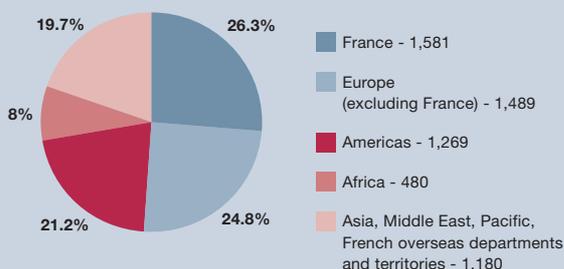
The second priority in hiring is to promote gender diversity. The number of female employees, in particular in management ranks, is still lower than the proportion of women attending the schools and universities from which we recruit. This can be partly attributed to the industrial nature of our operations. But we are assertively committed to promoting gender diversity, gradually increasing the number of women across our businesses and giving them more equitable access to senior technical and management positions.

Recruiting is a key driver in this process, as is attentive career management. In 2003, women accounted for 30% of hires, as in 2002. In the Oil business in France, 20% of women hired had an engineering background and 50% business degrees, in line with both gender diversity in education and our target. Progress needs to be made with regard to universities. In 2003, the percentage of women recruited by the French Oil business on graduation was 38%, below the proportion of women graduating with relevant degrees, estimated at close to 50%.

## ● Diversifying Skills Profiles

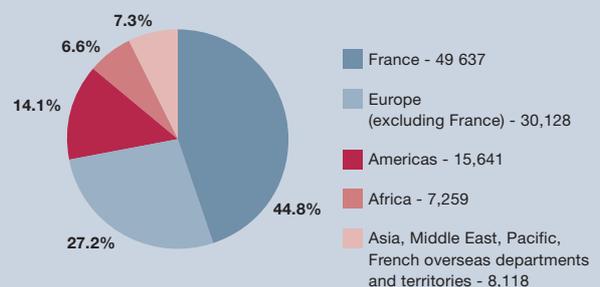
A third challenge is to diversify educational backgrounds, which represents an advantage in an ever more complex environment. That's why Total recruits young graduates from an increasingly wide range of degree programs, attracting engineers, business and management graduates, lawyers and experts from a variety of educational streams. In France, the 289 managers recruited in the Oil business in 2003 came from 169 different programs. This growing diversification of profiles will be expanded outside France, with stepped-up initiatives to identify the best international education programs.

Hiring by Region



Source: Global Workforce Analysis, end-2003.

Workforce by Region



Source: Global Workforce Analysis, end-2003.

## Structuring the Recruiting Process

These objectives can be achieved only by continuously improving our recruiting process, starting upstream with applicants. Total receives more than 300,000 applications a year from more than 100 countries. One application in three is sent in via Careers, our online recruiting site; the others are submitted by mail or e-mails addressed directly to a subsidiary.

To encourage more diversified and international applications, we are working to raise our profile at colleges and universities by forging lasting ties and by participating in a large number of job fairs, in France and abroad.

Where appropriate, we help to create local programs. For instance, in 2003 we initiated a local petroleum engineering program in cooperation with France's *Ecole Nationale Supérieure des Pétroles et des Moteurs* and Nigeria's Port Harcourt University, with an intake of around 20 students a year.

The gradual opening of the Careers site to applicants outside France will step up internationalization and recruiting. Fifteen countries use it today, and international deployment is continuing.

In addition, Angolan, Nigerian, Indonesian and other students pursuing their education overseas are regularly contacted for recruitment in the subsidiary operating in their home country. For example, seven young Nigerians were hired in London in 2003 to work in Port Harcourt and two Indonesian students were selected in Berlin and then recruited in Jakarta and Balikpapan.

Once the applications have been received, the selection process is collective. Human Resources departments shortlist applicants on the basis of interviews and, sometimes, tests to evaluate their personalities and capabilities. Applications are then assessed by management, which validates the person's ability to fill the target position. Lastly, there is a debriefing prior to the final decision. Testing makes the choices as objective as possible, thereby avoiding pressure and preventing discrimination.

A guide is being prepared to help subsidiaries formalize the recruiting process. Scheduled for distribution in 2004, it describes the different phases in the Group process, the relevant guidelines, and Group recruiting criteria.

## Encouraging Employment for the Disabled

Hiring the disabled is a key objective in Western countries, notably in Europe, where integration policies are more developed:

- Atofina has signed an agreement with the French Fund for Integration of the Disabled (AGEFIPH), while the Oil business last year signed memoranda of understanding with unions on employing the disabled in 2003, 2004 and 2005, covering hiring, training, support for sheltered employment, maintaining employment, and sensitivity training.
- We are actively pursued our partnership with the *Tremplin* association, which we helped to found 12 years ago. Headquartered in La Défense, just outside Paris, *Tremplin* comprises around 30 large French companies and is dedicated to facilitating contacts between companies and disabled students.
- A number of Group companies have also formed partnerships with associations. In Germany, for example, Total Deutschland cooperates with the Annedore-Leber-Foundation, offering apprenticeship contracts for young disabled people.

## Developing Initiatives Oriented toward the Young

In 2003, 71% of the employees recruited worldwide under permanent contracts by companies in the consolidated base were under 35 years old. In addition, we continued to promote work-study programs, which allow young people to gain practical work experience while continuing their studies. Close to 900 young people benefited in 2003. As well, 150 young in-company volunteers in around 40 countries have joined Group subsidiaries to acquire international experience.

## Fair, Responsible Compensation

For most employees, compensation policies integrate local parameters, such as the economic environment, the employment market, and labor legislation. While consistently tailoring salaries to local conditions, however, Total is also committed to paying fair compensation based on a diversified range of attractive, incentive-building packages. Increasingly, the base salary is supplemented by bonuses, variable compensation and stock options that reflect individual performance. In addition, the Group rewards corporate performance, assessed using indicators included in profit-sharing and incentive agreements, where local legislation permits. For example, a large number of incentive agreements have been signed with employee representatives in French companies, which take into account the business performance of the operations concerned.

At both the Group and business level, compensation policies are supported by centralized resources that are shared by the subsidiaries. As part of this process, corporate Human Resources conducts field audits and makes recommendations on behalf of subsidiaries. In 2003, surveys were carried out in Indonesia, Nigeria, Gabon and the United Kingdom. In addition, salary positioning surveys are conducted regularly to ensure that we continue to offer fair, attractive compensation.

### Job Evaluation

To promote fairness and equity in annual performance reviews, Total deploys a consistent global process to evaluate positions held by managerial staff, supplementing other job appraisal methods. At end-2003, 23,360 jobs had been evaluated, or nearly all management positions.

The process evaluates the jobs, not the employees. They describe their jobs and the description is validated by their managers. The job is then evaluated within each business, in line with three critical criteria: contribution to results, requisite capabilities, and the creative initiative required. For corporate positions, such as finance, legal and human resources, the Group performs smoothing and harmonization. This evaluation helps to partly, but not totally, eliminate subjectivity. In addition, the content of jobs is constantly evolving, either because of organizational changes or because their holders tailor them to new environments. That's why the job evaluations are regularly updated. In one year, close to 2,000 jobs were re-evaluated (or evaluated for the first time, in the case of new positions). Procedures have been validated and distributed in each business, defining the rules applicable to evaluating and validating jobs.



Percentage of employees (worldwide) covered by regular salary positioning surveys: **83%**

Percentage of employees (worldwide) covered by a minimum wage guaranteed by the company: **93%**

Source: Worldwide Human Resources Report, end-2003

## Employee Representation in Savings Plans: Further Advances in 2003

Several years ago, Total introduced employee stock ownership plans in which a large majority of employees have invested. We would therefore like them to be closely involved in the corresponding governance structures. So when the terms of the officers of the supervisory boards of the *Total Actionnariat France* and *Total Actionnariat International* mutual funds were renewed in 2003, we encouraged the election of a majority of employee representatives:

- 70,000 investors in the French fund were invited to take part in a mail-in vote that elected 14 employee representatives for three-year terms, giving them a majority on the supervisory board.
- In a similar process, 30,000 investors in the international fund in the 89 countries where the fund has employee shareholders were informed of the voting process and were asked to take part. The two-stage process resulted first in the appointment of 35 country-candidates, who attended an electoral meeting in London on October 13, 2003. They then elected the supervisory board of the fund for a three-year term. Employees account for the majority, with 14 nationalities from around the world represented.

## New Benefit Plans

Total continued the gradual implementation of death benefits programs in 2003. The system will ensure that all Group employees, regardless of country or business, are entitled to a death benefit equal to at least two years of salary, without discrimination. A full 70% of employees worldwide were covered by this type of policy at December 31, 2003.

2003 highlights in the area of benefits included:

- The introduction by two Group companies in Germany of defined contribution retirement plans, partly funded by the employer. These plans cover close to 900 employees in all, including some in Saxe-Anhalt, in the eastern part of the country, which previously did not have any supplementary retirement benefits. A similar plan covering around 100 employees was introduced in Portugal and took effect on January 1, 2004.
- In France, a collective agreement introducing additional reimbursement of health care expenses was negotiated with the unions in the main Oil business companies. It came into force on April 1, 2004 and covers 71,000 people (employees, families, etc.).

### Death benefits for employees, expressed in capital

Percentage of Group employees for whom the benefit is at least 200% of the gross annual salary: **70%**

Source: Worldwide Human Resources Report, end-2003.

Employee benefits		
Plan	Public and compulsory	Supplementary and negotiated
Health care	87	78
Disability	98	79
Death	93	89
Retirement	99	79

Source: Worldwide Human Resources Report, end-2003. The above table provides an overview of employee benefits. Based on a sample of 98 companies with 79,395 employees, it indicates the percentage of employees covered by a plan or program.

# Career Management That Fosters Mobility and Diversity

## Sustained Mobility

Promoting employee mobility is another major objective of Total's human resources policy. In the same way as training, it helps to drive personal and professional growth, instill a shared culture, and create cross-functional networks within the organization.

However, processes and practices vary significantly with the situation, whether they involve changing jobs or transfer to a different region. In particular, they reflect an employee's working environment and personal aspirations. Mobility is easier

to implement at large sites, in fast-growing segments or in highly flexible job environments, but more of a challenge at very specialized sites or in jobs requiring specific skills. This wide variety of situations explains in part the broad diversity of the statistics related to the average length of time employees have spent in their current positions, as revealed by the Internal Survey (see page 103). Nonetheless, with two-thirds of employees holding their positions for less than five years, mobility is a common practice in the Group.

**Average length of time in a job by business, France – Internal Survey sample**

	< 1 year	1 to 3 years	3 to 5 years	5 to 7 years	> 7 years	
Upstream	18%	42%	16%	7%	17%	100%
Downstream	18%	43%	15%	7%	17%	100%
Chemicals	11%	26%	18%	10%	35%	100%
Group	14%	34%	17%	9%	26%	100%

Source: Internal Survey, end-2003.

**Average length of time in a job by business, worldwide – Internal Survey sample**

	< 1 year	1 to 3 years	3 to 5 years	5 to 7 years	> 7 years	
Upstream	19%	41%	14%	7%	19%	100%
Downstream	12%	31%	13%	10%	34%	100%
Chemicals	10%	25%	16%	10%	39%	100%
Group	15%	34%	14%	9%	28%	100%

Source: Internal Survey, end-2003.

**Average length of time in a job, managers/non-managers, France – Internal Survey sample**

	< 1 year	1 to 3 years	3 to 5 years	5 to 7 years	> 7 years	
Managers	20%	44%	16%	8%	12%	100%
Non-managers	11%	28%	17%	9%	35%	100%

Source: Internal Survey, end-2003.

## Career Management

To encourage mobility that benefits both the employee and the company, Total has developed a dedicated career management organization and gradually introduced appropriate tools.

More than 200 career and human resources managers, of which more than 100 in subsidiaries outside France, form a network that covers the vast majority of units and whose main mission

is to match employees and Group needs. They each monitor the career paths of between 200 and 500 employees. They are supported by the growing use of annual performance reviews, which are carried out for 77% of employees (Internal Survey samples), and job studies performed in cooperation with the businesses. Since 2003, they have used a single software application that enables the individual management of 30,000 Group employees (the 21,000 French employees and 8,000

international managers in the Oil business and around 1,000 executives, high potentials and staff managers in the Chemicals business). This organization has enhanced knowledge of the employee base, enabling the Group to move forward in the area of high potential managers, international managers, women and seniors.

#### Annual performance reviews and career management (worldwide)

	2003	2002
Managers usually have an annual performance review	98%	98%
Non-managers usually have an annual performance review	84%	79%
Mobility and training are based on the annual performance review	89%	91%

As a percentage of Group employees.  
Source: Worldwide Human Resources Report, end-2003.

## High Potentials

Every year, Total identifies around 2,000 high potential managers through collective processes involving heads of disciplines, career managers, general managers and the human resources managers of subsidiaries. These high potentials are offered management training and career paths that enable them to rapidly broaden their scope of responsibility. The process whereby high potentials are identified in subsidiaries is currently being reviewed, in a commitment to strengthening the internationalization and diversity of our managers.

## International Managers

The oil industry is a global high-tech industry that often operates in countries where it is difficult to find the required expertise, despite the skills transfers and regionalization agreements that Total has long encouraged. That's why we rely on expatriates to lead and develop our operations. In 2003, 3,150 expatriates from 80 countries worked in 110 different countries. Their management and replacement raises a number of challenges, such as cultural differences, spousal careers, and children's schooling.

We are very demanding in these areas, as the example of schooling shows. In association with the *Mission Laïque Française*, we manage schools in Scotland, Norway, Indonesia, Myanmar and Nigeria. More than 2,000 children receive expatriate education, of which 350 in our five schools. We also develop innovative solutions to resolve professional and family-related problems linked to expatriation. In 2003, four new companies joined the agreement on spousal careers mentioned in the *Sharing Our Energies* 2002 report (see page 68).

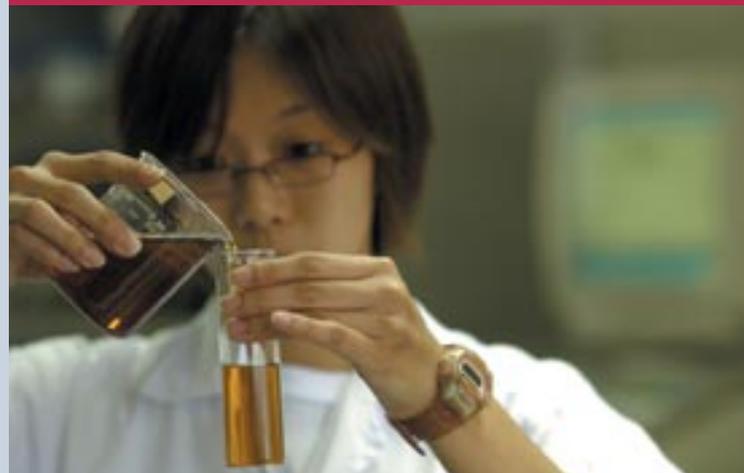
## Careers for Women

Although 17% of managers are women, they account for only 10% of high potentials and 4% of senior executives. In response, we have developed initiatives based on plans underway in the businesses to increase the number of women managers, and integrated into the Group-wide plan to promote diversity (see page 92). These measures include:

- Aligning the recruitment of women to the percentage of women who graduate from target schools.
- Identifying high potential women as of their second assignment to offer them positions with high technical, managerial or international exposure before the average childbearing age, which often entails a temporary plateau in advancement.

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In 2003, Total launched a Group-wide diversity plan intended to make our teams more international and increase the number of women managers. The latter initiative includes encouraging access to technical and engineering disciplines. Here, a lubricants engineer in the Refining & Marketing business in Singapore analyzes the viscosity of lubricants used in motorsports.



- Special monitoring of women, as well as international managers, at meetings where career development decisions are made.
- Promoting engineers' careers in plants and jobs with international exposure, as an alternative to geographic mobility.
- Examining specific measures related to maternity leave.
- Making career managers and heads of disciplines more sensitive to gender-related stereotypes.

## The Impact of Working Longer

Statistics related to the average length of time in a job show that mobility slows for employees over 55, who usually remain in their last job for a longer period of time. Previously overshadowed by early retirement plans, this phenomenon is becoming more apparent with the global trend toward working longer, and is likely to grow more acute as demographics change. Total is studying what these developments mean in practical terms and will tailor our organization, resources and practices accordingly.

## Diversity Plan

In 2003, a Group-wide diversity plan was introduced to increase the number of women and non-French managers. The plan, based on initiatives already deployed by various Group structures, stems from a commitment to fully leverage the talents and experience of employee categories that are under-represented in the Group and to broaden their development opportunities.

Although 57% of managers are non-French and 17% are women, these figures fall to 30% and 10% respectively for high potentials. Among senior executives, only 20% are non-French and 4% women. Since diversity is a major strategic challenge in terms of our performance, responsiveness and credibility, we will be implementing Group-wide measures, supported by specific programs concerning gender diversity and internationalization.

The plan, developed and managed by the Social Innovation and Diversity Department, is a long-term undertaking and will be deployed across all four businesses, in line with their needs. It sets specific quantitative and qualitative targets for recruiting, career management, mobility, and work-life balance. Career management processes integrate special attention to the advancement of these employee categories.

Lastly, the plan will encourage the change in attitudes necessary to its success through innovative sensitivity initiatives. A Diversity Council, chaired by a member of the Executive Committee and comprising representatives of the various activities, will be set up in 2004 to track the plan and report on it each year to senior management.

# Training: Keeping Pace with Rapidly Changing Expectations

The size and diversity of our operations is driving an increase in training needs, expressed both by employees and the company, to develop skills, build cultural awareness, enhance management skills, and adapt to technical, regulatory and legal developments.

## ● Training Solution Developments

Some training needs are not specific to Total, but stem from more general trends affecting companies and their environment:

- Accelerated technological change, affecting both operational activities and workstations, as well as the related support services.
- The emergence of new demand in corporate areas such as finance, law and taxation, related to changes in international accounting and tax standards.

In the area of management and personal development, our training solutions include not only "conventional" training, but also a major program dedicated to cultural adaptation, since a large proportion of employees work in a very international environment or are expatriates.

Recent years have also seen the growth of training in areas of broader corporate responsibility, such as safety, the environment, ethics, and sustainable development. The Group, which already devoted extensive resources to safety and environmental training, has developed an even more comprehensive array of courses in these areas, for example ethics and the challenges related to gender and other diversity.

Lastly, other major training initiatives are linked to our strong presence in emerging countries:

- Contributing to the upgrading of initial and technical training in countries with inadequate educational systems.
- Transferring skills.
- Instilling professional methods and processes shared by all operating teams, while respecting local cultures.

## ● Targeted Programs

In addition to segmenting the main training solutions by theme, there is also a need to pay increasing attention to particular employee categories, with a focus on young new hires and seniors. Support for new hires entails appropriate training to ensure seamless integration into a large, complex organization. Induction courses are organized by the unit, business or Group, depending on the profile and position. Around 4,000 people took these courses in 2003, or half of all new hires.

The challenge for seniors is to plan as effectively as possible for the extension, in most countries, of the average working life and the job impact in terms of health, preparation for future challenges, changes in positions proposed, and other areas. Training helps people to move up the career ladder and transfer to other responsibilities. In fall 2003, a new one-week course was introduced at the Group level to support local initiatives deployed by a number of subsidiaries. Two sessions are planned for 2004, each for around 50 participants. This Group-wide project has begun with senior managers, but will be cascaded to other levels. It is being relayed by new, more local initiatives by the operating units.

## ● Enhancing the Effectiveness of Training Solutions

For training performance, a critical challenge is the ability of human resources teams to publicize existing solutions and to quickly identify the employees likely to be interested, whether at the Group, business, unit or industrial facility level. In particular, this entails regular contacts with local interfaces in the different units, which is why it is important to strengthen our network of training professionals. Training managers meet within each business regularly and, beginning in 2004, similar meetings will be held every two years for the entire Group, bolstering the network's permanent support system.

Training effectiveness also depends on tailoring the offering to the professional requirements of employees and the units in which they work. This means better combining courses and emphasizing the most appropriate learning methods (for example, a blend of classroom courses and distance learning). As a result, new programs comprising a mix of methodological media were launched in 2003, such as e-procurement training and courses to train marketing teams in new lubricant lines. A workstation-based course on safety, the environment and quality is being finalized for Chemicals at the Saint-Auban plant in southern France.

Lastly, the effectiveness of training, in particular in very technical areas, requires tracking market trends (issues, new methodologies, benchmarks) and forging solid, quality partnerships with universities worldwide to ensure preferred access to the best available expertise.

## Main Trends in 2003

Excluding on-the-job training, 67% of employees received training in 2003, with marked differences depending on their category. Training was highest in the Oil business, as well as in Africa and Asia, where long-term training is offered, especially early in the career (see tables below). This training is directed more toward the youngest employees, as well as employees with less seniority in their positions.

The figures, which are high for all employee categories, are also attributable to our initiatives to increase training related to safety (see section on Safety, page 77), ethics (see section on Ethics and Local Development, page 109), and broader corporate responsibility.

### Training courses by region

Region	Average number of days per employee in 2003
Africa	10
Asia	4.4
Europe (excluding France)	4.2
France	3.8
Americas	3.4

Source: Worldwide Human Resources Report, end-2003.

### Training days by category, men/women, 2002-2003

Breakdown	Employees	2003		2002	
		Employees	Total training days	Employees	Total training days
Men	74%	79%	76%	78%	
Women	26%	21%	24%	22%	

Source: Worldwide Human Resources Report, end-2003.

### Training days by category, manager/non-manager, 2002-2003

Breakdown	Employees	2003		2002	
		Employees	Total training days	Employees	Total training days
Managers	23%	26%	22%	30%	
Non-managers	77%	74%	78%	70%	

Source: Internal Survey, end-2003.

