



Institutions, scientists, NGOs, non-profit organizations, our neighbors, all of our customers and partners and of course our employees remind us of their expectations and ask us questions about issues that are of interest or concern to them. It is by leveraging this dialogue with our stakeholders that we intend to continuously improve our corporate social responsibility process.

In previous years,
our stakeholders asked
us questions about
the following topics:

IN 2009

OIL AND GAS
CLIMATE IMPACTS
ALTERNATIVE ENERGIES
SOCIAL RESPONSIBILITY
SAFETY
ETHICS
ENVIRONMENT
LOCAL DEVELOPMENT
MYANMAR
OIL SANDS

IN 2010

GOVERNANCE
RESOURCE MANAGEMENT
ALTERNATIVE ENERGIES
PREVENTING MAJOR ACCIDENTS
TRANSPORTATION SAFETY
TOTAL AND ITS PROFITS
ENERGY EFFICIENCY
PLASTICS
NIGERIA
DIVERSITY

COVER PHOTO

Maurice O. K'Anjejo
Corporate Affairs Manager
in Charge of Solar Energy Projects
and Sustainable Development
Total Kenya Ltd.

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Our CSR Process

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CHAIRMAN & CHIEF EXECUTIVE OFFICER

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Energy Efficiency – Access to Energy
– New Energy Solutions



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PROMOTING EMPLOYMENT

Worldwide – Diversity – Employment
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EMPOWERING OUR SUPPLIERS

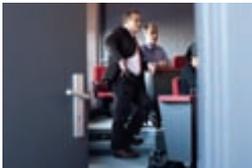
Ethics – Local Content –
Procurement Policy



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OPERATING IN CHALLENGING COUNTRIES

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RECYCLING, RECOVERY AND RECLAMATION

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Hydraulic Fracturing –
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OUR INCLUSION IN THE MAIN ENVIRONMENTAL,
SOCIAL AND GOVERNANCE (ESG) INDEXES

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IPIECA/GRI/OGP INDEX

Total Chairman & CEO
Christophe de Margerie takes
his turn answering questions.



**A CONVERSATION WITH
CHRISTOPHE DE MARGERIE,
CHAIRMAN & CHIEF EXECUTIVE OFFICER**

**THE RECENT INCIDENT ON
YOUR ELGIN PLATFORM IN
THE NORTH SEA HIGHLIGHTS
THE RISKS ASSOCIATED
WITH DEVELOPING COMPLEX
RESERVOIRS. WHY
CONTINUE TO SEARCH FOR
OIL AND GAS AT ANY COST?**

The incident was a reminder that accidents are always possible in spite of our best efforts to prevent them. We must not, therefore, become overconfident and must strive for operational excellence. Constant vigilance is a must. It is also what enables us to respond efficiently and effectively when an incident occurs. Ensuring the safety of our teams and our facilities is our number one responsibility.

We also have a responsibility to supply enough energy to meet the needs of as many people as possible. We are redoubling our efforts in this area too. At a time when global demand is rising and energy is increasingly costly and complex to produce, our task has never been more difficult. The amount of intellectual resources that go into each barrel we produce has also never been higher. The reason why we are developing deep and ultra-deep offshore fields and unconventional oil and gas resources is not because of some sort of misplaced pride. It's because we believe that

this is the only realistic solution to satisfying the world's energy needs over the long term, while also limiting the increase in energy prices. And preparing for the future also means supporting the development of renewable energies, which we know will play an essential role in tomorrow's energy mix. At Total, we have chosen to focus on solar energy and biomass. We are also preparing for the future by encouraging innovation by our teams so that we can develop the smartest possible solutions while minimizing our impact on the environment.

**ARE YOU DOING ENOUGH
FOR SOCIETY, IN LIGHT
OF TOTAL'S MORE THAN
HEALTHY FINANCIAL
RESULTS?**

Our financial results are what enable us to invest and therefore to fulfill our commitment to society. Producing the energy the world needs already requires considerable investment, but doing it in an environmentally conscious way with a heightened focus on safety makes it even more costly. In 2011, Total spent more than €20 billion to meet this triple objective.

It is also thanks to our profits that we are able to support development in our host countries. We foster growth



“Creating shared value is the key to our corporate social responsibility commitment. And to continue to fulfill that commitment over the long term, we need to be profitable.”



“Companies cannot overcome these challenges alone. It is only by listening to our stakeholders and maintaining constructive dialogue with them that we can hope to develop appropriate solutions together.”



and employment all around us. Our employees, shareholders, suppliers and customers all benefit from our success, as do host country governments, via the taxes we pay — and we do pay a lot of tax, including in France. Other beneficiaries include local small and medium-sized businesses, communities with little or no access to energy, and the people living near our facilities who need help with healthcare and education. Creating shared value is the key to our corporate social responsibility commitment. And to continue to fulfill that commitment over the long term, we need to be profitable.

BY GIVING STAKEHOLDERS AN OPPORTUNITY TO EXPRESS THEMSELVES IN YOUR SOCIETY AND ENVIRONMENT REPORT ONCE AGAIN THIS YEAR, AREN'T YOU OPENING YOURSELVES UP TO CRITICISM?

The technical, financial, environmental and social challenges we face today are enormous. Companies cannot overcome these challenges alone. It is only by listening to our stakeholders and maintaining constructive dialogue with them that we can hope to develop appropriate solutions together.

Many people have questions about our businesses, operations and actions. They are legitimate questions and we must answer them openly

and transparently. Take the shale gas debate, for example. It is up to us to prove that safe, environmentally responsible exploration in France is possible.

Our initiatives to facilitate access to energy also require an educational, informative approach on our part. We must win over our detractors by explaining our vision, objectives and solutions in detail. I hope that this report will foster discussion and provide more food for ongoing dialogue.

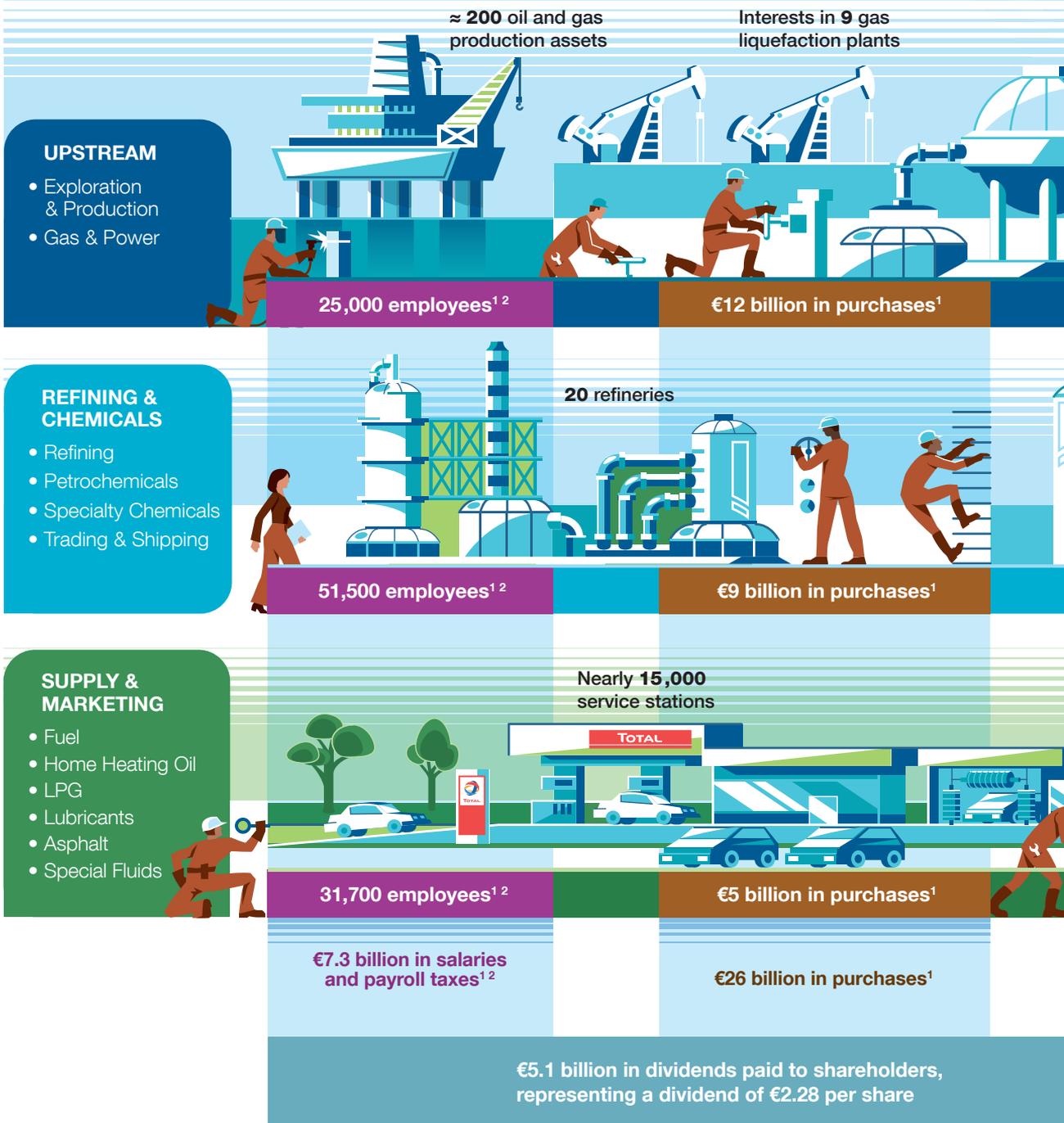
OUR MAIN OBJECTIVES

	Objective	2011 Performance	Overview and Outlook	
ENVIRONMENT				
Exploration & Production hydrocarbon discharges to water	Offshore	< 30 mg/l	22 mg/l	<ul style="list-style-type: none"> Our facilities performed well, significantly decreasing discharges from 2010 levels
	Inshore	< 10 mg/l	17 mg/l	<ul style="list-style-type: none"> Results negatively impacted by operating problems at two of our sites Capital expenditure planned
Reduction in gas flaring in Exploration & Production	50% in 2014 versus 2005	33% versus 2005	<ul style="list-style-type: none"> On course to achieve the objective 	
Energy efficiency	Exploration & Production	10% improvement in 2012 versus 2007	16% improvement versus 2007	<ul style="list-style-type: none"> Objective exceeded, due in part to the change in scope and maintenance initiatives
	Petrochemicals	10% improvement in 2012 versus 2007	8% improvement versus 2007	<ul style="list-style-type: none"> Achievement in line with objective
	Refining	5% improvement in 2012 versus 2007	4% decrease versus 2007	<ul style="list-style-type: none"> Objective not achieved, due in part to under utilization of industrial capacity
ISO 14001 certification rate	100% of environmentally sensitive sites ¹ in 2012	97%	<ul style="list-style-type: none"> Achievement in line with objective 	
SAFETY				
Total Recordable Injury Rate (TRIR) ²	TRIR less than 2 in 2013	TRIR of 2.2, a 15% reduction versus 2010	<ul style="list-style-type: none"> Objective strengthened Achievement in line with objective 	
SOCIAL				
Percentage of non-French senior executives	30% in 2015	23%	<ul style="list-style-type: none"> Stable, action plan under way 	
Percentage of women senior executives	18% in 2015	15%	<ul style="list-style-type: none"> On course to achieve the objective 	
Percentage of employees entitled to death benefits	92% in 2012	87%	<ul style="list-style-type: none"> The change in scope had a negative impact on our performance, but the trend is positive and we are maintaining our objective 	

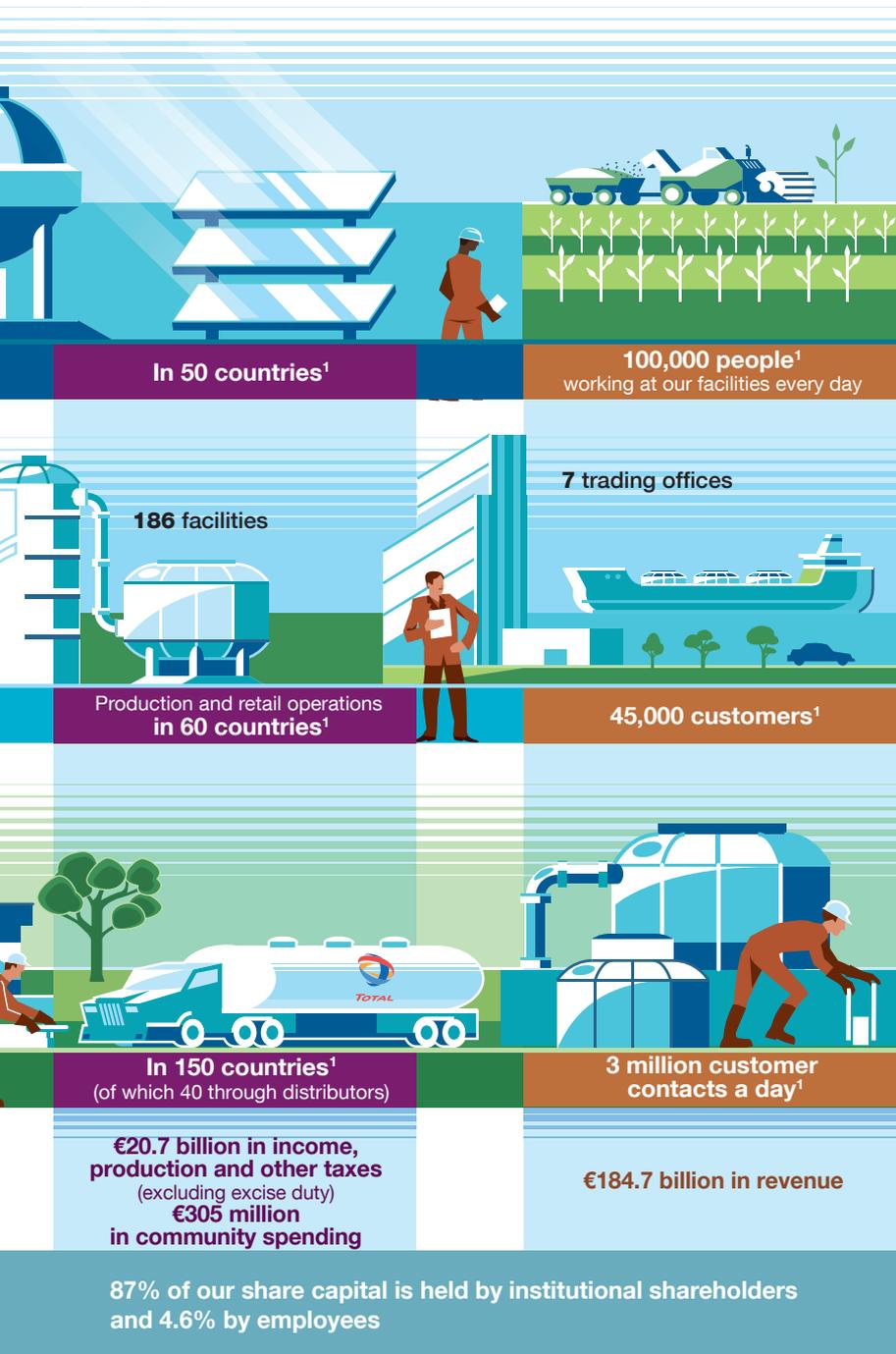
1. We have 60 environmentally sensitive sites that account for 90% of our greenhouse gas, nitrogen oxide (NO_x) and sulfur dioxide (SO₂) emissions and water withdrawals.

2. Number of recordable injuries per million hours worked.

OUR PEOPLE AND OUR BUSINESSES

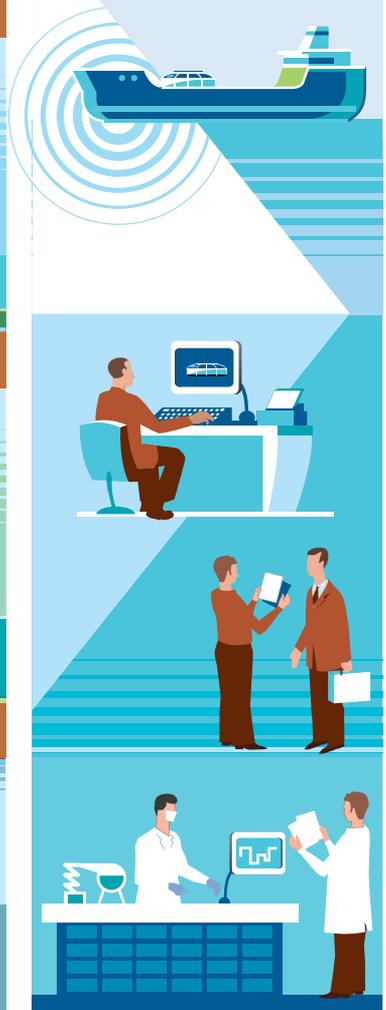


1. Rounded figure. 2. Managed scope.



DEVELOPMENT OF OUR FUTURE BUSINESSES

- Gross capital expenditure: €24.5 billion
- R&D: €0.8 billion
- Exploration spending: €1.6 billion







Developing Viable Energy Solutions

Renewable energy adviser **Gunnar Wegner** joined German development agency GIZ in 2007. He contributes his expertise in mini-grids to the Energising Development program, which already benefits 8.5 million people. His question concerns Total's commitment to the poor.

“Total wants to sell affordable, renewable energy solutions to customers from the bottom of the pyramid – the 1.3 billion people who live on less than \$1.25 a day – through a solid business approach. Long-term engagement and sustainability are very important for us. Does your approach leave enough space for true ‘pro-poor services,’ including reliable after-sales guarantees, and for recycling programs?”



Our Expert Answers



MAURICE O. K'ANJEJO
**CORPORATE AFFAIRS MANAGER
IN CHARGE OF SOLAR ENERGY PROJECTS
AND SUSTAINABLE DEVELOPMENT
TOTAL KENYA LTD.**



"Total's mission is to supply energy to as many people as possible."

Our Total Access to Solar (TATS) program, aimed at the base of the pyramid, takes an approach to this subject somewhere between social business and pure business. Experience and other credible studies have convinced us that more radical programs are prone to failure. TATS is based on a number of key success drivers. They include offering standardized products whose reliable quality is ensured by close cooperation with suppliers, engaging financial institutions to offer credit to customers, supporting young retailers who sell our products in villages, working with recognized partners like GIZ¹ to educate people about how to use them, training technicians to deliver after-sales service, and introducing recycling programs. We believe that this is the most effective way to provide the poor with long-term, sustainable solutions."



MAURICE O. K'ANJEJO
CORPORATE AFFAIRS MANAGER
IN CHARGE OF SOLAR ENERGY
PROJECTS AND SUSTAINABLE
DEVELOPMENT
TOTAL KENYA LTD.

Watch the full interview at:
csr-report2011.total.com

1. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

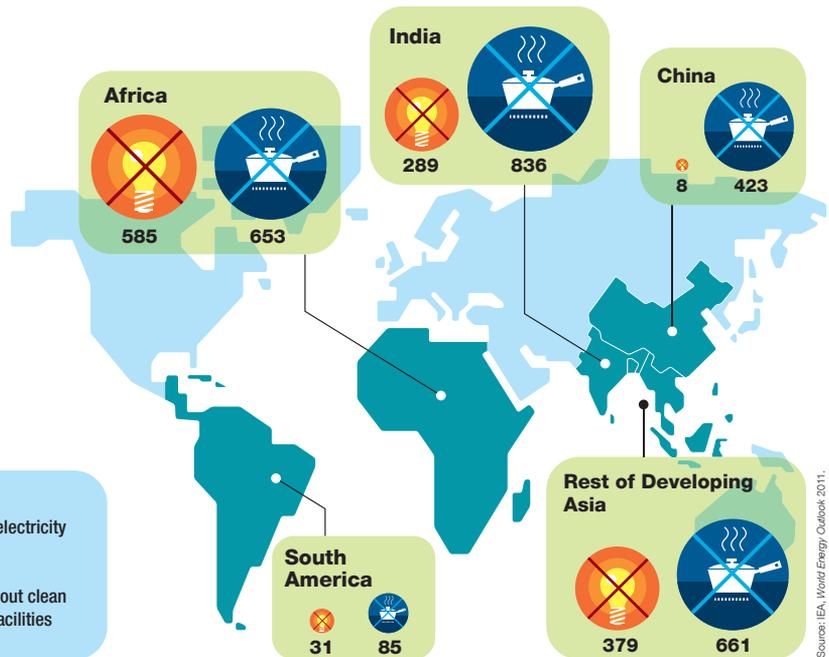
1.3

billion people worldwide do not have access to electricity

2.7

billion people lack clean and safe cooking facilities

-  Million people without access to electricity
-  Million people without clean and safe cooking facilities



Source: IEA, World Energy Outlook 2011.

DEVELOPING VIABLE ENERGY SOLUTIONS

Our mission is to responsibly and sustainably enable as many people as possible to access energy. By focusing our strategy on providing access to a resource that is essential to daily life and to economic development, we are helping individuals, communities and businesses.

