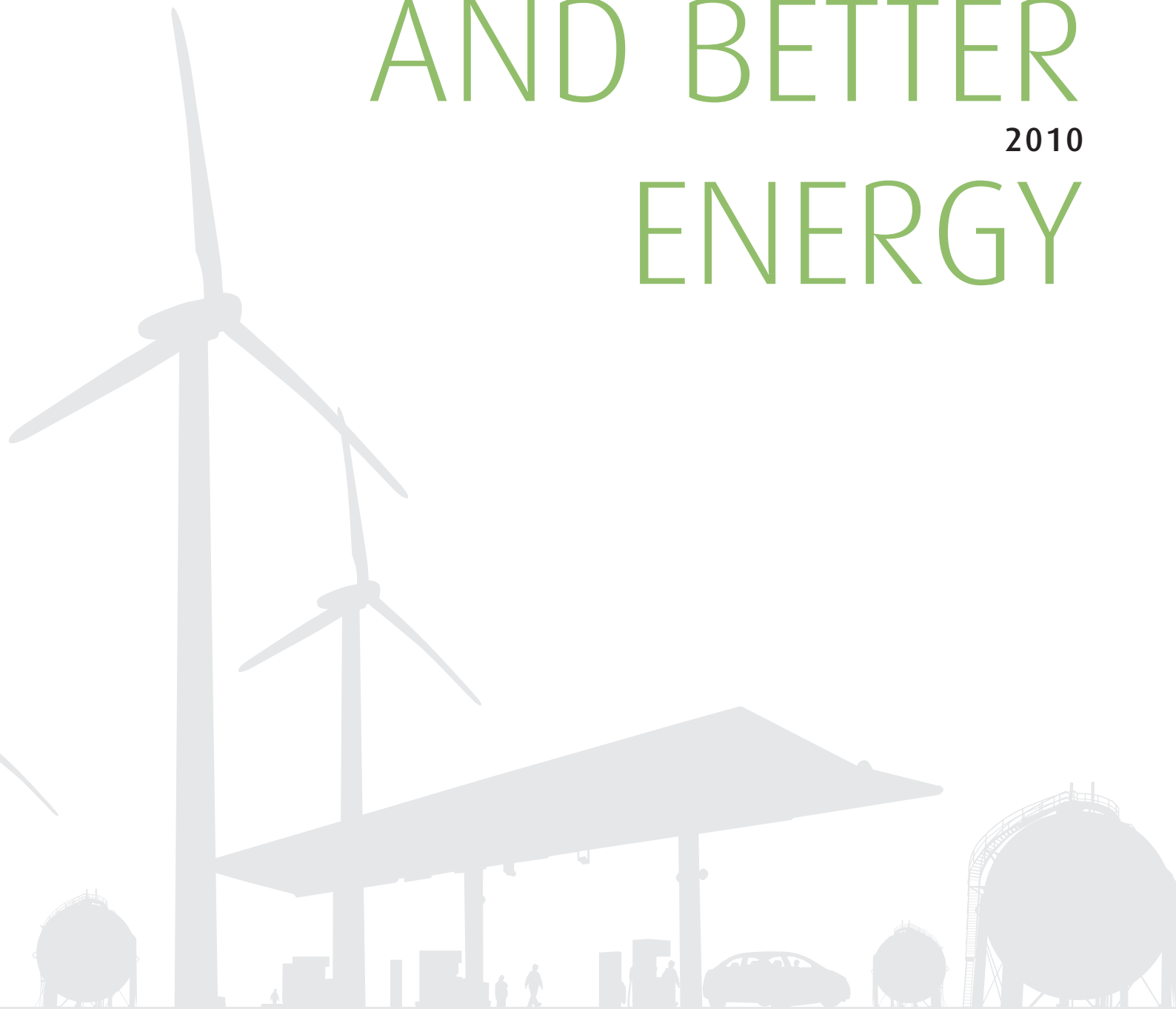


# IN SEARCH SUSTAINABILITY REPORT OF MORE GALP ENERGIA AND BETTER 2010 ENERGY





GALP ENERGIA

# SUSTAINABILITY REPORT 2010

**Galp Energia** is an integrated energy operator with diversified activities across the globe in the oil and gas industry. With its refining and marketing activities centred on the Iberian Peninsula, Galp Energia has a strong presence in the resource-rich South Atlantic exploration and production area that covers Brazil's pre-salt Santos basin and the Angolan offshore.