Responding to the Internal Survey, two-thirds of employees indicated that they had taken part in a training session in 2003. Eighty-five percent stated that the training they had had in recent years was useful. They also described the limitations, which mainly consisted of the incompatibility between their workloads and the time needed to study and the lack of a transition phase between expatriation assignments. These issues are regularly discussed with employees during the annual performance review, or with their representatives, as training is a recurring theme in Group employee relations.

This course-based training is supported by on-the-job training, in particular in operational activities. In companies where on-the-job training is a common practice (Refining, Chemicals), it mainly covers technical issues and represented, in relation to the total workforce, an average of two days per employee in 2003.

Statistics have not yet been compiled on e-learning, which has been used to varying degrees. A logical solution for office technology and information technology training, e-learning is now used for other subjects or in other environments, often to support conventional training sessions. This was demonstrated by trials in 2003 covering broader responsibilities, integration of new employees, safety and health, and contractor employee training. In the case of ethics, for example, e-learning to support dedicated seminars in the leading units is expected to reach several tens of thousands of employees in 2004.

Technical training accounted for 54% of training days organized in 2003, of which 19% were dedicated to safety. These figures do not include initiatives for onsite contractors, for the many and varied service providers, or for skills transfer programs (see pages 120 to 121 and 126 to 129).

The *Total Professeurs Associés* association, created at the initiative of current and retired Group experts, significantly broadened its audience in 2003. It now includes 150 experts, is active in 49 units in Europe, Asia, the Middle East and Africa, and has offered more than 650 half-days of training.

### Training by age (Scope: Worldwide – data in percentage of the workforce)

Age	< 30		30-40		40-50		50-60		> 60	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
%	72	78	68	71	70	68	63	66	63	65

Source: Internal Survey, end-2003.

### Training by length of time in position (Scope: Worldwide – data in percentage of the workforce)

Seniority	< 1 year		1 to 3 years		3 to 5 years		5 to 7 years		> 7 years	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
%	68	70	71	68	64	64	64	64	54	57

Source: Internal Survey, end-2003.

# Developing Employee Dialogue Worldwide

Among the many stakeholders with whom we are developing regular dialogue, employees and their representatives have a preferred position and role, because they are an essential resource in our operations. In this area, however, we face two major challenges: the extreme variety of situations in our host countries and the need to restructure, especially in the Chemicals business.

## Employee Dialogue Topics

Total operates in countries that generally adhere to International Labour Organization conventions, to which we make explicit reference in our Code of Conduct. They are particularly applicable to employee relations, even in countries where this approach is not widespread.

Most Group companies have a formalized employee relations process; in all, 97% of the workforce is covered, but not always the same topics.

### Employee dialogue topics, in percentage of worldwide workforce concerned

Duration of work	76%
Health and working conditions	97%
Compensation	89%
Training	92%

Source: Worldwide Human Resources Report, end-2003.

More than 134 agreements were signed in 2003 in our different companies. In France, the ability of employee representatives to exercise their rights and responsibilities was enhanced by two agreements, one allowing them to use the corporate e-mail system and another covering the social and cultural activities of head office works councils in the Oil business.

Most Group companies have employee representatives, elected by a majority of employees. The median participation rate in the most recent elections was 79%. A few subsidiaries, accounting for less than 3% of the total workforce, boasted 100% participation.

## Working Conditions

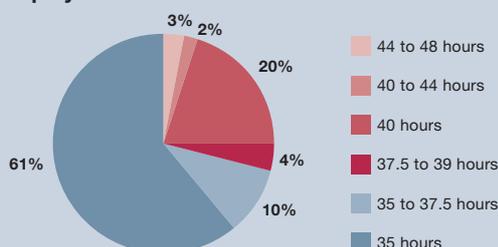
The workweek exceeds 40 hours for 5% of the workforce. Some 86% of employees can work part-time. The average absenteeism rate is between 3 and 4%.

Sixty-six percent of employees who responded to the annual internal survey (see page 103) said they were satisfied with the balance between their personal and professional lives; 77% were satisfied with their working conditions and 61% with their workload.

## Industrial Safety, a Priority Issue for the European Works Council

After a detailed report on the safety methodology and results of the businesses, three subjects will be examined more closely in 2004-2005: safety and driving, work in contained areas, and contractor safety policy. Each of these subjects is covered by a specific Group Safety Guideline.

### Average workweek worldwide, in percentage of employees



Source: Worldwide Human Resources Report, end-2003.

**1** In June 2003, the European Works Council Liaison Office examined the progress of the Group Safety Action Plan. Here, a safety sign on the Torpille platform offshore Gabon.



In June 2003, the European Works Council Liaison Office — an organization consisting of 12 representatives of employees and union organizations from Belgium, France, Germany, Italy, the Netherlands, Spain and the United Kingdom — examined the progress of the Group Safety Action Plan in three key areas:

- Management involvement.
- Safety methods and practices (safety management systems, International Safety Rating System®).
- Enhanced transparency and local communications.

With a panel of European subsidiaries, the Liaison Office continued its survey on how employee representation bodies operate in the area of health and safety. At the plenary meeting in November 2003, plans were made to present a detailed report on the safety performance of the businesses in early 2004 and to visit a number of sites.

Ethics was also a topic of discussion with the European Works Council. A report on Total's ethics process from 2000 to 2003 was presented to the Liaison Office on October 16, 2003.

**The European Works Council is a supranational employee dialogue organization with 50 permanent members selected or appointed for four years. It meets at least once a year and is responsible for issues concerning the entire Group in Europe or at least two Group companies in two different European countries. It covers a wide variety of subjects, including Group strategy, divestments, acquisitions, and health and safety.**

## ● Employee Dialogue and Restructuring

Continued restructuring and divestment in the Chemicals business have given rise to a large number of information and consultation meetings with employee representation organizations in France and Europe. Management and labor partners agree that information on the Group's strategy has been satisfactory, but that the information and consultation process to be implemented during restructuring could be improved.

The divestment in 2003 of SigmaKalon, our paints business, concerned 10,000 employees, of whom 89% are based in Europe. A Europe-wide information and consultation process was deployed, involving Total management, management of the new group, investors and other stakeholders.

At these meetings, it was noted that the new investor would retain all of SigmaKalon's staffed organizations, employee contracts, collective agreements and representative bodies.

The labor-related aspects of the divestment were the subject of a document prepared jointly by Total's management, SigmaKalon's management and the European Works Council Liaison Office. This document stipulates that:

- The transaction would not affect salaries, other compensation or benefits, with the exception of those that were related to consolidation in the Total group.
- Specific provisions would ensure the continuity of savings and retirement plans.
- SigmaKalon's management would begin negotiations to set up a European Works Council, no later than three months after the signature of the divestment agreement.
- SigmaKalon's management would give priority to employment and skills development, i.e. pay particular attention to training budgets and, in the event of restructuring within 12 months of the signature of the divestment agreement, would introduce a specific body for dialogue among representatives of the management, employees and unions of the sites and units concerned.

Overall, objectives in the area of employee relations are to consolidate European employee dialogue, i.e. enhance dialogue in change situations (restructuring, divestments), to step up the involvement of the Liaison Office in the Group's safety process, and to broaden employee dialogue worldwide.

## Health

Total considers that the respect and integrity of health are an integral part of our corporate social responsibility and a decisive ingredient in our long-term growth.

Actions to protect health and prevent health risks are based on a carefully measured combination of risk assessment, planning and management that involves:

- Identification and precise knowledge of potential hazards.
- Assessment of the degree and type of exposure.
- Qualitative and/or quantitative assessment of the associated risks.
- Risk management that includes defining the initiatives to be deployed.

In the field, each unit is responsible for deploying the organization that best corresponds to its own risks and the needs of the people concerned by its operations. The organization must be consistent with unit improvement plans and health, safety and environmental management plans being extended across the Group.

### Occupational Health

Workplace prevention is designed to avoid adverse effects on employee health with an appropriate risk management policy to provide medical care and to prevent occupational illnesses and accidents.

#### Asbestos and Occupational Illnesses

Like most industrial corporations, Total is concerned by occupational illnesses resulting from past exposure to asbestos. Most of the work situations concerned date back prior to the 1980s, well before the complete ban on asbestos in most of our host countries (January 1, 1997 for France). Our businesses are not particularly exposed to asbestos hazards, since this material was rarely used in manufacturing processes. The main source of potential exposure is insulation in industrial facilities. This is gradually being removed under programs underway for a number of years. However, given that the latency periods for asbestos-related cases can range up to 40 years, we expect that other illnesses will be reported in the future. Accordingly, the asbestos issue is carefully monitored in all businesses.

Global reporting of occupational illnesses was also introduced in late 2003 for Chemicals.

#### Post-Traumatic Stress Disorder

The disaster that occurred at the Grande-Paroisse plant in Toulouse on September 21, 2001 led us to organize a procedure to look after employees who witness a serious accident on company premises. Such accidents may cause psychological trauma resulting from the direct, sudden exposure to a tragic, even fatal, event. Post-traumatic stress disorder, which consists of reliving the event and can sometimes arise as much as six months later, can cause lasting psychological harm and diminished quality of life for victims. Its treatment therefore requires a proactive, individualized approach.

A prevention and treatment protocol for post-traumatic stress disorder was finalized in 2003. Applied in all units, it specifies the responsibilities of the site management, the person responsible for its application, and the occupational health unit. As part of this process, company doctors are involved in organizing trauma treatment, while health care personnel receive special trauma support training.

More generally, Total has decided to involve its occupational health physicians more closely in procedures for planning for and managing crises. Training trials for crisis management doctors were developed in 2003 and will be extended; in particular, they cover the physicians' contribution to crisis management units and their role in identifying the institutions and people — laboratories, hospitals, public institutions, experts — that can facilitate the understanding of problems and provide emergency treatment in times of crisis.

### Health Audit of Facilities in China

All of the Chemicals and Refining & Marketing sites in China were audited in fourth-quarter 2003 to determine current medical conditions and existing resources in the area of health protection, risk prevention, emergency response, and workplace hygiene. Depending on the results, recommendations will be issued in early 2004 and organizations and operating methods will be introduced to facilitate workplace prevention and protection, in cooperation with local Chinese occupational medicine and toxicology organizations.

- Water quality (local rivers and canal): heavy metals, hydrocarbons, suspended solids, pH, anions, COD, etc.
- Air quality: SO<sub>2</sub>, NO<sub>x</sub>, particulates (PM10), settleable particulates and VOCs specific to the activities of the industries operating in the park.
- Noise.
- Transportation.

Overall, despite the increase in industrial output from the park over the past ten years, environmental quality has not deteriorated. In fact, some of the emissions and disamenities have stabilized or been reduced, thanks to the programs undertaken by local companies and ongoing dialogue in the Commission.

## Health and the Environment

In cooperation with the local authorities, Total actively assesses and manages the health impact of our industrial operations, particularly on people living or working near our facilities.

### Examples

In France, a model developed by the French Union of Petroleum Industries (UFIP), in cooperation with the Health Ministry and the Ministry of Ecology and Sustainable Development, to serve as a benchmark for assessing the health impact of oil industry operations is now being extended to all our refineries and petroleum product depots. In addition, the Solaize Research Center in southern France, which manages some of Refining & Marketing's research programs, has formed an air quality control team that is available to analyze emissions in all our operations. Its mobile lab can perform field checks at oil, gas and chemicals production sites, then use the data to recommend actions for complying with sulfur dioxide, nitrogen oxide and other emissions standards.

In Belgium, we helped to create a unique program, led by the University of Mons, that since 1992 has published an annual environmental report on the Feluy North industrial park, where we operate a Total Belgium depot, a polypropylene, polyethylene and polystyrene production plant, and an Atofina research center. Studies for the report, which is not directly required under current regulations, are conducted by independent organizations with the support of local companies. The report is submitted to the park's Health and Environment Commission, whose members include companies, local and regional authorities, and environmental protection associations. It is based on an analysis of the following parameters, measured or calculated by accredited organizations:

## Health and Products

The impact of Total products is analyzed not just during use, but also across the entire life cycle, with a focus on the health of customers, users and anyone in contact with them. Information on their toxicological and environmental properties and precautions for their use is reported in Safety Data Sheets and regularly updated and distributed to users through our QuickFDS.com Web site.

The new European Union regulatory framework for chemicals and dangerous substances, known as the Registration, Evaluation and Authorization of Chemicals (REACH) system, is being closely studied by our experts. They participated actively in the preliminary workshops and programs conducted in 2003 by the European Commission to enhance the system's efficiency and help achieve its objective of protecting health and the environment.

To reduce the health and environmental impact of our products, Total is closely involved in programs to assess this impact. A large number of projects are now being prepared, often as part of international producer consortiums, or evaluated by regulators as part of voluntary High Production Volume Chemicals (HPV) programs, or under the European Union and OECD REACH programs. The HPV programs are being carried out by the global chemical industry, under the aegis of the International Council of Chemical Associations (ICCA), and by the U.S. chemical industry in cooperation with the Environmental Protection Agency (EPA). All of these programs can have a significant impact on the future of the chemicals assessed with, for example, new regulatory classification, stricter occupational exposure thresholds, tougher emission standards during production and use, and in some cases banning or restrictions on use in certain markets.

French, European Union and international regulatory authorities often request our expert input when setting acute and chronic toxicity reference values for a growing number of chemicals. These values are then used in accidental emission scenarios, in the event of transportation accidents to protect emergency responders and populations, to manage urban development around industrial sites, or to protect populations and the environment around sites in the event of repeated fugitive emissions.

## Promoting Individual and Community Health

Total uses the World Health Organization's (WHO) definition of health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. This is why our units also promote healthy living through employee awareness and information programs on basic medical subjects.

The programs reflect health practices of the host regions and take into account national public health programs and local social, economic, regulatory and cultural factors. Posters, leaflets, theme days, and intranets are used to provide information on subjects such as smoking, alcohol, back problems, stress, cardiovascular disease, nutrition, domestic accidents, driving, immunization, malaria and HIV/AIDS, depending on the country.

## HIV/AIDS Prevention and Treatment

The human, economic and social consequences of the HIV/AIDS pandemic, in particular in sub-Saharan Africa, led Total in 2003 to formalize and strengthen initiatives undertaken by subsidiaries for employees and their families, or close to 45,000 people. In particular, we increasingly reimburse the cost of triple therapy, where necessary.

Confidentiality is respected at all times and, in line with our Code of Conduct, people infected with the virus are not discriminated against.

In the Congo, Cameroon, Gabon and Nigeria, the Exploration & Production subsidiaries have introduced programs and an organization to look after employees and their families, in cooperation with national programs to combat HIV/AIDS or with local or international associations. Some of these programs have existed for several years.

In late 2003, Total E&P Angola began a vast operation that will continue through most of 2004, in cooperation with a French NGO. Launched on World AIDS Day, the program targets onshore and offshore operations, offices, and residential and recreational sites. Some 730 people attended the 20 launch presentations, which consisted of a bilingual French and Portuguese slide show followed by Q&A sessions and the distribution of information materials and condoms. For the duration of the program, posters and messages will be included in the subsidiary's internal newsletter and posted on the intranet. Employees can also use an e-mailbox and boxes installed on the different worksites to ask their questions freely and confidentially.

A similar program has thus far been deployed in 37 of the 43 Refining & Marketing subsidiaries, accounting for 90% of the workforce. The shared process includes:

- Information/awareness initiatives comprising assessment of employee and family familiarity with the disease, detection among employees, and training of “educator peers” of the same culture; these peers, usually volunteers, enhance the effectiveness of information campaigns through their ability to listen, advise and reassure.
- Prevention initiatives and condom distribution systems.
- Promotion of voluntary, anonymous, confidential testing and diagnosis, selection of labs and medical centers with the aid of local partners and referring physicians.
- Medical, social, psychological and financial support for HIV-positive people who ask for this assistance under the subsidiary’s medical insurance.

The initiatives are tailored locally to each country’s features and public health programs. They are conducted in cooperation with reputable local stakeholders, such as national HIV/AIDS programs, physicians, public and private treatment structures, national and international NGOs, and groups of companies.

This policy runs into two main problems. The first is psychological. The programs have to integrate beliefs, taboos, and cultural barriers that cause many people to be reluctant to be tested because of misconceptions about the illness or because they are afraid of being rejected by the community or of being discriminated against at work or losing their jobs. They need to be reassured, encouraged, and convinced of the benefits of early testing, the effectiveness of treatments and the need to pursue them.

The other problem is technical. Not all countries receive regular supplies of the appropriate equipment and medication. In 2003, the average treatment cost per year for a person with the illness varied by a factor of one to ten depending on the country.

In order to discuss practices and examine new forms of cooperation for greater effectiveness, Total has also joined two associations of companies engaged in similar programs:

- *Sida-Entreprise*, a French association of around 20 companies, most of which are members of the French Council of Investors in Africa (CIAN).
- The Global Business Coalition on HIV/AIDS (GBC), an international group of more than 100 companies, most from North America and the United Kingdom.

### Medical Research

Total supports research performed by the Franceville International Center for Medical Research (CIRMF), based in Gabon’s Haut-Ogooué province. The center works in partnership with international institutions such as the WHO, the U.S. Centers for Disease Control and Prevention, the French National AIDS Research Agency (ANRS), Cambridge and Cardiff Universities in the United Kingdom, and the Pasteur Institutes. Our biological and epidemiological research mainly covers:

- Parasitic diseases, such as malaria, filariasis and trypanosomiasis.
- Human retrovirus infections (HIV/AIDS, human T-cell lymphotropic virus – HTLV).
- Emerging viral diseases, notably hemorrhagic fevers such as Ebola.

Studies currently focus on joint parasitic-viral infections and interspecies viral transmission.

The CIRMF is part of the Global Outbreak Alert and Response Network coordinated by the World Health Organization, reporting on Ebola in central Africa. Its location in the interior of Africa, its resources (including a Level 4 biosafety laboratory), and the skills and fast response of its staff enabled it to play a key role during recent outbreaks affecting humans. Fast response makes it possible to rapidly establish a scientific biological diagnosis and to implement preventive public health measures for local populations. During the last decade, repeated sporadic outbreaks in tropical rainforest regions have decimated major monkey and chimpanzee populations, then spread to villages in hard to access provinces in Gabon and the Congo. An outbreak infected 143 people and killed 128 between January and April 2003 in the Mbomo and Kelle districts in the Congo.

Alongside Gabon and the *Coopération Française* organization, Total is an active member of the Board of Directors of the Center, to which it contributes funding of \$4 million a year.

### Multidisciplinary Health-Related Coordination

In 2003, a team comprising representatives of the Safety Department, the Sustainable Development and Environment Department, correspondents from our four businesses, and the Social Innovation and Diversity Department (coordinator) was formed to examine and track the main lines of our health policy. In this way, the efficiency of long-established actions will be enhanced across all our sites, through joint analysis of underlying issues, centralized management of some issues, increased consulting of outside and internal experts, and the implementation of pilot projects.

Managing our health policy is a multidisciplinary process:

- A Steering Committee, chaired by the Senior Vice President of Human Resources, brings together HSE, sustainable development and human resources managers from across the Group and businesses. It meets every three months to identify the main issues to be analyzed, review actions in progress and set the objectives of technical groups.
- The technical groups, consisting of physicians, toxicologists, and HSE and human resources professionals, examine specific issues in greater detail, with the support of internal and external reports and experts.
- In addition, a medical advisory committee, consisting of French and non-French experts and physicians from outside Total and chaired by the Group's Medical Advisor, meets twice a year with Safety, Sustainable Development, Environment, Health and Human Resources managers to examine specific health-related issues in more detail (in 2003, stress and HIV/AIDS).



1

Total E&P Angola: Initiated in 2003, an HIV/AIDS campaign organized with the *Douleurs Sans Frontières* (Pain without Borders) NGO is continuing in 2004.



## ● Information on Employee Statistics

The statistics on pages 82 to 103 were compiled from three different sources: the Global Workforce Analysis, the Worldwide Human Resources Report, and the Internal Survey.

The **Global Workforce Analysis** is conducted twice a year, on June 30 and December 31, in all companies owned 50% or more by the Group. The figures in this report are those of the December 2003 survey for fully consolidated companies included in the annual report. The data covers worldwide workforces, the male workforce, the female workforce, managers, non-managers, employees under permanent contracts, and recruitment of men, women, managers and non-managers. At Total, the term manager covers any position of responsibility corresponding to a rating greater than or equal to 300 points in the scale established by Hay Management Consultants. Since 2002, these data have been subdivided by age bracket (under 25, 25 to 34, 35 to 44, 45 to 54, and over 54). All companies participated in the December survey and 99% of them worldwide provided information on age brackets. For the first time, at end-2003, the correspondents indicated their responses on a dedicated Web site. These were validated by correspondents in the businesses, before being entered in the database and analyzed. To reduce the risk of error, the new system allows for internal controls to be performed during input, such as comparison with data from the previous survey and verification of sums (men + women, managers + non-managers, etc.).

The **Worldwide Human Resources Report** is an annual year-end survey using the same application as the Global Workforce Analysis, with similar internal controls and an identical feedback and validation process. This survey tracks year-on-year changes in indicators on nine key themes: recruitment, mobility and career management, employee dialogue, human rights, health, quality, compensation, retirement and insurance, and training. It covers a sample of 105 Group companies (consolidated scope), which takes into account the breakdown of employees by business and region. The figures in this report correspond to the data compiled from the 88 companies that had responded at end-January 2004 and whose responses were validated by the businesses. These companies account for 74% of the global consolidated workforce and operate in 30 different countries. The data sought are quantitative data, yes and no answers, and verbal comments on existing systems. Most of the questions allow comments to be made.