Investing and Innovating to Deliver Sustainable Energy Solutions

In developed countries, access to energy is taken for granted for the simple reason that fuel and electricity have become an essential part of our daily lives. However, to ensure secure, sustainable access to this now indispensable resource, it is critical that we invest in industry and infrastructure. At Total, we are tackling the issue of sustainable access to energy on several fronts: by investing and innovating in major oil and gas projects, by diversifying our production sources (see *Tomorrow's Energy Mix* on page 32), and by enhancing energy efficiency in our various businesses across the entire value chain, from production to consumption.

ECO-EFFICIENT PRODUCTS

Getting the most out of our products while continuously reducing their environmental impact is a challenge that our teams strive to meet every day.

In the transportation market, for example, our Fuel Economy line of engine oils reduces fuel consumption by at least 1 to 3%. In addition, our Excellium Diesel, a premium fuel that delivers superior engine protection, can reduce fuel consumption by as much as 3.7% on day-to-day commutes of less than 50 kilometers.

For the construction industry, we offer the Totalgaz Eco-Déclic range of solutions that combine different types of energy with advice on how to optimize equipment or insulate more effectively. The solution that combines LPG with solar energy, for example, reduces the amount of fossil fuel used for home heating by 30%.

Eco-efficient products are also being developed by Total Petrochemicals for the packaging industry. The polypropylene grade PPC 9612, for example, delivers a 35% saving in raw materials use. It has been utilized to manufacture crates for the storage and transportation of goods since 2011.

All of these products and services are part of the **Total Ecosolutions** labeling program, which aims to develop solutions to help our customers and end users **reduce their energy consumption and their environmental impact** (see *Recycling, Recovery and Reclamation* on page 46).

ENERGY EFFICIENCY ON THE ROAD

To help our customers reduce their energy consumption, we encourage them to modify their behavior behind the wheel. Advice on eco-driving techniques, vehicle maintenance and how to choose fuels and lubricants is provided through our Eco 10 and Eco-Services programs, deployed respectively in Europe and in Africa and the Middle East.

INNOVATIONS FOR TOMORROW

Another pathway to sustainability involves more effectively aligning energy supply with demand. That's why we are looking into smart grids to regulate energy consumption, particularly during peak periods; optimize the use of renewable energies, including photovoltaic solar; and develop energy storage techniques.

In 2011, a five-year trial was launched in Issy-les-Moulineaux, just outside Paris, at the initiative of Bouygues Immobilier. Bringing together the strategically related competencies of ten major players in industry including Total, **IssyGrid will be the first district smart grid in France.**

Through our venture capital arm, Total has also invested in the Ecomobilité Ventures investment structure



IssyGrid is being deployed in the Seine-Ouest district in Issy-les-Moulineaux, France.

created alongside partners SNCF, Orange and PSA Peugeot Citroën. A total of €30 million has been injected into the fund, which will be used to invest in start-ups that offer new mobility ecosystems.

Helping the Poor Gain Access to Energy

Total is committed to the ambitious long-term objective of eliminating fuel poverty by helping poor communities gain access to the affordable, reliable and sustainable energy that is critical to their development.

To achieve this objective, we are deploying an access to energy program that goes beyond a philanthropic approach to promote innovative, economically viable solutions developed with the support of our various partners in the field.

1.6 BILLION PEOPLE WITHOUT ACCESS TO MODERN ENERGY SOLUTIONS

In developing countries, lighting and cooking often still require the use of energy solutions that are expensive, difficult to find and sometimes inconvenient, such as paraffin and other lamp oils. That's why the **Total Access to Solar** (TATS) project was launched in 2010 to encourage the use of photovoltaic solar energy in these countries. As part of the project, a range of solar products, costing



WE SUPPORT

SUSTAINABLE ENERGY FOR ALL

Launched by the United Nations in 2012, the Sustainable Energy for All initiative will present its work at the Rio+20 Conference on Sustainable Development. Total is participating in the initiative via the Business for Action working group.

between \$10 and \$90, has been identified for lighting and low-voltage electrical devices. A total of 50,000 products have been sold since trials began in Cameroon, Kenya and Indonesia in 2011. Four more pilot regions will be added in 2012. In Africa, the products are distributed via the Total service station network and by young retailers trained to reach customers outside the network's clientele. In Indonesia, the products are sold via local cooperatives and similar distribution channels. Feedback from the trials will enable us to deploy the project in around 15 countries by 2015. Our goal is to sell one million products that will benefit five million people.



01



02

01 Demonstration of the TATS product line, from lamps to a modular, expandable system, for members of a rural cooperative on the island of Java, Indonesia.

02 Presentation of the entry-level lamp, five times brighter than a kerosene lamp, at the market in Suswa, Kenya.

Total is also exploring the possibility of **using associated gas** from our oil production sites to generate electricity for local communities. In Yemen, associated gas is already used to supply power to tens of thousands of people. A similar trial was conducted in Nigeria, but the absence of a tariff system makes it difficult to replicate or sustain. Assessments are under way to identify solutions that are both economically sustainable and suitable for wide-scale deployment.

TACKLING FUEL POVERTY

Affected by the economic crisis and rising energy costs, 12 to 20% of the population in Europe can no longer afford the cost of heating. In France, an estimated 3.4 million households are impacted, of which one-third use home heating oil.

To combat fuel poverty, Total signed an agreement with French national housing agency ANAH in September 2011, pledging support for insulation work and heating system upgrades in 16,000 households by 2013. The agreement is part of the **Habiter Mieux housing improvement program** being conducted under the aegis of France's Ministry of Ecology, Sustainable Development, Transportation and Housing.

In addition, our affiliate **CPE énergies** signed a Local Commitment Contract with ANAH to identify households in eastern France experiencing fuel poverty and to help

finance insulation work or furnace replacement. The experience acquired will be leveraged in other pilot projects initiated at the end of 2011.

Contributing to the Energy Future in Producing Countries

Our ties with the countries that host our exploration and production operations are not merely the ties that bind a customer to its supplier. Total is a longstanding partner of oil producing countries, and as such, we help them reflect on the sustainability of their energy supply.

CUSTOM-DESIGNED SOLUTIONS

Should we only use fossil fuels to produce electricity? How can we get the most out of our gas reserves? How do we develop renewable energies and which ones should we focus on? How can we spread the cost of investment decisions over the coming years? By proposing **master plans** and implementing **pilot projects**, our experts help countries looking for answers about their energy future. In 2011, our teams helped Bolivia and Nigeria manage their gas resources and conducted in-depth studies on the renewable energy potential of several Gulf States.



Shams, a Groundbreaking Solar Power Project

As part of Masdar, its renewable energies initiative, Abu Dhabi launched a call for tenders in 2008 for the construction of a concentrated solar power plant. Total was awarded the contract alongside Spain's Abengoa Solar. The construction project is now in its final phase: the plant will have a capacity of 110 MW at end-2012. Shams serves as a showcase for our growing expertise in solar energy, which was further strengthened during the year by our investment in SunPower.

Shams is 260,000 solar collectors on a 250-hectare site.



Promoting Employment

Secretary of Total's European Works Council, **Christine Renaud** is a chemical technician at the Lacq Research Center. She is one of 12 members of the Council's Liaison Office and addressed several questions to Total's senior management on the topic of employment.

"Businesses are people-driven. A world-class company like Total has significant corporate social responsibility. What is senior management's vision of employment in Europe tomorrow? How will they protect and grow it? What steps are being taken to integrate over-55s, provide training and facilitate workforce entry for the young?"



Our Expert Answers



DOMINIQUE BELLOS
**CORPORATE VICE PRESIDENT, HUMAN RESOURCES,
COMMUNICATION, HSE AND SUSTAINABLE DEVELOPMENT
HUTCHINSON S.A.**



"Total operates in more than 130 countries, but Europe is our traditional home."

It accounts for nearly two-thirds of our workforce and one-third of our hires. In 2011, 3,400 employees were hired under permanent contracts in Europe. All of our activities are represented here, predominantly Chemicals with more than 25,000 employees. Our training initiatives are sustained, averaging around 4.5 days per employee per year. Fifteen percent of our European workforce is aged over 55 — slightly above our global average — and we strive to integrate seniors satisfactorily. For example, mentoring is one of the preferred avenues of our affiliate Hutchinson in France, where 11% of the workforce is over 55. Every year, we host 2,500 interns, our way of helping prepare young people to enter the workforce. Under-25s make up 5% of our European employees."

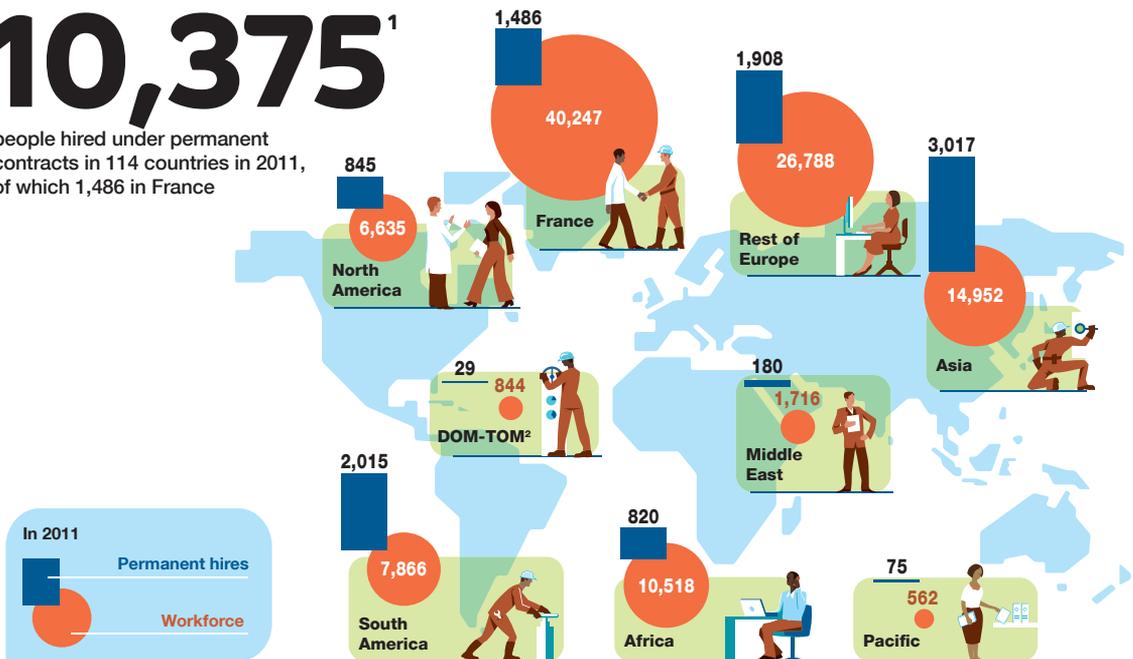


DOMINIQUE BELLOS
CORPORATE VICE PRESIDENT,
HUMAN RESOURCES,
COMMUNICATION, HSE AND
SUSTAINABLE DEVELOPMENT
HUTCHINSON S.A.

Watch the full interview at:
csr-report2011.total.com

10,375¹

people hired under permanent contracts in 114 countries in 2011, of which 1,486 in France



1. The figures presented in this section refer to the managed scope, or all affiliates in which one or more Group companies own a stake of 50% or more.
2. French overseas departments and territories.

PROMOTING EMPLOYMENT

Employment is very often the key concern for our host regions, and we share this priority. That's why we endeavor to do our part to create jobs and stimulate the local economy in all our host countries.

Hiring, Onboarding and Training Teams Worldwide

Hiring is strategic in supporting our expansion in growth activities and in different regions. In 2011, 86% of the permanent positions filled were outside France. We give priority to hiring local employees at all reporting levels. Today, over 150 nationalities are represented in our workforce.

SUPPORTING LOCAL EDUCATION TO FACILITATE LOCAL EMPLOYMENT

In countries where it can sometimes be difficult to find applicants with the necessary qualifications, we finance scholarship programs, internships and university courses. Along these lines, we signed agreements with three widely recognized African universities — University of the Witwatersrand (Wits) in South Africa and the International Institute for Water and Environmental Engineering (2iE) in Burkina Faso in 2010 and the CESAG business school in Senegal in 2011. Around ten new agreements are expected to be signed by 2015.

In addition, 200 students from 30 countries are awarded scholarships to enroll in master's or Ph.D. programs in France every year.

INCREASING THE NUMBER OF NON-FRENCH NATIONALS IN MANAGEMENT

We encourage the recruitment of talented local applicants who have the potential to become senior managers at our affiliates. Helping them to forge a solid career path within the Group is a core priority that is achieved through our various training programs and **the onboarding seminars organized worldwide** for new hires.

Fostering Diversity

At Total, we cultivate diversity. Everyone is involved in the diversity process, from managers and human resources teams to employee representatives and buyers.

TOTAL'S FIRST GLOBAL DIVERSITY DAYS, A POPULAR SUCCESS

From May 23 to 27, 2011, more than 70 affiliates in 50 countries held conferences, plays, exhibitions and debates as part of the first Global Diversity Days organized by Total. Our employees celebrated diversity over a five-day period, at events addressing the topics of equal opportunity and living and working together. Our first Global Diversity Days were such a success that we have decided to make them a regular event on the Total calendar.

What They Say

Paul Ginies, Executive Director of the 2iE Foundation

Our partnership with Total enables us to initiate students into the business world.

Several of them have participated in internships and/or research at Total affiliates in the region, learning about such topics

as waste treatment at depots and service stations and the feasibility and design of an "eco-station."



ENSURING EQUAL PAY FOR MEN AND WOMEN

Following the signature of a workplace gender equality agreement in 2010, we conducted an analysis of variance study with the help of APEC, a French association for the employment of managers, to measure the pay gap between men and women in our oil sector in France. As a result of the study, half of the women working in the oil sector had their salaries increased. Total received the **2011 C&B Award for Sustainability and Diversity** for taking this step.

FACILITATING DISABLED EMPLOYMENT

Our team of disability advocates, **Mission Handicap**, has been part of the Human Resources Department since 2008. This enables them to work in close cooperation with Total recruiters and career managers on strategic and operational issues.

PROMOTING SOCIAL INCLUSION AND EMPLOYMENT FOR YOUNG PEOPLE

Total has been partnering the French Education Ministry since 2009 in the **Fonds d'expérimentation pour la jeunesse**, a community development fund for youth. With a total of €50 million committed over six years and

69% of Total employees say that their jobs are fulfilling.

79% would recommend Total as an employer to family and friends.

Only **6%** plan to leave Total in the next few years to pursue their careers elsewhere.

Source: Internal satisfaction survey (Total Survey) conducted from September 26 to October 31, 2011, of around 70,000 employees at 324 sites in 94 countries.

managed by our corporate foundation, Total is the fund's largest private partner. Hundreds of innovative initiatives to help young people enter the workforce have been tested and assessed and are designed to inspire public policy.

The Total Foundation also supports several non-profit organizations championed by our employees, including **Frateli**, **Proximité** and **Nos Quartiers ont des Talents**, which help young people in their search for employment.

Implementing an Assertive Job Creation and Conversion Policy in France

Our activities help to create jobs in France. Not only does France account for nearly 37% of our workforce, but it is also the country where we hire the most people per year, after China (1,486 and 1,834 respectively in 2011). Both direct and indirect jobs are created (see *Empowering Our Suppliers* on page 20).

SUPPORTING THE EXPANSION OF FRENCH SMALL BUSINESSES

Total Développement Régional (TDR) has been helping French small businesses for more than 30 years. It provides financial backing in the form of unsecured, interest-free loans, delivers organizational assistance to help businesses move into exporting and explore new markets, and offers its technical resources and expertise to support their innovative developments. **In ten years, TDR has financially supported 1,000 French small businesses, representing 15,000 jobs, with a total of €60 million committed.**

Hutchinson Poland Takes a Proactive Approach to Disabled Employment

In 2005, our affiliate Hutchinson started up a new plant for its high-pressure fluid transfer systems business in Bielsko-Biala, in the Silesia region of southwestern Poland. Right from the start, the plant's young managers decided to employ disabled workers. They made this commitment to disabled employment a point of pride for employees, who rallied together to support the approach. Today, disabled employees account for 7.62% of the

Hutchinson workforce in Bielsko-Biala, working on production lines, in warehouses and in administrative positions. The plant won the 2010 award for best employer in Silesia in the "Disabled Employees in Industry" category in the annual Icebreakers competition to promote the integration of disabled people. The Zywiec 1 facility is following in the Bielsko-Biala plant's footsteps and will compete alongside it in the 2012 Icebreakers competition.



Photovoltaic solar panel production and assembly plant, Composite Park, France.

REVITALIZING REGIONAL ECONOMIES BY HELPING TO CREATE JOBS

Total Développement Régional (TDR) makes a key contribution to revitalizing regional economies affected by the reorganization of our industrial activities.

Following the closure of several chemical units in Carling in eastern France, we supported the creation of 300 jobs in the region. Nearby, we also co-financed **Composite Park**, where we are building a photovoltaic solar panel plant that will employ 80 people.

A year after the Dunkirk refinery was closed, we are pursuing our long-term commitment to the seaport, the city of Dunkirk and the region. We are investing more than €150 million over the next three years to generate a total of 600 jobs. The projects include the construction of a

What They Say

Fabrice Chapelain, Executive Director of oil industry equipment specialist Lafon

Total's support gave our international expansion a fantastic boost. And we've been hiring ever since.

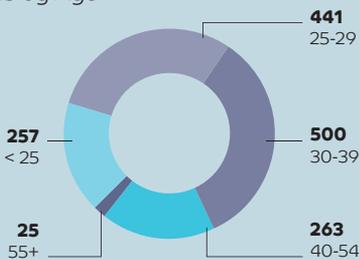
In 2011, we participated in several export missions organized by French trade commission Ubifrance and sponsored by TDR. The mission to Nigeria took place in March and the first orders started coming in just a few months later. Nigeria is now one of our top 20 customers.

Partnership contracts have also been signed in Indonesia and Vietnam. To manage the additional business generated, we've hired three employees on permanent contracts. Over the next five years, we expect to create another 40 jobs.

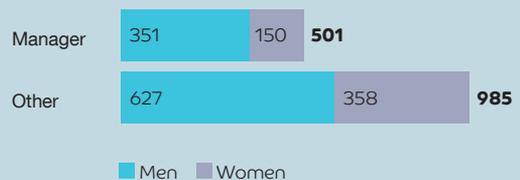
biofuel pilot unit, representing a €100 million investment and 550,000 hours of work for contractors, and the creation of a **new industrial park on the site of the former Flandres refinery**. The site's oil depot will become the Group's largest in Europe with a total capacity of 1.8 million cubic meters. And our training and technical support centers in Mardyck are operational.

1,486 people hired in France in 2011

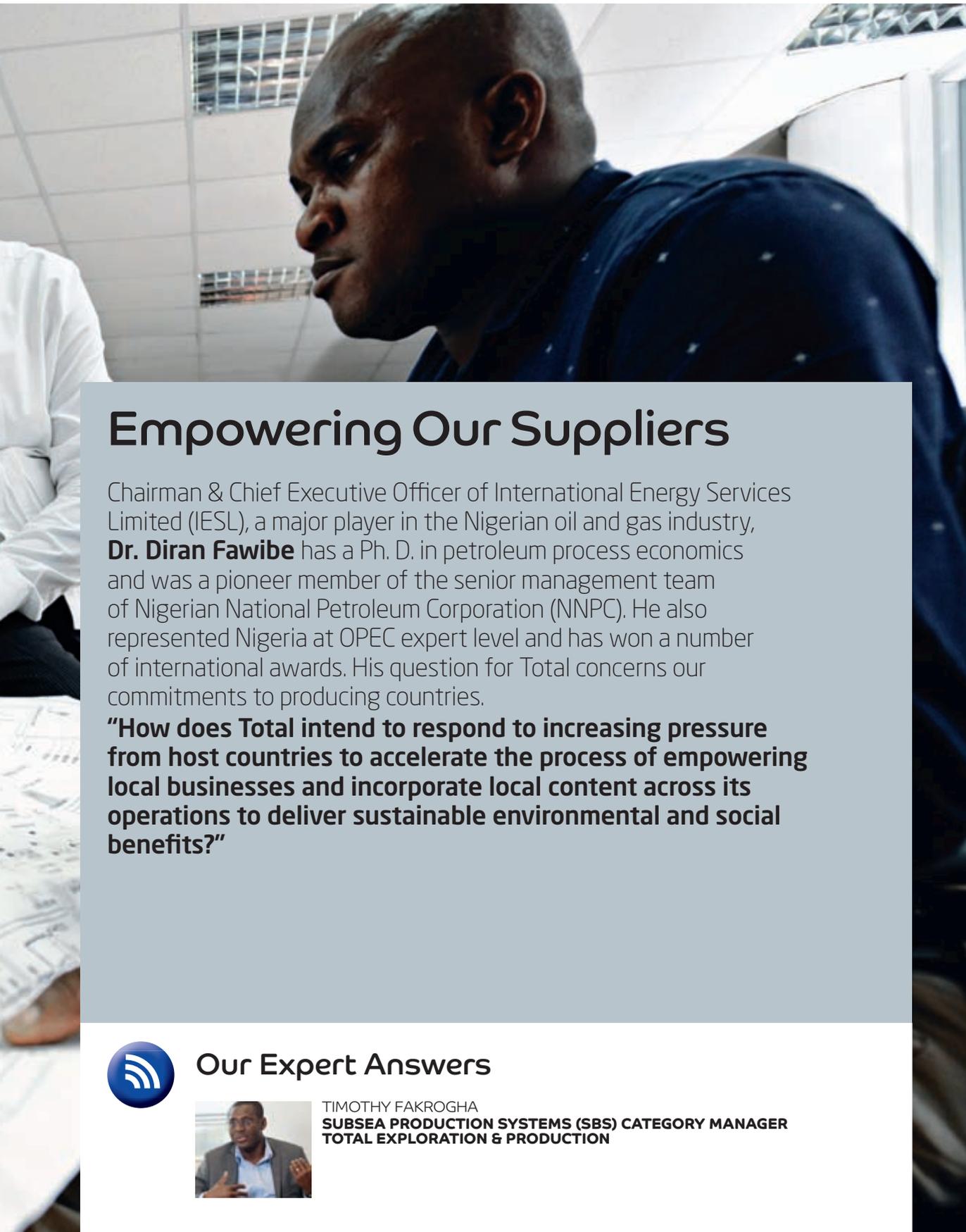
New Hires by Age



New Hires by Job Category and Gender







Empowering Our Suppliers

Chairman & Chief Executive Officer of International Energy Services Limited (IESL), a major player in the Nigerian oil and gas industry, **Dr. Diran Fawibe** has a Ph. D. in petroleum process economics and was a pioneer member of the senior management team of Nigerian National Petroleum Corporation (NNPC). He also represented Nigeria at OPEC expert level and has won a number of international awards. His question for Total concerns our commitments to producing countries.