Galp Energia is present in 13 countries: Portugal, Spain, Brazil, Angola, Venezuela, Mozambique, Cape Verde, Guinea-Bissau, Swaziland, Gambia, East Timor, Uruguay and Equatorial Guinea.



GALP ENERGIA  
SUSTAINABILITY REPORT 2010

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# 01

## STATEMENTS

SUSTAINABILITY IS ALWAYS PRESENT IN GALP ENERGIA'S DAY-TO-DAY MANAGEMENT DECISIONS, WHICH GENERATE BENEFITS FOR EVERY STAKEHOLDER OF THE COMPANY.



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Francisco Murteira Nabo,  
Chairman of the Board of Directors of Galp Energia.

## STATEMENT BY THE CHAIRMAN OF THE BOARD OF DIRECTORS

Galp Energia considers it is necessary to undertake special efforts to improve Energy Efficiency in the use of all forms of energy, including renewable energy, as the most effective way to reduce emissions of greenhouse gases. Hence, we reinforce our performance in this area by integrating energy efficiency in both the relationship with our clients – through the recently-established unit Galp Soluções de Energia and the sales areas –, and in our facilities, with the implementation of the conversion project of refineries, the capital expenditure in the cogeneration units and the development of the Ecoposto concept in our service stations.

On the other hand, for further guidance of the teams' efforts, processes of measurement and recording of the most important energy indicators were deepened to allow the calculation of carbon footprint, from fossil fuels produced and biofuels marketed to the set of all activities.

The growth of Galp Energia's upstream activity and the diversity of countries where it currently operates, covering every continent, bring important responsibility regarding transparency. This way, Galp Energia recently stated its adhesion and support to the EITI – Extractive Industries Transparency Initiative.

Rewarding the enormous effort that Galp Energia has made in the exploration activities of oil and natural gas, our company sees the confirmation of our highest expectations related to the amount of oil reserves and resources, largely due to successful exploration in the pre-salt of the Santos Basin. This constitutes a strong incentive for further investment, in both financial and human resources, in this activity.

Galp Energia will continue investing and innovating in integrated solutions of sustainable energy and mobility that respond to all of these challenges: focusing on technology, new business models and products and services that increase energy efficiency to combat climate changes, and developing all economically feasible sources of energy to meet the needs of present and future generations.

To remain as a positive force in the communities where it operates, Galp Energia will maintain the commitment with its principles of ethics and transparency, and respect for human rights in the execution of its businesses.

Under innovation and technology, the company will continue to extend and deepen the cooperation with the Scientific and Technological System in the search for technological solutions that are innovative and efficient and reduce emissions.

Galp Energia is deeply committed to environmental protection in every day-to-day aspect of its operations and a true safety culture is deeply rooted today in our teams. We thus hope that this Sustainability Report is useful for our stakeholders to understand how our company is operating in these areas.

A handwritten signature in dark ink, appearing to read 'Francisco Murteira Nabo'.

**Francisco Murteira Nabo**  
Chairman of the Board of Directors

In this report, Galp Energia presents a clear Strategy for Climate Change, with performance axes set out for the next years, building on an extensive assessment of the several dimensions involved, namely regulation, technological development and people's expectations.

In order to guide an expanded programme to promote sustainability, Galp Energia conducted in 2010 an extensive process of Stakeholder Engagement, which is disclosed in this report. The participation of our Stakeholders was very high. Overall, results show a positive perception of Galp Energia's dynamics in sustainability, namely its responsibilities in the economic, environmental and social fronts.

The recent rise in the share price of Galp Energia and good results from the use of emission licences during 2009 confirm, in our view, those perceptions.

## STATEMENT BY THE CHIEF EXECUTIVE OFFICER

In an adverse external environment, Galp Energia presented its 2010 earnings with a significant improvement compared with the previous year, although still far from the 2008 earnings. Our RCA operating profit amounted to €445 million and net profit reached €306 million, up 43% from a year earlier. Throughout the year, the Galp Energia share went up by 19%, among the best in the sector.