The **Internal Survey** is based on a questionnaire sent to employees, in contrast to the other two, which are completed by the human resources departments of the units. Unlike them, which are managed from inside the Group, this survey is performed by an outside company with recognized expertise, which deploys the necessary resources, guarantees the confidentiality of responses, and summarizes the information. This survey was conducted for the first time in 2000 and became annual in 2003. It is carried out in the fall and covers employees representing the entire Group. The most recent survey covered 137 sites; 23,800 employees were contacted, consisting of the 6,000 principal international managers and 17,800 European employees selected by random sampling. A total of 10,200 employees responded. In 2003, the questions enabling us to identify the categories were reviewed to provide more details about management responsibilities, length of time in the position, and age brackets. For the survey itself, the focus was mainly on the perception of pride, management, one's place and role, working conditions, and awareness of societal issues. It included 136 questions divided into 40 main categories, of which several allowed for comments by the employees. Some of the questions provide useful additional data to the Worldwide Human Resources Report. A majority of the questions were carried over from the previous survey, so as to assess the change in employee opinions. The summaries of results are presented to the different Group and business management organizations, as well as employee representatives, and are accessible on the intranet. The subsidiaries and different sites have direct access to the data related to them, and can request assistance with analysis.





# Universal Human Rights and Cultural Diversity

Interview with Jean-Pierre Cordier  
Chairman of the Ethics Committee



**Total sometimes conducts business in countries where human rights are violated. What can you do about this? Or, to put it another way, how much can you do?**

**J.-P. Cordier:** Respect for human rights in the broadest sense is a primary objective, and we must do everything we can to stop violations of these basic rights wherever we do business. However, as a private company we have no legal authority to intervene in the political processes of our host countries. We therefore express our beliefs through ongoing dialogue — sometimes at the highest level of government and sometimes via local initiatives, when they could be useful. The process isn't necessarily publicized, since that might jeopardize its effectiveness, but in certain sensitive countries managers are involved in such actions on a daily basis, however discreetly. Owing to our status as project operator and sometimes the sheer economic weight of our oil operations, we often wield a certain amount of influence, but unfortunately this isn't always the case.

**Unfortunately, the human rights situation is slow to improve in many countries. Is dialogue enough to make things better?**

**J.-P. Cordier:** Your question touches on the problem of how private companies can promote respect for human rights. It's not easy to strike the right balance between condemning the inaction of certain governments, developing the

fruitful dialogue and tangible initiatives that produce genuine progress, and refraining from interfering in internal problems.

We must address these demands if we want to avoid being accused — as is often the case with multinational corporations — of overstepping our bounds and trespassing in the social and political arena to promote Western cultural imperialism. However, it would be unacceptable to adopt a *laissez-faire* attitude in the name of cultural diversity or political neutrality. We are constantly monitoring the situation and seeking the most effective initiatives possible. Moreover, it's in our interest to do so, since a business can only be profitable to both the company and local population if it has been successfully integrated into the country's socio-cultural fabric, in a way that respects everyone.

**What kind of relationships do you have with local communities and their representatives?**

**J.-P. Cordier:** At project sites we maintain ongoing contacts with neighbors, representative associations, supervisory organizations and elected officials. In developing countries, we also sponsor socio-economic programs to improve living conditions and educational opportunities in host communities, in addition to participating in existing local and national programs. Here too, we must be careful to avoid interfering with the political authorities, so we work within a strict partnership format that clearly defines respective responsibilities. This is the only way to establish a constructive, sustainable relationship with host communities and to guarantee that our operations run smoothly, an outcome that largely depends on the quality of this relationship.

### Are there any countries where you won't do business?

**J.-P. Cordier:** Our position is clear. We only undertake projects in countries where our presence is authorized by the United Nations and the European Union and where we are able to comply with the principles and values laid out in our Code of Conduct.

### Total's Code of Conduct is a short, fairly general document without any prohibitions or practical advice, which would seem to limit its scope and impact. Do you agree with that assessment?

**J.-P. Cordier:** Our Code of Conduct is not intended to dictate how each person is supposed to act under all circumstances on the job. As a basic document it spells out the values and principles that all Group employees are expected to embrace. It is meant to serve as a reference and guide for responsible behavior by getting people to think. In my opinion, this is the best approach for a multinational company like Total. Perception of ethical concepts is strongly conditioned by such factors as history, culture and religion, and varies from one continent or country to another. A code of conduct must therefore contain universally understood values and refer to internationally recognized conventions such as the 1948 Universal Declaration of Human Rights, which means that its tone is necessarily fairly general. But it still remains firm in its purpose and its vigilance against any form of non-compliance.

### Is a code of conduct really necessary? Isn't it enough to respect international laws and conventions?

**J.-P. Cordier:** Strict compliance with international laws and conventions isn't enough, and we need more than that to justify the legitimacy of our operations. We need to have a code of conduct because it's important for us to have a positive impact on the human rights situation in the non-democratic countries where we operate. A number of organizations oppose Total's very presence in countries that flout "Western values," and stigmatize our business. But will this intransigent attitude, accompanied by extensively reported pressure on us to withdraw, deliver any real social progress for the people concerned? In my opinion, no. Quite the contrary, I believe our presence in these countries can be a source of progress.

### How?

**J.-P. Cordier:** You're not going to improve an already difficult situation by boycotting a country and consequently its entire population. Apart from South Africa with its unique historical circumstances, embargos hurt the already disadvantaged, inflame radical nationalistic sentiment, and fail to promote the values in whose name the media-glorified pro-embargo campaigns are waged. On the other hand, the presence of a Western company in an outcast country with a despotic regime can encourage receptiveness to new ideas and behavior and provide a gateway to the outside world. It goes without saying that this can only be done if the company in question conducts itself irreproachably and doesn't worsen the insecure environment through unethical dealings with the authorities. This is the basis on which the legitimacy of our presence in controversial countries is founded.

### What about Myanmar (Burma), where Total's presence is strongly criticized by some organizations?

**J.-P. Cordier:** As an oil company, we have to work in many difficult countries, including Myanmar (Burma), which has become a symbolic crusade for many activists, especially in the English-speaking world. Obviously, our chief responsibility is to avoid taking advantage of the democratic failings of these regimes and instead raise awareness of the fact that other options exist by adopting an open attitude and listening to our local employees, subcontractors and neighbors. In this regard, our experience in Myanmar has taught us a lot about the need for us to serve as an example and the importance of being a final resort when the local population has no other means of defending its fundamental rights.

### How do you make sure these responsibilities are understood and fully assumed?

**J.-P. Cordier:** Implementation of the Code of Conduct principles is subject to a monitoring procedure known as ethical profiling — described in this report — which carefully audits each of our subsidiaries in order to pinpoint our strengths and weaknesses. In addition, our traveling Ethics, Values and Culture seminar aims to familiarize as many employees as possible with our philosophy.



# Human Rights

Our presence in more than 130 countries requires that we pay special attention to fundamental human and social rights, due to the challenges of ensuring the compatibility of extremely diverse economic situations, political practices and cultural references with the universality of basic human principles. Morally irreproachable behavior on the part of our teams is critical to deploying the “governance contract” as understood by public opinion.

One component of this behavior is respect for the founding principles of human rights and compliance with the UN, European Union and French laws, rules and resolutions stemming from these principles, in particular in the area of investment and labor law.

These principles are set out in our Code of Conduct. Their application is reflected in our everyday operations by the trust-based, fair relations we are committed to nurturing with employees, contractors, industrial partners and local communities.

In addition to this respect for basic principles, a second component of our governance practices is the refusal to interfere in the political affairs of our host countries and the promotion of enhanced transparency in the management of oil and gas resources. Our commitment to non-interference does not prevent us, however, from speaking out in favor of respect for human dignity when the situation requires.

## ● Enhancing Employee Awareness of the Code of Conduct and Its Application

In 2003, the Ethics Committee organized 15 day-and-a-half long seminars to enhance employee awareness of ethics and cultural diversity. In all, five seminars were held in France, and the ten others in Angola, Belgium (two), Gabon, Italy, Morocco, Nigeria, Norway, South Africa and Spain. The program began in January 2003 in Paris.

The seminars were attended by around 2,000 corporate lawyers, human resource specialists, operational managers, and other employees, who took advantage of the opportunity to talk with members of the Ethics Committee and discuss the diversity of situations and constraints they encountered. The program is continuing in 2004, with around another 20 seminars.

The seminars are an effective forum for exchanging experience on the wide array of practices and the universal nature of fundamental human rights. At the same time, they allow the Code of Conduct to play its essential role of encouraging reflection, fostering initiative, demanding vigilance and appealing to everyone's sense of responsibility.

## ● Security in Tense Regions

### Importance of Preventive Measures

In unsafe or unstable countries, it is our duty to take all the measures necessary to minimize risks, both to local employees (and their families) and to employees of contractors working at our installations.

This vigilance is reflected in the strict security instructions that all these employees are expected to follow. These instructions can sometimes be restrictive, such as the preventive repatriation of expatriates' families in the event of growing tension, keeping personal and group travel to a strict minimum, the obligation to live in secure residential compounds, and even, as a last resort, withdrawal of all personnel and temporary shutdown of operations.

Crisis plans have been prepared and are regularly tested in any region where there is a high risk of attack or where there is already conflict. In the event of a major crisis, teams can be withdrawn to specially designed bases offering a safe haven in the rear. Highly secure sanctuaries can also be provided for local employees and contractors in tense regions, for maximum protection in the event of a major crisis.

In 2003, a number of crises necessitated action in various regions:

- Serious threats of attacks, in particular in the Middle East and Indonesia.
- Political instability, both more or less chronic, as in Venezuela and Côte d'Ivoire, and more sudden, as in Bolivia.
- Serious insecurity in Colombia, due to the persistence of armed rebellion.
- Worsening tensions in Nigeria, forcing us to briefly halt onshore operations.

### Principles

The resources implemented to ensure the security of people and property are based on the *Voluntary Principles on Security and Human Rights*, published in December 2000 under the aegis of the U.S. Department of State and the U.K. Foreign Office.

In line with these guidelines, Total is responsible for the security of our employees and installations within the perimeter assigned to us. Outside this perimeter, local law enforcement organizations are responsible for security. We maintain ongoing dialogue on these distinct responsibilities to prevent misunderstandings or incidents.

### Security Policy

Total's security policy is designed to protect our people, installations, technical assets and information, integrity and image from any tangible and intangible threats.

Our commitment to security is based on compliance with codes of conduct and ethics, as well as respect for the fundamental values that govern our operations worldwide — professionalism, respect for employees and stakeholders, and an ongoing concern for health, safety and environmental protection as part of a sustainable development process.

Employee participation, commitment and sense of responsibility are critical to an effective security policy. All security-related activities must comply with the general principles set out in the Code of Conduct and Ethics. These fundamental principles, described below, provide a reference framework for defining and implementing security policy across our subsidiaries.

- 1 Employee security and protection shall be the main criteria determining how operations are conducted.
- 2 Security policies and procedures shall comply with the Universal Declaration of Human Rights, national and international legislation, and the *Voluntary Principles on Security and Human Rights*. Respect for human dignity is a fundamental value that cannot be infringed in any way.
- 3 The managers of our units, whatever their level, are at all times responsible and accountable for the security aspects of their operations. This commitment must be clearly reflected in their organization.
- 4 Prevention shall be our main priority. Threats and risks are constantly analyzed and assessed.
- 5 Fast, efficient management of events requires good planning. As a result, plans for managing potential risks are prepared and tested.
- 6 Security measures and procedures are regularly checked by security specialists and updated to maintain high levels of protection for our operations worldwide.
- 7 The professionalism, capabilities and integrity of people working on behalf of Total in the area of security must be beyond reproach and diligently assessed. Specific procedures shall govern hiring, signature of contracts, and appropriate training programs.
- 8 All incidents, including failures and shortcomings in the security system, shall be reported and logged. The appropriate corrective measures are assessed during periodic inspections in order to improve the general level of security.
- 9 Generally speaking, security for our installations is provided by unarmed guards. However, if there is no other alternative when dealing with certain types of risk, armed guards may be used, in line with local legislation and agreements with the host country. In such cases, the armed guards undergo a rigorous selection process, receive regular training and are closely supervised.
- 10 While recognizing the importance of deploying security measures to protect our employees and local personnel, Total strives to minimize the impact of this policy on neighboring communities.

Industrial operations and security are inseparable, a situation that must be reflected in our security procedures and guidelines.



Michel A. Bonnet  
Vice President, General Security

# Ethical Profiling

## Enhancing the Transparency and Professionalism of Our Practices

In 2003, we continued our program, coordinated by the Ethics Committee, to ensure that the Code of Conduct is being correctly applied. Known as Ethical Profiling, the program is based on an innovative methodology developed by U.K. accreditation company GoodCorporation and validated by the Institute of Business Ethics in London. To develop a benchmark for the

process, the action principles in the Code of Conduct were divided into six stakeholder categories — shareholders, employees, customers, suppliers and contractors, industrial partners, and host countries — and then broken down into 76 compliance criteria, known as “evidence points,” whose front-line application is verified externally by the GoodCorporation team.

This process-based verification is supplemented by individual interviews with representatives of the different stakeholder categories. Each evidence point is thus assessed in four successive stages:

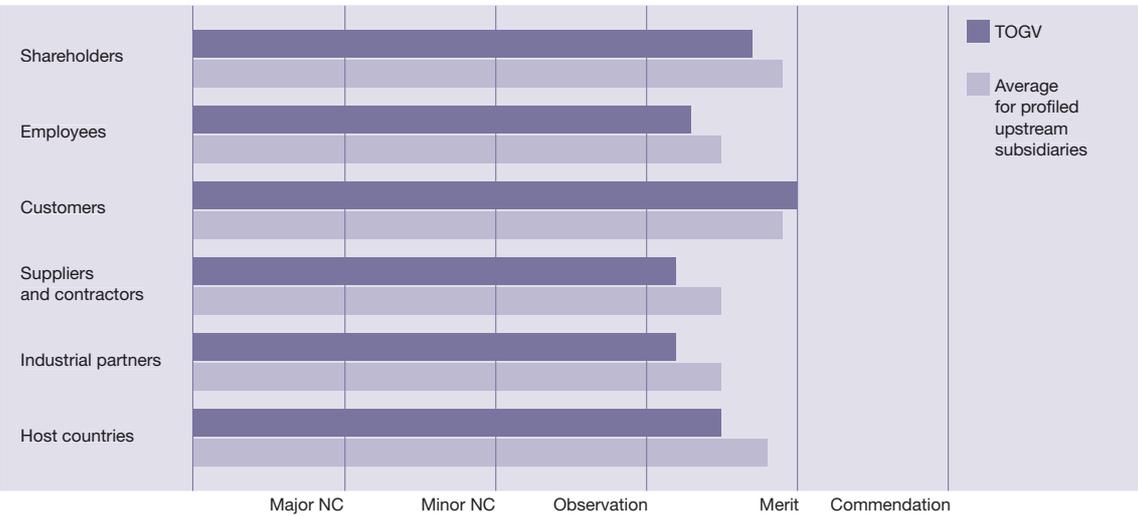


### Compliance is then graded as follows:

- **Major non-compliance:** There is no policy or criteria, or the system does not work.
- **Minor non-compliance:** There is a system in place, but it does not always work.
- **Observation:** The system works, but there is room for improvement.
- **Merit:** The system works well.
- **Commendation:** The system is a benchmark for best practice.

The 76 grades obtained make up the unit's “ethical profile,” providing an outside view of our ethical and societal performance. The results can be analyzed in a variety of ways, for example by category of stakeholder, as below.

### Overview of the results of a subsidiary: Total Oil & Gas Venezuela



## A Management Resource

Ethical profiling gives the unit concerned an accurate overview of how well its operations comply with Total's principles and how well it is satisfying its internal and external stakeholders. This means the unit can compare performance with expectations, offering a clearer vision of its practices. In turn, this enables managers to rank compliance priorities, while respecting the distinctive nature of local challenges and requirements.

At the Group level, profiling enhances the consistency of corporate social responsibility policies. The main advantage is being able to compare the profiles and create a database of best practices to be promoted and implemented across the Group. Although environments vary from one country to another, subsidiaries often face similar dilemmas, which underscores the benefits of having more effective information sharing on these issues. Case studies will be available on the intranet in the near future, providing responses for other units that are reviewing their practices and possible improvements.

### Examples of results reported in subsidiaries profiled in 2003

#### Best practices

#### Practices to be improved

Shareholders	
• Methodical, regular reporting	• No promotion of the Code's values (Europe)
Employees	
• Effective consultation systems and processes • High level of safety at operational sites	• Unclear contractual terms • Unclear disciplinary and grievance procedure
Customers	
• Efficient customer service • Continuous product improvement processes	• Customer feedback poorly reported • No formal gift policy
Suppliers	
• Strict control of compliance with safety regulations • Clear contracts, flexible terms and conditions	• No formal anti-corruption policies • No promotion of corporate social responsibility
Industrial partners	
• Clear contractual clauses • Effective data protection	• Incomplete assessment of the partner's ethical risk • Code of Conduct not promoted outside Europe
Host countries	
• Involvement in local projects outside Europe • Open dialogue with sensitive communities outside continental Europe	• Involvement in neighboring communities in Europe • Employees not encouraged to participate directly in local projects

Following pilot tests in the United Kingdom and Morocco in 2002, ethical profiling was extended to some 20 units worldwide in 2003.

Exploration & Production	Gas & Power	Refining & Marketing	Chemicals
<ul style="list-style-type: none"> <li>Total Angola</li> <li>Elf Gabon</li> <li>Total Oil &amp; Gas Venezuela</li> <li>Elf Petroleum Nigeria</li> <li>Total Norge AS</li> <li>Total Syrie</li> </ul>	<ul style="list-style-type: none"> <li>Electrica Argentina</li> <li>Total G&amp;P UK</li> </ul>	<ul style="list-style-type: none"> <li>Charvet</li> <li>Total Belgium</li> <li>Total Kenya</li> <li>Elf Lubricantes Mexico</li> <li>Total Nigeria Plc</li> <li>Total Raffinaderij Antwerpen</li> </ul>	<ul style="list-style-type: none"> <li>Sartomer</li> <li>Atofina South East Asia</li> <li>Ceca, France</li> <li>Atofina Petrochemicals USA</li> <li>Atofina Fluor China</li> </ul>
2002/2003	2003/2004		

Profiling also enables senior management to track corrective measures implemented to offset the shortcomings identified. This encourages the subsidiary to better manage its risks, in particular in terms of image and reputation, and makes it easier for us to respond to rating agency questionnaires. In the long term, this process should facilitate the transfer of information and responsible practices.

# Myanmar: Promoting Human Development in a Heavily-Criticized Country

Total's presence in Myanmar since 1992 has triggered controversy and a number of lawsuits (see page 115). Public liberties and human rights are infringed in the country, especially through forced labor, and have caused a critical distancing of the international community, a sharp slowdown in foreign investment, and the withdrawal of a number of Western companies. The May 2003 arrest of Aung San Suu Kyi, the leader of the democratic opposition, seemed to ruin the hopes of national reconciliation that had arisen from a hesitant political opening in 2002. In response to the arrest, the United States imposed a full trade embargo, while the European Union tightened its sanctions. The outlook appears to have improved slightly with the government's publication in the summer of a "road map for democracy" that includes reconvening a National Convention for delegates from all walks of society.

Despite this situation and the increasing pressure being exerted by some members of the international community on the Myanmar regime, Total remains in the country. We are convinced that our presence benefits the country's economy and that our societal initiatives in our host region help to create sustainable economic activity and promote human rights. This belief is not shared by everyone, and a number of NGOs and political organizations are demanding that we withdraw from Myanmar.

## Reasons Why We Believe Engagement is Constructive

First of all, developing the Yadana field capitalizes on the country's gas resources while creating skilled local workers. Of the 800 people who work for Total and our subcontractors, 95% are locals and have received significant training. In addition, since 1995, the project has been supported in the field by a socio-economic program designed to:

- Help the very disadvantaged people in the corridor achieve satisfactory living conditions, while ensuring that human rights are respected.
- Enable Total to work efficiently with the local people and establish conditions conducive to genuine dialogue.

The program's priorities, whose fit with villagers' real needs is constantly monitored through Village Communication Committees, are health care, education, economic development, and infrastructure. The program's content was defined in close cooperation with the more than 45,000 inhabitants of the 23 beneficiary villages. Total and our partners have already spent \$10 million on these initiatives, which saw the construction or renovation of a hospital, eight health centers, around 50 schools, roads, water wells and supply systems, bridges, and other infrastructure. The program is deployed by physicians, veterinarians, and agriculturalists, all of whom are Myanmar nationals and live in the villages.

Infant mortality, malaria, and gastrointestinal and respiratory diseases have declined significantly with the introduction of free treatment, and general health standards have improved. Our educational initiatives mean that all children can now attend school under satisfactory material conditions, and the attendance rate has doubled. Technical support, model farms and micro-credit have stimulated economic development. At end-2003, 1,200 farmers were taking part in the crop development program, which comprises two parts:

- Economic development, to encourage the cultivation of rice, vegetables, cashew nuts, oil palms and rubber trees.
- Support for the disadvantaged, with the "backyard vegetable project."

In addition, 250 small pig farms and 250 chicken farms were created. Fishing and local businesses are supported and encouraged.

Initially intended for residents of the 13 villages closest to the pipeline, Total's socio-economic program was gradually extended to encompass 23 villages in the pipeline corridor in 2001.

The same year, we began supporting the Helen Keller International Foundation, which combats blindness in different regions of Myanmar. We also support orphanages that are home to 1,000 children in the Yangon region and are currently examining a new country-wide medical project.