“How does Total intend to respond to increasing pressure from host countries to accelerate the process of empowering local businesses and incorporate local content across its operations to deliver sustainable environmental and social benefits?”



Our Expert Answers



TIMOTHY FAKROGHA
SUBSEA PRODUCTION SYSTEMS (SBS) CATEGORY MANAGER
TOTAL EXPLORATION & PRODUCTION



"At Total, developing local businesses and building human capacity are integral to our corporate culture."

As a result, we have more than doubled local content over the last five years. This is a win-win situation that forges partnerships for the long run. Certain jobs, for example, have been designated for local companies only, and we deploy our own resources to help them improve standards. We also offer training to develop the necessary technical capacity, such as in-country fabrication and engineering. Targeted measures allow us to factor in the specific features of each community. Our objective is to leave behind a lasting legacy of sustainable development."



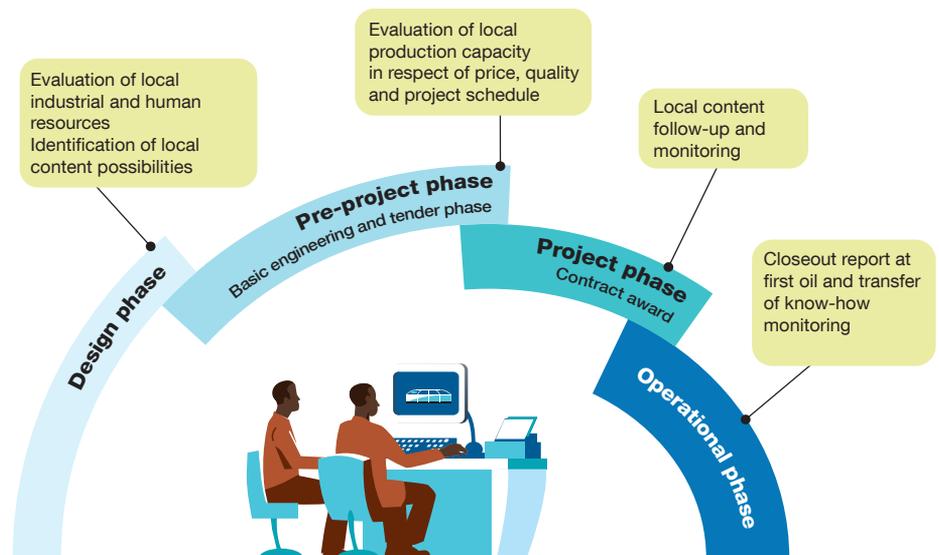
TIMOTHY FAKROGHA
SUBSEA PRODUCTION SYSTEMS (SBS) CATEGORY MANAGER
TOTAL EXPLORATION & PRODUCTION

Watch the full interview at:
csr-report2011.total.com

30%

by weight of the equipment for the Usan project in Nigeria was supplied by local contractors

Integrating Local Content in Our Projects



EMPOWERING OUR SUPPLIERS

With procurement expenditure of around €26 billion, excluding oil trading, Total is a major economic force. Fully aware of the significant social, community and environmental impact our operations may have, we make every effort to raise awareness of their implications among our procurement officers and suppliers.

Deploying Appropriate Monitoring Policies

Procurement teams play a strategic role in our corporate social responsibility (CSR) process, because they establish ties with a category of contract stakeholders that is critical to our operations — our suppliers.

Total's procurement activities are governed by fundamental principles that are applicable in all our host countries. We only select suppliers whose ethical principles are comparable to our own and we reserve the right to audit them and to help them make progress in this area.

UPHOLDING OUR CODE OF CONDUCT

Total is strongly committed to upholding fundamental rights at work, protecting health, safeguarding the environment, promoting economic and social development, preventing corruption and ensuring free competition. These principles, expressed in our Code of Conduct, are clearly communicated to our suppliers and are part of their contractual obligations. They are included in the body of our contracts and developed in dedicated appendixes, in line with the context and the business concerned.

In Exploration & Production services contracts, for example, new HSE clauses updated in 2011 incorporate requirements related to health, safety, social, environmental and security issues, including the *Voluntary Principles on Security and Human Rights* (VPSHR) in the latter area.

€26 billion
in procurement expenditure, including
€12 billion by Exploration & Production

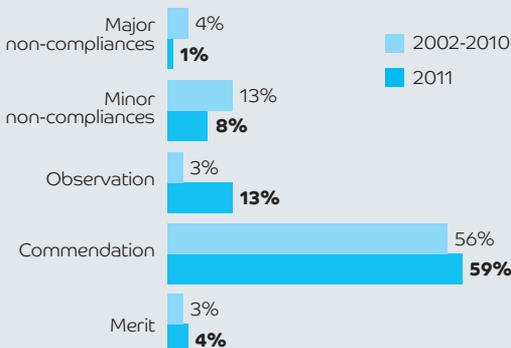
ASSESSING AND MONITORING

As part of the supplier selection process and during calls for tenders and audits, we use questionnaires focused on social and environmental issues to find out more about how our suppliers perform in these areas. Supplier relations are also included in the ethical assessments of our affiliates and units conducted by **GoodCorporation** at the rate of around ten per year.

The **Danish Institute for Human Rights (DIHR)** also helps us improve our supplier ethical assessment process (see *Operating in Challenging Countries* on page 26). In 2011, we jointly finalized a dedicated CSR audit questionnaire based on our *Corporate Social Responsibility Principles for Purchasing* guidance.

Pilots will be introduced in 2012 in our new Supply & Marketing business, to assess how well our suppliers comply with these principles, which in particular refer to the standards of the International Labour Organization.

GoodCorporation Assessment Findings, 2002-2010 and 2011¹



1. Non-applicable evidence points were 21% in the period 2002-2010 and 15% in 2011.

Priority on Local Sourcing

In Africa, 90% of the goods and services purchased by Refining & Marketing are sourced locally. This includes fuel storage tanks, service station furnishings and uniforms. When the equipment available in a country does not meet Total standards, we always consider regional solutions before importing from other continents.

INTRODUCING CROSS-FUNCTIONAL GOVERNANCE FOR SUSTAINABLE PROCUREMENT

Our cross-functional governance organization brings together representatives from the Procurement and Sustainable Development teams and from each business. Its objective is to progress our sustainable procurement policy, drawing inspiration from CSR best practices implemented by the businesses.

Raising the Standards of Small Public Works Contractors in Myanmar

In southern Myanmar, we regularly outsource the maintenance of infrastructure near our gas pipeline, such as roads and bridges, as well as work related to our local outreach programs, which include health centers, schools and water supply systems. Usually, only a small number of companies based in the country's capital are able to provide these services while complying with our standards, particularly in terms of health, safety and environment (HSE) and financial transparency. A pilot initiative was conducted in 2011 with

a view to helping two small local businesses to maintain part of a service road. Our HSE and Contracts & Procurement teams provided training to enable them to meet Total's standards in these areas. We are also helping them through the company registration process and to introduce a legal framework for their operations. If they pass the test, they will be eligible for other contracts with Total and — we hope — with PTT Exploration and Production (PTTEP), the Thai oil company that is building its own infrastructure nearby.



Aerial view of a bridge undergoing renovation in Myanmar.

In 2011, for example, Refining & Marketing (R&M) mapped CSR risks and opportunities by procurement category, a process that may soon be deployed more widely across Total.

Enriching Supplier Relationships

Our goal is to showcase the initiatives undertaken by our suppliers and to support them if necessary.

AN AMBITIOUS AND INNOVATIVE APPROACH

Our objective is to identify the sustainable development issues associated with each procurement category and to co-build CSR performance assessment tools with our suppliers and procurement officers.

A pilot project was launched in March 2011 in R&M. As part of the project, we worked with a key supplier to jointly design a questionnaire for assessing the CSR performance of catalyst suppliers. In a positive outcome, the approach got suppliers and procurement officers actively involved in the process and strengthened the ties between them.

ENVIRONMENTALLY RESPONSIBLE PROCUREMENT

In 2011, we developed a **method** for incorporating our requirements regarding the overall environmental impact of information systems across their life cycle ("Green IT") in our calls for tenders. This criterion is now used when comparing bids, alongside quality and cost criteria. The aim is to implement improvement plans that will produce results in the next two to three years.

SUPPORTING LOCAL BUSINESSES

To enhance the local integration of our activities and contribute to the growth of the local economy, we increasingly segment our oil and gas projects to make them accessible to regional suppliers. We also factor in local resources during the planning phase.

Project **segmentation** is one of the avenues **used by our affiliate Total E&P Indonésie (TEPI)** to step up cooperation with medium-sized local businesses and to help them develop long-term activities such as maintenance services. Local content has amounted to 50% of all TEPI projects for the last five years and covers increasingly varied fields.

Procurement in China: Reducing Costs Without Lowering Our Standards

THREE QUESTIONS for Vincent Bordmann, General Manager of Total E&P's International Procurement Office



In 2007, Total began opening procurement offices in China to identify and select local suppliers and then serve as an intermediary between them and Total affiliates. Vincent Bordmann, in Shanghai, tells us about his experience in the field.

How many suppliers do you have in China?

We focus on quality not quantity, so we only have about 40 suppliers in China so far. Eventually, we expect to have around 70.

How do you select them?

Are CSR criteria taken into account?

We follow a rigorous procedure. First, we preselect suppliers on paper, looking at such aspects as their production capacity, financial situation, and HSE policies. If they pass this initial screening, we conduct an onsite

audit with the help of independent experts. This usually takes a week. During this time, we meet all categories of employees and verify the company's health and safety standards and its compliance with labor laws.

What happens next?

When companies do not meet all of our criteria, we do not use them, but we do provide them with keys to improve and become eligible suppliers. For example, we recently discovered a paint shop that was in a deplorable state. The company is now building a new one that complies with our HSE standards.

Once a contract has been signed, we conduct scheduled inspections with the help of independent inspectors from Moody International. We also carry out spot checks with no advance warning. In fact, we're present throughout the entire production process — 24/7 if necessary — right up until the products are loaded. And that can take several weeks.

A similar trend has been observed in R&M, where a recent study covering 52 categories confirmed that more than two-thirds of our corporate category managers¹ already use small and medium-sized businesses.

Pioneering Innovative Initiatives in France

With more than €5 billion spent on purchases of goods and services in France, Total is one of the largest buyers in the country. France is therefore the perfect place for us to launch initiatives that may later be duplicated in other countries.

PROCUREMENT BEST PRACTICES CHARTER

In 2010, Total signed a charter of best practices between buyers and small and medium-sized enterprises, under the aegis of the French Ministry for the Economy, Industry and Employment. Setting out 10 responsible procurement commitments, the charter aims to foster a balanced, sustainable and responsible relationship between suppliers and their customers.

In addition to signing the charter, we also created an in-house **Procurement Ombudsman position**. Suppliers

can address their concerns or complaints to the ombudsman at: mediation.fournisseurs@total.com.

SUPPORTING DISABLED WORKERS THROUGH OUR PROCUREMENT

Since 2011, procurement officers in France have access to two tools that enable them to easily identify and contact suppliers who employ disabled workers under sheltered or supported employment contracts. Calls for tenders can also be posted directly on dedicated e-procurement platforms.

Total spends more than €5 billion on purchases of goods and services in France, including more than €1 billion from small businesses.

1. Corporate category manager: A lead procurement officer responsible for a specific procurement category across Total or part of Total.



Operating in Challenging Countries

Special Representative of the UN Secretary-General for Business and Human Rights from 2005 to 2011, **John G. Ruggie** is the Berthold Beitz Professor in Human Rights and International Affairs at the Kennedy School of Government and an Affiliated Professor in International Legal Studies at Harvard Law School. He helped to establish and oversee the UN Global Compact. In 2011, the UN Human Rights Council unanimously endorsed the “Guiding Principles on Business and Human Rights” that he developed. His question for Total relates to this issue.

“What are some examples of the types of changes Total has made in projects or project plans as a result of conducting human rights due diligence?”



Our Expert Answers



JULIE VALLAT
COMPLIANCE AND CSR LEGAL EXPERT
LEGAL AFFAIRS DIVISION, TOTAL



“To ensure compliance with our Code of Conduct, we ask an independent third party, GoodCorporation, to conduct ethical assessments of our operations every year.

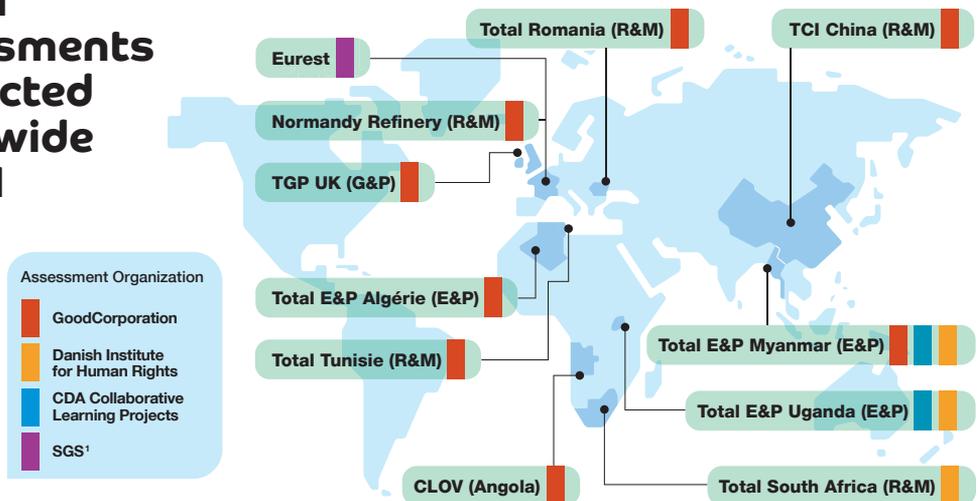
The assessment form addresses issues that include business integrity, labor standards, the environment, and human rights. In cooperation with GoodCorporation, we signed an agreement with the Danish Institute for Human Rights (DIHR) to strengthen the human rights component of these assessments. Each one produces an action plan whose progress is monitored by our own assessors. Angola is a good example of the types of change made. In 2009, the DIHR conducted a human rights compliance assessment (HRCA) of Total E&P Angola’s activities, focused in particular on the issue of labor standards in the supply chain. That’s why, as part of the CLOV project, the management practices of Total E&P Angola’s contractors are being directly assessed by GoodCorporation.”



JULIE VALLAT
COMPLIANCE AND CSR LEGAL
EXPERT
LEGAL AFFAIRS DIVISION, TOTAL

Watch the full interview at:
csr-report2011.total.com

Ethical Assessments Conducted Worldwide in 2011



1. An inspection, verification, testing and certification company.

OPERATING IN CHALLENGING COUNTRIES

The nature of our activities often means that we operate in challenging countries. But our presence is always contingent on our ability to apply the highest possible social standards so that we can make a sustainable contribution to improving the living conditions in neighboring communities.

Our Values and Business Principles

Oil and gas reserves are often located in countries where authoritarian regimes, human rights abuses and corruption can be found. Resources and democracy are not necessarily synonymous. As a result, Total frequently faces criticism and questions about our presence in these sensitive countries, our relations with their governments and the impact of our operations on local communities.

While economies and cultures vary widely in the more than 130 countries where we operate, we have a duty to act as a responsible corporate citizen and set a positive example.

TWO DECISIVE CRITERIA BEFORE WE WORK IN A COUNTRY

Firstly, our international deployment must **comply with applicable legislation and regulations**, especially those in France and the European Union. That's why we suspended our oil and gas production operations in Syria after the EU imposed sanctions on the country in late 2011.

The second fundamental prerequisite is that **we must be certain that we will be able to apply the principles set out in our Code of Conduct** in the scope of our operations and ensure that our suppliers do the same. Our presence in Myanmar over the past 20 years is founded on our ability to meet this commitment in the pipeline region, which has a population of 50,000. In practical terms, this means applying our ethical standards with regard to our affiliate's nearly 800 employees and our suppliers, establishing and maintaining respectful relationships with local communities, and playing an active role in improving the living conditions of our neighbors.

SECURITY, A TOP PRIORITY

Protecting our employees and facilities from sabotage, criminal acts, riots and other forms of attack is one of our top priorities. Our own security teams prevent and handle security risks and crisis situations, ensuring that the rights of neighboring communities are respected. For the protection of our sites, we rely on law enforce-

ment organizations in our host countries. Private security guards — when we use them — are only armed in exceptional circumstances, where there is a significant risk of terrorism or a very high crime rate. In addition, we take all the measures necessary to ensure that the *Voluntary Principles on Security and Human Rights* (VPSHR) can be applied.

Political Unrest in the Middle East

A wave of uprisings swept through the Arab world in 2011. Present in Tunisia, Egypt, Libya, Yemen and Syria, Total made every effort to protect our employees, maintain the integrity of our facilities and — where technically and legally possible — to ensure the continuity of our oil and gas operations. At the height of the crisis, we were able to maintain Yemen LNG's production. Our Refining & Marketing operations were suspended for just two weeks in Tunisia and three in Egypt. The civil war in Libya had a longer-lasting impact on our operations, which were halted in February and gradually resumed from September. In Syria, production was

interrupted in November before being stopped completely in compliance with European Union regulations. Feedback from our affiliates about our crisis management processes, for example for evacuating expatriate employees and their families and ensuring operational communication links, was very positive. Particularly appreciated was the attention paid to tracking local personnel in affiliates and service stations. We maintained contact when our affiliates were closed, paid salaries even when banking infrastructure was down, adjusted working hours and limited employee exposure when situations were tense.



A Responsible Corporate Citizen

Our goal is to contribute positively to the economic and social development of our host countries. And while we do not interfere in the political life of sovereign states, we do voice our convictions to governments whenever necessary.

OUR ETHICAL PRINCIPLES IN ACTION

Total's Ethics Committee coordinates a continuous improvement process to ensure we are making regular strides in enhancing employee familiarity with and understanding and implementation of our Code of Conduct. The number of employees and other stakeholders who sought assistance from the Committee regarding difficulties in applying the Code of Conduct increased by 70% in 2011, attesting to the positive impact of our preventive measures.

As our Code of Conduct emphasizes, respect for human rights is non-negotiable. To help our employees understand and implement this in their day-to-day work, we published our *Human Rights Internal Guide* in 2011. It can also be downloaded from our corporate Web site, www.total.com, helping us to share best practices with our peers.

We have made it very clear that Total takes a zero tolerance approach to fraud and corruption. 2011 saw the launch of a new business integrity policy and the creation of a global network of compliance officers in our affiliates.

Oil and gas operations often account for a significant proportion of our host countries' revenues. Yet local populations do not always obtain the hoped-for development or economic ripple effects. That's why we have been an active supporter of the **Extractive Industries Transparency Initiative (EITI)** since it was introduced in 2002 to promote better governance in resource-rich countries.

INDEPENDENT ETHICAL ASSESSMENTS

Ethical assessments enable us to check that our practices are aligned with our Code of Conduct and identify practical pathways to improvement. We are supported in this approach by three partners. U.K.-based **GoodCorporation** verifies that our units and affiliates

In 2011

More than **35,000** employees completed our anti-corruption e-learning program.