The improvement in earnings mentioned above is mainly due to the increase of 33% in crude production, the rise of 6% in the volume of crude processed in refineries and the improvement of €0.2/bbl in the benchmark refining margin, as well as the synergies achieved with the consolidation of our operations in Spain. Sales of refined products stood at 17.3 million tonnes; sales of natural gas increased by 5%, reaching 4,926 million of cubic metres; production of cogeneration units climbed 86%, exceeding 3,800 gigawatts-hour, a result of the excellent operational performance of the Sines cogeneration plant.

Throughout the year, we continued to consolidate the ongoing transformational project, whose progress I summarise as follows:

1. As a result of the ongoing research and appraisal project, our oil and gas reserves (P3) reached 574 million barrels, the equivalent of a reserves-to-production ratio of over 70 years; contingent resources (3C) were, in 2010, 2,356 million barrels and prospective resources (average value) reached 2,550 million barrels. These excellent results are the anchor of Galp Energia's sustained growth. The

resources we now possess allow us to ambition a production level of 300,000 barrels/day in the first five years of the next decade.

2. The conversion project of the Sines and Matosinhos refineries, to be completed in 2011 and accounting for a capital expenditure higher than €1,400 million, ensure the competitiveness of our refining system at least during a decade.
3. The completion of the integration of the distribution operations acquired in Spain, by ensuring the synergies estimated when investments were approved, consolidates the capacity of distribution and marketing of oil products in the Iberian Peninsula, which, in volumetric terms, is close to Galp Energia's refining capacity; this complementarity contributes to the long-term sustainability of the downstream activity in the Iberian Peninsula.
4. We keep appraising projects of natural gas liquefaction, namely in Angola, Equatorial Guinea, Venezuela and Brazil, with the long-term purpose of ensuring LNG supply to our markets; the activity of distribution and marketing of natural gas, now operating in a competitive context, was extended to Spain, where we already supply natural gas to over 370,000 customers.
5. The operation of the Sines cogeneration plant revealed itself as an activity with a significant contribution to improve the energy efficiency and profitability of the operations of the Sines refinery; an equivalent plant is under construction in Matosinhos, whose completion is expected for late 2011, and will contribute in the



Manuel Ferreira De Oliveira,  
Galp Energia's CEO.





same way to the sustainability of the Matosinhos refinery.

What is summarised above translates the completion, expected for 2011, of a transformational cycle started in 2007. Galp Energia's potential of sustainable growth is clear in all main business segments. In addition to these activities, we keep investing in a large project of wind energy, in an integrated biofuel project, in the promotion of efficient solutions of energy consumption to our clients, and in the development of our distribution capacity in Africa; these are projects that, in the long term, can greatly contribute to the success and sustainability of the energy group we are building.

The Vision that guides us in the construction of our future is simple and clear: to be, in the markets where we operate, the benchmark

company in the energy sector. In these markets, we want to fulfil the Mission that we understand to be our responsibility: to create value for our Clients, Employees and Shareholders by performing in the energy markets with ambition and competitiveness and promoting respect for the principles of ethics and sustainability. It is our duty to do everything to accomplish our Vision by fulfilling our Mission and ensuring that the future we are building is sustainable and that we do it by adopting the highest standards of corporate citizenship.

This is our fifth edition of the sustainability report using the GRI G3 methodology; we hope this report is easy to read, clear and, mostly, another instrument of accountability to our stakeholders and promotion of who we are and what we do regarding sustainability. In this field, our great purpose is to be better



than the year before. We know that to be what we should be we still have a long way to go; it is our strong conviction that this journey of continuous improvement is well worth it and is, in fact, crucial for our success today and tomorrow. In this report, we express for the first time our strategy to fight climate changes; we report our adhesion to the EITI – Extractive Industries Transparency Initiative; we report the reinforcement of our initiatives guided to the promotion of energy efficiency; we present the governance models adopted to promote and control the execution of our policies of health, safety and environment; and we describe the activities of the Galp Energia Foundation, which has been reinforcing its position as a positive strength in the communities surrounding our operations.

Everything that I mention above is a result of the work and dedication of many people. I thank all my colleagues, who are active agents in our sustainability policies; I also have to thank the support of many of our stakeholders and the members of Galp Energia's governing bodies, who always encourage us to do more and better.