### Critical Evaluation of the Socio-Economic Program

In 2003, around 15 French, Belgian, British and American journalists, a number of diplomats, and the International Labour Organization representative in Myanmar were able to assess the reality and effects of our initiatives during a visit to the Kanbauk region, through which the Yadana pipeline runs. In addition, the program's design and outcomes continue to be observed by specialists. For instance, The Collaborative for Development Action (CDA), a U.S. organization whose Corporate Engagement Project (CEP) is designed to help multinational corporations clarify the impact of their operations in areas affected by socio-political tensions or conflict, followed up its original October 2002 visit with two more in 2003. The CEP is financed by the governments of Canada, the Netherlands, Germany and Denmark, the World Bank and large corporations. In addition, Dr. Bernard Kouchner, founder of *Médecins sans Frontières* and former French minister, evaluated our health care initiatives in the pipeline region and is helping us to expand them into other provinces. As well, a number of humanitarian organizations working in Myanmar have observed our operations and shared their experience with local managers.

A dedicated Web site, [burma.total.com](http://burma.total.com), was created in November 2003 to present the project, the related controversy and criticisms, and the reports published by the CDA and Dr. Kouchner.

In its latest report, the CDA confirmed the positive effects of the socio-economic program, the engagement of the team responsible for deploying it, and the assertive involvement of the villagers. It pointed out that the pipeline corridor is "one of the very few pockets in Myanmar/Burma where some form of civil society structure is in place," enabling villagers

to gain experience in "electing representatives." The CDA's comments and criticisms will enable us to tailor our initiatives to ensure that the local economy is not over-reliant on the support program. This will drive sustainable progress, channel support to the disadvantaged, and minimize the gap between the villages covered by our program and neighboring villages.

### Total in Myanmar

The CDA reports and Dr. Kouchner's report also raise the more general issue of our presence in Myanmar and our responsibility to the country in light of its problems. Both support Total's continued engagement in Myanmar, where they believe we are doing worthwhile work.

Dr. Kouchner states: "Should energy companies have responded to the request for bids and built the natural gas pipeline in Myanmar? I believe so. Otherwise, they would be in another business. (...) The generals will not be able to maintain their dictatorship eternally, and democracy will need economic and industrial development to flourish. This is particularly true for the public health system. It is impossible to build an effective prevention system or a hospital network on international charity alone."

But clearly, in Myanmar today, Total cannot simply implement its sustainable development, environmental stewardship and human development initiatives for communities without also considering broader human rights issues. This was emphasized by Dr. Kouchner, who recommended that we "take a stand by clearly expressing a preference for democratic regimes," or at least for human rights, and publicize this commitment.

In fact, Total has been doing just that since at least 1995, when we firmly and resolutely eliminated forced labor in the Kanbauk region.



### The Yadana Project

Total operates the Yadana gas field in the Andaman Sea offshore Myanmar (Burma). With estimated reserves of 150 billion cubic meters of gas and a life of 30 years, the field produced 17.5 million cubic meters of gas a day in 2002.

The gas is piped from the offshore field to the border with Thailand, which consumes 90% of the output to fuel power plants in the Bangkok region; the remaining production is used locally.



Our initiatives delivered genuine progress, as illustrated by this quotation from the first CDA report, in which villagers indicated the advantage of having recourse when the army requisitioned labor: "Total has the voice to be heard in high places. This keeps us from being forced to work for the army." Although forced labor is still a widespread practice in Myanmar, our commitment is having a national impact, because it challenges the government while emphasizing the need for strict respect of human rights.

In line with the neutrality of our Code of Conduct, Total does not interfere in discussions between political factions. But this did not stop us from officially voicing our concern during the events in May 2003 that culminated in the arrest of Aung San Suu Kyi. More recently, we expressed our interest in the road map for democracy and our desire to see the process launched rapidly, with the participation of all political parties.

### A Positive Presence in A Controversial Country

Through our presence and initiatives, we play an important role in Myanmar. The socio-economic program has brought a degree of peace and prosperity to around 45,000 Myanmar nationals. In various areas, such as employment, workplace safety, environmental stewardship, community development and health care, Total's initiatives are a factor of progress. One of the problems from which Myanmar suffers is its isolation, in part historical and deliberate. Anything that contributes to the country's outward opening and maintaining critical dialogue between the regime and the international community is in the interests of human rights and of the people of Myanmar.

### Legal Proceedings Currently Underway

- **France: Lawsuit for complicity in unlawful confinement filed in 2002 in the Nanterre court. Total's former manager in Myanmar was heard as a witness under potential indictment.**
- **Belgium: Lawsuit for complicity in crimes against humanity. Magistrates are expected to dismiss the suit following the July 2003 repeal of the Universal Jurisdiction Act.**



1 2

A child immunization program in the Kanbauk region. The introduction of free health care has significantly reduced infant mortality and local disease rates. Total is currently studying a new country-wide medical project.



# Business Ethics and Transparency

More transparent management of revenues generated by extractive industries in some countries is a decisive driver for better governance. Corruption, which is often associated with a lack of political and economic maturity, is not only an obstacle to development, but also a source of political and social tension that is extremely prejudicial to the people of a country.

Total unequivocally condemns such practices, as reflected by its participation from the outset in the Extractive Industries Transparency Initiative (E.I.T.I.), which targets enhanced transparency in the management of mineral resources in least developed countries.

In particular, the E.I.T.I. covers:

- Declaration of taxes paid to States by private and state-owned extractive companies.
- Compilation and publication of data by an independent authority such as the World Bank or the International Monetary Fund.
- Respect for the confidentiality of existing contracts.
- Prior approval by States.

In June 2003, the E.I.T.I. recommendations were adopted by the G8 Summit in Evian, France, while in December 2003 Total issued a press release in support of the slightly earlier declaration by Nigerian President Obasanjo that his country would implement the recommendations.

## Update on the “Elf Affair”

Begun on March 17, 2003, the Elf trial ended on November 12, 2003 when the Paris Criminal Court handed down its ruling. Thirty of the 37 defendants were given prison sentences ranging from six months suspended to five years and ordered to pay fines of €30,000 to €2 million for fraudulent use of corporate property and receiving stolen property.

The ruling marked the outcome of an eight-year investigation opened when a lawsuit was filed against a person or persons unknown and Elf Aquitaine constituted itself plaintiff claiming damages. Between 1989 and 1993, Elf Aquitaine, then a state-owned company, had been the victim of various frauds that enabled large sums of money to be embezzled. These transactions, which deliberately violated all rules of ethics, were perpetrated by a group of senior executives acting mainly in their own personal interest. The ruling demonstrated that funds were indeed misappropriated from Elf Aquitaine and two of its subsidiaries.

Thirty people were found guilty and sentenced to pay total fines of €19 million and close to €200 million in damages and interest to Elf Aquitaine, today a Total subsidiary. Some of the defendants have filed an appeal, which means a new trial could be held in late 2004 or early 2005.

In order to avoid a recurrence of such incidents, an Ethics Committee was set up by Elf Aquitaine in February 1995, followed shortly thereafter by training in methods to combat different forms of corruption. By the end of 1999, around 3,500 Elf Aquitaine managers had attended these courses.

## The Main Types of Oil Production Contract

All aspects of the oil industry are strictly regulated and monitored, from booking production and setting tax prices by host countries to preparing profit and loss accounts. Exploration and production operations are governed by a stringent legal framework that takes into account the different types of operator, the different ways of obtaining licenses, and the different business and technical partners.

Contracts granting mineral rights are concluded either with States or with the state-owned oil companies that represent them. Revenue-sharing regulations are clear and specific, determined by public laws and contractual provisions that can be audited.

**The concession contract** is the most conventional type of contract signed with States. The oil company owns the assets and installations and receives all the production. In return, it bears all the operating risks, costs and investments and agrees to pay the State, which owns the mineral resources, a royalty calculated on the amount of production, income tax, and any other tax provided for under local legislation.

After the merger between TotalFina and Elf, a new Code of Conduct was adopted and distributed to the subsidiaries of the new group between October and December 2000. In addition, a new Ethics Committee was created in March 2002. The Committee, which can be consulted or notified by any Total employee, responds confidentially to any question concerning application of the Code of Conduct under any circumstances. Through programs to enhance awareness of the ethical process, all of our employees are being made accountable on issues that are extremely important for the Group. The Ethics Committee guarantees compliance with our ethics policy and acts directly when issues that pose a problem cannot be resolved via the usual management channels. This was the case on 45 occasions in 2003.

#### **Compliance with the Rules of Free Competition: Atofina Further Empowers Management**

To supplement the Total Code of Conduct, Atofina introduced a Compliance Program in 2001 to ensure that the company, its subsidiaries and employees comply with national and European Union competition regulations. In 2003, the program was further amended to strengthen the accountability of managers across the organization regarding compliance with competition rules. An internal procedure now commits unit and subsidiary managers to implement effective measures to ensure the Code is respected in their operations. In particular, they must attest in writing to their support for the principles set out in the Code and their application, on behalf of themselves and their teams. The initiative also involved the appointment, by the Chemicals Management Committee, of a Compliance Officer responsible for ensuring correct application of the program, the preparation and continuous updating of practical competition guidelines, and the application of penalties in the event of infractions.

#### **Purchasing Policy**

Total's ongoing commitment to corporate social responsibility and compliance with Code of Conduct principles also encompasses purchasing and subcontracting processes. That's why compliance with our environmental and societal commitments (quality, environment, safety, etc.) is a criterion for selecting suppliers, incorporated in each business' purchasing guides. To more effectively integrate environmental and societal requirements into purchasing processes, a new Group-wide purchasing guide is being prepared and will be introduced in early 2004.

In addition, we systematically require our business partners, contractors and suppliers to adopt a code of conduct if they don't have one already and to comply with ours. This is one of the evidence points audited in the ethical profiling conducted by GoodCorporation, under the supervision of the Ethics Committee (see pages 111 to 112). Since January 2003, Refining & Marketing has distributed the Code of Conduct to contractors as part of its internal audit processes; this practice may be extended across our other businesses. Lastly, in line with our commitment to supporting economic development in host countries, we purchase local goods and services when supplier standards meet our requirements and commitments.

**The production sharing contract (PSC)** is more legally complex than a concession contract. It sets out the methods for sharing production and defines cooperation rules between the company or consortium holding the license and the host country, usually represented by a national company. This company may also participate in the operational decision-making process and in calculating costs and production sharing. The consortium agrees to perform and finance exploration operations at its sole risk and, in some cases, production operations. In return, it receives a portion of production known as cost oil that it can sell to cover its expenses (investments and operating costs). The remaining production, known as profit oil, is then shared, in differing proportions, with the State or the state-owned company.

Today, concession agreements and PSCs exist side by side, sometimes in the same country, and they are increasingly similar. Although other contractual formulas exist, concession contracts account for the vast majority of Total's portfolio of licenses.

In all countries, oil company accounts and compliance with contractual commitments are constantly audited by the host country authorities, often assisted by international auditing firms.



## Local Development

In emerging countries, our local development programs are designed to remedy the human and economic imbalances that our industrial installations and labor relations practices, along with the industrial and financial resources deployed, can create in local communities that are often very underprivileged and deprived of institutional support.

The social, educational, health care and economic support we provide often makes a strategic contribution to our projects. In Exploration & Production operations, our local development initiatives are frequently stipulated in specific clauses in production sharing contracts, not only in the Middle East, but also in a large number of emerging countries where training and skills transfer are crucial provisions. Ensuring that our operations satisfy local or even national expectations is the best guarantee of the sustainability of our societal programs.

All our local development initiatives are governed by the same core principles:

- 1 Consistency between local practices and our Group-wide principles, as expressed particularly in our Code of Conduct.
- 2 Respect for the prerogatives of host countries, especially in the areas of health care, education and the economy; we exclude subsidiarity between public and private responsibility.
- 3 Identification of effective local contact persons who express the genuine expectations of communities, and partnership with development experts to design, implement and track societal programs. These experts may be recognized representatives of local communities, government officials or members of non-governmental organizations.
- 4 Transparency concerning project type and implementation.
- 5 Ongoing attention to ensure that the positive impacts of programs are shared fairly.

## Definition of the Term “Local” and Its Application in Our Societal Programs

The term “local” is used to describe the geographic and community space in which it is likely, even foreseeable, that there will be strong interaction between our operations and their social environment. The definition of local can change over time, for example between the construction phase and the operations phase, and broaden from the neighborhood to the region or country.

We believe that this definition should avoid reinforcing a sense of entitlement in a particular group to the exclusion of others, nor should it create a rift between the region where a support program is being deployed and neighboring areas. It is therefore important to adopt a long-term strategic vision based on:

- Identifying interdependencies between our host community and the rest of the region or country.
- The relationship to be established between our local socioeconomic initiatives and nationwide programs implemented by the government. Our initiatives should not be perceived as undermining the credibility of government actions.

## Total’s Societal Initiatives in Figures

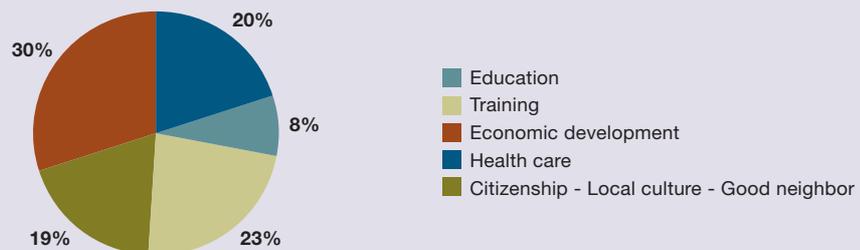
For the second year in a row, we inventoried our local development initiatives directed at stakeholder communities other than shareholders and their families. The list was prepared from societal data reported by all our Exploration & Production, Gas & Power, and Refining operations. For Marketing operations, it covers all subsidiaries in Europe, Africa and the French West Indies, as well as the main specialty units. In Chemicals, the reporting process encompassed a sample of eight subsidiaries and will be extended next year in line with the specific features of the business.

Subsidiaries spent more than €77 million on close to 2,000 societal initiatives in 2003. Expressed in dollars — the standard reference currency in oil-producing regions — and excluding some non-recurring initiatives in 2002, our spending was constant in relation to the previous year.

Seventy-five percent of societal spending, or €57 million, was directed to local communities in non-OECD countries.

- With 62% of its output coming from these countries, Exploration & Production accounted for nearly €54 million and 649 initiatives.
- The Overseas Marketing network, whose operations are scattered over large territories, spent €2.5 million on 250 actions, mainly focused on local culture and citizenship, such as support for associations and local community projects.
- Gas & Power, which is well established in Argentina, Chile and South Africa, was also very active in local development, with 40 actions undertaken at a cost of €700,000.

Non-OECD Societal Spending in 2003



Total amount: €57 million

## Education and Training

Human development begins with education and training, which are crucial to enabling people and communities to take charge of their lives. Included in our bids, programs to transfer oil industry skills are an inherent part of our operations, as illustrated by our long-standing practice in the Middle East.

At the same time, we continue to sponsor science students around the world. In spring 2003, we enhanced coordination by the Human Resources Department of our scholarship and bursary system to obtain a clearer picture of initiatives deployed Group-wide and to improve experience-sharing.

### Expertise and Skills Transfer in the Middle East

Over the years, Total has built up an effective partnership strategy in the Middle East to promote and organize the transfer of skills to host countries, a long-term undertaking. These skills-sharing partnerships are designed to:

- Contribute to high-level training to encourage the in-depth participation of nationals in major investment projects undertaken by Total.
- Enable host countries to benefit from technologies for optimum development of reserves. Enhancing oil recovery, a key challenge in the Middle East, entails transforming existing techniques, becoming proficient in complex technologies, and developing new processes.

Skills transfers mainly take place in the context of project implementation and management. In the Middle East, oil and gas resources are often developed by joint ventures known as operating companies (OPCOs) in which all shareholders have an interest. In this way, state-owned companies can leverage the expertise of international oil companies in their day-to-day operations.

Total also implements dedicated training programs, some of which are aimed primarily at local people working in our facilities. While technical in nature, these programs also integrate extensive managerial components. Our initiatives can also be extended to people and organizations other than local industrial partners.

### 2003 Highlights

#### Qatar

In October, Total signed an agreement with the Qatar Foundation for Education, Science and Community Development to establish a research and development center in Doha covering energy, petrochemical and environmental issues.

#### United Arab Emirates

- A Geosciences team of three experienced engineers has been working in Abu Dhabi since September, primarily to respond to OPCO needs in the areas of geosciences and reservoir engineering.
- All Total employees assigned to OPCOs are required to contribute significantly to transferring technology and skills, as well as to training young nationals. Their performance in this area is discussed during their annual performance review.
- As in 2001, Total supported the biannual Education without Borders conference organized by Abu Dhabi's Higher Colleges of Technology. The event brought together 400 students and teaching professionals on the topic of e-training. Total enabled two of its French interns to take part. In addition, we rewarded the best two student presentations with a one-week trip to Paris and produced a CD-ROM of the conference highlights.

**Yemen**

A number of training programs for local employees are in progress:

- Fifty-five young Yemenis are taking or have completed 14 to 18-month training courses to become production or maintenance operators. The program, begun in 2001, will be completed in June 2004.
- In 2000, Total recruited seven Yemeni graduate engineers and arranged a two-year training program for them, combining theory and practical work experience at headquarters. The beneficiaries have already worked in five of our subsidiaries, in Indonesia, Thailand, Myanmar, Qatar and Argentina.
- In addition, nine managers from the Ministry of Oil and Mineral Resources have been assigned to Total teams, where some of them have worked for more than ten years (five in geosciences, two in operations, and two in drilling).

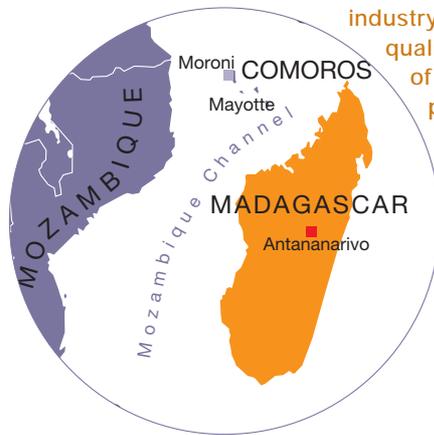
**Training Petroleum Product Carriers in Madagascar**

Total has launched a project to improve the quality and safety of overland petroleum product transportation in Madagascar.

The program falls within the scope of the UN-sponsored Global Compact, which Total signed in March 2002, and is being implemented in partnership with the Madagascar government, the UNDP, the Madagascar petroleum product carrier employers' group, the French Association for the Prevention of Risks related to Petroleum Product Transportation (APTH), and Madagascan labor partners.

The project trains chief executives in such critical industry processes as logistics, safety and management, and upgrades the on-the-job practices of drivers, mechanics, administrative staff, maintenance technicians and other operators. Training will also focus on improving the condition of the truck fleet, in particular by tightening acquisition, maintenance and replacement conditions.

The expected benefits are safer petroleum product transportation, enhanced transparency of transportation terms and conditions, and increased reliability of the petroleum production distribution chain. Another benefit will be the emergence of a formally organized industry that would create and maintain quality jobs. This initiative is part of the larger PATROM program to promote transportation safety (see page 69).



**1** Total implements dedicated training programs for local people working on our projects and in our facilities. Here, process training at Total's corporate headquarters in La Défense, just outside Paris, France.



## Scholarships, Bursaries and Student Sponsorship

For a number of years, Total has helped to train the future leaders of its host countries, awarding scholarships and bursaries, particularly in the Middle East. This practice was expanded in 2003 with the introduction of a global policy designed to enable young foreign students to study in France, to earn master's degrees and MBAs or to learn or perfect their knowledge of French. Around 15 countries benefit, mainly emerging nations where Total has well-established operations.

The beneficiaries are selected under partnerships between Total and the host country's leading institutes of higher education, such as Sharif University of Technology and Amirkabir University of Technology in Tehran, Iran; Zayed University, the Higher Colleges of Technologies and the United Arab Emirates University, all in Abu Dhabi; Tsinghua University in Beijing and Tongji and Fudan universities in Shanghai in China; and the Beniah International Foundation in Abidjan, Côte d'Ivoire.

In September 2004, around 30 students will begin a one or two-year study program in France, and the number will eventually rise to approximately 100 a year. In addition, in 2003, Total pursued its assertive policy of sponsoring students, in particular in Angola, Nigeria and Indonesia.

### Syria

Total supports the joint diploma agreement signed in October 2003 by France's University of Montesquieu-Bordeaux and Syria's Damascus University. Under the agreement, we will sponsor a postgraduate diploma in banking and finance for 35 students, with textbooks, possible scholarships, and one or more internships, at a cost of €10,000 a year.

The program is designed to support the reform of the Syrian banking system, which will introduce private banks (two opened in January 2004) and modernize the public sector.

This type of university-based cooperation, a first in Syria, reaches a fairly wide public and helps to prevent brain drain, since beneficiaries will be able to study locally.

### Gabon

Total, in partnership with the Gabonese Republic, set up the Port Gentil vocational training center, which was inaugurated in October 2003.

The center provides training to students working toward technicians' diplomas to meet the needs of local companies in the areas of instrumentation, pipe welding and engine mechanics.

## Education Support and Entry into the Labor Force

In addition to providing training and transferring skills, Total's educational initiatives also extend to younger students, in particular those who are at risk of leaving school, and to helping disadvantaged young people enter the labor force. In addition, we provide support for the construction of educational facilities and the purchase of teaching materials.

### Tunisia

Last year, in Gammarth, a coastal city 20 kilometers from Tunis, Total financed the construction of a group home for eight teenage girls for Tunisia's SOS Children's Villages Association, a member of the international SOS-Kinderdorf NGO.

The association provides family-style homes for orphans and abandoned children in SOS Children's Villages. These homes recreate families for the children, who live together as brothers and sisters with an SOS mother employed by the association.

The new home will allow the eight children to attend school, receive vocational training and live in a stable, secure social environment until they are self-sufficient and have jobs.



1

In early 2004, we published a brochure on our scholarship program for international students.

2

In Russia, development of the Kharyaga oil field in the Yamalo-Nenets Autonomous Area has been supported by educational initiatives. More broadly, measures are also deployed to reduce the project's environmental footprint and promote positive economic and societal benefits for communities.