More than **350** compliance officers were appointed in affiliates to help employees handle high-risk situations.

have implemented the systems and procedures necessary for the effective application of our Code of Conduct. The **Danish Institute for Human Rights**, a non-profit public organization, uses its expertise to help our affiliates self assess their operations' compliance with human rights principles. And **CDA Collaborative Learning Projects**, a non-profit organization specialized in economic and social development and local community relations, is helping us to better understand the impact our operations have in our host regions.

SUPPORTING ECONOMIC DEVELOPMENT

Promoting the economic development of our host countries is a key objective of our strategy. To achieve this objective, we enable local contractors to participate in building our oil and gas development projects. In this way, we help to build the country's industrial capacity and lift our contractors' performance to meet the highest international standards in terms of quality, safety and working conditions.

Our goal is to increase the contribution of local businesses both in our value chain and elsewhere, in accordance with our needs and those of our host countries. The **construction of floating production, storage and off-loading vessels (FPSOs)** for our deepwater operations in the Gulf of Guinea is a perfect example. In 2001, 1,000 metric tons of the Girassol FPSO was built in Angola. In 2013, 7,000 metric tons of the CLOV FPSO will be fabricated locally, thanks to the increased capacity of a local yard. On Nigeria's Usan project, local contractors supplied 7,500 metric tons of equipment for the CLOV FPSO — 30% of the total weight. And local content is set to increase in future projects, such as Ofon 2 and Egina, again in Nigeria.



Fabrication of pressure vessels for the Usan project at Nigerdock in Lagos, Nigeria.

IMPROVING LIVING CONDITIONS IN LOCAL COMMUNITIES

Based on building transparent relationships with our stakeholders through mutual respect, listening and dialogue, our community relations strategy aims to ensure that the people living near our sites reap the benefits of our presence. Our contribution to the development of local communities is even more important when we consider that 75% of our production comes from non-OECD countries, which often have significant basic needs. We try to act as a catalyst, with the help of NGOs, to implement sustainable programs that will empower these communities to drive their own development. Facilitating the creation and expansion of small businesses is part of this approach. In the Congo, for example, we support **Association Pointe-Noire Industrielle (APNI)**, which aims to develop and strengthen the country’s small business segment. And in Nigeria, we have created a **business center** that assists local entrepreneurs in the start-up phase.

Our Commitment to Myanmar

TWO QUESTIONS for Namita Shah, General Manager of Total E&P Myanmar

Have local communities really benefited from Total’s presence in Myanmar over the past 20 years?

Our wide-reaching socio-economic program has improved local living conditions with its focus on four key areas: public health, education, economic development — particularly agriculture — and infrastructure. These projects have been given positive reviews, both in terms of management and outcomes by organizations such as CDA Collaborative Learning Projects. In fact, many observers agree that our practices should be used as an example for other investors. At the same time, we do everything in our power to ensure that human rights principles,

labor laws and HSE standards are upheld in the area where we operate. All of our stakeholders are involved. If a violation is brought to our attention, we take the matter up with whomever is involved, whether it be our suppliers, our partners, the villagers or the authorities.

What about at the national level?

We help to spread best practices via forums with our suppliers, the national authorities and other oil companies operating in the region. We also worked with the United Nations Institute for Training and Research (UNITAR) to educate local government officials about human rights, humanitarian and refugee law, maritime law and environmental law.





FEATURE REPORT

TOMORROW'S ENERGY MIX

In May 2030,
more than
8 billion people
will be living
on Earth.

Using energy efficiently and intelligently is the first step toward ensuring that the world has sustainable access to the energy needed for its development and to meet the challenges associated with population growth and economic development while reducing global greenhouse gas emissions. But we must also rally all available energy sources starting right now. The task is far from simple, as it means finding the right energy mix for the development of each country and region and continuing to support renewable energies until they reach maturity. Let's take a closer look.

TODAY'S ENERGY MIX

THE ENERGY MIX

The energy mix is the way in which the various primary energy sources available are combined to meet our energy needs. These sources include oil, natural gas, coal, biomass, solar, hydropower, wind power, geothermal and nuclear.

Far from a universal model, the energy mix varies between regions and countries depending on the resources available, local energy needs, and the social, economic and environmental factors at play. In Brazil, for example, hydropower makes up 15% of the country's energy mix and represents more than two-thirds of the country's power generation. In China, coal is used to meet more than two-thirds of energy demand and to produce nearly 90% of the country's electricity.

The energy mix can also be the result of political decisions. In France, where the government launched a major nuclear power program in 1974 after the first oil crisis, nuclear power now

accounts for 80% of power generation and 40% of energy consumption. In Denmark, where nuclear power production is prohibited by law, wind power accounts for 15% of electricity output and 5% of the energy mix.

PRIMARY ENERGY

Before it can be used, primary energy generally needs to be converted into fuel, such as home heating oil, gasoline or diesel. However, electricity accounts for the second largest proportion of final energy consumption, after oil. Energy is used in three main areas: transportation; industry, in the form of heat or power; and services and households, for heating, air conditioning, lighting, cooking, communications, etc. ■

Main Applications of Each Energy Source



Oil is primarily used in transportation and by the petrochemical industry. However, it is still utilized for power generation in some emerging economies and to meet peak demand in developed countries.



Natural gas is used in equal proportions to generate heat for industry and households and for power generation. It also serves as a feedstock for the petrochemical industry.



Coal is almost exclusively used for power generation.

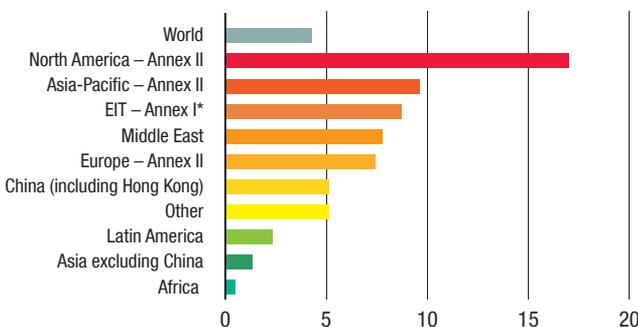


Nuclear energy is exclusively used for power generation.



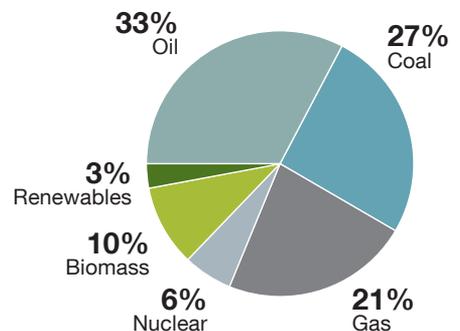
Renewable energies primarily supply electricity. Biomass is also used for industrial purposes and for heating and cooking in less developed countries, and solar thermal energy is also used for heating.

Per Capita CO₂ Emissions Worldwide in 2009



* Economies in transition to a market economy: Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russian Federation, Slovakia, Ukraine. Source: IEA 2011.

Today's Global Energy Mix



Source: IEA 2011.

TOMORROW'S ENERGY MIX

40%

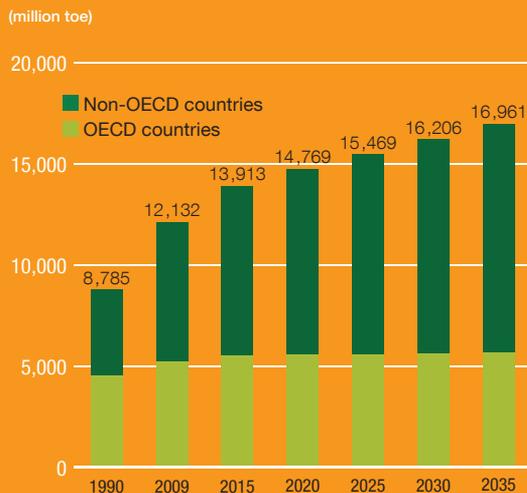
According to the IEA's New Policies Scenario, energy demand will increase by 40% between 2009 and 2035.

The increase will be driven by:

- Population growth, with an additional 1.7 billion people by 2035.
- Rapid economic development in emerging economies, where GDP will grow by an annual average of 4.9% between now and 2035.
- New energy needs associated with population growth and growing affluence, resulting in a significant increase in demand for transportation fuel and electricity.

65%

Energy consumption is forecast to increase by 65% in non-OECD countries between 2009 and 2035, compared to 8% for OECD countries over the same period.



Source: IEA 2011.

FACTORS TO BE TAKEN INTO ACCOUNT

The availability of primary energy, in terms of the amount of fossil fuel reserves, the technical maturity of renewable energies and the potential of nuclear power.

→ Oil and gas reserves — particularly unconventional reserves — are still abundant, but require increasingly complex technology to produce.

→ Hydropower has just about reached its maximum potential, with very few major waterways still available.

→ Wind, solar and modern biomass technologies are being developed. However, technical improvements are necessary for the widespread deployment of new technologies and this requires time — several decades — and considerable financial investment.

→ Solutions, for example in the areas of power storage and smart grids, need to be found to overcome the intermittence issues associated with renewable energies.

→ Nuclear power depends on the availability of a safe, socially acceptable installed base of plants.

The improvement in energy efficiency, by using less energy to achieve the same performance during production and consumption. This depends greatly on energy policies and trends in consumer behavior, which vary significantly between countries.

The reduction of greenhouse gas emissions, particularly carbon dioxide (CO₂) emissions, to curb global warming. Today, 60% of greenhouse gas emissions come from the production and consumption of fossil fuels, primarily coal. ■

Spotlight

China, the World's Largest Energy Consumer

In 2007, China overtook the United States to become the world's biggest energy consumer. In 2035, its energy needs will be 70% higher, despite having half the per capita energy use of the United States. While oil demand is forecast to decline in OECD countries, China is expected to become the world's biggest oil consumer in 2035, due to growth in the

transportation sector. Fossil fuels will still account for more than 62% of power generation. China will also become a major gas producer. It is banking on the partial substitution of coal by natural gas and renewable energies to reduce its carbon footprint, an objective set out in its twelfth five-year plan, launched in 2011

Source: IEA.

TOTAL'S VISION

At Total, we strongly believe that all energy sources will be necessary to meet growing global energy demand. Still very abundant, oil and gas resources are essential to ensure a smooth transition to a lower carbon energy mix, while limiting price pressure and guaranteeing secure supply. In addition, significant investments need to be made to optimize and diversify our production to prepare for tomorrow's energy mix, particularly by enhancing energy efficiency and developing alternative and renewable energies.

1 KEEP PRODUCING OIL AND GAS

Total is pursuing the exploration and improved management of our resources. In 2011, our efforts led to **major new discoveries** offshore French Guiana and in Azerbaijan. Certain regions and plays, such as deep offshore subsalt, remain relatively unexplored. Their long-term development will depend on the associated operating costs and environmental impact. We will, of course, apply stringent standards to ensure the safety of our people and integrity of our facilities, two fundamental prerequisites for all our operations.

Oil fields are being operated more efficiently than ever before, but there's still room for improvement.

When an oil field is operated today, an average of two-thirds of the oil remains trapped in the rock. Improving the recovery rate by five points would represent

the equivalent of ten years of global consumption. In addition to implementing conventional techniques for maintaining reservoir pressure, such as injecting water or gas, we are also developing new technologies like polymer injection.

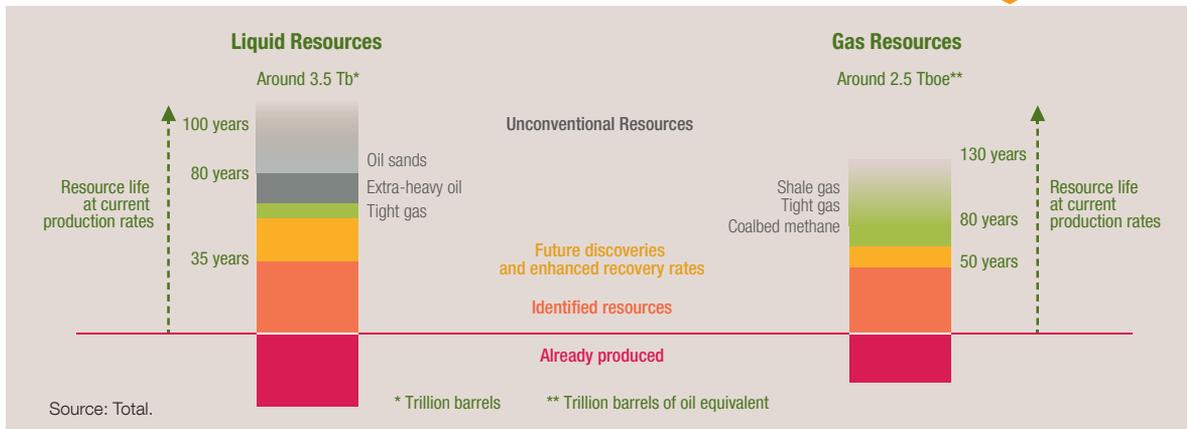
Unconventional oil and gas resources also offer promising opportunities. Examples include the heavy, viscous bitumen found in Canada's oil sands and extra-heavy oil from Venezuela, as well as the shale oil and gas still trapped inside source rock (see *The Shale Gas Debate* on page 58). Although they require specialized production techniques, Total is fully committed to developing these resources responsibly, taking into account the impact on local communities and the environment. ■



At least **80 years** of oil resources¹

At least **100 years** of gas resources¹

1. At the world's current rate of consumption.





Pilot Carbon Capture and Storage

Given our extensive knowledge of the properties of geological reservoirs, it was only natural for Total to take an interest in carbon capture and storage (CCS), a technology that could neutralize CO₂ emissions from power plants and energy-hungry industrial facilities. Since 2010, we have been testing Europe's first end-to-end commercial-scale CCS

chain in Lacq, southwestern France. The pilot project aims to test carbon capture on a boiler via oxy-fuel combustion, followed by storage in a depleted gas reservoir. In late 2011, the pilot's permit was extended by 18 months.

Innovative Technology Developing Stationary Batteries

To enable intermittent renewable energies like solar and wind power

to really take off, we need to devise new ways to store electricity. That's why in 2009 we signed an agreement with the Massachusetts Institute of Technology (MIT) in the United States to develop a stationary battery that would require a small initial outlay, deliver high energy efficiency and last for around 20 years. In 2011, we also acquired an interest in EnerVault, a start-up that is developing a high capacity flow battery technology that would scale power independently of energy storage capacity.

2 CONTINUOUSLY IMPROVE THE ENERGY EFFICIENCY OF PRODUCTION FACILITIES

Total is a committed advocate of responsible energy use. To support growing requirements in this area, we deliver solutions that help our customers shrink their environmental footprint (see *Developing Viable Energy Solutions* on page 8).

We also target energy efficiency at our facilities. Every year, Total uses around 560 million gigajoules of energy. We fully intend to optimize energy use in all of our businesses and have set ourselves the objective of improving the **energy efficiency** of our facilities by 1 to 2% per year between 2007 and 2012. In 2011, 46 million metric tons of CO₂ equivalent in direct emissions were reported at our sites, or **20% less than in 2008**.

In each of our businesses, dedicated management systems enable us to implement a structured environmental program.

In April 2011, a cogeneration plant was commissioned at one of our major petrochemical sites, in Feluy, Belgium, resulting in a 10.6% reduction in primary energy use and a 10.4% reduction in total greenhouse gas emissions. At our Gonfreville site in France, following work on the styrene production unit in 2008, the steam cracker was upgraded. As a result, its energy consumption, which represented 50% of the site's overall energy use, was reduced by 3%. It is now one of the most efficient steam crackers in Europe. ■

3 INVEST IN NEW ENERGIES

Although we specialize in major industrial projects, we also have extensive expertise in chemicals, materials science and fuel production. This gives us a significant advantage when it comes to developing photovoltaic solar energy and biomass, the two renewable energy segments that we believe offer the most promise and the greatest opportunity for synergies.

Photovoltaic Solar Energy

We began to take an interest in photovoltaic solar energy 25 years ago as a way of helping low-income communities gain access to energy. In 2007, we took our involvement to a new level by forging R&D partnerships in this area. Our goal was to become a leader in the solar industry. With this in mind, we acquired interests in three solar companies and **in 2011 a 60% stake in SunPower** (for \$1.4 billion), which we increased to 66% in January 2012. This California-based company is active across the photovoltaic solar value chain, from cell manufacturing — it produces the most efficient solar cells in the market — to the turnkey design and construc-

€5 billion

invested in renewable
energies between
2010 and 2020



tion of large plants. Thanks to it, Total is now a global leader in the solar energy industry.

Biomass

In the biomass segment, we are exploring several avenues. With our U.S. partner **Amyris**, we are looking into **biochemical conversion pathways**, where microorganisms are

used to produce fuel and chemicals via the fermentation of sugar. The first biofuels made from sugarcane grown in Brazil are expected to be ready for commercial scale-up within a few years. Similarly, we acquired an interest in **Gevo**, a start-up that is developing a process to convert sugar into isobutanol for the automotive fuel and petrochemical markets. The first commercial-scale unit is scheduled for commissioning in mid-2012.

In the **BioTfuel** project, the focus is on **thermochemical conversion pathways**. At one of our refineries, we are testing a method that involves the co-gasification of coal and biomass (wood) followed by Fischer-Tropsch synthesis. The aim is to produce biodiesel and bio-jet fuel.

We also provide industrial support to the Futurol project, where the objective is to produce second-generation bioethanol from biomass, using farming and forest waste or dedicated biomass.

Another strategic move was our investment in **Coskata**, a start-up that is developing a process for converting syngas into alcohol via fermentation.

We also monitor advances in the nuclear energy industry, especially since the Fukushima accident. Many projects have been put on hold. ■



“All subsequent capacity additions would have to be carbon neutral.”

MARIA VAN DER HOEVEN
EXECUTIVE DIRECTOR OF
THE INTERNATIONAL ENERGY AGENCY (IEA)



“We’re campaigning for an international agreement to control greenhouse gas emissions.”

MANOELLE LEPOUTRE
EXECUTIVE VICE PRESIDENT,
SUSTAINABLE DEVELOPMENT & ENVIRONMENT, TOTAL

The IEA’s *World Energy Outlook 2011* projects that all carbon “allowances” will be used up by 2017 if the world is to stay on a path consistent with limiting the long-term global temperature rise to 2°C. That is, all subsequent capacity additions would have to be carbon neutral. What is Total doing, in terms of its own policy as well as its impact on public policy and other

market players, to encourage the kind of significant changes to the energy mix which would be required to reduce carbon emissions so dramatically and in such a short time?

Our primary mission is to meet growing global energy demand. We believe that rapidly developing renewable energies will help us. Fossil fuels will nonetheless remain a predominant part of the energy mix in 2030, with one important change — the rise of natural gas. These forecasts compel us to continuously strive to reduce emissions from our facilities and enhance their energy efficiency. And also to reduce the environmental impact of our products and services, by encouraging innovation by our teams. But even if we, at Total,

do everything we can to help devise solutions to the energy challenge, the answer must be a global one. That’s why we’re campaigning for an international agreement to control greenhouse gas emissions, a wide-ranging accord whose introduction is sufficiently gradual and does not distort competition among market operators.

Watch the full interview at: csr-report2011.total.com

THE ENERGY MIX IN 2030

According to the IEA

28%



25%



23%



7%



11%
of which
1% agrofuels



6%
of which
3% hydropower



According to Total

30%

22%

24%

6%

11%
of which
1% agrofuels

7%
of which
3% hydropower

In the IEA's New Policies Scenario, global CO₂ emissions would be 21% higher in 2030 than in 2008, a forecast that puts greenhouse gas emissions on track to cause a global temperature rise of 3°C by 2100. This is the most realistic vision and calls for significant energy efficiency efforts in all of the world's big energy consuming countries and regions, including Europe, China, India and North America. It also supposes that natural gas consumption will be less than coal consumption, which has a higher environmental impact. This scenario could evolve post-2030 with greater reductions in emissions, once further progress has been made in technologies like carbon capture and storage.

We have developed our own vision of tomorrow's energy mix that differs somewhat from existing scenarios. In our opinion, fossil fuels will represent 76% of the energy mix in 2030. Although abundant, oil resources are become increasingly difficult to access. This will limit oil production, which we believe will plateau at 95 million to 97 million barrels per day in around 2020, stabilizing thereafter. Accounting for an estimated 24% of the energy mix, natural gas will become the second largest energy source in 2030, overtaking coal, which generates twice as many greenhouse gas emissions (see *The Shale Gas Debate* on page 58). The contribution made to the energy mix by oil and gas will undoubtedly decline gradually after 2030. However, it is important that we continue to produce these resources, because it is the only way of ensuring a smooth transition to a lower carbon energy mix, while allowing the balanced development of emerging economies and without putting too much financial strain on consumers.



Health and Safety

A doctor of medicine with a Ph.D. in cognitive psychology, **René Amalberti** is a recognized expert in risk management, particularly in industry and aviation. He currently divides his time between the French National Authority for Health (HAS) and MACSF, an insurance company for health professionals. His question relates to Total's safety policy.