**Manuel Ferreira De Oliveira**

Galp Energia's CEO







# 02

## BACKGROUND

IN THE FIFTH EDITION OF THE SUSTAINABILITY REPORT, DRAFTED IN ACCORDANCE TO THE METHODOLOGY OF THE GRI G3, THE CONSOLIDATION OF THE STRATEGY FOR CLIMATE CHANGES AND THE FIRST ENGAGEMENT OF THE MOST RELEVANT STAKEHOLDERS, ALONG WITH ENERGY EFFICIENCY, ENVIRONMENTAL IMPACT, INNOVATION AND SOCIAL RESPONSIBILITY, ARE HIGHLIGHTED.

## SUSTAINABILITY IN GALP ENERGIA

**The world is going through a transition phase to a low-carbon energy system. The need for this transformation is due not only to the urgency of mitigating negative impacts of climate changes, but also the need to guarantee that everyone has access to sustainable energy. To this end, the priorities of the energy industry are not only developing new energy sources but also creating energy management solutions that are economically and environmentally rational.**



**THE GALP ENERGIA GROUP HIGHLIGHTS THE IMPORTANCE OF ENVIRONMENTAL VALUE IN BUSINESS DEVELOPMENT AND THE SUPPORT TO THE SOCIAL DEVELOPMENT OF SURROUNDING COMMUNITIES.**

According to the forecasts of the International Energy Agency (IEA), close to 58% of the reduction of CO<sub>2</sub> emissions to reach the target of the Blue Map Scenario (14Gt of CO<sub>2</sub>) must come from measures of energy efficiency and sustainable mobility.

Being fully aware of its responsibility of supplying energy to Portugal in a safe and sustainable manner, Galp Energia continually strives to create integrated solutions that contribute to the well-being and prosperity of the Portuguese economy.

It is in this context that sustainability assumes a strategic importance in the conduction of the company's business. To this end, Galp Energia heard its stakeholders for the first time, as the first step of the consolidation process of the sustainability strategy and its application.

In addition, Galp Energia also formulated a strategy for combating climate changes, assuming commitments towards society. Given the increasing importance investors have been giving to sustainability

practices in listed companies, Galp Energia applied in 2010 for the second turn to the Dow Jones Sustainability Index (DJSI).

Currently, Galp Energia's sustainability principles are grouped according to the following values: customer focus, teamwork, entrepreneurship, focus on results, individual development and upgrade, innovation and continuous improvement, safety and environment, and integrity and transparency.

In the sustainability report 2010, the main themes are the following: the strategy for addressing climate change, stakeholder engagement, energy efficiency, sustainable mobility, environmental impact, health and safety, partnerships with universities and research centres, services and products offered to clients and the commitment to the well-being of employees and communities where Galp Energia operates.

Drafted every year since 2006, Galp Energia's sustainability follows the parameters of the third edition,

called G3, of the guidelines for the sustainability reports published by the Global Reporting Initiative (GRI), whose purpose is reporting Galp Energia's economic, social and environmental performance. The sustainability report 2010 was assured by PricewaterhouseCoopers, an external accredited company.

## ETHICS CODE

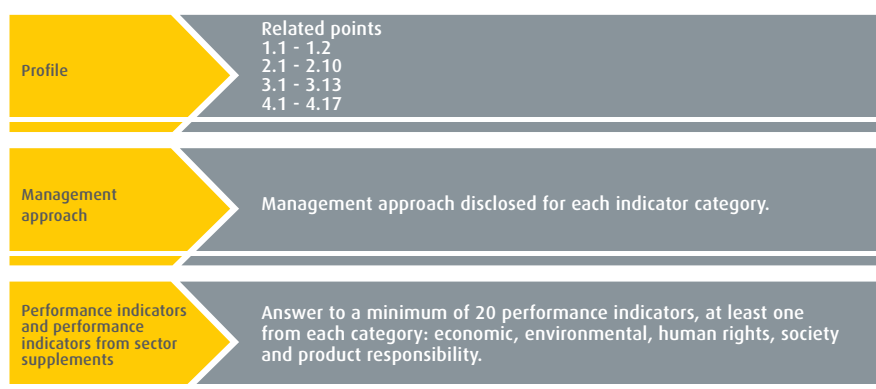
Galp Energia's Ethics Code, composed of a set of principles and values, aims at guiding the personal and professional behaviour of all employees, regardless of their position or role, and regulating its relationship between colleagues, shareholders, clients, suppliers and representatives of the communities with which the Galp Energia group companies interact.