### Lebanon

Total supports the Bednayeel school for handicapped children, set up in 1993 by the Swiss foundation *Terre des Hommes*. Located in the impoverished Bekaa plain region, the center gives handicapped children from local villages access to medical care, education and training. In 2003, Total contributed \$23,000 toward the construction of new buildings and donated \$10,000 toward the center's operations. Further funding will be provided in 2004.

### Russia

Total finances and provides logistical support to the Association of French Teachers in Russia at two centers, one in Narian-Mar in the Yamalo-Nenets Autonomous Area and one in Usinsk in the Komi Republic. The centers also provide insights into French geography, history and culture, especially for young people.

### United States

In December 2003, Atofina Chemicals' Science Teacher Program was recognized by the Public Relations Society of America (PRSA) for excellence in achievement in community relations.

The program, launched in 1996, helps elementary and secondary schoolteachers increase students' interest in science.

Every year, Atofina Chemicals invites schoolteachers from host regions to its 14 production facilities and its research center in King of Prussia, Pennsylvania. In this highly hands-on approach to science (especially chemistry), the teachers are supported with such resources as mentoring by Atofina engineers, researchers and experts, tours of facilities, demonstration kits, sample chemical applications, and science experiment models.

In summer 2003, 110 teachers from 60 different elementary and secondary schools took part in the Science Teacher Program, on top of the 500 who had already attended since 1996.

### United Kingdom

For the second year in a row, Total supported the Summer Reading Challenge organized by the local authorities in Aberdeenshire. Around 1,250 children took part.

### France

In the French West Indies, the Total-operated SARA refinery funds a program in partnership with Lafarge to provide school and after-school support to 20 junior high school students (ten in Martinique since 2001 and ten in Guadeloupe since 2002) living near our facilities. Students from disadvantaged families receive support from the sixth grade until they graduate from high school. With a budget of €100,000 over seven years, the program aims to help children who might otherwise drop out of school.

In addition, the refinery continues to host more than 70 interns a year and offers a university scholarship to the top ten high school science graduates.

### Belgium

Following the relationships built with the ministries responsible for combating social exclusion, Total last year supported a number of projects to integrate the underprivileged and help young people and under-educated adults enter the workforce. In most cases, our support for these initiatives, which will be deployed in 2004, takes the form of financing buildings to house activities.

For example, we helped two Brussels-based associations that work with disadvantaged immigrants, *Promo-Basket/Promo-Jeunes* and *F.O.L.L.I.E.S.*, to build new premises and renovate an older building, which will enable them to diversify their activities (cultural programs, literacy classes, help with homework, childcare, etc.). We also support projects in Ghent and Ostend that encourage people who have fallen through the social safety net to return to work or create their own businesses. In Antwerp, we have formed a partnership with the public social assistance center to restore a building to house a furniture storage facility and a food bank/low-cost supermarket, in cooperation with food retailer Carrefour.



**Argentina**

- In Tierra del Fuego province, in partnership with the Center for the Implementation of Public Policies Promoting Equity and Growth (CIPPEC), Total supports the spread of alternative schools, an initiative launched by the municipality of Ushuaia in 1992 and since taken over by the province.

The most striking features of these schools are their organization, management and teaching methods. For example, children move up through the grades in line with their performance, not their age, in contrast to the traditional system. This type of practice, combined with strong parental involvement, is gradually improving the province's educational system. The popularity of these schools with local parents has led the provincial government to examine the possibility of helping to create new schools in Rio Grande, the second-largest city in the province. With this in mind, CIPPEC conducted a study, to which Total contributed \$5,000, to assess the results of existing alternative schools in Tierra del Fuego.

- We also provided funding to the Hueche and Equity Foundations to create a computer room open to the public in the Las Coloradas community center in Neuquén province. The center's school has 60 pupils from underprivileged neighborhoods. The project is designed to teach the students to understand and use information technology and to create a network of community centers that facilitate exchanges between communities via the Web.

- In another initiative, Total provides funding for the Caritas after-school support centers, whose outreach programs target children and teenagers in underprivileged urban areas who are at risk of failing school and dropping out. The project, which covers a number of regions, is training 270 volunteers to improve after-school support at 120 Caritas centers. Approximately 2,700 children between the ages of six and 15 are expected to benefit. The first phase began in October 2003 and encompassed training for representatives at 20 after-school support centers. The second, scheduled to begin in March 2004, will assess the pilot program with Caritas representatives to determine how it can be expanded to other centers. Funding of €17,000 was provided in 2003, a figure that is expected to rise to €28,000 in 2004.



1

Total funds educational support programs in Argentina.

2

In the Philippines, we have developed a community program for the residents of Smokey Mountain, a Manila slum. Here, two sponsored students train for a year in automotive mechanics before a three-month apprenticeship at a Total service station.



2

## Chile

Total has a 56.5% interest in the GasAndes pipeline from the Neuquén Basin in Argentina to the Chilean capital of Santiago. Since construction began in 1996, the partners have deployed a proactive societal policy in the neighboring communities of San Jose de Maipo, San Alfonso, Pirque, San Bernardo, and Puente Alto.

Created in 1997, the Cordillera de GasAndes Foundation channels GasAndes funding to communities and implements social development projects. The pipeline operator signs agreements with each municipality and the Foundation specifying the type, duration and amount of aid that will be allocated.

Depending on needs, the commitments can be very long term. For example, the agreement with the Municipality of San José de Maipo, southeast of Santiago, specifies that GasAndes will provide funding for 20 years to support projects to improve the education and living standards of the city's inhabitants.

A Development Council created by the Municipality of San José de Maipo in 1997 manages the funds. The Council, which meets once a month, is chaired by the Governor of Cordillera province. Its other members are the mayor and a number of municipal representatives, local residents, and a GasAndes representative.

In 2003, GasAndes allocated \$110,300 to San Jose de Maipo to finance university scholarships, vocational training initiatives, the construction of a kindergarten, the renovation of a high school (*Liceo Polivalente*), and the installation of a drinking water system in the Ignacio Carrera Pinto district.

## Alleviating Extreme Distress in the Philippines

In 2003, Total developed a community program to benefit the residents of Smokey Mountain, a Manila slum located on the road leading to our new storage facilities. Smokey Mountain is one of the country's largest garbage dumps, where more than 500,000 families live from what they can scavenge. The school attendance rate is very low. After discussions with residents and local NGOs, Total deployed a number of initiatives in partnership with residents' association Sambayanan ng Muling Pagkabuhay Multi-Purpose Cooperative (SMPMPC). These included:

- Support for a program to provide inhabitants of Smokey Mountain with a source of income: 500 people now recycle old newspapers, magazines and telephone directories to manufacture useful paper items such as bags. Total covers production costs, supplies old newspapers and sells the recycled products in five of our service stations. Proceeds from the sales are handed over directly to SMPMPC.
- Sponsorship to enable two Smokey Mountain students to train for a year in an automotive-related profession, then work as apprentices for three months at a Total service station. The bursaries also cover daily commuting and food expenses, the purchase of books and school supplies, a salary during the apprenticeship, safety equipment and uniforms.
- Organization in 2003 of a drive among employees and at some service stations to collect toys, books and clothes to give to younger children for Christmas. In addition, 29 Total volunteers organized a Christmas party for the children of Smokey Mountain and distributed presents.



# Human Development through Economic Support

In emerging countries, Total deploys a variety of economic support programs to reduce over the medium and long term the dependence of governments and communities on our operations and presence.

Our first line of action is to encourage local employees and subcontractors to participate in our projects and companies, which is why training and skills transfer are so important. Precedence is also given to purchasing local goods and services, provided that local suppliers and subcontractors meet Total's requirements and commitments in terms of service quality, environmental stewardship, safety and working conditions.

This approach is often covered by specific clauses in contracts with host countries, which makes it an integral part of our businesses. It is supported by targeted front-line initiatives, particularly micro-credit and the construction of local infrastructure.

In 2003, Total encouraged local economic development through new programs to support small and medium-sized businesses outside Europe. In this process, our experience in France with regional development initiatives is a valuable advantage.

## ● Encouraging Local Participation in Industrial Operations

In response to the expectations of host countries, Total deploys action programs to increase the number of local employees and suppliers. These programs are usually supported by vocational training courses designed to meet program objectives.

### Iran

160 local engineers and technicians were able to attend 16 to 20-month training courses as part of projects to develop the Balal and Dorood fields in the Persian Gulf. In addition, the Dorood project led to the creation of more than 2,000 local jobs by suppliers. These front-line jobs, related to plant construction and drilling, lasted an average of two years and covered areas such as civil engineering, pipework, assembly and drilling.

### Syria

A new 18-month program will train 47 maintenance and production engineers and operators, leading to subsequent employment. After courses in English and remedial math, physics and chemistry, they will acquire high-level, specialized technical skills in instrumentation, electricity, mechanical engineering and production, followed by a long period of on-the-job training.

### Russia

Total works with local contractors able to meet our quality requirements. For instance, 350 Russian companies from all industry segments worked on the Kharyaga project in the Yamalo-Nenets Autonomous Area, where jobs were created for more than 2,500 local engineers, technicians and workers during the construction phase (2001-2003). Currently, of the 110 Total employees in key positions on the site, 76 are Russian and 34 are expatriates.

## Micro-Credit to Support Local Community Projects

Total's partnership with microfinance institutions offers another avenue of economic support. By promoting access to micro-loans for local communities who want to launch or expand agricultural, craft or business activities, we are taking a participative development approach that supports small-scale economic projects that are capable of driving growth in underprivileged communities.

### Myanmar

Total has deployed a socio-economic program to support the development of the southern region through which the pipeline from the offshore Yadana gas field to Thailand runs. The program focuses on micro-credit to enable villagers to realize their agricultural or business projects. The six-month, low-interest loans — 2% a month, significantly below inflation — are denominated in the national currency, kyats, and are used to purchase the animals, plants or equipment needed to start up a project. In each village, the loans are granted and managed by an elected committee of four people (two men and two women, often teachers). In mid-2003, the outstanding loans totaled 30 million kyats (around \$70,000) to 950 beneficiaries. Since the start of the socio-economic program in 1997, 2,500 people have received micro-loans.

### Cooperation with the United Nations

In 2003, we strengthened our cooperation with the United Nations to leverage the synergies with its sustainable development capabilities and experience. Partnerships are being implemented internationally as part of the UN's Global Compact, of which Total is an active member, and nationally with the United Nations Development Program (UNDP) and UNESCO representative offices.

One example is the international cooperation agreement signed by Total and United Nations Institute for Training and Research (UNITAR) in October 2003. We are supporting UNITAR's decentralized cooperation program, in particular to:

- Help local authorities respond more effectively to global issues such as sustainable development, post-conflict reconstruction, and new information and communications technologies.
- Create an innovative partnership by developing a meeting and working place where partners from a wide variety of areas — the United Nations system, States, territorial communities, NGOs, foundations, schools, universities, and companies — can focus on shared development issues.

Total and UNITAR are already preparing programs to train community officials for African cities and regional development agents for African and Asian deltas, reflecting our strong presence in these regions. Other programs to train public officials in environmental and industrial safety issues are also being examined.



**1** In Myanmar, micro-credit is a key component of the socio-economic program deployed by Total in the Kanbauk region. Micro-loans have supported the development of craft industries and animal husbandry, in particular pig farming.





#### Dalia Project

**Total: 40% (operator)**

**ExxonMobil: 20%**

**BP: 16.67%**

**Statoil: 13.33%**

**Norsk Hydro: 10%**

**Concessionaire: State-owned Sonangol**

1 2

In addition to deploying a policy of Angolanization of teams and contractors, Total is also supporting community development projects covering education, health care and agriculture.



## Angola: Local Participation in the Dalia Project and Development Assistance

In the aftermath of the ceasefire agreement signed in 2002, Total's initiatives in Angola initially focused on assisting victims of the fighting, who were often displaced and suffering from malnutrition or illnesses. For instance, in July 2002, we distributed food, medicine, blankets, clothing and other emergency supplies in Huambo, Moxico and Bié provinces (for more details, see the *Sharing Our Energies* 2002 report, page 85). Additional aid was provided to a refugee camp near Huambo in February 2003. In particular, school supplies were delivered, allowing 10,000 children to begin primary education.

In 2003, we redirected our efforts to peacetime economic development. Leveraging the experience acquired when developing the Girassol field — for which we encouraged the creation of local contractors to fabricate subsea equipment at yards in Soyo and Lobito — we are actively integrating our operations into the Angolan economy, making local development a key component of projects.

This is why during the Dalia project we are demonstrating our commitment to employing Angolans, purchasing local goods and services, and assertively supporting community development. Launched in May 2003, it consists of developing a deepwater field lying in 1,300 meters of water 125 kilometers offshore to bring it on stream in late 2006.

### Participation of Angolan Companies and Angolanization of Teams

Dalia is offering Total the opportunity to develop local industry and provide training for Angolans recruited to work on the project.

- Local business development mainly consists of working with Angolan partners, as well as creating new industrial activities and services needed to build the installations. We are planning to have a significant proportion of the deep offshore production components fabricated in the industrial port area of Lobito, south of Luanda. It is estimated that the Dalia project will generate two million man-hours of work in Angola.

- Extensive training and skills transfer initiatives were necessary to fully integrate Angolans into the project as Total or contractor employees at various levels of the organization. Intended to encourage the creation of a highly skilled labor force, this “Angolanization” policy led to the introduction of a training program to enable Angolan engineers to acquire the expertise needed to supervise the fabrication of certain components for the planned installations. Much of the training is offered outside Angola, in Norway, Scotland, South Korea and other countries. In 2003, 40 Angolan engineers and technicians began their training, in particular concerning construction of the floating production, storage and offloading (FPSO) vessel, fabrication of pumps and turbines, and management of control and drilling processes.

### Community Development

Support for community development projects unrelated to the oil industry is the second type of initiative we are deploying to promote economic development in Angola. In the case of the Dalia project, the support is integrated in the production sharing contract, which stipulates that a varying percentage of the oil resources is to be dedicated to financing local actions.

Taking advantage of the opportunity, Total asked its partners and state-owned Sonangol to determine where the funding should be allocated. As a result, last year we identified a number of projects in the areas of agriculture, industry and health care. If our partners (in particular the Angolan government) approve them, the funds will be allocated beginning in 2004 to long-term development projects, in cooperation with the Angolan authorities and reputable NGOs that are well-established locally, such as Agrisud, international NGOs specialized in development such as Pro Natura International, and Okutiuka, a local NGO active in the Huambo region and specialized in managing post-humanitarian crisis situations. An agreement was signed in January 2004 with Okutiuka to ensure food self-sufficiency of 10,000 people through the cultivation of vegetables, with surplus production available for marketing.

In addition, a project to develop fish farming is on the verge of being launched with the assistance of Agrisud. Designed to ensure more secure local food supply, the project is expected to create sustainable fish farming activities for 200 families, enabling them to make the transition from economic and social insecurity to relative self-sufficiency.

As well, a project under the Angolan National Rehabilitation and Reconstruction Program is being prepared in cooperation with the local authorities and our partners in the Dalia project. With a provisional budget of \$4.3 million over two years, it will improve road infrastructure by repairing or rebuilding six to ten bridges.

### Bursaries and Student Sponsorship

To promote Angolanization, Total not only offers training as part of projects such as Dalia, but also actively sponsors students. We currently finance 97 bursaries, 44 in Angola and 53 outside the country (49 in Portugal, one in France, two in the United States and one in Poland) in the areas of oil and management.

For the first time in Angola, postgraduate studies in the oil industry began in 2002 under the aegis of France's *Ecole Nationale Supérieure du Pétrole et des Moteurs* (ENSPM) and the University of Luanda. The program is the same as the one offered in France, with the same requirements. Total has agreed to sponsor a number of students for five years. This educational initiative encourages the recruitment and fast integration of young Angolan managers by our subsidiary.



1

1

In the Congo, Total is backing the Industrial Pointe Noire project, which aims to create a viable fabric of small and medium-sized businesses to drive regional economic development.



## Congo: Strengthening the Local Economy with the Industrial Pointe Noire Project

Since July 2002, Total has backed the Industrial Pointe Noire project, initiated by five local organizations that support the creation of companies, led by the Pointe-Noire Chamber of Commerce, Industry, Agriculture and Business. The project's aim is to create a viable fabric of small and medium-sized businesses in and around Pointe-Noire, supported by local initiatives and leading corporations. Currently, we are providing a project coordinator who works from our premises, as well as resources such as office hardware and applications, conference rooms and a car. We have also put up seed money of around €27,000.

Phase 1 was dedicated to identifying problems that had to be addressed to encourage the emergence of a local economic fabric. In 2002, nearly 130 entrepreneurs took part in workshops that identified four key issues:

- Strengthening the capacities of small and medium-sized businesses through training and technology transfer.
- Integrating these businesses into the urban area.
- Tailoring the financing system to these businesses.
- Introducing a market observatory.

Sector-specific working groups bringing together entrepreneurs, large companies, local authorities, local Pointe-Noire development organizations, and other participants were created to find satisfactory solutions to these four problems.

### Taxation

Taxes account for a substantial proportion of the economic impact of our oil, gas and chemical operations, and can vary significantly depending on the business and on the applicable national legislation.

The taxes we pay can be summarized as follows:

### Royalties

The royalties paid on oil and other operations to the host country are calculated as a percentage of production volume or revenue. Contracts specify the calculation method (base, production valuation, exemptions, etc.).

### Corporate Income Tax

In general, our operations are subject to applicable tax regulations in host countries.

These working groups led to the creation of the Pointe-Noire Industrial Association (APNI) on June 30, 2003. Comprising four member categories (founding members, large companies, trade associations, and people and corporations contributing to local economic development), APNI intends to serve as a forum for discussions and initiatives among the various institutional, business and association partners concerned by development issues in the Kouilou district, which hosts our operations.

Two projects were implemented in 2003. The first was the creation of a market observatory, a participative venture built around a shared information system. The second was the setting up of government-approved management centers offering accounting and tax services for businesses.

An investment company is being created, which should enable the first business projects to be financed in 2004. We will make a financial contribution to the selected projects through the *Total Développement Régional* association (for more on regional development, see page 132).

## Initiatives in Favor of Indigenous Peoples

Total is aware that the impact of our operations in areas inhabited by indigenous and tribal peoples is a particularly sensitive issue. In this respect, we recognize the definitions of the United Nations Development Program (UNDP) and abide by International Labour Organization Convention C169 on Indigenous and Tribal Peoples. The initiatives deployed in Canada in 2003 illustrate how these expectations are taken into account in the field.

### Canada

Since late 2002, Total has had a 43.5% interest in the ConocoPhillips-operated Surmont oilsands project, located 60 kilometers southeast of Fort McMurray in the Athabasca region of Alberta. The project, launched in 1999, is designed to develop bitumen production, which is scheduled to commence in 2006.

Tripartite consultation structures involving the government, indigenous peoples and operators were set up to ensure dialogue among the various stakeholders for this and future projects. Their role is to encourage discussion of the economic, social and environmental aspects so that aboriginal communities are aware of project needs at a very early stage and can therefore take advantage of the related employment and business opportunities. In this way, dialogue enables indigenous peoples to participate in the operations and share in the resultant economic benefits.

Dialogue for the Surmont project primarily takes the form of support to business associations, an effective means of maximizing the contribution of local suppliers. Consultations also identified a need for training courses and other educational initiatives, such as online remedial courses. The priority focus on education and training is designed to improve local labor skills for application in current and future operations.

Total's contribution to these initiatives in favor of indigenous peoples amounted to €150,000 in 2003.

However, for exploration and production, corporate income tax is calculated based on margin and the return on capital employed. The rate can be as much as 80%, or even higher.

### Local Taxes

These consist of local and regional taxes other than corporate income tax, such as local taxes on businesses, asset taxes, additional payroll taxes, property taxes, taxes on operations that generate pollution, withholding taxes on dividends, financial taxes, and special taxes on a given business.



Our Annual Report details the corporate income tax paid by exploration and production subsidiaries by region, customs duties, excise taxes, and sales tax in their entirety, as well as the "taxes paid to the Middle East oil-producing countries for the portion which Total held historically as concessions." For more information, see the Annual Report, available at [www.total.com](http://www.total.com).

## ● Consolidating Regional Development Initiatives in France

To deliver technological support and transfer skills in France, Total gives a number of small and medium-sized businesses access to highly-qualified experts and development resources. For example, information technology experts are assigned to help install software, companies can use research labs to conduct experiments, or personnel can be seconded to transfer a specific skill.

Total also helps small and medium-sized businesses expand abroad by sharing our infrastructure and local market knowledge. Our subsidiaries host managers, usually young volunteers, from these companies for prospecting missions ranging from two to 24 months. Over the last five years, 55 international in-company volunteers and 39 interns have benefited from the program.

In Japan, an in-company volunteer placement was created to represent Medinfo, a global leader in software for blood transfusion centers and hospital blood banks, to raise the profile of Medinfo's products in Asian markets and create a network of distributors. Through Total, it has a fully equipped local office, managed locally by one of our employees.

Three weeklong commercial prospecting missions were arranged in the United Arab Emirates for small health care, environment and mechanical engineering companies. The company heads had numerous contacts with local companies, representatives of the economic authorities, and specialists in local business, health and customs regulations and legislation.

Lastly, we provide financial support to top up public aid to companies, to create companies or to enable entrepreneurs to acquire them. For sound projects likely to create new jobs, the *Total Développement Régional* association grants interest-free loans that do not require the acquirer's personal guarantee.

### **Sofrea, 25 Years of Partnership to Promote Regional Development**

Wholly-owned Sofrea, which celebrated its 25<sup>th</sup> anniversary in 2003, has supported initiatives by 2,000 small businesses in France that have maintained 25,000 jobs. The subsidiary is responsible for promoting regional economic development, and originally operated in southwestern France around the Lacq industrial basin. The partnership initiative to which it contributes has grown with Total and today is active in ten host regions across the country.