“Procedures are there to ensure that work is performed correctly and safely, but work sequences can often be disrupted. That’s when operators and teams may bend the rules. In the real world, some companies are safer than others, with fewer accidents. What makes them that way? How is Total addressing this issue?”



Our Expert Answers



BENYAMIN ARGUBIE
HSE MANAGER
TOTAL E&P INDONÉSIE



"Safety is a matter of continuous improvement that involves a strong commitment by management to make it sustainable."

We want to strengthen our policy in two main areas: workplace safety and technological risk management. We are also paying special attention to contractor management and the way they manage safety. The strong commitment displayed by everyone, especially management, is crucial. What really makes us stand out from other companies, besides our team spirit, our equipment reliability and our resilient organization, is our managers' visible presence in the field. As a field manager, I am fully committed to safety as a paramount priority."



BENYAMIN ARGUBIE
HSE MANAGER
TOTAL E&P INDONESIA

Watch the full interview at:
csr-report2011.total.com

15%

decrease in the Total Recordable Injury Rate per million hours worked in 2011 versus 2010

Our safety performance continues to improve. Our workplace safety statistics, which cover both Total and contractor employees, improved once again in 2011, reflecting the various initiatives undertaken in all of our businesses.



HEALTH AND SAFETY

Year after year, we continue to strengthen our risk prevention process, both at our sites and during the transportation of hazardous materials. Health and safety are absolute priorities, a strategic commitment for Total and a workplace commitment for all of our employees.

An All-Encompassing Approach Serving Everyone

Our Safety Health Environment Quality Charter, signed by our Chairman & CEO, reflects our commitment to health and safety at the very highest levels. The efficiency of our organization, our management practices, our employees' skills and their individual involvement are also key factors in driving progress in our performance in these areas.

Fostering a Shared Safety Culture

Declaring safety a priority is not enough. Corporate practices and behaviors are part of an overall culture. To improve them, we need to shift that culture toward a stronger focus on safety. It is critical that we set a **good example** for contractors, whose safety performance is monitored at all levels of the organization alongside that of our own units.

A CONTINUOUS ASSESSMENT AND IMPROVEMENT PROCESS

When it comes to safety, nothing can be taken for granted. We must continuously review and rethink our safety process. To do this, dialogue and learning from experience are essential.

The **Total Survey**, an employee satisfaction survey carried out every two years, enables us to measure the progress made in each unit and across the Group in a number of key safety culture parameters. Our workforce believes that the attention paid to safety continues to improve. In particular, 90% of employees think that safety rules are properly applied. Employees are also increasingly satisfied with manager communication.

GOLDEN RULES DEPLOYED WORLDWIDE

The vast majority of accidents are caused by human factors and non-compliance with basic safety rules. Because these need to be reiterated as often as possible, in 2010 we introduced the Golden Rules for safety

at work, which are applicable to everyone involved in organizing, carrying out or overseeing our operations. The goal is to eliminate discrepancies between safety guidelines and actual practice by clearly adopting a zero tolerance approach.

The Golden Rules continued to be deployed one by one throughout 2011 to ensure that they are understood and applied by everyone at Total and adopted by each

A Group Safety Award for Foshan in China

The Foshan petrochemical plant in China earned a Group Safety Award for its Golden Rules deployment. Launched on April 28, 2011 to coincide with the World Day for Safety and Health at Work, the program brought together employees and suppliers for workshops on such topics as safe driving and managing simultaneous operations and co-activities. The program continued throughout the year via communication

initiatives, training sessions and safety meetings, as well as role-play contests on safety culture and the designation each month of a "Safety Star" among employees and suppliers. The result was a significant reduction in the discrepancies between safety rules and practice, both in operations and behaviors, and no accidents reported at the end of 2011.



unit in accordance with its needs. **Total Infrastructures Gaz France (TIGF)**, our affiliate based in southwestern France, and the **Foshan plant in China** both received a **Group Safety Award** for their deployment of the Golden Rules.

COMMITTED MANAGERS ON THE FRONT LINE

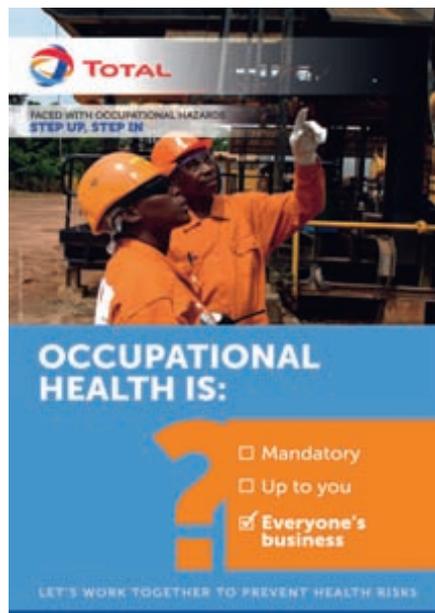
Management's fundamental role in the safety process has also been reaffirmed and the safety aspect of **mandatory training for managers** has been reinforced. Managers are responsible for explaining the rules, motivating their teams and tracking any difficulties in implementation during safety inspection tours. They are also responsible for setting the standards, rewarding positive practices adopted by individual employees or teams, and taking disciplinary measures when necessary. Health, safety and environment (HSE) criteria are now included in the **assessment of managers' performance**, and this is reflected in their annual performance reviews as well as in their compensation packages.

A CONSTANT FOCUS ON PROGRESS

At Total, we continuously reevaluate our safety policy in light of the analyses systematically conducted of all industrial accidents and high-potential incidents.

The accident that occurred in the Gulf of Mexico in 2010, on another oil major's drilling rig, obviously received our full attention. In addition to working alongside the rest of the industry, we set up three task forces to leverage the lessons learned. Our first focus was improving the safety of drilling operations and optimizing well design, in terms of standards, procedures and organization. The second was developing technological solutions for capping a subsea well blowout. And the third was strengthening our capacity to respond to a major spill resulting from a blowout. As a result of this work, new technical and logistical resources for surface and underwater oil dispersion were introduced in 2011. The organization of oil spill response resources was also reviewed, along with our tools and methods, to ensure fast access to relevant information and, consequently, a more efficient response. For example, we now have access to satellite images that would enable us to locate and monitor an oil slick, both during the day and at night.

All of these initiatives result in significant, continuous improvement. But we can never let down our guard. The recent incident on our Elgin platform in the North Sea is a reminder that our operations require us to be constantly alert on all fronts.



Document on occupational health, prepared for the World Day for Safety and Health at Work in our businesses.

Taking a Responsible Approach to Health

In light of the products and processes involved, our industry has a responsibility to be particularly vigilant about safeguarding the health of employees, contractors and neighboring communities. Health is therefore a top priority.

TARGETING "INVISIBLE" RISKS

Occupational health and hygiene experts identify hazards and assess workplace health risks. One of their main challenges is to sustainably raise employee awareness of "invisible" risks and delayed effects.

Our Indonesian affiliate, for example, has implemented **programs** at each of its nine operating sites **to monitor exposure** to such hazards as excessive noise and benzene. Teams are regularly informed about chemical, physical, biological and ergonomic risks and the various prevention methods in place via training sessions and targeted, on-the-job initiatives.

In addition, a network of physicians monitors the health of our employees, in accordance with their potential exposure levels.

ONGOING HEALTH MONITORING

At the initiative of the Corporate Health Steering Committee, which makes decisions about health policy at Total, an **employee health monitoring system** was set up in 2008. The objective is to measure the incidence¹ and prevalence² of diseases among employees and, in the longer term, to propose and coordinate prevention measures. The value of the system is that it will provide collective rather than individual data.

Occupational physicians play a leading role in this process. Our Medical Advisory Committee meets twice a year, bringing together Total executives and internal and external experts. Led by the Group's Chief Medical Officer (CMO), they review the findings of the health monitoring system and discuss a particular topic of general interest.

VIGILANCE ON AN INTERNATIONAL SCALE

Total has operations worldwide, with employees in more than 100 countries and managers who travel abroad frequently. Our **International Medical Department** therefore conducts campaigns worldwide to provide health-related information and promote healthy behaviors among employees, their families and the wider community, targeting major pandemics like HIV/AIDS, malaria and avian flu. At the local level, it creates and operates Group medical structures and audits the hospitals closest to our facilities. It is also responsible for organizing evacuations in the event of an emergency.

SUPPORTING PUBLIC HEALTH INITIATIVES

At Total, the preventive role of occupational health departments is being broadened to include supporting public health initiatives.

In addition to highlighting the risks associated with our products and technologies, we draw attention to risky behaviors. The consumption of psychoactive substances, poor body mechanics and poor diet are all factors that can have a negative impact on employees and their families. That's why we deploy prevention and awareness

campaigns on such issues as smoking, alcohol and substance abuse, and obesity.

Beginning in 2011, we focused on **sleep**. To start with, employees at Total headquarters received comprehensive, practical information and medical advice on sleep issues during dedicated workshops. The objective was to help them manage their sleep more effectively to enhance alertness, increase energy levels and prevent sleep disorders.

Supporting Community Health Initiatives via the Total Foundation

In Morocco, the Total Foundation joined forces with the Pasteur Institute to support local anti-HIV/AIDS association ALCS in conducting a prevention campaign aimed at truck drivers and sex workers. The campaign reached 80,000 truck drivers between 2007 and 2011 via information and screening conducted by physicians in mobile medical clinics. The

experience has already inspired similar initiatives in Cameroon and Burkina Faso. In Madagascar — where diarrheal illnesses are the second leading cause of death in children under five — a major program has been undertaken to establish an internationally recognized research hub based in a local children's hospital.



1. Number of new cases of a disease that occur in a given population during a specific period of time.

2. Number of people affected by a disease in a given population at a specific moment in time.



Recycling, Recovery and Reclamation

A graduate in European law from Université de Liège in Belgium, **Jean-Pierre Hannequart** is Executive Director of the Institut Bruxellois pour la Gestion de l'Environnement [Brussels Institute for Environmental Management] and Chairman of ACR+, the Association des Cités et Régions pour le Recyclage et la gestion durable des Ressources (Association of Cities and Regions for Recycling and Sustainable Resource Management). He lectures at Université Libre de Bruxelles and is the author of studies and articles on European Union environmental policy, including *European Waste Law* and *Municipal Waste in Europe: Towards a European Recycling Society*. His question concerns waste management at Total.

“European Union legislation and policy requires the application of a waste management hierarchy comprising five levels – prevention, reuse, recycling, recovery and controlled disposal. Are there synergies that Total can develop with local government to improve application of this principle?”



Our Expert Answers



MICHEL GOVAERTS
VICE PRESIDENT, POLYMER RECYCLING
TOTAL REFINING & CHEMICALS



“Yes, it’s crucial. Today, Total is developing new solutions to improve waste recycling and recovery.”

We are also developing new technologies to recycle cuts and products that were not treated in the past. But it’s the authorities, upstream, that can organize effective collection and encourage active participation by consumers. In the case of municipal waste, this cooperation has led to the creation of specialized companies such as France’s Valorplast and Belgium’s Fost Plus to educate consumers about selective sorting of plastic and implement it for households and in collection centers. We are working with industry federations to continue to build on strong synergies with national and European Union authorities, identifying affordable technical solutions to achieve maximum recycling rates. In this way, we are helping to reduce discharges and emissions of all types and conserving resources for future generations.”

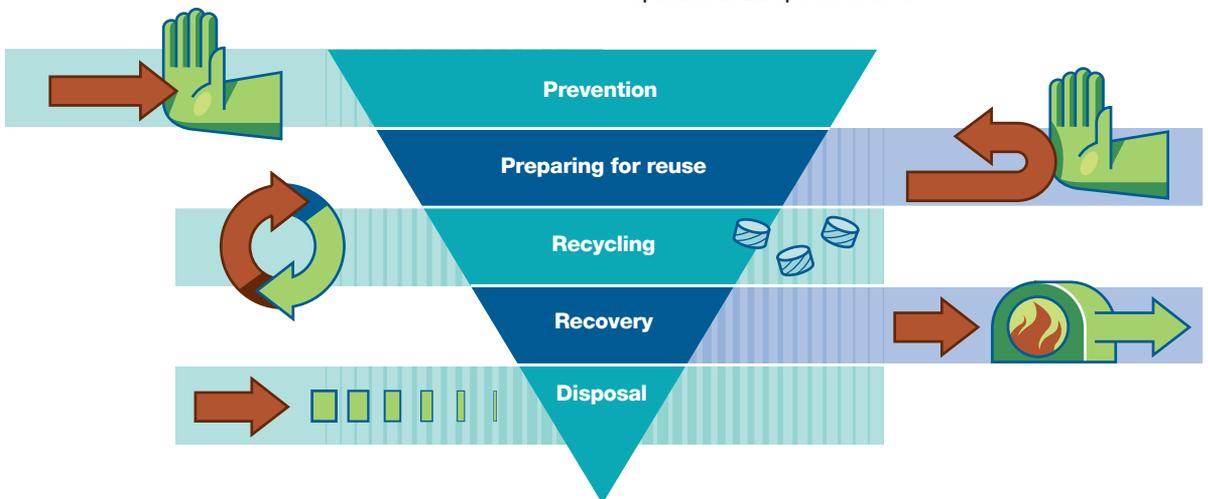


MICHEL GOVAERTS
VICE PRESIDENT,
POLYMER RECYCLING
TOTAL REFINING & CHEMICALS

Watch the full interview at:
csr-report2011.total.com

58%

of plastics in Europe are reused



RECYCLING, RECOVERY AND RECLAMATION

Reducing the end-of-life environmental impact of our products and facilities is one of our core challenges. That's why we adopt an all-encompassing approach based on life cycle assessments (LCAs).

Optimizing Resources

Reducing waste production is a priority. It starts with designing products, services and processes that generate the least amount of waste possible and, consequently, limit our use of resources. Waste management therefore begins very early in the production process. We take into account our products' environmental impact at all stages, from the extraction of raw materials to end-of-life.

BY LIMITING RESOURCE USE

Our petrochemical teams have developed a **new generation of polyolefins**, marketed under the **Lumicene®** brand. They can be used to make thinner packaging, therefore utilizing less material and generating less waste. All of these products underwent LCA as part of the Total Ecosolutions labeling process (see sidebar on page 50) and were shown to deliver savings in both the amount of materials and the resources used to produce them. The lineup includes polyethylene grades for film, rotational molding, blow molding, artificial turf and caps and closures, and polypropylene grades for fibers, injection molding, medical applications, cups and baby bottles. The same approach is also applied to our industrial pro-

cesses. One example is the **Uniplate copper plating system** developed by **Atotech** for printed circuit board manufacturing. By using a horizontal rather than vertical plating method, the system reduces the amount of copper utilized in the plating process by 50%.

BY EXTENDING PRODUCT LIFESPAN

In our **Lubricants** business, we strive to limit waste production by developing automotive oils and fluids that extend the life of mechanical engine parts and other vehicle components, such as particulate filters, and reduce the frequency of oil changes.

Our efforts also include incorporating recycled products during production. For example, **Polystyrene Compound 818R** contains 10% recycled polystyrene and has been awarded the Total Ecosolutions label. Some of our plastics contain up to 25% recycled materials.

Managing Waste Efficiently

Despite our best efforts, a production chain inevitably generates waste. In this case, our approach focuses on recycling and waste-to-energy conversion. That starts with selective collection and a waste treatment process for recycling and/or conversion into energy.

Eco-Design and Life Cycle Assessment (LCA)

Life cycle assessment (LCA) is an environmental impact assessment method used to quantify the impacts of a product, service or process across its life cycle, from the extraction of raw materials through the transportation and use phases, right up to end-of-life disposal.

Standardized and recognized, LCA is the most comprehensive method for multi-criteria assessment of the environmental impact of products and services.

Source: French Environment and Energy Management Agency (ADEME).

Television back panel made from recycled polystyrene.



ESTABLISHING WASTE COLLECTION AND TREATMENT SYSTEMS

In certain developing countries, shortcomings in or a lack of waste treatment infrastructure call for practical solutions.

In **Gabon**, for example, we have developed a **pilot project to centralize the management of waste** from our various businesses, encouraging the emergence of local service providers whose waste treatment standards are aligned with European standards.

In **Indonesia**, we have set up a bioremediation facility capable of treating oily waste, drill cuttings and contaminated soil at the Senipah site. After treatment, the remediated soil is used to restore vegetation cover to the slopes to protect them from erosion.

REUSING WASTE

Incinerating waste to generate energy in the form of steam or electricity is now a relatively common practice. Converting used plastics into crude oil without harming the environment is not. And yet **an innovative process developed by U.S. start-up Agilyx** does just that. Total Energy Ventures¹ acquired an interest in the company in March 2011 and the first production facility, capable of processing around 10 metric tons of plastic per day, is already up and running.

Various initiatives are also under way in Africa to collect and convert used oils. In Morocco and Gabon, for example, waste collected at our service stations is converted into fuel for local cement plants. We have also created a **dedicated used oil recovery and recycling system called Ecolub**, in which the treated oil is blended with heavy fuel oil to make fuel that is then sold to local customers.



With an investment of €50 million, of which 35% for work by local contractors, and a treatment capacity of 120,000 metric tons, Osilub will be one of the biggest used oil recycling units in Europe.

Ecolub has already been deployed in Burkina Faso, Cameroon, Madagascar and Niger, and there are plans to extend it to other countries, such as Nigeria and Uganda. In **France**, the **Osilub** oil recycling plant near Le Havre is in the final phase of construction. Developed in partnership with Veolia Environnement, the innovative facility will produce around 85,000 metric tons of recycled engine oil per year.

Planning Ahead for Decommissioning

Our responsibilities as an operator do not end when a facility is shut down or an oil or gas field reaches the end of its producing life. We systematically conduct cleanup and reclamation operations and dismantle structures to make sure that decommissioned sites are suitable for their future use.

RECLAIMING SITES AND REMEDIATING SOIL

Total has actively implemented a policy to prevent contamination and reclaim contaminated sites and soil for many years. Our policy is based on the expertise of specialists. A Group-wide guide was published on the topic in 2008.

Depending on the condition of the soil and whether the site will be used for industrial, commercial or other purposes, we provide the solution that best addresses the social, environmental, health, technical and economic issues involved, in cooperation with public authorities and stakeholders.

Total Ecosolutions



Total introduced the internal Total Ecosolutions program in 2009 to stimulate the development of products and services that perform above market environmental standards. The Total Ecosolutions

label had been awarded to 32 products and services at end-2011. According to our estimates, using these products and services instead of standard ones avoided the emission of 750,000 metric tons of carbon dioxide in 2010, the same amount emitted by 75,000 European Union residents in one year.

In the past ten years, cleanup operations have been conducted at more than 1,500 service stations, oil depots, distribution sites and refineries in France and at nearly 2,000 service stations, oil depots and refineries in Germany. Some of the most recent major reclamation projects in the United States include the Bryan, Dorchester, Coltex, Portland, and Greensboro sites.

In France, after projects in Toulouse and Lacq, our wholly owned affiliate **RETIA**, specialized in the reclamation of brownfield sites, focused on land formerly occupied by a Group chemical plant in **L'Estaque**, near Marseille. Some 545,500 cubic meters of contaminated soil spread over 25 hectares was removed, treated with ferric chloride to stabilize the pollutants and then placed in impermeable containment cells. The upper section, roughly two-thirds of the total, has been classified as a natural area. The lower section that has been cleaned up is now suitable for urban development.

ORGANIZING THE DISMANTLING OF OFFSHORE INFRASTRUCTURE

Today, our facilities are designed so that they can be dismantled and recovered. However, dismantling offshore oil platforms remains a long and complex process. In all cases, we work closely with stakeholders, including business partners, scientific institutions and environmental NGOs.

The topsides — metal structures above the water — are removed and brought to shore to be recycled and reused whenever possible. The substructures below the surface of the water, particularly the pipelines, are either removed or made safe and left in place, depending on the water depth and the specific circumstances.

These principles governed the dismantling of the six platforms on the offshore Frigg field, the first major North Sea development to be decommissioned. Dismantling of the *Serepca* floating storage and offloading (FSO) barge, which operated until 2008 offshore Cameroon, saw each metal part recycled in a steel plant.

The Pioneering Frigg Cessation Project

THREE QUESTIONS for Tore Bø, Operation & Projects Director at Total E&P Norge in Norway

Frigg, a large gas field located in the North Sea, was discovered in 1971. Production from the field ceased in 2004 and the dismantling process took seven years.

What are the main challenges of a project like this?

Today, decommissioning and dismantling are integrated into a project's design right from the start. The enormous steel topsides and concrete substructures built in the 1970s, on the other hand, weren't designed to be dismantled. And that's exactly what we had at Frigg. With a total of six platforms included in the cessation plan, this was one of the first and largest operations of its kind ever undertaken.

How exactly did you go about it?

Our primary concern was the safety of our teams, which included divers, workers and technicians, so the first thing we did was conduct an in-depth risk assessment. It showed that removing the concrete substructures

would involve major technical obstacles and would put our people at risk. So they were left in place and all necessary measures were taken to ensure that they wouldn't pose a risk to ships, fishing vessels and other marine activities. The 20-centimeter-thick layer of cuttings was also left in place, as this was deemed acceptable by the environmental impact assessment. On the other hand, the metal topsides and substructures, containing more than 45,000 metric tons of steel, were removed and brought onshore. All the pipeline segments within a 500-meter radius will also have to be removed to facilitate trawling around the concrete substructures.