To ensure its implementation and continuous validation, Galp Energia uses four tools provided in the Ethics Code:

**Commitment of fulfilment** – The subscription by all employees of a statement of accession to the Ethics Code;

**Disciplinary sanction** – The deviation from the general standards of conduct set out in the Ethics Code is a serious fault, subject to disciplinary proceedings and with direct effects on performance assessment;

## Framework of the report



## (GRI level: self-declared and assured)

	2002 in accordance	C	C+	B	B+	A	A+
Mandatory	Self Declared				✓		
Optional	Third party checked				✓		
	GRI checked						

## Committee of Conformity

**Verification** – Composed of three elements appointed by the executive committee, the remit of this committee is ensuring the implementation of the Ethics Code as well as its interpretation and clarification of doubts and omissions. All employees, clients and suppliers may use this committee to obtain answers to their questions or request clarifications, report any occurrence or irregular situation that may violate the standards of the Code;

**Clarification channel** – To simplify the sending of employees' questions, an email address was created (CodigoEtica.ComissaoVerificacao@galpenergia.com), which, besides being a best practice, will be a repository of both questions received and answers sent that may be audited at any moment.

2010

MARCH



## MAIN EVENTS AND PRIZES



**Public presentation of Galp Soluções de Energia**



**Tupi NE proves high productivity**

Production potential was estimated at close to 30 thousand barrels of oil per day.

APRIL



**Galp Energia reaches the second Iberian place in number of natural gas customers**

Galp Energia reached the second Iberian place in number of natural gas customers with a portfolio in excess of 1,300,000 customers.

MAY



**Presentation of Academia Galp**

Comprehensive and structural project for the next years of Galp Energia's training policy.

OCTOBER



**Installation of the first fast-charging point for electric vehicles, in one of Galp Energia's service areas**

DECEMBER



**Coming into operation of Galp Energia's first plant to generate electricity based on renewable energy sources**



**Declaration of commerciality of the Tupi and Iracema areas**



### **Galp Energia was awarded the third place in the category of Best IR Professional in the European Oil & Gas sector**

In April, in the 2010 survey of Institutional Investor for the European Investor Relations Perception Study, Galp Energia reached the third place, in both the analyst segment and the investor segment, for the category of Best IR Officer of the European Oil & Gas sector. This survey aims at choosing the best investor relations officer in each sector according to capital market professionals.

### **Galp Energia is the listed company with best online communications in Portugal Globally, it was the third company that improved the most**

According to the H&H Webranking annual survey of the Swedish consultancy Hallvarsson & Halvarsson, which reviews the corporate websites of European companies, Galp Energia's website is the best among the largest listed companies in Portugal, the third steepest climb worldwide.

In the ranking of Portuguese companies, Galp Energia ([www.galpenergia.com](http://www.galpenergia.com)) was the winner, with 59.5 points out of 100. The survey highlighted the improvements made by Galp Energia in online communication with analysts, investors and journalists throughout the year, up 28.75 points in comparison to 2009.

Check the results of the survey at  
<http://webranking.eu/en/Results/Results-2010/Portugal/>

### **Galp Energia's advertising campaign was awarded twice in the IV edition of Prémios Genio**

Galp Energia was awarded in Spain with the award for Best Use of the TV Medium and with the Grande Premio Genio, the main distinction awarded in the IV edition of Prémios Genio, awarded by Grupo Vocento. The Grande Premio Genio was awarded to BBDO Proximity and Carat, as a recognition for the projects created for Galp Energia in the Spanish market.

In Galp Energia's campaign, an advert was broadcast live for the first time, which was followed by 11.6 million people in the main television channels. The channels broadcast the advert at the same time.

The advert included the release of 56,000 orange helium balloons, representing the arrival at Spain of a company that transmitted, in an innovative and close manner, its "Positive Energy", which is Galp Energia's positioning.