Sofrea grants low-interest loans in line with the number of jobs created. Projects supported include a company specialized in detecting and identifying pollutants, a manufacturer that is a leader in chemical packaging, a service company that develops management software for local communities, and a U.K. company that designs and manufactures safety valves for the oil and gas industry — a wide array of businesses that created jobs and are successful.

Over the last 25 years, *Total Développement Régional* and Sofrea have supported 2,250 projects, providing aggregate financing of €257.5 million and helping to create or maintain 27,100 jobs. Outstanding loans to small businesses totaled €18 million at end-2003.

## ● AZF, Redeveloping the Toulouse Industrial Basin

As Thierry Desmarest, Total's Chairman and CEO, pledged when he visited the AZF site on September 21, 2001, the day of the explosion, we are assuming our responsibilities as a manufacturer without waiting to identify the causes of the explosion, which are still unknown. This commitment reflects our solidarity with the victims and the people of Toulouse.

Extraordinary resources were deployed immediately to deliver emergency aid, repair damage quickly and completely, and identify the possible causes of the disaster.

This exceptional program has proven highly effective. Most of the rehabilitation work has been completed, while the injury and property damage compensation process is almost complete. In addition, the large majority of companies were able to continue operating, ensuring a rapid return to normal life and business by the people of Toulouse. Lastly, most employees have been reassigned or were able to take early retirement.

Cooperation and dialogue with the State, communities, judicial authorities and victims' associations, in particular as part of the French National Victim Monitoring Committee (CNSV), contributed significantly to this result.

### Compensation

To date, 97% of the 75,000 claims have been settled out of court, thanks to the attention paid to the most seriously injured, the resources deployed, and cooperation among stakeholders. Only 120 claims were the subject of legal proceedings. At December 31, 2003, compensation of €1.465 billion had been paid to victims.

This exceptional process included three particularly significant measures:

- The immediate allocation of emergency aid to the most disadvantaged and hardest hit by the disaster; more than €12 million was released outside the compensation process.
- The recognition of "specific damage" stemming from the collective nature of the disaster, which increased the compensation to the injured, and in particular doubled the funds paid to bereaved families and the most seriously hurt.
- Broader access to compensation for Group employees injured in the disaster.

### Solidarity with Employees and Contractors

All 459 Grande-Paroisse employees, with the exception of six still recovering from their injuries, have been transferred or have found other jobs with our assistance. In addition, dedicated initiatives implemented jointly by Total, the French government and industry organizations ensured continued employment for site subcontractors and employees of small companies in the area affected by the explosion.

### Economic Redevelopment

After the April 11, 2002 announcement that Grande-Paroisse's AZF plant would not reopen, Total pledged to contribute assertively to the redevelopment of the Toulouse industrial basin by creating 1,000 jobs. As part of this commitment, in summer 2002 we set up a dedicated unit to attract projects by regional companies. At end-2003, we were supporting close to 300 companies and individual entrepreneurs through our initiatives, resulting in commitments to create 1,300 jobs over 15 months, of which 300 directly by Total. In January 2003, Total Energie, a joint subsidiary of Total and electric utility Electricité de France, announced that it had decided to locate its European solar panel production plant in Toulouse. Then, in July 2003, we announced that we would be setting up a center, managed by a leading IT services company, for part of our Refining & Marketing information systems. This activity is expected to create more than 200 jobs over three years, for an investment of €5 million.

For the future, in light of the disaster's impact on industrial operations and the environment, Total has created the Industrial Safety Culture Institute with the support of the State and France's largest companies. This signals our commitment to making a significant contribution to improving the safety of industrial processes through technological research, and university and continuing education, and our dedication to enhancing dialogue with neighbors.

### Investigation Update

**Total believes that identifying the causes of the disaster is incumbent on us as a manufacturer and that it is our duty to the victims and everyone in Toulouse.**

**The judicial investigations have not yet identified the causes of the explosion. The reconstructions conducted in 2002 as part of the criminal proceedings ruled out the theory that products had been mixed accidentally. Following the reconstructions, most of the charges against Grande-Paroisse employees were dismissed. The Toulouse public prosecutor is appealing this decision.**

**Other technical assumptions concerning an accidental cause of the explosion are still being actively studied by the judicial experts, and none has been ruled out. Our internal investigation committee is using its considerable resources to continue its work, in cooperation with the judicial experts.**

## Health Care Initiatives

Total takes part in initiatives designed to improve the health of local communities in host countries. Focused on regions and countries lacking health care infrastructure, equipment or human resources, our projects also concentrate on the most vulnerable populations, especially children, or those most exposed to major pandemics. This is why there is particular emphasis on prevention programs, especially for HIV/AIDS.

Total only supports initiatives approved by the local authorities, since public health is their prerogative and that of the State. These actions also frequently rely on local NGOs, which are well informed about the medical needs of local people.

### ● Eradicating Endemic Diseases

#### Bolivia

Chagas disease, endemic across 60% of Bolivia, is one of the country's most serious public health threats, with more than four million people exposed. This parasitic disease is fatal and incurable in adults. It gradually attacks vital organs, such as the heart, digestive tract and brain.

In 2003, Total therefore implemented an integrated approach for combating Chagas disease in Carapari, a town with a population of 11,500 in Tarija province in southern Bolivia.

This region, where Total has operated since 1997, is particularly hard hit by the scourge, with an estimated prevalence rate of 80%.

- The parasitic protozoan is mainly transmitted through the bite of an insect, popularly known as the *vinchuca*, which is prevalent in rural areas where housing conditions are poor.

To combat transmission, Total is participating in a project to improve the habitat in partnership with the Pro-Habitat Foundation, a local NGO.

- In addition, we support a program to study the congenital transmission of Chagas disease from mother to child in partnership with France's Development Research Institute. In both cases, we cooperate closely with the municipality of Carapari.



#### Combating HIV/AIDS

In addition to providing prevention programs and care for our employees (see pages 100 to 101), we also help to combat HIV/AIDS in local communities, in particular in the countries hardest hit by this pandemic.

In 2003, Total formed a partnership with the Red Cross to finance equipment for an outpatient treatment center in Port Gentil, **Gabon**, for HIV/AIDS sufferers. Under the National Plan to Combat HIV/AIDS, the Red Cross will manage and operate the center, while Total will provide an operating subsidy. In addition, we are continuing awareness and testing programs for employees and their families.

Last year, Total took part in a number of HIV/AIDS initiatives in **Haiti**. For instance, we participated in a fundraiser organized jointly by the French and American embassies for local centers run by the Haitian Kaposi's Sarcoma and Opportunistic Infections Study Group (Gheskio) that test for and treat HIV/AIDS. We also provided financial aid to Population Services International (PSI), a U.S.-based NGO, to conduct an awareness campaign aimed at encouraging young people to use condoms. Lastly, we helped to fund *Protège-moi* (Protect Me), a video on HIV/AIDS.

**Iran**

Total again took part in a malaria prevention campaign around Assaluyeh, a Persian Gulf port in southern Iran. As in 2002, we provided the Assaluyeh medical center with insecticides for use in homes and ponds. Around 30,000 people benefited from this action, which is expected to be repeated in 2004.

● **Training Medical Personnel**

**Iran**

Since 2002, Total has been supporting annual medical conferences and financing scholarships for young Iranian physicians. In 2002 and 2003, we organized seminars where French and Iranian doctors shared expertise and questions about HIV/AIDS and cancer. In addition, special bursaries enable young Iranian specialists to work for a year in French teaching hospitals. Five physicians benefited in 2002, with another ten arriving in October 2003 at Lyon and Paris hospitals for additional training that will finish in late 2004.

**Syria**

A three-year sponsorship agreement was signed by the European Institute of Cooperation and Development (IECD), the Orthopedic Center in Aleppo and Total covering financing of €20,000 a year for the center. In particular, funds will be allocated to the center's subsidized and free services to meet the needs of the underprivileged. The funding will be used to acquire equipment and train personnel, such as nurse's aides — a profession that does not exist in Syria — nurses and administrative personnel.

**United Kingdom**

In 2002, Total agreed to finance two play areas at the Royal Aberdeen Children's Hospital, which opened in January 2004. The funds raised through activities organized by employees, such as soccer and netball tournaments, cycling, swimming and draws, were topped up by a donation from Total. Our total contribution was £100,000.

● **Financial Support to Hospitals and Health Centers**

**Qatar**

Total provides financial support to the Shafallah Center for Children with Special Needs in Doha, a private non-profit establishment providing treatment, education and health support to disabled children until the age of 18. Over the next three years, \$200,000 a year will be allocated to the construction of new buildings.



1 In Syria, inauguration of the Aleppo Orthopedic Center in March 2003.

2 In southern Bolivia, medical center in the municipality of Carapari, renovated by Total. In 2003, we implemented an integrated approach for combating Chagas disease, with the accent on prevention.



**Iraq**

In November 2003, Total signed a sponsorship contract with *La Chaîne de l'Espoir*, a medical NGO that helps sick children who require surgery unavailable in their home countries. In 2003, the NGO decided to launch the Iraqi Children operation, a program designed to help gradually rebuild a health care system that is in a state of collapse after years of international embargo and the 2003 war. Initially, the program will focus on three areas:

- Sending surgeons to the country to help children.
- Training Iraqi medical and surgical personnel.
- Rehabilitating a hospital center.

After helping to finance an exploratory mission to assess needs in June 2003, Total has agreed to donate €600,000 to the Iraqi Children operation in 2004.

**Total in Iraq**

Total, then known as *Compagnie Française des Pétroles*, acquired its first oil assets in Iraq in 1927, with the discovery of the Kirkuk field. We withdrew from the country in 1972 following nationalization of the oil and gas industry, but hope to return when the international and local environment permits.

**Iran**

Following the Bam earthquake on December 26, 2003, Total provided immediate aid of €1 million. In addition, from December 27 through January 2004, we provided material aid, thanks to donations by our subsidiary and an appeal among employees on the Assaluyeh site in the southern region of the country. In total, four truckloads of medical supplies (serum, disinfectants, syringes, splints, etc.) and staples (mineral water, blankets, mattresses, etc.) were delivered to the Red Crescent in Kangan and Shiraz. In 2004, we will be working with the Oil Ministry on identifying methods for assisting the victims and aiding the reconstruction effort.

● Emergency Aid

**Algeria**

Total donated €1 million to the government to aid victims of the May 21, 2003 earthquake and participate in the reconstruction effort. In addition, our local subsidiary provided €500,000 to help employees (and their families) of state-owned oil company Sonatrach, our main partner in Algeria, which was very hard hit by the earthquake.



1 Iran, Total supports annual medical conferences, which in 2002 and 2003 covered HIV/AIDS and cancer.





Mahakam Delta, Indonesia

## Total in Indonesia and Nigeria: Case Studies

In our second corporate social responsibility report, we thought it would be interesting to present two case studies that offer a practical illustration of how environmental, safety, social and societal issues are approached in the field.

The first case study focuses on the methods and resources we deploy to support and manage the societal implications of our oil operations in Indonesia, which is experiencing sweeping political and economic change.

The second covers the recent project to bring on stream the Amenam/Kpono development in Nigeria, and illustrates how we approach safety, environmental and social cohesion challenges when implementing our projects.

Niger Delta, Nigeria



## Indonesia: Achieving Social and Environmental Balance in the Mahakam Delta

The community development plans that have long been implemented in Indonesia offer a comprehensive illustration of Total's commitment to effective, shared integration of industrial operations and traditional local activities.

Ensuring harmonious coexistence between industrial operations and neighboring communities enables stakeholders to support local development, thanks to open dialogue and the continuous involvement of a team integrated into the local environment.

For Total E&P Indonesia, this is not always easy, because of the tension created by the severe environmental damage in the Mahakam Delta and the nascent opening of the country's national, regional and local institutions and politics.

Despite the difficulties, Total E&P Indonesia works with local institutions to redistribute some of the resources it operates for the host government and encourages local communities to take charge of their future, fostering the development that will eventually free them from dependence on existing industrial operations.

### Background

Indonesia is a vast archipelago south of the equator, covering an area of nearly two million square kilometers and comprising 13,000 islands with 212 million inhabitants. The distance separating the country's most extreme points is around 4,500 kilometers.

Total operates 13 fields in the Mahakam Delta on the island of Borneo under the Offshore Mahakam Contract Area production sharing contract (PSC), renewed in 1997 until 2017. Operations are managed from Balikpapan.

Total E&P Indonesia is headquartered in Jakarta, on the island of Java.

We began operating in Indonesia in 1968, making our first find in 1971 and bringing it on stream in 1974. The contract area is operated by Total (50%), in partnership with Inpex (50%). The PSC stipulates that output will increase steadily, from 508,000 boe/d in 2003 to 580,000 boe/d in 2010, by further developing the main producing fields (Tunu, Tambora, Peciko) and developing new fields (Sisi and Nubi). This is why an intensive drilling program will be deployed over the next three to four years, with up to nine rigs in operation at the same time.



## ● Sweeping Political and Economic Change

Like its neighbors in the rest of Southeast Asia, Indonesia was severely destabilized by the economic, financial and monetary crisis of 1997. One of its consequences was to accelerate political change in the country, with a new government elected in 1998. Indonesia has since embarked on a process of democratization encouraged by national institutions.

### **Institutional Decentralization**

The Decentralization Act transferred significant powers to the provinces (run by governors appointed by the central government) and prefectures (with prefects appointed by the regional parliament). In this new institutional landscape, the Kutai Kartanegara prefecture is now more closely involved in oil operations in the Mahakam Delta. The immediate result of this change was that, after a period of centralization that left very little leeway for local initiatives, new institutions — the central government, village councils, a variety of regional and local institutions and the new national oil authorities (BP Migas, which has replaced Pertamina, the former state-owned oil company) — now deploy industrial and community projects in a more participatory process than in the past. This change has also had a direct impact on partner private oil companies.

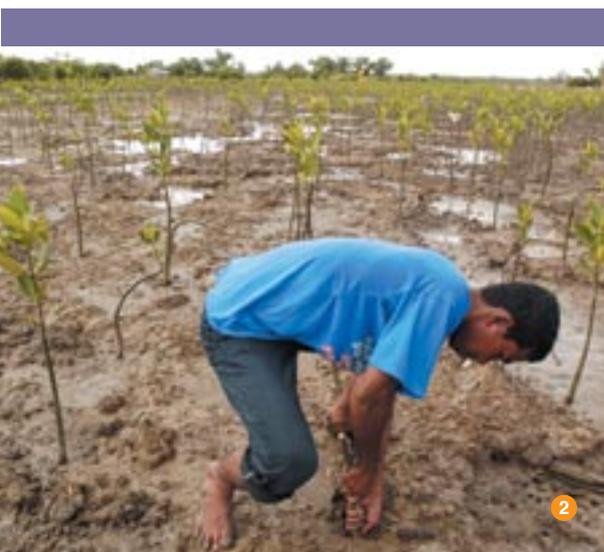
These new practices, which are richer but more complex because of the new relationships and the broader responsibility of local players, have given Total E&P Indonesia an opportunity to further enhance its dialogue process, by including more stakeholders than in the past. The ensuing dialogue of course includes institutions, critical partners in many decisions.

## ● Challenging Economic Redeployment: The Example of the Mahakam Delta

The 1997 economic and monetary crisis encouraged the development of intensive shrimp farming in the delta, with production exported to Japan, Hong Kong and Taiwan. The immediate profitability of these farms was further boosted by the sharp depreciation in the rupiah, Indonesia's currency. Traditional fishermen therefore found they could earn more money farming shrimp. As the farming has intensified, related businesses have sprung up, such as pond construction, mangrove clearing, freezing, and transportation.

The uncontrolled, unregulated development of shrimp farming very quickly resulted in the destruction of the mangrove forest over a large part of the delta. The damage to the local ecology (soil acidification, changes in salinity, diseases) was worsened by the use of aggressive cultivation methods (nutrients, medication), which forced farmers to quickly abandon ponds and cultivate new areas. Combined with a dynamic oil industry, this situation has generated very high demand for what space remains, exacerbated by the lack of property law.

The rapid spread of shrimp farming has disrupted the traditional lifestyles of fishing communities, who often hold the oil industry solely responsible, although the local environment is much more complex.



2

**Total's action program in the Mahakam Delta was defined in cooperation with the local authorities and includes:**

1

**Educational initiatives, in particular literacy programs.**

2

**Redevelopment of mangrove forests through an assertive replanting program.**

3

**Support for local economic development. Here, a motivator visits a farmer seeking aid to develop her farm.**

**Community development officers and motivators maintain local contacts between Total and village institutions.**



3

## Dialogue and Partnership

In response to this situation, which was untenable in the short term, Total took advantage of the opportunity to talk with local communities now that the political context was more open. The resulting dialogue helped to redefine our community development policy in 1999, when a five-year plan covering the period through 2004 was launched, comprising the following critical components:

- A strategic vision: Ensure prosperity and harmonious relations with neighboring communities, compatible with our oil production operations.
- A mission: Remedy low literacy rates and provide income-generating opportunities for neighboring communities.
- Objectives: Deploy community projects in the areas of education, health care, local economic development, public infrastructure, and preservation of the local cultural heritage.
- Principles: Ensure community development through sustainable socio-economic programs involving institutions and stakeholders, avoiding donations where possible. To be effective, the programs have to:
  - Analyze community needs.
  - Allow the communities to define their own development plans.
  - Entail active community participation in selecting and implementing programs.
  - Be sustainable.
  - Significantly improve the lifestyle of local communities.

## Implementation and Methods

Involving around 40 villages with some 110,000 inhabitants scattered across the Mahakam Delta region, the 2003 socio-economic programs covered all the issues identified in the objectives of the five-year plan (mainly primary education,

health care and micro-development), at a total initial cost of around \$1 million, paid by the government and private companies. Without listing them all, it would be useful to identify the drivers and best practices used to successfully implement these programs.

### Participation of Local Institutions

Each project is discussed and approved by the Village Council, chaired by an elected village chief. After approval, the project is implemented by a village foundation whose members, executive and employees are chosen at a village meeting. This community-based organization (CBO) implements, tracks and reports on each village project. Regular relations are also maintained with subdistrict and district authorities. Around 1,000 people (either unpaid volunteers or paid by the villagers) have helped to implement community projects since they were introduced in 1999. They include carpenters, masons, boatbuilders, farmers and laborers.

### Support from Local Liaisons

Local contacts are maintained by three community development officers in Balikpapan and 12 community development motivators recruited in the villages. Their main role is ensure daily liaison between our teams and village institutions, such as the council and foundation, and to report any tensions or problems that arise when implementing community projects in which we are involved.

On a more occasional basis, a member of the neighboring community known as a watchman is employed onsite during operations to watch for, report and prevent tensions that may arise between the community and the teams working at our facilities.

This interface role, traditionally assumed by NGOs, is here performed by villagers recruited by Total E&P Indonesia. Ongoing discussion and

### Managing Requirements

There are a number of different constraints and problems. Some are institutional, stemming from the newness of structures, whether governmental or in the oil industry. In addition, Total E&P Indonesia is not the only contributor to local development, and many decisions require the approval, or involvement, of local institutions.

This situation is particularly sensitive when it comes to the Mahakam Delta, where the management committee led by Total E&P Indonesia is having serious problems implementing the program, even though it was defined in cooperation with the local authorities:

- Mangrove redevelopment (replanting).
- Monitoring and repairing coastal erosion.
- Developing a pilot shrimp farm and sustainable aquaculture.
- Developing local resources (fishing in particular).

dialogue means that potential conflict-causing situations are reported to us directly. In addition, this makes it easier for Total E&P Indonesia's teams to inform the communities of the launch of certain operations and their impact, such as 3-D seismic surveys or pipelaying.

### Use of Micro-Credit

The introduction of micro-credit in early 2000 contributed significantly to community development projects and home industry by enabling the purchase of equipment or supplies for traditional activities, plants, shops, small businesses and chicken farms. Nearly 4,000 people living in around 30 villages have benefited from this type of financing. For example, in 2002 individual loans in Handil Terusan village ranged from €40 to €200, while village loans ranged from €2,000 to €10,000. By comparison, the average monthly income of a fisherman is around €200.

Matters have been complicated by the 2003 banning of cash donations to communities as part of micro-credit reforms introduced by the Indonesian mineral resources authorities. Since then, Total E&P Indonesia, like other companies, has tried to respond to village council requests by providing aid in kind. The company allocates the necessary supplies and equipment directly to the village council.

### Employing Locals

A shortage of skills in the local employment area means that we inevitably fill some jobs requiring specific technical expertise with Indonesians from other regions or with non-Indonesians, an action that neighboring communities do not always understand or appreciate.

To improve understanding and encourage local employment, Total E&P Indonesia has introduced a wide array of training initiatives, some of which — welding, mechanics' and

electricians' courses — are directly related to oil industry operations. Others are designed specifically for an environment that is still overwhelmingly rural, and include farming techniques and new aquaculture techniques for shrimp farms.

The challenge is to promote the acquisition by local residents of vocational skills in a broader, more sustainable environment. These training initiatives, from which 150 people in the region benefited in 2003, were provided by contractors and village foundations (for training integrated into community projects) to ensure a better fit with local needs expressed by our contacts in Indonesia.

## Organization

Deployment of this ambitious program is also supported by a dedicated Community Relations Department based in Balikpapan. It covers safety issues, community relations and development, delta management, land management, and support/administration services, with responsibility for:

- Managing relations with authorities and communities.
- Tracking operations, employee and equipment safety, information and corporate image.
- Preventing, managing and controlling any disputes or conflicts arising in other Total E&P Indonesia units.

- Improving education and skills (training).
- Mobilizing local government (master development plan).
- Introducing new regulations, in particular to improve property management.

A wide array of stakeholders (institutions, BP Migas, farmers, fishermen, local NGOs, shrimp exporters, academics, industrial partners) is trying to work together effectively despite the tensions inevitably generated by the fast-changing situation in the region.