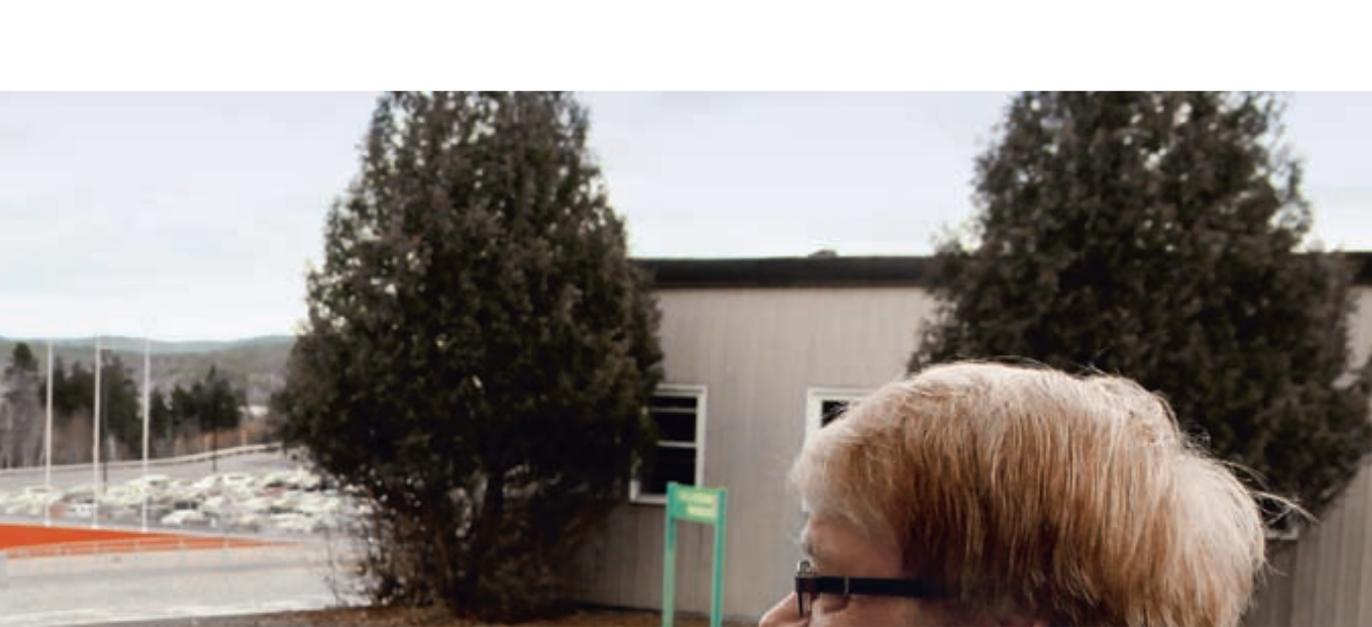
To what extent are these materials reusable?

We focused on recycling and reuse opportunities for certain modules; a platform tank was converted into a pontoon, for example, and a production deck was repurposed as a training center.



1. Total Energy Ventures supports the development of companies with innovative technologies or business models working in areas that help meet the challenges associated with the energy transition. This includes renewable and other alternative energies, the efficient use of energy and natural resources, waste management, and the reduction of greenhouse gas emissions.





Water

Scientific Director of the Canadian Water Network, **Kelly Munkittrick** is based at the Canadian Rivers Institute at the University of New Brunswick, where he develops methods for monitoring the environmental effects of industrial and agricultural activities and for the assessment of the cumulative effects of multiple stressors on aquatic environments. His question addresses the way in which Total manages water in its Canadian projects.

“Given environmental concerns about water and the oil sands, progress on addressing the potential cumulative effects of development requires increasing commitment to partnerships. How will Total approach these partnerships to collectively define, measure and respond to exactly what environmental and social ‘success’ looks like?”



Our Expert Answers



WENDY BROWN
ENVIRONMENT MANAGER
TOTAL E&P CANADA LTD.



"We and our partners acknowledge stakeholders' concerns about cumulative effects, including those on water, of oil sands development."

We have a responsibility to help achieve environmental and social sustainability in the Athabasca region. We have been working for several years to better understand, monitor and manage these effects in the region. We are conducting focused transverse environmental research and monitoring programs based on risk scenarios that assess contaminant sources, their transport in the environment and their end-point. We also welcome the development of the new joint federal and provincial oil sands monitoring program. We believe that a holistic integrated framework is essential for effective cumulative effects management."



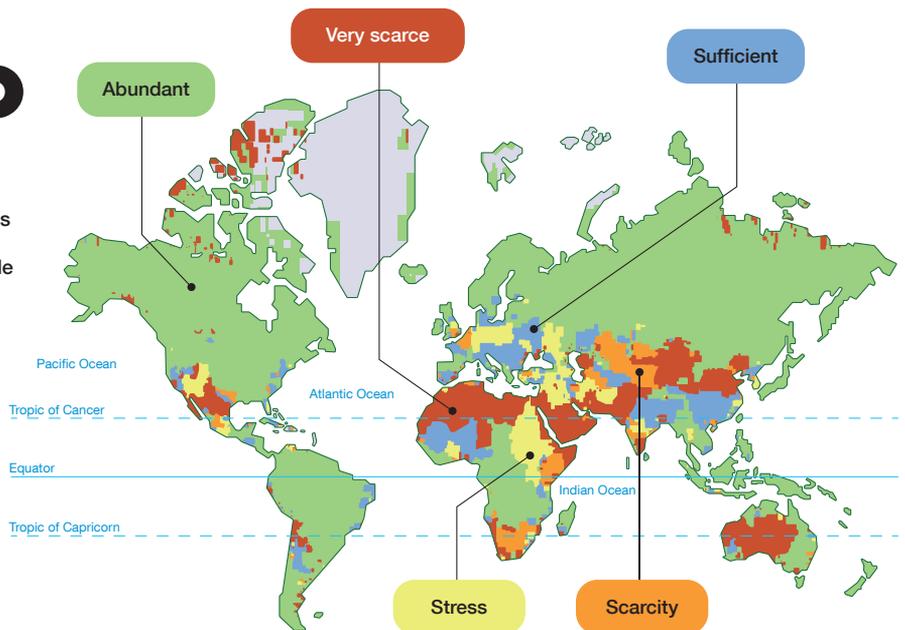
WENDY BROWN
ENVIRONMENT MANAGER
TOTAL E&P CANADA LTD.

Watch the full interview at:
www.csr-report2011.total.com

44%

of our industrial sites are located in water stressed areas. The Falkenmark indicator differentiates regions according to the annual amount of freshwater available per person. A region begins to experience water stress when this falls below 1,700 cubic meters per person.

Projected Water Resources in 2025,
based on World Resources Institute data



WATER

All of our operations require water, and our biggest industrial sites often use large quantities. To help conserve this vital resource, we endeavor to limit our water use and to improve the quality of the water we discharge into the natural environment.

Global Challenge, Local Issues

Water is the most abundant resource on Earth. It moves through a continuous cycle of evaporation and precipitation that allows its volume to remain constant. Yet **freshwater** accounts for only 2.5% of global water resources and only a third of that is accessible, with most of the remainder frozen in Antarctica. The highly unequal distribution of freshwater around the world leads to **very different local situations**.

A GROWING IMBALANCE

Driven by economic development and population growth, water use increased sixfold during the twentieth century. Agriculture is the largest consumer, accounting for 70%, well ahead of industry (22%) and household consumption (8%). Growth in water use has led to an increase in discharges containing pollutants of all types, which can have a significant negative impact on aquatic environments.

The other consequence of growth in demand is the exacerbation of localized water scarcity. According to the

United Nations Environment Program (UNEP), 40% of the world's population now lives in water stressed regions (see map on page 54), and this could rise to 60% by 2025. Today, more than one billion people worldwide do not have regular access to safe, clean drinking water, because of either economic or physical scarcity.

Total As a Water User and Producer

Most of the freshwater consumed by Total is used in our refining and chemical processes, primarily and in equal proportions for steam generation and cooling purposes. We also use water upstream to produce oil and gas. In conventional production, water is injected into the reservoirs to enhance oil recovery. However, the volume of freshwater withdrawn for this purpose is relatively small, because the water used to maintain pressure in the reservoirs is mainly sourced from the sea or from saline aquifers.

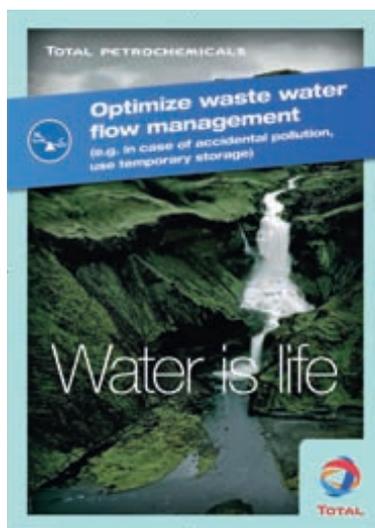
We also produce water during these operations. Generally quite insignificant in the early stages, the amount of produced water increases as a field matures. Given the important role water plays in all of our operations, it is central to our corporate social responsibility commitment.

Limiting Our Impact on Water

In the future, water will undoubtedly be governed by increasingly stringent and demanding regulations. A responsible corporate citizen, Total is already working hard to reduce the impact of our operations on this precious resource, in terms of both our water use and the quality of our discharges.

MORE EFFECTIVE RECYCLING IN CONVENTIONAL PRODUCTION

Managing produced water is our first challenge. In recent offshore developments, 25% of our technical costs were allocated to this issue. Finding more efficient ways to recycle produced water is one of the keys to limiting our impact in the future.



Total Petrochemicals' "Water Is Life" awareness campaign.

Oil Sands and Optimized Water Recycling

Two industrial oil sands extraction methods are currently in use: surface mining, which is followed by separation of the bitumen from the sand and the clay, and Steam Assisted Gravity Drainage (SAGD), an in situ recovery method. Both methods require large quantities of water. However, a very significant and constantly increasing proportion of that water — more than 80% — is recycled. Improving this rate is critical to limiting our water withdrawals for future projects.

In Canada, one of our main objectives is to avoid affecting the flow rate of the Athabasca River, which is low in winter. To achieve this objective, we are developing an innovative method of managing tailings, the mixture of water, sand, clay and small particles left over from the mining process. Breaking away from the standard practice of depositing the entire mixture into a single huge tailings pond, our method involves separating the tailings into different streams according to size. Each stream can then be processed appropriately to optimize the separation of water from



waste, thereby increasing the amount of water recycled.

To avoid withdrawing too much water from the river (currently around 1% of the annual flow rate), we have also diversified our water sources. Storage ponds that can hold up to 90 days' worth of water have also been created for our new mines, to compensate for the low water levels in the Athabasca River during winter. For in situ recovery, water is withdrawn exclusively from underground aquifers.

All of these measures should enable us to reduce our net water consumption to less than two barrels of river water per barrel of bitumen

produced for surface mines and to 0.5 barrels of aquifer water for in situ recovery.

We are pursuing our research to further reduce these quantities, with a particular focus on improving our management of tailings from surface mining and reducing the amount of steam injected during the in situ recovery process.

In addition, our affiliate Total E&P Canada contributes actively to the work being carried out by the Oil Sands Leadership Initiative (OSLI) to develop innovative water management solutions and is also a member of Canada's Oil Sands Innovation Alliance (COSIA).

Ultrafiltration using ceramic membranes represents a breakthrough in this area. It is being tested, for the first time ever, by Total's R&D teams. Much more efficient than conventional water treatment techniques, ultrafiltration removes droplets of oil and solid particles as small as one-hundredth of a micron, compared to five microns for conventional treatments. Because the water is so much cleaner, the result is a significant reduction in the risk of plugging the injection wells and damaging the rock formations and a marked increase in the volume of produced water injected back into the reservoir.

Another cornerstone of our responsible water management policy is to continuously reduce the oil content of our discharges. In offshore operations, the 22 milligrams per liter achieved in 2011 was considerably better than our target of 30 milligrams. We are also working to develop innovative methods to monitor the quality of our discharges.

THE CHALLENGES RAISED BY UNCONVENTIONAL RESOURCES

Water management is one of the main challenges involved in the development of unconventional resources, especially oil sands. Large amounts of freshwater are used to separate the bitumen from the ore. On average, two to four barrels of water are withdrawn for every barrel of bitumen produced by the industry. This is much more than what is needed to extract bitumen in situ via steam injection (0.4 to 0.6 barrels of water per barrel of bitumen) or to produce shale gas using hydraulic fracturing (0.1 to 0.2 barrels of water per barrel equivalent) (see *The Shale Gas Debate* on page 58).

To meet the challenge of reducing water use in oil sands operations, we are developing a number of innovative processes with a view to applying them in our Joslyn North Mine project in Canada. Production is scheduled

to begin at the mine in 2018.

In the future, we will also be faced with the task of managing significant quantities of the brackish to salty water associated with coalbed methane (also known as coal seam gas) production. The challenge in this case is financial. Numerous desalination techniques are available, but their cost increases in line with the water's salt content. For the Gladstone LNG project in Australia, in which Total is a partner, plans have already been made to treat this water so that it can be used for irrigation.

REFINING AND CHEMICALS: ANTICIPATING EVER STRICTER REQUIREMENTS

Optimizing freshwater use and improving the quality of water discharges are important objectives for our refining and chemicals teams too. A wide-reaching water management awareness campaign was therefore deployed at our petrochemical sites in 2011.

The measures taken are tailored to the specific water conditions at each site. We focus in particular on sites where industrial water requirements compete with other uses, such as household consumption and agriculture. These concerns are incorporated right from the project design stage.

One example is the feasibility study for the coal-to-olefins (CTO) project in Inner Mongolia, in which Total is a partner. This Chinese province experiences high levels of water stress. Using air cooling technology, for example, will reduce water use by more than 60% compared to cooling methods based on water alone.

In relation to discharge quality, the European Union's Water Framework Directive sets the clear and ambitious

objective of obtaining good chemical and ecological status in inland and coastal waters in Europe by 2015. At Total, we have already taken significant steps toward achieving this objective. The results speak for themselves. Between 2007 and 2011, the chemical oxygen demand (COD) of the water discharged from our European refineries declined by 33% and the oil content by 66%. COD is the indicator used to indirectly measure the amount of organic compounds in the water. At our chemical plants, we have identified the substances whose presence or concentration levels do not comply with the future requirements set by the directive. In 2011, we pursued our work in this area by deploying a program to **assess the impact of our discharges into the natural environment** at sites where we believe further progress can be made.

A certain number of tools have been developed to measure the impact of discharges on water bodies. These are mainly based on the monitoring of biological communities, or biocenoses, such as diatoms and benthic invertebrates. However, it is not always possible to rely on these indicators, for example, when several sites discharge into the same zone or when it is difficult to access the water body to take samples. Alternative methods therefore need to be developed. Together with **Conservation of Clean Air and Water in Europe (CONCAWE)**, the European oil companies' organization for environment, health and safety issues, our R&D teams are working to demonstrate to the authorities the value of using an impact assessment method known as Whole Effluent Assessment (WEA), which is based on analyzing the effluents discharged.



TOTAL
CORPORATE
FOUNDATION

At 20, the future is all that matters.

The Total Foundation, Protecting Marine Biodiversity for the Past 20 Years

Since its creation in 1992, the Total Foundation has supported research programs and awareness initiatives aimed at understanding and protecting marine biodiversity. Over the years, it has forged long-term partnerships with many internationally recognized organizations and institutes whose teams work tirelessly to protect endangered species and restore fragile ecosystems. They include France's Port-Cros national park, France's coastal conservancy *Conservatoire du Littoral*, the French National Natural History Museum, the International Union for Conservation of Nature (IUCN) and the Census of Marine Life program.



The Shale Gas Debate

Global energy sector lead at Sustainalytics, a leading global provider of environmental research and analysis, **Dayna Linley** is responsible for overseeing environmental, social and governance (ESG) research on oil and gas companies. She also educates investors and financial institutions about the risks associated with developing unconventional resources. With a Master's degree in Environment and Sustainability from the University of Western Ontario, her previous experience spans environmental auditing and hydrogeology-focused consulting. Her question concerns water protection in our shale gas projects.

“Does Total have company-wide standards to evaluate, control and protect local water resources near its shale gas developments?”



Our Expert Answers



MATTHIEU NAEGEL
MANAGER, UNCONVENTIONAL RESOURCES R&D PROGRAM
TOTAL EXPLORATION & PRODUCTION



“First and foremost, we comply with all applicable legislation and regulations in our host countries. They govern our work with local water agencies.

That said, we have our own rules, which are sometimes more stringent than local ones, to protect aquifers. We apply them in all our projects. For shale gas, our guiding principle is isolating the aquifer from the outset of the well construction process, long before we start drilling in the formations that interest us. We use steel casing and several layers of cement; their quality is strictly controlled. We closely supervise installation to ensure it is performed correctly. Field pressure testing confirms the integrity of these protective barriers, which must hold up for the long term. As a result of these precautions, freshwater is not exposed to shale gas or to hydraulic fracturing fluid. We also limit freshwater withdrawals and, where possible, recycle wastewater. Samples are taken from aquifers throughout the duration of operations.”

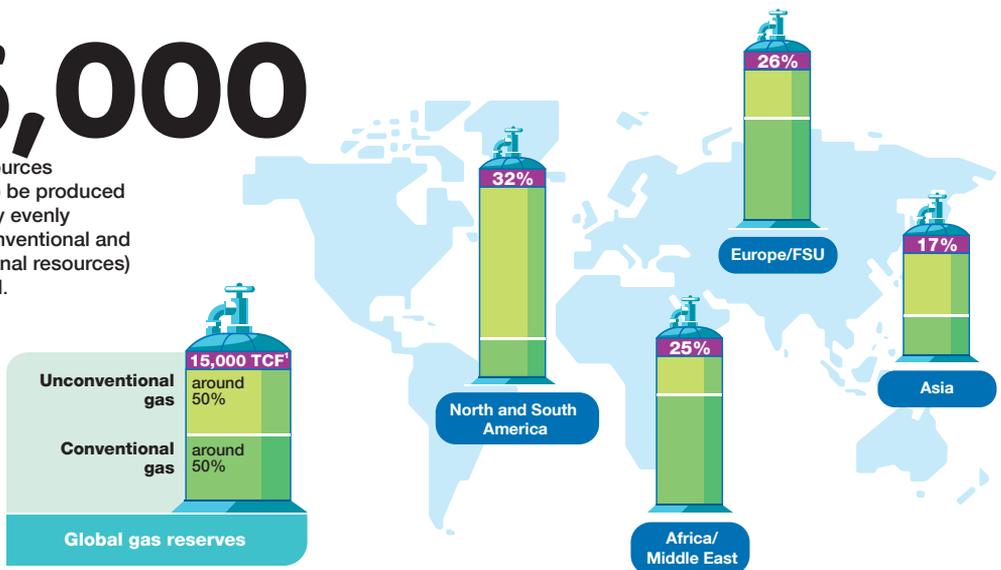


MATTHIEU NAEGL
MANAGER, UNCONVENTIONAL
RESOURCES R&D PROGRAM
TOTAL EXPLORATION
& PRODUCTION

Watch the full interview at:
www.csr-report2011.total.com

15,000

TCF¹ of resources remaining to be produced (split roughly evenly between conventional and unconventional resources)
 Source: Total.



1. Trillion cubic feet.

THE SHALE GAS DEBATE

Plentiful and potentially available worldwide, shale gas can help to meet the challenge of supplying energy for the planet. We are enlisting our expertise and our R&D to produce it in an environmentally responsible way.

A Resource of the Future

Produced on a large scale in the United States and being explored for in the rest of the world, shale gas is an “unconventional” gas. What sets it apart from “conventional” gas is not its chemical composition — it is never anything other than natural gas — but the fact that it cannot be produced using conventional methods. Shale gas is trapped in rock too impermeable to allow it to flow. Extracting it therefore requires special drilling and production stimulation techniques, specifically horizontal wells and hydraulic fracturing of the rock.

A VERY ABUNDANT NATURAL GAS RESOURCE

The recent growth in the U.S. gas industry has been fueled by shale gas. According to the U.S. Department of Energy, the United States is expected to achieve gas self-sufficiency in 2022. But the American boom has no counterpart in other countries. Elsewhere in the world, question marks hang over source rock’s geology, gas content and profitability. It will take several years of exploration and research to come up with the answers.

However, shale gas could play a key role in sustainably meeting ever-growing demand for gas. We believe that this demand will strongly impact how the energy mix evolves. As a substitute for coal in power plants, gas could keep up with soaring demand for electricity while helping to curb greenhouse gas emissions and air pollution.