## TRANSPARENCY IN EXPLORATION & PRODUCTION

With the commitment of continuing to develop a sustainability strategy that contributes to a fair and transparent development, Galp Energia stated its adhesion and support to the fulfilment of the principles of the Extractive Industries Transparency Initiative (EITI).

EITI aims at strengthening governance by improving transparency and accountability in the extractive sector. EITI is a global standard that promotes the transparency of revenues generated from activities of extraction and production of mineral resources, among which are oil and gas. It consists of a robust and flexible method to follow

and reconcile the payments of operating companies and the public revenues of the country that owns resources.

The process is supervised by participants from governments, companies and civil society. The principles of the EITI, agreed in the Lancaster House Conference, in June 2003, are the basis of the initiative, which may be checked at <http://eiti.org/eiti/principles>.



### GALP ENERGIA STATED ITS ADHESION AND SUPPORT TO THE FULFILMENT OF THE PRINCIPLES OF THE EITI.

## ECONOMIC INDICATORS AND INTERPRETATION

Core economic indicators	2009	2010	Change (%)
Turnover (M€)	12,008	14,064	17%
Staff costs (M€)	339	355	5%
Retained economic value (M€)	439	755	72%
Tax paid to the state (M€)			
Company income tax	127	108	(15%)
Tax on oil products (ISP)	3,010	2,726	(9%)
Purchase of products and services (M€)	751	781	4%
Accounts payable (average number of days)	30	35	17%
Net profit (M€)	347	441	27%
Replacement cost adjusted net profit (M€)	213	306	43%
Capital expenditure (M€)	730	1,233	69%
Net assets (M€)	7,514	9,148	22%
Net debt (M€)	1,927	2,840	47%
EBITDA (M€)	830	1,053	27%
Replacement cost adjusted EBITDA (M€)	630	854	36%
EBIT	459	639	39%
Replacement cost adjusted EBIT (M€)	287	454	58%
Expenses in I&DT (M€) <sup>(1)</sup>	16.3	N.D. <sup>(1)</sup>	
Capital spending and expenses in environment, quality and safety (M€) <sup>(2)</sup>	33.9	43.8	29%
Sold volumes in E&P (Mbbl)	3.0	2.8	(5%)
Proved and probable reserves on a net-entitlement basis (Mboe)	35	574	s.s.
Sold volumes of refined products (Mton)	17.3	17.3	0%
Sold volumes of natural gas (Mm³)	4,680	4,926	5%

<sup>(1)</sup> Consolidation of the amount is under way.

<sup>(2)</sup> Includes the most relevant environment and safety investments at the refineries

The IFRS net profit was €441 million, including a positive stock effect of €156 million. The replacement cost adjusted net profit in 2010 was €306 million, or €213 million higher than in 2009, mainly a consequence of the rise in the price and production of crude oil, the improvement of the refining margin and higher volumes of natural gas sold.

## RISK MANAGEMENT

### RISK MANAGEMENT POLICY

Galp Energia is exposed to several types of risk, such as market risks, operational risks, the financial and liquidity risk and the credit risk. The Company set out policies and processes to measure, manage and monitor its risk exposure. The purpose of the risk management policy is to support business segments in achieving their goals while monitoring the potential impact of risks on its results. Galp Energia's risk management policy optimises natural hedges in each business segment and between different business segments. At a second phase, Galp Energia identifies residual market risks, if any, that may affect expected cash flows or certain balance sheet items and reviews them in an integrated manner, taking into account possible correlations between outside variables beyond the control of the Company that may influence the results of its operations.

The risk management committee establishes the mechanism for implementation of the risk management policy and submits it to the executive committee for approval. Outcomes are evaluated on a monthly basis by the corporate unit that is responsible for all business units.

The policy for managing commodity price risk is implemented at the business unit level by monitoring the Company's net global commodity position and balancing purchase and supply commitments. In particular, Galp Energia manages the pricing period in order to achieve, at the end of each month, the average price of dated Brent of the month, regardless of the actual days of the pricing period. The Company pursues this goal through daily purchases and/or sales of crude oil futures based on the difference between the spot price and the average price of dated Brent in each month. As a result, Galp Energia's purchases are spread out over the month based on market prices without affecting the pattern of physical purchases. Galp Energia hedges these prices on the Intercontinental Exchange (ICE), in London. Galp Energia's oil production in Angola is hedged in over-the-counter markets using the same flattening method in the period for fixing the sales price of the oil produced. This method flattens the price for a period of up to one year. To hedge against relative price movements between exported products and crude or oil products purchased, Galp Energia fixes the margin of part of its exports on a monthly basis. Hedging transactions consist of swaps and futures. Given the deregulation of prices in the natural gas business, Galp Energia uses



over-the-counter markets to offer clients the prices they request, thereby not changing their final risk position.