Although we advocate local hiring, some of our contractors are still temporarily importing workers with certain skills lacking in the region. This also sometimes causes tensions.

Hostile responses can sometimes occur for a variety of political, social, and economic reasons, although there is no significant religious or ethnic tension in the Delta, unlike other regions of Indonesia.

## Amenam/Kpono: Corporate Responsibility in Action

The new Amenam/Kpono development in Nigeria illustrates the corporate social responsibility issues involved in preparing and implementing major projects.

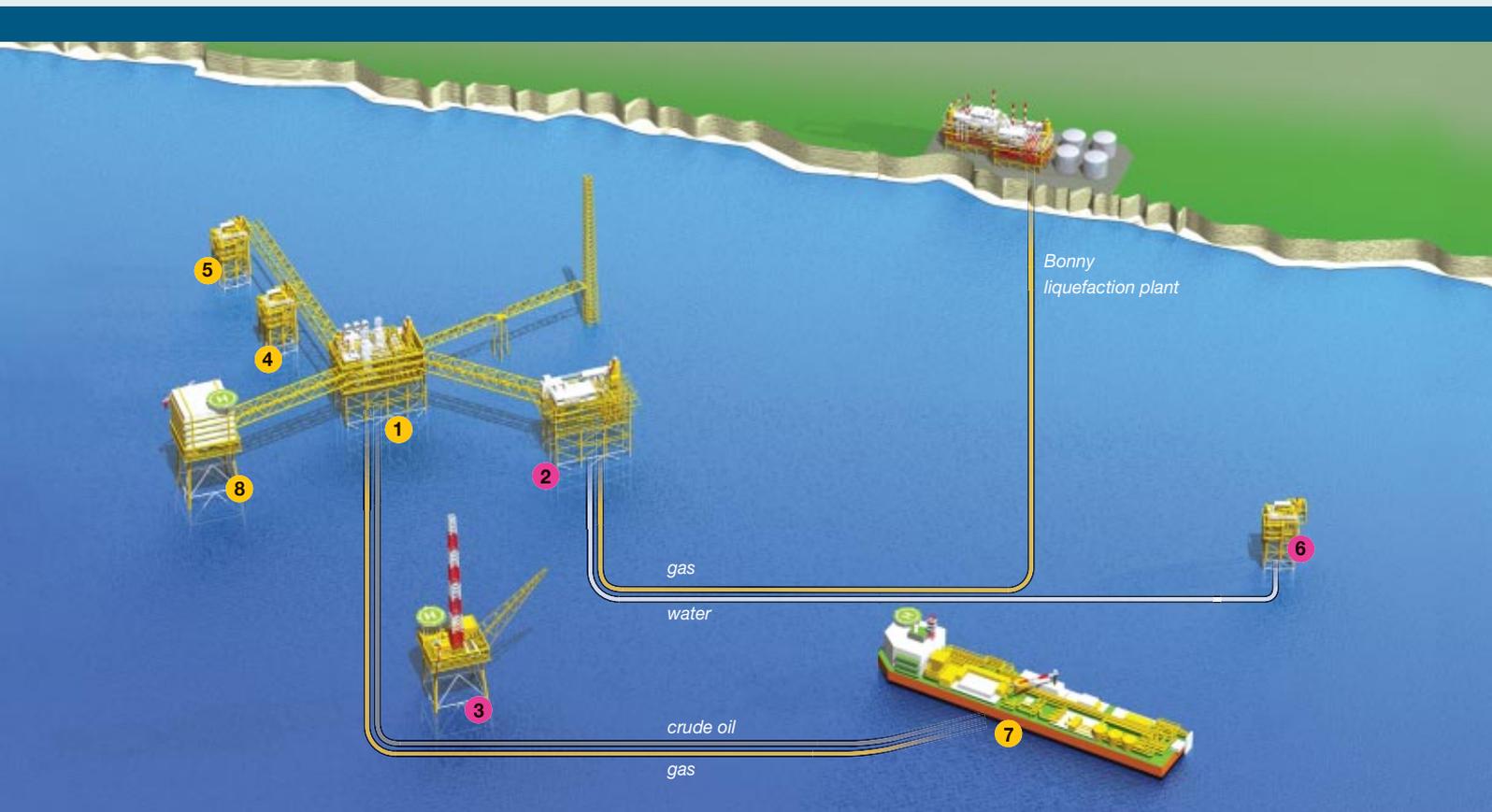
For example, the project has enabled us to tackle an important environmental aspect of oil production — developing associated gas. This is an issue of great concern in Nigeria, and it was a major challenge in the Amenam/Kpono project.

In addition, the country's oil and gas resources have spurred community conflicts and sporadic attacks against oil installations in the Niger Delta region in recent years. As a multinational oil company, Total must therefore directly deal with the issues of wealth-sharing and instability generated by these tensions.

The cause of the conflict is persistent economic and social insecurity, a problem common to many nations in the South. This is a source of ongoing difficulties for the local population, and the struggle for daily survival often outweighs medium and long-term considerations.

To respect our commitments in this environment, we have to focus on preserving balances, while adapting, especially in the areas of communication and training, to a culture that is different from highly industrialized countries. During the Amenam/Kpono project, we handled these complex issues as efficiently as possible.

In the local language, Amenam means “well done” and Kpono, “respectfully.”



### Installations:

- 1-2: Amenam production platforms
- 3: Odudu production platform
- 4-5-6: Wellhead platforms

- 7: Floating storage and offloading
- 8: Quarters

### Gas development:

- developed gas
- water reinjected into the reservoir

- Units already built
- Units under construction

## Background

With reserves of around 1 billion barrels of oil equivalent and a forecast life of 25 to 30 years, Amenam/Kpono is one of the largest conventional offshore developments undertaken worldwide in the last several years. Peak production will be 125,000 barrels of oil per day in 2004. In addition, 8 to 9 million cubic meters of gas will be developed from 2006.

The scale of the installations is equally impressive. They include an immense production platform weighing 11,500 metric tons, quarters for 80, and a floating storage and offloading vessel (FSO) with a capacity of 2.4 million barrels.

At the project's peak, several thousand people were involved in construction and fabrication in Nigeria, South Korea, Dubai and Europe, with 178 supervisors. Since the development was brought on stream, around 300 employees and contractors work onsite: 200 on the drilling rigs and around 100 managing production operations.

Such an immense project demanded a constant focus on effectively managing the related industrial risks, environmental impact, and potential social, societal and economic consequences for neighboring communities.

## Safety

In line with Total's practices, safety was a priority for our teams and our contractors. First, major risks were integrated during the installation design phase. In addition, a number of initiatives and rules were introduced to guarantee optimum operational safety, including:

- Routinely opening project meetings with a safety review.
- Providing safety training for all subsidiary and contractor employees working offshore.
- Systematically auditing construction sites and barges.
- Installing rear seat belts in all vehicles used on the construction site in Dubai.

These demanding safety requirements were echoed in extensive communications campaigns on the Amenam/Kpono site, as well as all related worksites. Ongoing safety awareness initiatives included safety contests that rewarded best practices.

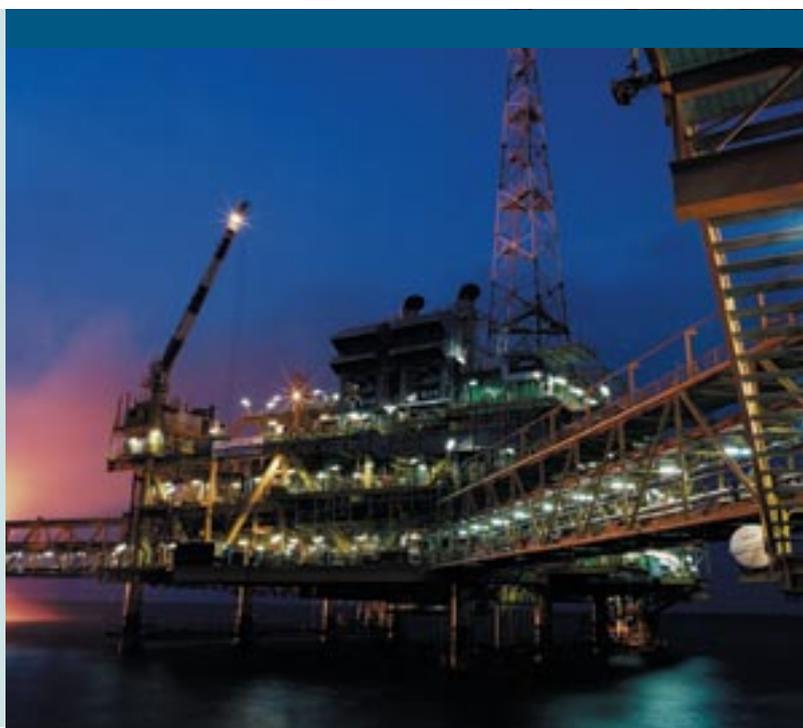
Our safety objectives were also reflected in strict discipline concerning compliance with instructions in a local environment where risky behavior is still too frequent and there is little tradition of industrial safety. A total of 12 accidents, none of which involved serious injury, were reported for 12 million man-hours worked, a satisfactory outcome when compared with international experience in this area.

### Amenam/Kpono at a Glance

The Amenam/Kpono development came on stream on July 13, 2003. Located 30 kilometers offshore Nigeria in 40 meters of water, it is operated by Total in partnership with state-owned Nigerian National Petroleum Corporation (NNPC) and ExxonMobil subsidiary Mobil Producing Nigeria Unlimited (MPNU).

#### Interests

Partner	Interest
Total	30.4%
NNPC	60.0%
MPNU	9.6%



## Environmental Baseline Study

Before work began on the Amenam/Kpono project, an environmental baseline study was conducted offshore and along the coast in order to assess risks (pollution, impact on neighboring communities), identify the main needs, and determine what measures would be required to prevent risks. Surveys performed during both the dry and rainy seasons enabled us to establish baseline conditions, which were later used to carefully check changes in environmental indicators (onsite water quality, waste treatment and compacting, cessation of flaring).

The assessment also involved dialogue with the inhabitants of the coastal villages, notably in the form of public meetings presenting the possible environmental risks and potential solutions.

The resulting impact report was studied by experts brought together by the Nigerian Ministry of Petroleum Resources. Operations could not begin until the project had been formally approved by the Nigerian authorities.

The main measures recommended in the report and subsequently implemented consisted of developing the associated gas, controlling production water quality, and managing waste.

### Gas Development

The solutions deployed to avoid flaring associated gas contributed significantly to abating the project's environmental impact. Since production began, the gas has been reinjected, maintaining the reservoir pressure required to optimize recovery. From 2006, most of the gas will feed the Bonny liquefaction plant on an island south of Port Harcourt. The gas no longer available for reinjection will be offset by waterflood.

The development plan eliminates emissions of 15 million metric tons of CO<sub>2</sub> a year, while developing the associated gas through liquefied natural gas operator Nigeria LNG. As a result, Amenam/Kpono is helping us to meet our greenhouse gas reduction target, while complying in advance with the Nigerian government's requirement that flaring be halted by 2008.

### Production Water Quality and Waste Management

Production water quality and waste management standards on the project are also tougher than Nigerian regulations. Production water treatment guarantees an oil content less than the regulatory 40 parts per million, while an optimized waste management system that includes sorting, compacting and recycling has been installed on the quarters platforms.

## Skills Transfer and Local Development

Support for local development is structured around:

- Having as much project work as possible performed in Nigeria.
- A partnership with the Pro-Natura NGO to support development in the neighboring coastal states of Rivers State and Akwa Ibom.

Our local development and skills transfer strategy has had positive results, despite the lack of education and technological skills among the labor force. In a country with a very precarious education system, oil companies are required to deploy major remedial and vocational training initiatives.

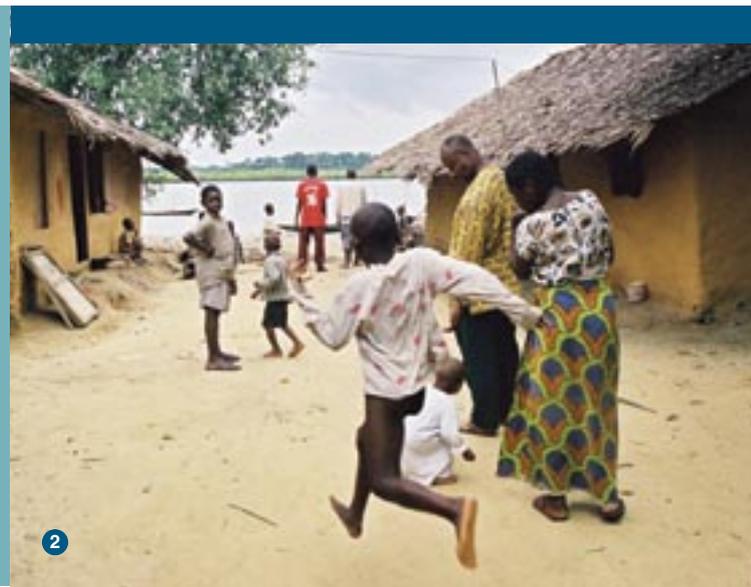


1

Throughout the Amenam/Kpono project, our safety objectives were reflected in strict discipline concerning compliance with instructions.

2

Our commitment to local development was supported by a program aimed at making a sustainable contribution to improving the quality of life in the communities of Rivers State and Akwa Ibom, the coastal states closest to Amenam.



2

An example is the nine-month program attended by 40 Nigerian technicians recruited by Total to operate the Amenam/Kpono installations. Five representatives of state-owned NNPC and the Department of Petroleum Resources (DPR) also took part. The program comprised three main sessions:

- A two-month training course in Lacq, France, that used a special simulator to familiarize students with the Amenam/Kpono production processes.
- Training in gas reinjection technology on the Total-operated Nkossa field in the Congo.
- Participation, in Dubai, in commissioning of the production platform, an operation that consisted of acceptance of the installations and verification of their compliance with technical specifications.

In addition, 20 Nigerian members of the project team were expatriated to France for two to three years to acquire experience that prepared them for managerial positions on their return. This skills transfer strategy benefited employees of the subsidiary and NNPC and DPR employees integrated into the project team.

In this way, we worked to maximize Nigerian participation across the process and encouraged our contractors to do the same, while respecting local constraints. Construction of the production platform and the floating storage and offloading (FSO) vessel, which required specific proficiency in very complex technologies and significant industrial resources, was awarded to reputable contractors in Dubai and South Korea. However, the wellhead platforms, also very demanding in terms of technical capabilities, were fabricated in the Warri yard on the coast of Delta State in southern Nigeria, in a first for the country.

The flare and piping support structures were also fabricated in Warri, with more than 1.2 million man-hours of work, equivalent to 500 full-time jobs, performed in all. A further million man-hours were worked by Nigerians tying in the various components and commissioning the offshore installations. Overall, work performed locally accounted for 13% of the total man-hours worked and more than 20% of project-related investments. These results should not, however, overshadow the need to further increase local content.

### Working with Pro-Natura for Local Development

This commitment to local development is supported by a long-term program aimed at making a tangible, sustainable contribution to improving the quality of life of the 350,000 inhabitants of the communities of Rivers State and Akwa Ibom, the coastal states closest to the site. In our efforts to deploy initiatives tailored to community expectations, we teamed up with Pro-Natura, an NGO with extensive experience in the Niger Delta region. The NGO takes a participatory approach: rather than just simply providing financial or material aid, it helps communities to develop their own activities.

In 2003, this cooperation resulted in the creation of two foundations to promote local development in the Opobo/Nkoro and Eastern Obolo local government areas. The foundations' initiatives include micro-credit to improve fishing techniques, support agriculture, craft industries and offshore farms, and enhance logistics and distribution.



**Capital:** Abuja  
**Population:** 120 million  
**Per capita GDP:** \$820

**Area:** 923,770 sq. km  
**Oil production:** 2 million barrels per day (100 million metric tons per year)  
**Type of government:** Federal republic (36 states)  
**Head of state:** Olusegun Obasanjo, President since May 1999, re-elected in May 2003

### Political, Social and Economic Situation

- Interethnic violence and religious conflict, especially between Muslims and Christians, as a result of the application of Islamic Sharia law to criminal cases in 11 states.
- The issue of wealth-sharing has triggered violence against oil companies in the Niger Delta. Local communities believe they do not benefit sufficiently from the oil revenues. In March 2003, violence near Warri seriously disrupted oil operations.





# Governance

Total actively informs stakeholders about corporate governance issues and maintains a policy of transparency concerning compensation and stock options for corporate officers. This policy is reflected in increased attention to introducing risk assessment and internal control systems. In 1995, we established two special committees, the Nomination and Remuneration Committee and the Audit Committee. The Board adopted a Directors' Charter and, at a meeting on February 19, 2003, amended the corporate governance policies originally adopted in 1995 and 2001 to take into account recent developments and recommendations.

## Directors' Charter

The Directors' Charter specifies the duties of each director, as well as the mission and operating rules and regulations of the Board of Directors. Directors undertake to remain independent in making decisions and to participate actively in the work of the Board, notably on the basis of information provided by the Company. Directors must inform the Board of conflicts of interest and any proposed projects in which they might participate. Directors who oppose a proposal being examined by the Board must clearly state their opposition.

Directors are required to own at least 500 registered company shares and comply strictly with provisions regarding the use of privileged information. Directors may not carry out transactions involving financial instruments related to these shares or buy or sell Total S.A. shares in the period preceding the announcement of the Group's results.

## Board of Directors

The Board of Directors determines the overall strategic direction of the Company and supervises the implementation of strategy. With the exception of powers and authority expressly assigned to shareholders and within the scope of the Company purpose, the Board addresses any issue that may affect the proper operation of the Company, and its decisions govern the matters falling within its purview. Within this framework, the Board's missions include:

- Appointing the corporate officers responsible for managing the Company and maintaining oversight of their work.
- Defining Total's strategy.
- Discussing major transactions considered and setting terms and conditions.

- Keeping informed of any significant events pertaining to the Company's operations.
- Ensuring the quality of information provided to shareholders and financial markets in the financial statements approved by the Board and the Annual Report.
- Calling Shareholders' Meetings and establishing their agendas.
- Each year preparing a list of directors it deems to be independent under generally accepted corporate governance criteria.
- Performing audits and inspections that it deems appropriate.

Specifically, with the assistance of the appropriate special committee, the Board ensures the following:

- The proper definition of powers and authority within the Company, as well as proper exercise of the respective powers and responsibilities of Company governing bodies.
- That no person has the power to enter into commitments that are binding on the Company without supervision and control.
- The proper functioning of internal audit bodies and statutory auditors' satisfactory performance of their engagement.
- The proper functioning of the committees that it has created.

The Board assesses its own procedures and operations at regular intervals. The last formal assessment was performed by external consultants in November and December 2003.

## The Audit Committee

The Audit Committee assists the Board of Directors in assessing the quality of internal auditing and oversight and the reliability of the information provided to shareholders and financial markets. The Audit Committee:

- Recommends the appointment of Statutory Auditors and their compensation, ensures their independence and proposes rules governing the assignment of work other than auditing financial statements.
- Evaluates the appropriateness of accounting principles and procedures and reviews the assumptions used when preparing financial reports.
- Evaluates internal audit procedures, and in particular ensures the establishment and proper operation of a committee to verify data to be published and review its conclusions.
- Reviews the annual work schedules of external and internal auditors.
- Ensures the correct application of the financial ethics code applicable to the principal financial officers of the Group.
- Evaluates procedures for delegating authority and the appropriateness of risk assessment procedures.

- Examines the conditions for using derivatives.
- Issues an opinion regarding major transactions contemplated by the Group.
- Tracks the status of significant disputes during the year.

The Committee is made up of at least three directors appointed by the Board of Directors. At least two-thirds of the members must be independent directors.

### The Nomination and Remuneration Committee

The Nomination and Remuneration Committee recommends to the Board of Directors persons to be appointed as directors or corporate officers and prepares the corporate governance rules applicable to the Company. It also reviews the Group's executive compensation policies and compensation for members of the Executive Committee.

The Committee is made up of at least three directors designated by the Board of Directors. The majority of the members must be independent directors.

### Internal Control

The purpose of internal control is to ensure the application of appropriate procedures in terms of reliability of financial information and compliance with applicable laws and regulations. It primarily covers the organization and principles of control, risk assessment processes, control procedures, and supervision of the internal control system (see Annual Report, page 17).

The three pillars of internal control are integrity, ethics and competency. Our senior executives are regularly reminded of the content and importance of rules of individual behavior as set out in the Code of Conduct. Each operating and finance manager of a profit center or subsidiary commits annually to comply with internal control rules and attests to the fairness of the financial information reported.

In 2003, Total decided to set up a committee to review published information. Its main role is to help senior management meet the Company's obligations in terms of market information.

### Risk Assessment Process

The Executive Committee, assisted by the Risk Committee and the Financial Control and Internal Auditing Departments, identifies and assesses risks that may impact our assets and our ability to fulfill our objectives. The main risks monitored across the Group are sensitivity to changes in the oil environment (oil prices, refining and marketing margins, petrochemical margins), sensitivity to changes in exchange rates, financial market risks, commodity risks arising from trading in oil and gas markets, legal and political risks, and industrial and environmental risks.

### Control Activities

Control activities, in particular financial, safety and environmental reporting systems, are designed to take into account the specific nature of risks and the degree of delegation enjoyed by businesses and profit centers.

Control activities at Group and business segment level are mainly based on a strategic plan that is reviewed annually, an annual budget, monthly reporting packages comprising detailed budget/actual analyses, and quarterly consolidations with reconciliations between statutory and management data. Control is also exercised at the operational level through procedures requiring investment and expense commitments in excess of a certain amount to be approved by the Executive Committee or by the Management Committees of the businesses.