Potentially found worldwide, shale gas is reshaping the global geopolitics of energy. Without reaching the same numbers as the United States, Europe can still hope to double the amount of its current reserves. On the line are a number of potential benefits, including the proximity of producer to consumer regions, lasting downward pressure on gas prices, more competitive Western economies, and the preservation of thousands of jobs.

A MAJOR DRIVER OF OUR GROWTH

Aware of this potential, we began to acquire strategic positions in shale gas in 2009. Our first stop was the United States, where we teamed up with the world’s leading shale gas producer, **Chesapeake**, in the **Barnett Shale** in Texas, one of the country’s biggest shale gas

formations after Haynesville in northwestern Louisiana and Marcellus in Pennsylvania. This allows us to add to the skills and know-how of our partner, while strengthening our own expertise more quickly. We stepped up this cooperation at end-2011 by acquiring an interest in the **Utica Shale** in Ohio.

At the same time, we are appraising shale gas potential through exploration licenses in Europe, as an operator (two licenses in Denmark) or as a partner (two licenses in Poland), and in Argentina, where we have interests in nine licenses. The exploration license we were awarded in France was revoked in 2011.

The Montélimar License in France

TWO QUESTIONS for Bruno Courme, Vice President, Total Gas Shale Europe



Why did Total file an appeal with the Paris Administrative Court after its Montélimar exploration license was revoked?

The Act of July 13, 2011 banned hydraulic fracturing in France and required every license holder to commit

to work programs that did not involve this technique. So we did. Since our program complies with the Act, we consider the revocation of our exploration license unfounded.

Why hold on to the license knowing that the only production technique currently available for shale gas is banned there?

We don’t know what the real extent of any deposits is. That’s why we want to continue studying the geological data acquired in the 1970s, then perform coring to verify the presence of shale gas and characterize it. Whatever the results, the exploration program will help us learn more about what lies beneath the surface in France — and thereby stimulate constructive discussion of its potential future development.

Responsible Production

A topic the public knows very little about, the techniques for extracting shale gas and their potential environmental impacts spark questions and concerns. The sensational footage in the documentary *Gasland* pillorying shale gas development in the United States has done a lot to fuel them.

Although its images depict very real events, they sometimes distort this reality. In one shot, a cigarette lighter is used to make running tap water burst into flame; the film points the finger at hydraulic fracturing. However, as an official state report¹ found, the gas is actually naturally occurring gas nearer the surface that has infiltrated a water well supplying the home. Shale gas development is not to blame.

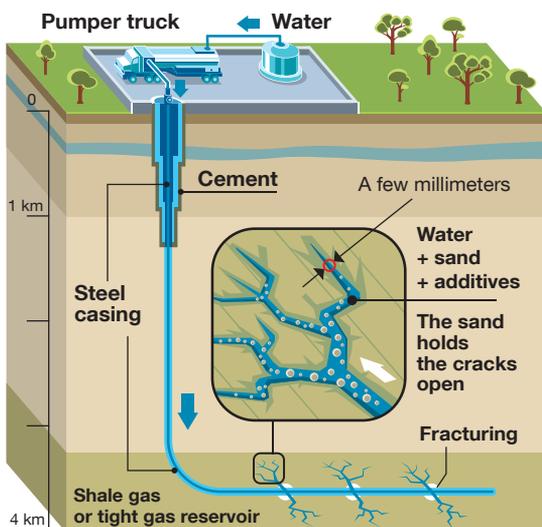
On the other hand, it is possible that some cases of aquifer contamination by methane may have been caused by the oil industry. But contrary to the documentary's assertions, the source of the methane contamination is not hydraulic fracturing itself. It may, in fact, result from a well construction defect that affects well integrity. This type of risk is not specific to shale gas and must be addressed by any oil operator during drilling operations.

The risks involved in developing shale gas are known and the techniques that exist to manage them are proven, although they cannot deliver zero risk. These techniques are central to the environmental component of all our shale gas projects. In the United States, we work with companies that are vigilant about applying best industry standards; elsewhere, managing the environmental footprint will be an essential factor in determining the feasibility of our future developments.

OPTIMIZING HYDRAULIC FRACTURING

Hydraulic fracturing has been used for many years and is not specific to shale gas development. Even so, our R&D teams are working to make it more efficient for this application. The challenge is to optimize the network of cracks fracturing creates in the pay zone to allow the gas to flow more freely, stimulate well productivity, and reduce the amount of products used. More productive wells and better drainage equate to fewer wells.

At the same time, the development of techniques to monitor fracturing in real time aims to produce a reliable map of the network of cracks, to ensure that the outcome is always positive.



About Hydraulic Fracturing

Hydraulic fracturing, commonly referred to as fracking, is practiced in the deepest horizontal part of a wellbore, 1,500 to 3,000 meters below the surface. A high-pressure mixture of water and sand (99.5% of the injection fluid) and additives (0.5%) is injected to create a network of fine cracks, just millimeters wide, that allow the gas to flow to the well. The water opens the cracks and the sand holds them open. The

additives consist mainly of bactericides to protect the reservoir from contamination by bacteria brought down from the surface and surfactants to reduce the energy used in operations. An average of five to ten fracks are carried out per well, which has a network of cracks extending about 100 to 200 meters on either side of the borehole laterally and a few dozen meters vertically.

1. State of Colorado Oil & Gas Conservation Commission, Department of Natural Resources.

PROTECTING AQUIFERS

Protecting aquifers from being contaminated by fluids circulating in the well is critical. Although it is a sensitive issue for shale gas acceptance, it is also a fundamental area of expertise for any oil company. We provide this protection by a barrier comprising several casings and cementing. When production starts, the water and additives injected during fracking flow back to the surface through the well before it starts producing gas. However, to limit the risks associated with incidents, we are studying the use of **additives with a low environmental impact**.

REDUCING WATER USE

Using less water — currently each well requires 10,000 to 20,000 cubic meters — is another key focus of our commitment to responsible production. In shale gas production, most of the water is used during a short window before the wells start producing. This is still just one-tenth the amount required by conventional enhanced oil recovery, which injects water into reservoirs throughout the life of the field.

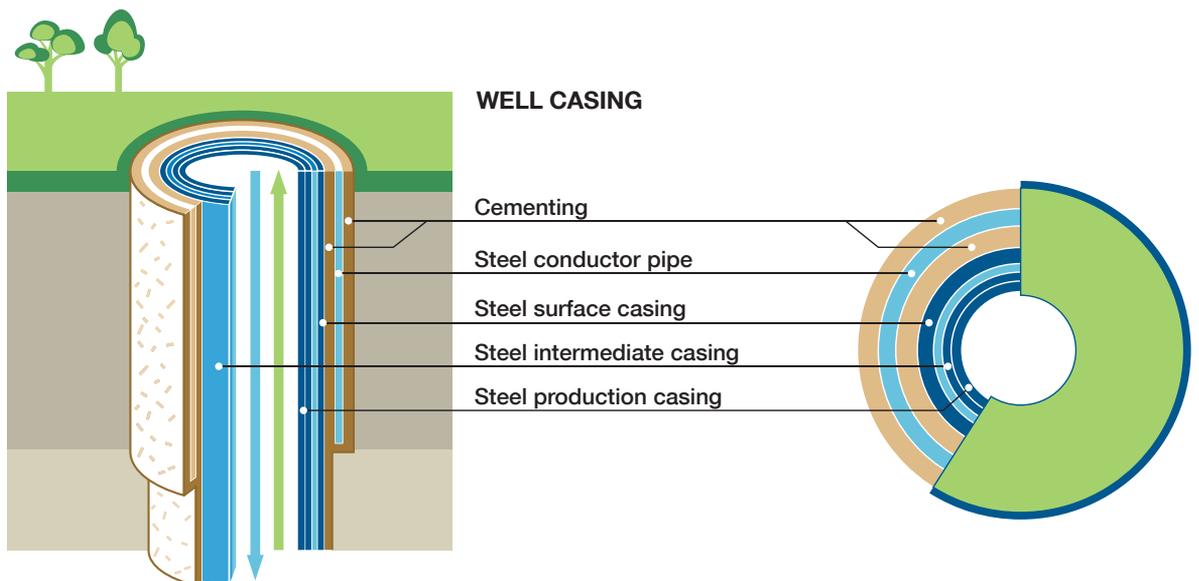
To limit our withdrawals as much as we can, treatment technologies can be deployed to recycle as much flow-back water from the wells as possible. A **nearly 100% recycling** goal has already been set for developing gas from the U.S. Utica Shale play.

To avoid competing with household water use, we are studying the possibility of employing all kinds of water, including seawater, wastewater and brackish water. In the longer term, our research could lead to developing dry fracturing techniques, which would not require water at all.

MANAGING GREENHOUSE GAS EMISSIONS

Independent organizations published numerous articles on the life cycle (extraction, transportation and use) of shale gas in 2011. All conclude that life cycle greenhouse gas emissions from shale gas are 20 to 60% lower compared to coal.

However, shale gas emits slightly more greenhouse gas than conventional gas, some 3 to 5% more over a complete life cycle¹. The difference is attributable to its extraction phase, mainly to methane losses when the wells are started up. The first step before connecting a well to a gas pipeline system is to recover the injection water, with which the gas gradually mixes. Although in the United States some companies have in the past and still do let that gas escape, others use systems to recover and market it. Our partner **Chesapeake drastically curtails such losses** by shutting down the wells as soon as the methane reaches the surface and not resuming operation until they are connected to the pipeline system.



1. Source: "Life cycle greenhouse gas emissions of Marcellus shale gas," *Environmental Research Letters*, IOP Publishing Ltd., 2011.



Onshore drilling rig in Fort Worth, Texas, United States.

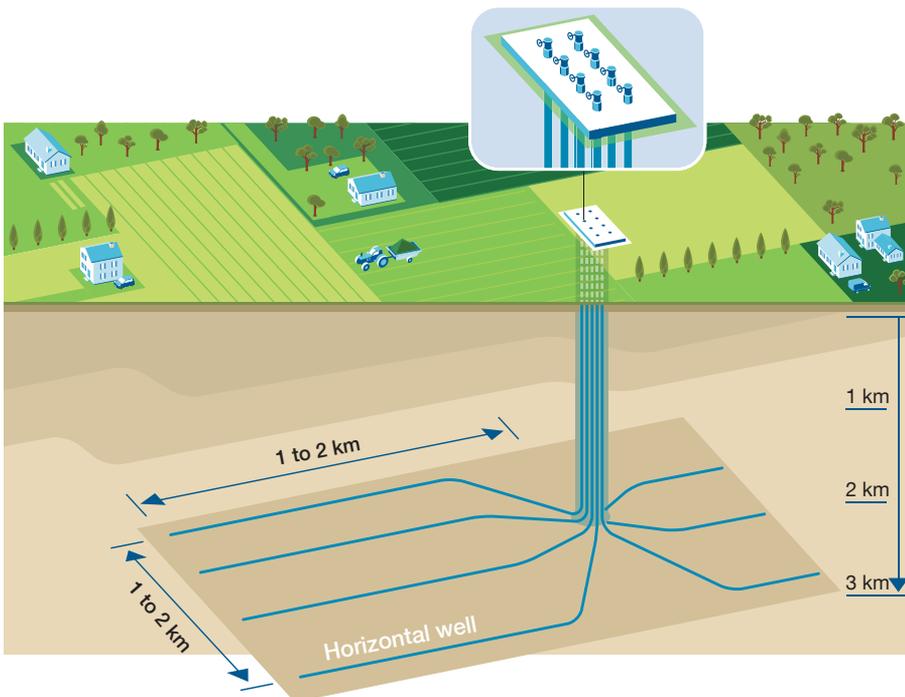
We have already taken steps to implement all the procedures and techniques that will enable us to more effectively assess and manage methane loss from our future installations.

LIMITING SURFACE INTRUSIONS

In Europe, our future developments will be in sparsely populated areas. To reduce the impact of operations on the surroundings, **wellheads will be clustered** on a single, central drilling pad. When construction is complete, only the roughly 1.2-meter-high wellheads will be visible.

In the United States, well reach is restricted by licenses, which are often small. In Europe, the huge size of licenses means that longer horizontal drain holes could be used. This would be one way of reducing both the number of wells required and the footprint of facilities.

Building the road, pipeline, well drilling, fracturing and water treatment infrastructure for a production operation will inevitably generate noise and intrusions. To minimize truck traffic, we will **move the water and gas by pipeline** whenever possible. Once this roughly one-year period of intense industrial activity is over, the infrastructure will create very few nuisances during the ten years of production that follow.



Well Clusters

To reduce intrusions caused by surface activities, several wellheads — the visible portion of the well — are clustered on a single pad, thereby curbing the number of sites and the associated road traffic.

OUR INCLUSION IN THE MAIN ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) INDEXES



Total has been continuously included in the DJSI World Index since 2004 and the DJSI Europe Index since 2005. These indexes are published by Swiss asset manager SAM.



Total has been a constituent company of the FTSE4Good Index since 2001. The index is managed by global index provider FTSE Group.



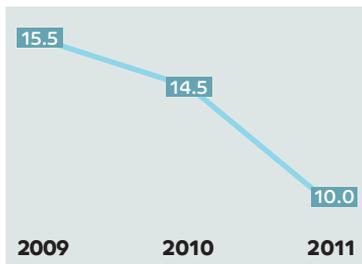
Total has been continuously included in French rating agency Vigeo's ASPI Index since 2004.

Our 2011 Performance Indicators

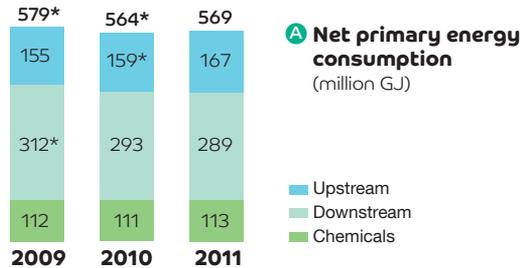
ENVIRONMENT

From 2011, environmental data reflect the current scope of reporting, so that any differences are attributable in part to changes in scope. For comparative purposes, the 2011 method was applied to 2009 and 2010 data, with the result that some historical figures have been adjusted, as indicated by an asterisk (*) (see page 74).

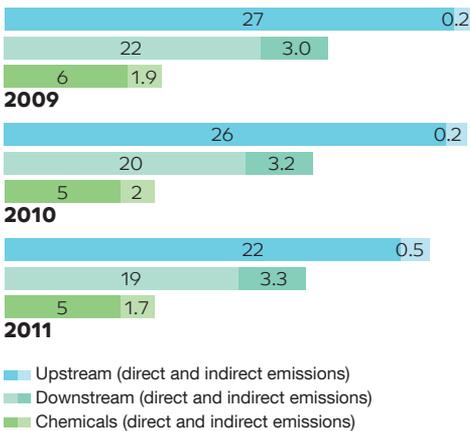
ENERGY AND CLIMATE



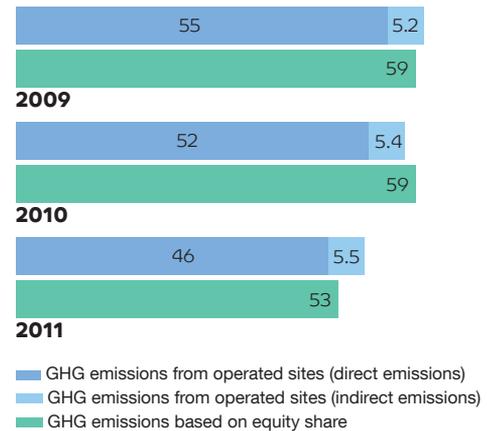
Flaring (Mcu. m/day)
The decrease in flaring is attributable in equal parts to changes in scope and operational improvements.



Direct ^A and indirect greenhouse gas emissions from operated sites, by business (MTCDE)



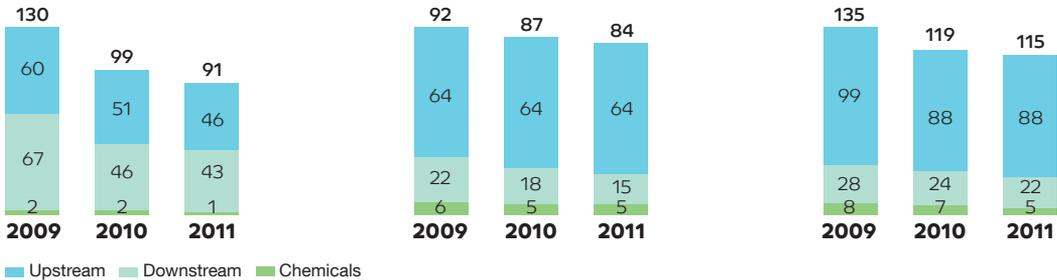
Greenhouse gas emissions from operated sites (direct ^A and indirect emissions) and based on equity share (direct emissions ^A) (MTCDE)



As presented here, indirect emissions are greenhouse gas emissions generated to produce the energy purchased. Seventy percent of the decrease in direct greenhouse gas emissions results from changes in scope; the other 30% is attributable to reduced flaring. The decrease in emissions as a result of lower activity is offset by emissions related to energy used to reduce flaring.

^A Audited indicators that obtained a moderate level of assurance from Ernst & Young and Bureau Veritas Certification (see page 75).

AIR EMISSIONS



A SO₂ emissions (metric kT eq. SO₂)

Allowing for changes in scope, SO₂ emissions mainly decreased in Refining.

A NO_x emissions (metric kT eq. NO₂)

Refining has begun investing in low-NO_x burners.

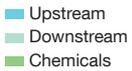
Non-methane VOC emissions

(metric kT)
In the Upstream, VOCs are mainly gaseous hydrocarbons with a very low environmental impact.

WATER IMPACTS

A Freshwater withdrawals

excluding once-through cooling water (in 10⁶ cu. m)

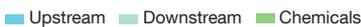
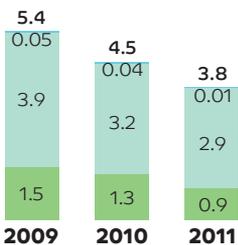


Discharges

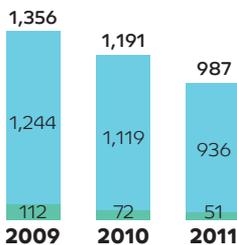
(10⁶ cu. m)

The Upstream discharges produced water from geological reservoirs after it has been treated. Refining and Petrochemicals use some of the water to generate steam, which is not included in discharges (see page 52).

Chemical oxygen demand (COD) in aqueous effluent (metric kT)



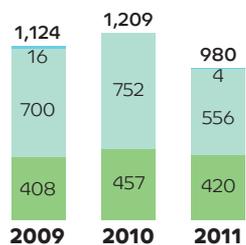
A Hydrocarbon discharges to water (metric T)



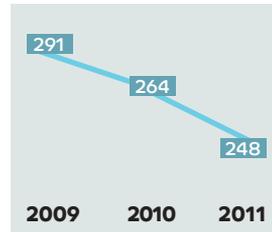
More than half of the hydrocarbons discharged in effluent in the Upstream are discharged offshore, in concentrations significantly less than 30 milligrams per liter. Improved water treatment operations at our refineries reduced their hydrocarbon discharges by 25%.



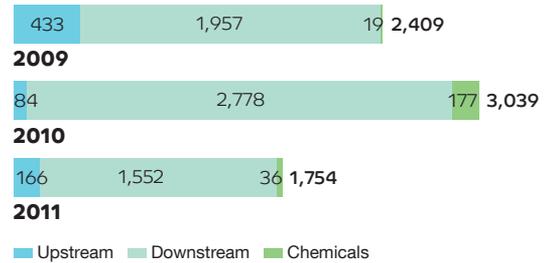
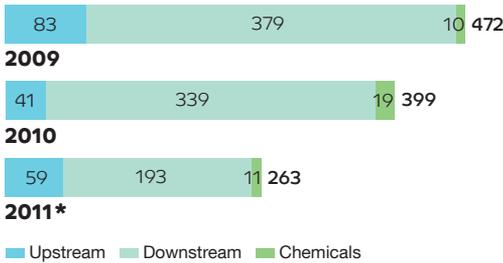
Suspended solids discharges in aqueous effluent (metric T)



WASTE



SPILLS



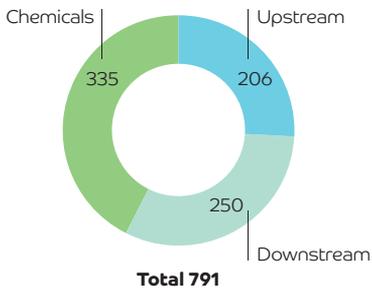
A Number of oil spills

A Volume of oil spills (cu. m)

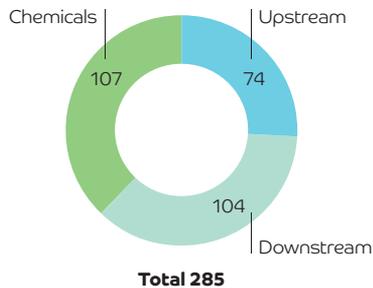
From 2011, due to a change in method, this indicator only covers spills that reach the environment, not spills that are contained in a retention pond. The 2011 data cannot therefore be compared to 2010 data.

ENVIRONMENTAL MANAGEMENT

Number of employees dedicated to the environment in 2011

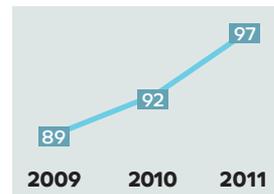


A Number of ISO 14001-certified sites in 2011



A ISO-certified environmentally sensitive sites (%)

Sixty environmentally sensitive sites in 2011, accounting for 90% of our greenhouse gas, nitrogen oxide (NO_x) and sulfur dioxide (SO₂) emissions and freshwater withdrawals.

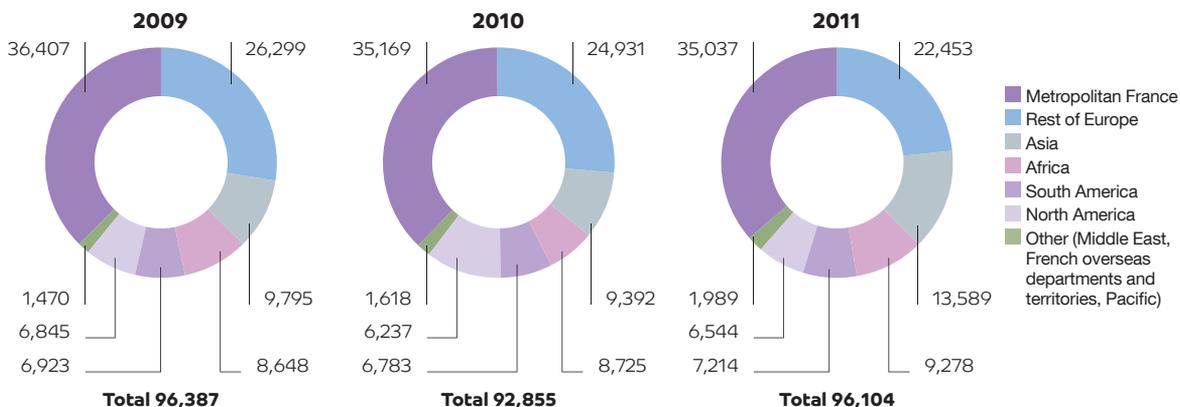


A Audited indicators that obtained a moderate level of assurance from Ernst & Young and Bureau Veritas Certification (see page 75).

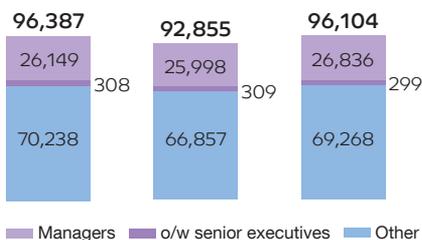
WORKFORCE – Consolidated Scope¹

A Workforce by region

Two events had a significant impact on the workforce in 2011: the sale of our retail network in the United Kingdom and our investment in SunPower, which has a strong presence in the Philippines.



A Workforce by manager/other



A Workforce by age bracket

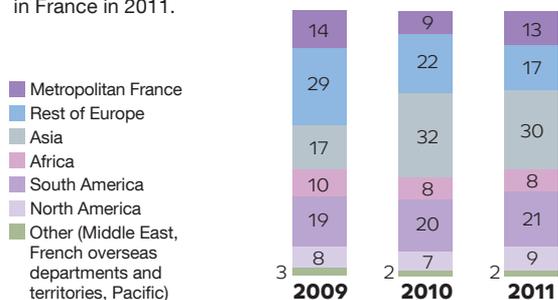
	2009	2010	2011
Under 25	7%	6%	6%
25-54	82%	82%	82%
55 and over	11%	12%	12%

Our two focuses are hiring young people and keeping employees over 55 in the workforce.

EMPLOYMENT – Consolidated scope¹

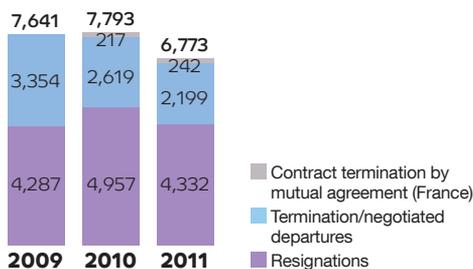
A Permanent hires by region (%)

An upturn in hiring in France in 2011.



DEPARTURES – Consolidated scope¹

A A global average resignation rate of 4.5%; 0.8% in France.

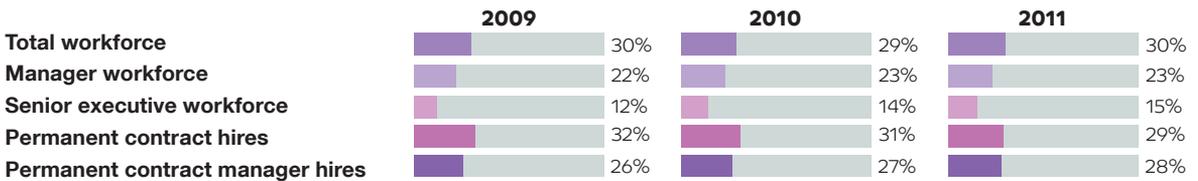


1. See page 74. ^A Audited indicators that obtained a moderate level of assurance from Ernst & Young and Bureau Veritas Certification (see page 75).

DIVERSITY – Consolidated scope¹

A Women in the workforce (%)

Progress is being made in gender diversity, with more women in management.

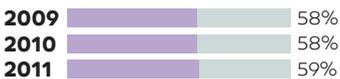


A Non-French nationals in the workforce

As a percentage of the total workforce



As a percentage of the manager workforce



A Non-French nationals in new hires

As a percentage of permanent contract hires



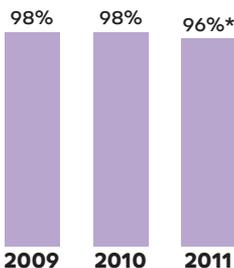
As a percentage of permanent contract manager hires



131
nationalities
represented at Total
Significant cultural diversity
that must be reflected at every
reporting level.

A HEALTH – Worldwide Human Resources Survey scope¹

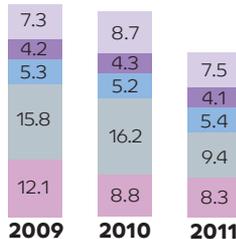
Percentage of Group companies that offer employees regular medical checkups



A TRAINING – Worldwide Human Resources Survey scope¹

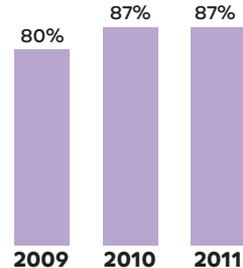
Average number of training days per employee by region (including on-the-job training)

An annual average of **5.8** training days per employee



A BENEFITS – Worldwide Human Resources Survey scope¹

Percentage of employees entitled to death benefits coverage > 200% of gross salary



A COMPENSATION – Worldwide Human Resources Survey scope¹

91% of employees are paid more than the local minimum wage. Salary surveys are regularly carried out to ensure fair, attractive compensation.

A EMPLOYEE DIALOGUE – Worldwide Human Resources Survey scope¹

Companies with employee representation (%)



Employees covered by collective bargaining agreements (%)



Number of collective bargaining agreements

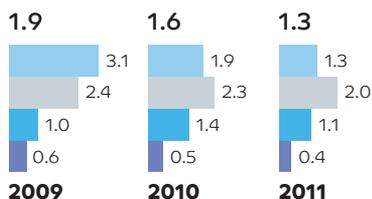


1. See page 74. * These changes are due to a change in the Worldwide Human Resources Survey scope in 2011.

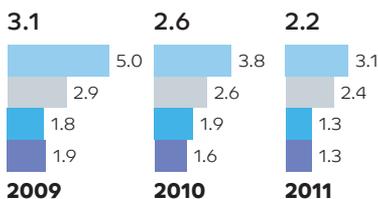
A Audited indicators * that obtained a moderate level of assurance from Ernst & Young and Bureau Veritas Certification (see page 75).

SAFETY

Lost Time Injury Rate per million hours worked



Total Recordable Injury Rate per million hours worked

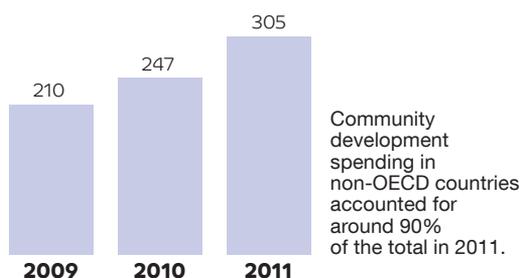


Regrettably, four fatalities occurred in 2011

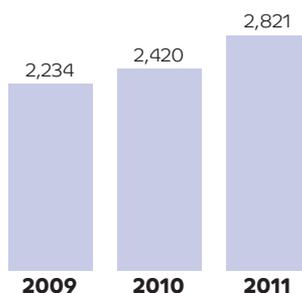


COMMUNITY DEVELOPMENT

Community development spending (€M)



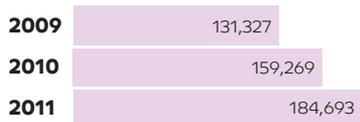
Number of initiatives



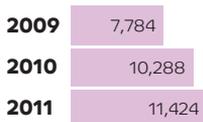
In 2011, corporate philanthropy spending by Total S.A. (including the Total Foundation) amounted to **€28 million.**

ECONOMIC

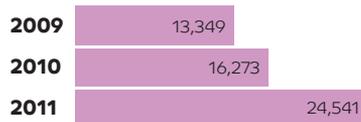
Sales (€M)



Adjusted net income (Group share)¹ (€M)



Capital expenditure (€M)



	2009	2010	2011
Adjusted operating income from business segments ¹ (€M)	14,154	19,797	24,409
Adjusted net operating income from business segments ¹ (€M)	7,607	10,622	12,263
Dividend per share ² (€)	2.28	2.28	2.28
Net debt-to-equity (at December 31)	27%	22%	23%
Return on Average Capital Employed (ROACE) ³	13%	16%	16%
Return on equity	16%	19%	18%
Cash flow from operating activities (€M)	12,360	18,493	19,536
Divestitures at selling price (€M)	3,081	4,316	8,578

1. Net income using replacement cost, adjusted for special items, excluding the impact of fair value adjustments from January 1, 2011, and, through June 30, 2010, Total's equity share of adjustments related to Sanofi.

2. 2011 dividend; subject to approval at the Annual Shareholders' Meeting on May 11, 2012.

3. Based on adjusted net operating income and average capital employed, using replacement cost.

IPIECA/GRI/OGP INDEX

In preparing our *Society and Environment Report*, we refer to the 2010 edition of the International Petroleum Industry Environmental Conservation Association/American Petroleum Institute/International Association of Oil & Gas Producers (IPIECA/API/OGP) *Oil and Gas Industry Guidance on Voluntary Sustainability Reporting*, which is specific to the oil industry, and to the Global Reporting Initiative (GRI) *Sustainability Guidelines*. For 2011, we have completed a full GRI content index for the first time and have requested an application level check to confirm A+ application. The GRI Content Index and the GRI Statement/GRI Application Level Check will be available at www.total.com.

	IPIECA ▼	Reporting elements* ▼
ENVIRONMENT		
Greenhouse gas (GHG) emissions	E1	C + O
Energy use	E2	C + O
Alternative energy sources	E3	C + O
Flared gas	E4	C
Biodiversity and ecosystem services	E5	C + S
Fresh water	E6	C
Other air emissions	E7	C
Spills to the environment	E8	C + S
Discharges to water	E9	C + S
Waste	E10	C + S
HEALTH AND SAFETY		
Workforce participation	HS1	C + S
Workforce health	HS2	C
Occupational injury and illness incidents	HS3	C
Product stewardship	HS4	C
Process safety	HS5	-
SOCIAL AND ECONOMIC		
Local community impacts and engagement	SE1	C + S + O
Indigenous peoples	SE2	C + S
Involuntary resettlement	SE3	-
Social investment	SE4	C
Local content practices	SE5	C
Local hiring practices	SE6	C
Local procurement and supplier development	SE7	C
Human rights due diligence	SE8	C + S
Human rights and suppliers	SE9	C
Security and human rights	SE10	C
Preventing corruption	SE11	C
Preventing corruption involving business partners	SE12	C
Transparency of payments to host governments	SE13	C
Public advocacy and lobbying	SE14	-
Workforce diversity and inclusion	SE15	C + S
Workforce engagement	SE16	C + S
Workforce training and development	SE17	C
Non-retaliation and grievance system	SE18	C

* Reporting elements (see IPIECA/API/OGP *Oil and Gas Industry Guidance on Voluntary Sustainability Reporting*, 2010):
C = Common, S = Supplemental, O = Other.



GRI



Go to



EN16, EN17, EN18, EN29
EN3, EN4, EN5, EN7
EN6
EN16
EN11, EN12, EN13, EN14, EN15, EN25
EN8, EN9, EN10
EN19, EN20
EN23, EN29
EN21, EN25
EN2, EN22, EN24

<i>Registration Document</i> , Section 12/2.2, CSR pp. 37 and 66
<i>Registration Document</i> , Section 12/2.2, CSR pp. 11, 32-39 and 66
<i>Registration Document</i> , Section 12/2.2, CSR pp. 13 and 37-39
CSR, pp. 5 and 66
<i>Registration Document</i> , Section 12/2.2, CSR p. 57, www.total.com
<i>Registration Document</i> , Section 12/2.2, CSR pp. 52-57 and 67
<i>Registration Document</i> , Section 12/2.2, CSR p. 67
<i>Registration Document</i> , Section 12/2.2, CSR p. 67
<i>Registration Document</i> , Section 12/2.2, CSR pp. 5, 52-57 and 67-68
<i>Registration Document</i> , Section 12/2.2, CSR pp. 46-51 and 68

LA6, LA9
LA8
LA7
PR1, PR2, PR3, PR4, PR6, PR7, EN26
-

<i>Registration Document</i> , Section 12/2.1, CSR pp. 40-45 and 70
<i>Registration Document</i> , Section 12/2.1, CSR pp. 40-45 and 70
<i>Registration Document</i> , Section 12/2.1, CSR pp. 5, 40-45 and 71
www.total.com
Indicator not yet reported

SO1, SO9, SO10
HR9
SO1, SO9, SO10
EC1, EC8
EC6, EC7
EC7, EC9
EC6
LA4, HR1, HR3, HR4, HR5, HR6, HR7, HR10
HR2, HR5, HR6
HR8
SO2, SO3, SO4
SO2, SO4
EC1, EC4
EC1, SO5, SO6
EC5, LA1, LA2, LA13, LA14
LA4, LA5, LA6, LA9
LA10, LA11, LA12
HR4, HR11

<i>Registration Document</i> , Section 12/3, CSR pp. 14-19 and 26-31
www.total.com
Indicator not reported
<i>Registration Document</i> , Section 12/3, CSR p. 71
<i>Registration Document</i> , Section 12/3, CSR pp. 14-19 and 26-31
<i>Registration Document</i> , Section 12/3, CSR pp. 14-19 and 26-31
<i>Registration Document</i> , Section 12/3, CSR pp. 20-25 and 26-31
<i>Registration Document</i> , Section 12/3, CSR pp. 14-19, 20-25 and 26-31
<i>Registration Document</i> , Section 12/3, CSR pp. 20-25
<i>Registration Document</i> , Section 12/3, CSR pp. 26-31
<i>Registration Document</i> , Section 12/3, CSR pp. 26-31
<i>Registration Document</i> , Section 12/3, CSR pp. 26-31
Indicator not reported
<i>Registration Document</i> , Section 12/1.5, CSR pp. 5, 14-19 and 70
CSR pp. 14-19, 43 and 70
<i>Registration Document</i> , Section 12/1.41, CSR pp. 14-19 and 70
www.total.com

EXCERPTS FROM THE REPORTING SCOPE AND METHOD

The complete reporting scope and method can be found on www.total.com.

Principles

The data published in this report are intended to inform shareholders about Total's corporate social responsibility performance for the year in question. The indicators selected focus on:

- Total's commitments and policy (safety management systems, environmental management systems, etc.).
- Performance relative to Total's main challenges and impacts.
- The effects of Total's social policy.
- Regulatory obligations (France's *Code du Commerce*, as modified in 2010 by Article 225 of the Grenelle II Act).

Environmental Reporting

From 2011, environmental data reflect the current scope of reporting rather than the like-for-like scope to ensure continuity from one year to the next. For comparative purposes, the 2011 method was applied to 2009 and 2010 data, with the result that some historical figures have been adjusted, as indicated by an asterisk (*).

The decline in the main indicators in 2011 can be attributed in part to significant changes in the scope of reporting in 2011 resulting from:

- In E&P, the sale of the Cameroon affiliate and the change in Block 3 status to non-operated in Angola.
- In Petrochemicals, the sale of the Mazingarbe site.
- In Marketing, the sale of the retail network in the United Kingdom.

In addition, E&P's overall operated activity declined 3% and Refining and Petrochemicals experienced a 4% decline in activity.

Social Reporting

Social reporting is based on two resources — the Global Workforce Analysis and the Worldwide Human Resources Survey (WHRS). The statistics in this report regarding Total's worldwide workforce concern all fully consolidated affiliates. The Worldwide Human Resources Survey (WHRS) is an annual survey addressing major components of our social policy. The survey covers a representative sample of the consolidated workforce. A total of 124 companies accounting for 77% of the consolidated workforce in 51 countries responded to the 2011 survey. Its scope was broader than in 2010, when a total of 88 companies accounting for 72% of the consolidated workforce responded, which explains the changes in data between the two surveys. The data in this report refer to the scope concerned.

Terminology Used

Managed scope: All affiliates in which one or more Group companies own a stake of 50% or more, or 510 companies in 132 countries.

Consolidated scope: All affiliates fully consolidated as in the *Registration Document*, or 356 companies in 106 countries.

EXCERPTS FROM ASSURANCE REPORTS BY INDEPENDENT THIRD PARTIES

Total asked Ernst & Young et Associés (E&Y)¹ and Bureau Veritas Certification (BV Cert)² to issue an assurance report providing a moderate level of assurance on the quantitative social and environmental data for 2011. This year, for the first time, we also asked them to express an opinion on the reliability of the social and environmental information presented, in early application of the external verification requirements associated with France's Grenelle II Act of July 12, 2010 and more specifically with the draft decree implementing Article 225, dated September 2011.

The relevant data and information are presented in Section 12 "Corporate Social Responsibility" of the 2011 *Registration Document*. The full reports are also published in same section of the *Registration Document*, as well as on Total's corporate Web site, www.total.com.

The units audited account for 25% of the Group's greenhouse gas emissions and 9% of the consolidated workforce.

Below are key excerpts from those assurance reports, selected by Total for the purposes of this *Society and Environment Report*.

Ernst & Young

For the social and environmental Information and Data provided in the Management report, as well as the related explanations, we bring the following comments to your attention:

- The methods used to calculate the number and volume of spills that reach the environment are not consistent between sites and affiliates, resulting in heterogeneous consolidated data.
- Regarding the number of training days, the type of training as well as the calculation methodology was not fully understood within some of the audited sites, affecting the reliability of this indicator.

On the basis of our review, and except for the comments listed above, nothing has come to our attention that causes us to believe that:

- The reviewed Data have not, in all material respects, been prepared in accordance with the Guidance.
- The social and environmental Information and Data have not been presented accurately.

Bureau Veritas Certification

Completeness of data: All the information and data required by the current draft decree implementing Article 225 of the Grenelle II Act is present, with the exception of "land use."

On the basis of our review, nothing has come to our attention that causes us to believe that the information provided by Total in its *Registration Document* is not reliable.

1. E&Y: Quantitative environmental and social data provided by the Exploration & Production and Refining businesses and consolidated at Group level.
2. BV Cert: Quantitative environmental and social data provided by the Gas & Power, Chemicals and Marketing businesses.

TO LEARN MORE

www.total.com Our Challenges section

You can learn more — and the latest — about each of our commitments and actions at the dedicated “Society and Environment” section of our Web site. You can also let us know what you think and ask us other questions via our “Contacts” page.

Watch the related Web documentary at csr-report2011.total.com

foundation.total.com



Created in 1992, the Total Foundation focuses on three core aspects of corporate philanthropy: community support and health, the environment and biodiversity, and culture and heritage. You can find out about the Foundation's projects, conducted in partnership with non-profit associations, institutions and NGOs, and about initiatives by Total employees on the Total Foundation Web site.

www.total.com CSR Analysts section

For more detailed information on our commitments and actions, go to the “CSR Analysts” section on our Web site.



We would like to sincerely thank all of the stakeholders who took time out from their own activities to share their questions with us, both in this report and in the Web documentary that has been posted on our Web site. We hope that they will continue the dialogue by sharing their reactions with us at www.total.com.

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WRITTEN BY: L. Becdelièvre, C. Delahaye, S. Eustache, B. Morin.

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With EcoFolio, Total is encouraging paper recycling. Sort your trash, protect the environment. www.ecofolio.fr



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www.total.com



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