For profit centers and subsidiaries, daily control activities are organized around the main cycles of exploration and reserves, investments, production and sales, oil trading, purchasing, inventories, payroll, cash flow, as well as safety or environmental management.

### Assessment of Our Corporate Social Responsibility Performance by Ethical Investment Rating Agencies

In 2003, Total was confirmed by the London-based FTSE for inclusion in its FTSE4Good index of socially responsible companies. This confirmation followed research performed by U.K.-based Ethical Investment Research Service (EIRIS).

Total is ranked eighth on the list of the best companies in its industry in terms of sustainable development established by Zurich-based Sustainable Asset Management (SAM). Together with Dow Jones & Company, SAM launched the world's first indexes to track the performance of sustainability-driven companies worldwide, the Dow Jones Sustainability Indexes. The indexes only include seven oil and gas industry companies, which meant that we did not appear in 2003.



For more information about our corporate governance, shareholder relations and relations with rating agencies, see the Annual Report at [www.total.com](http://www.total.com)

# Global Reporting Initiative: Main Indicators Used in Our Annual and CSR Reports

The Global Reporting Initiative (GRI) comprises 158 economic, environmental and social performance indicators. The following table lists a selection of 78 indicators that are included in our:

- Corporate Social Responsibility report (CSR).
- Annual Report (AR), in particular for economic and operating data.

Some of these indicators are also covered in our Code of Conduct (CC).

This selection is based on the relevance of indicators with regard to our operations. They include:

- Quantitative indicators, usually accompanied by explanations.
- Qualitative indicators, related to issues discussed in the Corporate Social Responsibility Report or the Annual Report for which no quantitative data are given.

Some of the indicators are not yet covered by an adequate reporting process within the Group.

They are identified by the  symbol, which indicates that an improvement process is being deployed.

Other GRI indicators may be covered in our reports without being included in the selection below.

## Vision and Strategy

### Sustainability Vision and Strategy

1.1	Statement of the organization's vision and strategy regarding its contribution to sustainable development	CSR, pages 2 to 5, 10 to 11, 20 to 21, 46 to 47, 62 to 63, 82 to 83, 106 to 107
1.2	Statement from the CEO (or equivalent senior manager) describing key elements of the report	CSR, pages 2 to 5

## Profile

### Organizational Profile

2.2	Major products and/or services, including brands if appropriate	AR, pages 84 to 86, 91 to 98
2.3	Operational structure of the organization	AR, pages 8 to 9
2.4	Description of major divisions, operating companies, subsidiaries and joint ventures	AR, pages 8 to 9, 57 to 98, 146 to 147
2.5	Countries in which the organization's operations are located	CSR, pages 6 to 7
2.8	Scale of the reporting organization: Number of employees - Products produced/services offered (quantity or volume) - Net sales - Total capitalization broken down in terms of debt and equity Value added - Total assets - Sales/revenues by countries/regions that make up 5 percent or more of total revenues - Major products and/or identified services - Costs by country/region Employees by country/region	AR, 2003 Key figures
2.9	List of stakeholders, key attributes of each, and relationship to the reporting organization	CSR, pages 10 to 11

### Report Scope

2.13	Boundaries of report (countries/regions, products/services, divisions/facilities/ joint ventures/subsidiaries) and any specific limitations on the scope	CSR, pages 6 to 7 AR, pages 57 to 98
2.14	Significant changes in size, structure, ownership, or products/ services that have occurred since the previous report	AR, pages 110, 173
2.15	Basis for reporting on joint ventures, partially owned subsidiaries, leased facilities, outsourced operations, and other situations that can significantly affect comparability from period to period and/or between reporting organizations	AR, pages 105 to 109
2.16	Explanation of the nature and effect of any re-statements of information provided in earlier reports, and the reason for such re-statements (e.g. mergers/acquisitions, change of base years/periods, nature of business, measurement methods)	AR, pages 105 to 148

### Report Profile

2.20	Policies and internal practices to enhance and provide assurance about accuracy, completeness, and reliability that can be placed on the sustainability report	AR, page 17 CSR, pages 12 to 15, 103
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## Governance Structure and Management Systems

<b>Structure and Governance</b>		
3.1	Governance structure of the organization, including major committees under the Board of Directors that are responsible for setting strategy and for oversight of the organization	AR, pages 11 to 18 CSR, pages 148 to 149
3.2	Percentage of the Board of Directors that are independent, non-executive directors	AR, pages 11 to 16, 186 to 189
3.6	Organizational structure and key individuals responsible for oversight, implementation, and audit of economic, environmental, social, and related policies	AR, pages 6 to 7, 11 to 18 CSR, pages 12 to 15
3.7	Mission and values statements, internally developed codes of conduct or principles, and policies relevant to economic, environmental, and social performance and the status of implementation	AR, pages 1 to 5, 11 to 18, 196 to 197 CSR, pages 111 to 112 - CC
<b>Stakeholder Engagement</b>		
3.9	Basis for identification and selection of major stakeholders	CSR, pages 10 to 11, 12 to 15, 139 to 141
3.10	Approaches to stakeholder consultation reported in terms of frequency of consultations by type and by stakeholder group	CSR, pages 10 to 11, 12 to 15, 139 to 141
3.11	Type of information generated by stakeholder consultations	CSR, pages 66 to 67, 104 to 145
<b>Overarching Policies and Management Systems</b>		
3.13	Explanation of whether and how the precautionary approach or principle is addressed by the organization	AR, pages 164 to 166, 196 to 197 CSR, pages 64 to 67, 99 to 100
3.14	Externally developed, voluntary economic, environmental, and social charters, sets of principles, or other initiatives to which the organization subscribes or which it endorses	CSR, pages 25, 109, 116 CC
3.16	Policies and/or systems for managing upstream and downstream impacts, including: <ul style="list-style-type: none"> <li>• Supply chain management as it pertains to outsourcing and supplier environmental and social performance</li> <li>• Product and service stewardship initiatives</li> </ul>	AR, pages 164 to 166, 196 to 197 CSR, pages 14 to 15, 21, 36, 40, 74 to 75, 99 to 100, 117
3.17	Reporting organization's approach to managing indirect economic, environmental, and social impacts resulting from its activities	CSR, pages 10 to 11
3.18	Major decisions during the reporting period regarding the location of, or changes in, operations	CSR, pages 6 to 7, 97
3.19	Programs and procedures pertaining to economic, environmental, and social performance. Include discussion of: <ul style="list-style-type: none"> <li>• Priority and target setting</li> <li>• Major programs to improve performance</li> <li>• Internal communication and training</li> <li>• Performance monitoring</li> <li>• Internal and external auditing</li> <li>• Senior management review</li> </ul>	AR, pages 1 to 5, 54 to 98, 192 to 197 CSR, pages 2 to 5, 12 to 15, 20 to 21, 46 to 47, 62 to 63, 82 to 83, 106 to 107, 111 to 112
3.20	Status of certification pertaining to economic, environmental and social management systems	CSR, pages 14 to 15, 40, 74 to 75

## Economic Performance Indicators

<b>Customers</b>		
EC1	Net sales	AR, 2003 Key figures CSR, pages 6 to 7
EC2	Geographic breakdown of markets	AR, 2003 Key figures CSR, pages 6 to 7
<b>Employees</b>		
EC5	Total payroll and benefits (including wages, pension, other benefits, and redundancy payments) broken down by country or region	AR, pages 192 to 194 CSR, pages 84 to 85, 89
<b>Providers of Capital</b>		
EC6	Distributions to providers of capital broken down by interest on debt and borrowings, and dividends on all classes of shares, with any arrears of preferred dividends to be disclosed	AR, 2003 Key figures, pages 40 to 41, 104, 173
EC7	Increase/decrease in retained earnings at end of period	AR, page 102
<b>Public Sector</b>		
EC10	Donations to community, civil society, and other groups broken down in terms of cash and in-kind donations per type of group	CSR, pages 17, 119
<b>Indirect Economic Impacts</b>		
EC13	The organization's indirect economic impacts	CSR, pages 10 to 11, 126 to 133, 141, 144 to 145

## Environmental Performance Indicators

<b>Energy</b>		
EN3	Direct energy use segmented by primary source	CSR, pages 16, 25
EN17	Initiatives to use renewable energy sources and to increase energy efficiency	CSR, pages 46 to 59
EN18	Energy consumption footprint (i.e. annualized lifetime energy requirements) of major products	CSR, pages 57 to 58
<b>Water</b>		
EN5	Total water use	CSR, pages 16, 31 to 33
EN20	Water sources and related ecosystems/habitats significantly affected by use of water	🚶
<b>Biodiversity</b>		
EN7	Description of the major impacts on biodiversity associated with activities and/or products and services in terrestrial, freshwater, and marine environments	CSR, pages 41, 144
EN25	Impacts of activities and operations on protected and sensitive areas	CSR, pages 41 to 42, 144
EN27	Objectives, programs, and targets for protecting and restoring native ecosystems and species in degraded areas	CSR, pages 41 to 43
EN29	Business units currently operating or planning operations in or around protected or sensitive areas	🚶
<b>Emissions, Effluents, and Waste</b>		
EN8	Greenhouse gas emissions	CSR, pages 16, 25
EN9	Use and emission of ozone-depleting substances	CSR, pages 27 to 29
EN10	NO <sub>x</sub> , SO <sub>x</sub> , and other significant air emissions by type	CSR, pages 16, 29
EN11	Total amount of waste by type and destination	CSR, pages 34 to 37
EN12	Significant discharges to water by type	CSR, pages 16, 33 to 34
EN13	Significant spills of chemicals, oils and fuels in terms of total number and total volume	CSR, pages 16, 34
EN31	All production, transportation, import, or export of any waste deemed "hazardous" under the terms of the Basel Convention Annex I, II, III, and VIII	CSR, pages 16, 36
<b>Suppliers</b>		
EN33	Performance of suppliers relative to environmental components of programs and procedures described in response to Governance Structure and Management Systems section (Section 3.16)	🚶
<b>Products and Services</b>		
EN14	Significant environmental impacts of principal products and services	CSR, pages 18 to 59
<b>Transportation</b>		
EN34	Significant environmental impacts of transportation used for logistical purpose	CSR, pages 32 to 35, 67 to 70

## Social Performance Indicators: Labor Practices and Decent Work

<b>Employment</b>		
LA1	Breakdown of workforce, where possible, by region/country, status (employee/non-employee), employment type (full time/part time), and by employment contract (indefinite or permanent/term or temporary). Also identify workforce retained in conjunction with other employees (temporary agency workers or workers in co-employment relationships), segmented by region/country	CSR, pages 17, 84 to 85
LA2	Net employment creation and average turnover segmented by region/country	CSR, pages 84 to 85
LA12	Employee benefits beyond those legally mandated	CSR, page 89
<b>Labor/Management Relations</b>		
LA4	Policy and procedures involving information, consultation and negotiation with employees over changes in the company (restructuring, etc.)	CSR, page 97
<b>Health and Safety</b>		
LA5	Practices on recording and notification of occupational accidents and diseases, and how they relate to the ILO Code of Practice on Recording and Notification of Occupational Accidents and Diseases	CSR, pages 70 to 74, 98
LA7	Standard injury, lost day, and absentee rates and number of work-related fatalities (including subcontracted workers)	CSR, pages 17, 70 to 72
LA8	Description of policies or programs (for the workplace and beyond) on HIV/AIDS	CSR, pages 83, 100, 134 to 135
LA14	Evidence of substantial compliance with the ILO <i>Guidelines for Occupational Health Management Systems</i>	CSR, pages 82 to 83 CC
<b>Training and Education</b>		
LA9	Average hours of training per year per employee by category of employee	CSR, pages 94 to 95

**Diversity and Opportunity**

LA10	Description of equal opportunity policies or programs, as well as monitoring systems to ensure compliance and results of monitoring (including affirmative action, etc.)	CSR, pages 86 to 87, 90 to 92
LA11	Composition of senior management and corporate governance bodies (including the Board of Directors), including female/male ratio and other indicators of diversity as culturally appropriate	CSR, pages 17, 84 to 85

**Social Performance Indicators: Human Rights****Strategy and Management**

HR1	Description of policies, guidelines, corporate structure, and procedures to deal with all aspects of human rights relevant to operations, including monitoring mechanisms and results	CSR, pages 14 to 15, 106 to 107, 111 to 112
HR2	Evidence of consideration of human rights impacts as part of investment and procurement decisions, including selection of suppliers/contractors	CSR, pages 111 to 112, 117
HR3	Description of policies and procedures to evaluate and address human rights performance within the supply chain and contractors, including monitoring systems and results of monitoring	👤
HR8	Employee training on policies and practices concerning all aspects of human rights relevant to operations	CSR, pages 14 to 15, 109, 111 to 112

**Non-Discrimination**

HR4	Description of global policy and procedures/programs preventing all forms of discrimination in operations, including monitoring systems and results of monitoring	CSR, pages 82 to 83, 86 to 92 CC
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**Child Labor**

HR6	Description of policy excluding child labor as defined by the ILO Convention 138 and extent to which this policy is visibly stated and applied, as well as description of procedures/programs to address this issue, including monitoring systems and results of monitoring	CSR, pages 82 to 83 CC
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**Forced and Compulsory Labor**

HR7	Description of policy to prevent forced and compulsory labor and extent to which this policy is visibly stated and applied, as well as description of procedures/programs to address this issue, including monitoring systems and results of monitoring	CSR, pages 82 to 83 CC
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**Indigenous Rights**

HR12	Description of policies, guidelines, and procedures to address the needs of indigenous people	CSR, page 131
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**Social Performance Indicators: Society****Community**

SO1	Description of policies to manage impacts on communities in areas affected by activities, as well as description of procedures/programs to address this issue, including monitoring systems and results of monitoring	CSR, pages 118, 136 to 145
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**Bribery and Corruption**

SO2	Description of the policy, procedures/management systems, and compliance mechanisms for organizations and employees addressing bribery and corruption	CSR, pages 111 to 112, 116 to 117 CC
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**Political Contribution**

SO3	Description of policy, procedures/management systems, and compliance mechanisms for managing political lobbying and contributions	CSR, pages 111 to 112, 116 to 117 CC
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**Competition and Pricing**

SO6	Court decisions regarding cases pertaining to anti-trust and monopoly regulations	AR, page 163
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**Social Performance Indicators: Product Responsibility****Customer Health and Safety**

PR1	Description of policy for preserving customer health and safety during use of products and services, and extent to which this policy is visibly stated and applied, as well as description of procedures/programs to address this issue, including monitoring systems and results of monitoring	CSR, pages 99 to 100
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**Products and Services**

PR2	Description of policy, procedures/management systems, and compliance mechanisms related to product information and labeling	CSR, pages 99 to 100
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# General

## Biodiversity

The number and variety of species, microorganisms, plants and animals found within an environment.

## Corporate Governance

The system by which business corporations are directed and controlled. The corporate governance structure specifies the distribution of rights and responsibilities among different participants in the organization, such as the Board, managers, shareholders and other stakeholders, and spells out the rules and procedures for making decisions on corporate affairs. In the broadest sense, which is increasingly widespread today, corporate governance is concerned with holding the balance between economic and social goals and between individual and communal goals. The governance framework is there to encourage the efficient use of resources and equally to require accountability for the stewardship of those resources. The aim is to align as nearly as possible the interests of individuals, corporations and society.

## Ecosystem

A dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit.

## Environmental Impact Assessment (EIA)

A process required by governments prior to the approval and development of resource projects. The assessment details, for each of the main types of pollution (water, air, noise, waste), the situation before the commissioning of the installation, the installation's properties and direct impact on the environment, and the planned remedial measures.

## Extractive Industries Transparency Initiative (E.I.T.I.)

An initiative designed to increase transparency over payments and revenues in the extractives sector in countries heavily dependent on these resources.

## Global Compact

First proposed in an address to The World Economic Forum in Davos in 1999 by UN Secretary-General Kofi Annan, the Global Compact seeks to advance responsible corporate citizenship by encouraging businesses to support nine fundamental principles in the area of human rights, labor standards and the environment:

- Support and respect the protection of internationally proclaimed human rights within their influence.
- Make sure that they are not complicit in human rights abuses.
- Uphold the freedom of association and the effective recognition of the right to collective bargaining.
- Uphold the elimination of all forms of forced and compulsory labor.
- Uphold the effective abolition of child labor.
- Eliminate discrimination in respect of employment and occupation.
- Support a precautionary approach to environmental challenges.
- Undertake initiatives to promote greater environmental responsibility.
- Encourage the development and diffusion of environmentally friendly technologies.

## Global Governance

The process whereby a framework of international rules is prepared by national governments, international institutions, non-governmental organizations (NGOs), corporations, and representatives of civil society.

## Global Reporting Initiative (GRI)

A multi-stakeholder process and independent institution whose mission is to develop and disseminate globally applicable Sustainability Reporting Guidelines, comprising 158 indicators, for voluntary use by companies and governmental and non-governmental organizations for reporting on the economic, environmental, and social dimensions of their activities, products and service. Started in 1997 by the Coalition for Environmentally Responsible Economies (CERES) and the United Nations Environment Program (UNEP), the GRI incorporates the active participation of representatives from business, accountancy, investment, environmental, human rights, research and labor organizations from around the world.

## Greenhouse Effect

A natural phenomenon that maintains an average temperature of 15°C on the planet. Emissions caused by human activities, which contribute greenhouse gases, such as carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>), disrupt the thermal balance between energy radiated from the sun and the longwave radiation being radiated to space. This disruption is believed to be the cause of climate change.

## Human Development Index (HDI)

Created by the United Nations Development Program (UNDP), the Human Development Index is a summary composite index that measures a country's average achievements in three basic aspects of human development: longevity, knowledge, and a decent standard of living.

## International Labour Organization (ILO)

Created in 1919 by the Treaty of Versailles, the International Labour Organization seeks the promotion of social justice and internationally recognized human and labor rights. It became the first specialized agency of the UN in 1946. It formulates international labor standards.

## Intergovernmental Panel on Climate Change (IPCC)

Established in 1988 by the World Meteorological Organization and the United Nations Environment Program (UNEP) to assess scientific, technical and socio-economic information relevant for the understanding of climate change, its potential impacts and options for adaptation and mitigation.

## Loi sur les Nouvelles Régulations Économiques (NRE)

France's Corporate Governance Act, passed on May 15, 2001, the Act regulates financial reporting, competition and corporate activities. Article 116 requires listed companies to publish an annual corporate social responsibility report on the environmental, social and societal impact of their operations. For example, businesses have to report their water and energy consumption, as well as the gender diversity of their workforce.

### **Organisation for Economic Co-operation and Development (OECD)**

Created in 1948 to promote economic cooperation among developed countries, the OECD now has 30 members (15 European Union member states, Australia, Canada, the Czech Republic, Hungary, Iceland, Japan, Mexico, New Zealand, Norway, Poland, Slovakia, South Korea, Switzerland, Turkey and the United States).

### **Social Impact Assessment (SIA)**

A study whose aim is to foresee and measure the effects of a public or private policy, program or project on surrounding populations (social organization, lifestyle, community relations, economic organization, health, culture, beliefs, etc.).

### **Socially Responsible Investment (SRI)**

Socially responsible investing takes into account social responsibility and environmental sustainability criteria alongside conventional financial criteria. For this, fund managers use the services of analysts specialized in this type of rating.

### **United Nations Development Program (UNDP)**

Created in 1965, it provides technical support for development.

### **United Nations Environment Program (UNEP)**

Created in 1972, the UNEP promotes leadership and encourages partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations.

## **Technical**

### **API gravity**

The universally accepted scale adopted by the American Petroleum Institute (API) for expressing the density of liquid petroleum products at 60°F.

### **Biodegradability**

Capability of a substance of being decomposed by living organisms.

### **Biofuel**

Fuel derived from biomass, such as rapeseed, sunflower and sugarbeet.

### **Cogeneration**

The combined production of heat and power.

### **Eco-Management and Audit Scheme (EMAS)**

A management tool based on ISO 14001 certification and an environmental declaration certified by European auditors and approved by the European Commission.

### **Flaring**

Burning of the associated gas produced with liquid hydrocarbons.

### **Global Gas Flaring Reduction Partnership (GGFR)**

An initiative launched by the World Bank in late 2001 to support national governments and the petroleum industry in their efforts to reduce the flaring and venting of gas associated with the extraction of crude oil by improving the framework for private sector investments. Total has been an active member since 2002.

### **Greenhouse gas (GHG)**

Atmospheric gas that absorbs and radiates back infrared radiation, including carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorinated carbons (PFCs) and sulfur hexafluoride (SF<sub>6</sub>), covered by the Kyoto Protocol.

### **ISO 14001**

A set of international certification standards governing environmental management systems (EMS) for businesses. Sites are certified by independent organizations. To obtain certification, companies have to comply with existing legislation, apply continuous improvement principles and prevent pollution.

### **International Safety Rating System® (ISRS®)**

The ISRS®, developed by Det Norske Veritas (DNV), is a comprehensive audit benchmark for safety management systems implemented in sites and in units. It includes a ten-part rating scale, with 10 being the best rating. This system covers 20 areas, including safety management leadership and organization, emergency situation preparation, and health.

### **Operating company (OPCO)**

A company created specially to perform development and operation for the group of shareholders that own the oil installations.

### **Seismic survey**

An imaging technology that uses ultrasound to obtain a three-dimensional (3-D) image of the subsurface or 4-D images to track changes to the subsurface over time when the field is producing.

### **Seveso sites**

Council Directive 96/82/EC of 9 December 1996 on the control of major-accident hazards involving dangerous substances, also known as the Seveso II Directive, is applicable to establishments where dangerous substances are present. It sets lower and upper thresholds for the amounts of hazardous substances, beyond which specific measures are required to manage risks. The sites concerned are generally referred to as Seveso sites, either upper tier or lower tier, depending on the level of risk.

### **Volatile organic compounds (VOCs)**

Volatile organic products such as solvents and light petroleum cuts.

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