Interest rate, exchange and other financial risks are managed by the Company's corporate finance and treasury departments.

Galp Energia's total interest rate position, including financial investments and debt, is monitored by the central unit that is responsible for the business units. The exposure to interest rate risk is mainly related to interest-bearing debt on the balance sheet and interest rate derivatives. The purpose of interest rate risk management is to lower the volatility of interest charges in the income statement. The purpose of Galp Energia's policy for managing interest rate risk is to reduce exposure to floating rates by fixing the interest rate on part of the debt (including the portion of long-term debt classed as short-term debt), using plain-vanilla derivative instruments such as swaps.

Galp Energia manages liquidity risk by maintaining adequate available credit lines to face treasury needs at any moment, regardless of market conditions.

Galp Energia's credit risk arises from the possibility of a counterparty not meeting its contractual payment obligations, meaning that the magnitude of risk depends on the counterparty's credit record. Credit risk is managed by business segments

taking into account the definitions set out by the executive committee regarding credit limits and initiatives to minimise or eliminate risk. Risk management is performed with instruments available on the market.

Galp Energia takes out insurance in line with the industry's best practice for business risks. Risks insured include, inter alia, damage to property and equipment, third-party liability, liability for the sea transportation of crude oil and other goods, pollution and contamination, directors' and officers' third-party liability and workplace accidents. Nevertheless, some major risks inherent in Galp Energia's activities cannot reasonably be insured economically.

### **SYSTEM OF INTERNAL CONTROL AND RISK MANAGEMENT**

The system of internal control is a set of policies and procedures adopted by the Group in order to ensure the fulfilment with reasonable safety of the Galp Energia group's objectives in the following subjects: orderly and efficient conduction of its businesses; prevention and detection of fraud and errors; fulfilment of laws and regulations; guarantee of strictness and completeness of financial reporting, as well as the timely preparation of credible financial information.



Galp Energia's system of internal control is based on the guidance of the Committee of Sponsoring Organizations (CoSO) of the Tradeway Commission. Regarding the components of the internal control as defined by the CoSO, its main features in the Galp Energia group's approach to Control Environment, Risk Assessment, Monitoring, and Information and Communication are described as follows.

### CONTROL ENVIRONMENT

Control Environment is the starting point and the basis for the other components of risk control. The control environment comprises the overall attitude, ethical awareness and the initiatives of the executive committee, being an example for employees and other stakeholders of the Group.

The implementation of a code of ethics to guide personal and professional conduct of all employees contributes to achieving the mission, vision and values of the Galp Energia group. This document is available on the Group's website.

Galp Energia's internal control environment also comprises the internal standards and procedures for delegating powers of authority, which ensure adequate scrutiny of several management decisions, according to their nature and materiality.

The supervisory board has the remit of supervising the effectiveness of the system of risk management, internal control and internal audit, as well as the annual assessment of system operation and its internal procedures, thereby strengthening the internal control environment. The recommendations deemed justified by the supervisory board are sent to the executive committee.

### RISK ASSESSMENT

The executive committee is responsible for the implementation in the Galp Energia group of a mechanism for identifying and assessing internal and external risks that may affect the Group's performance and is supported by various internal entities.

Given Galp Energia's responsibilities, the corporate service of internal audit has been promoting the systematisation of the assessment of the risks and the internal control systems at the level of business units. These analyses, performed along with the business units, are aimed at risks identified and managed by business units.

Since inherent risks and the effectiveness of internal controls are a function of endogenous and exogenous variables, this process is not static. Thus, risk reassessments must be regularly conducted to the Group's main businesses to guarantee the alignment of the business units' response to risks



with the risk profile decided by the executive committee. This way, the probability of potentially negative or even catastrophic events for the Group is reduced.

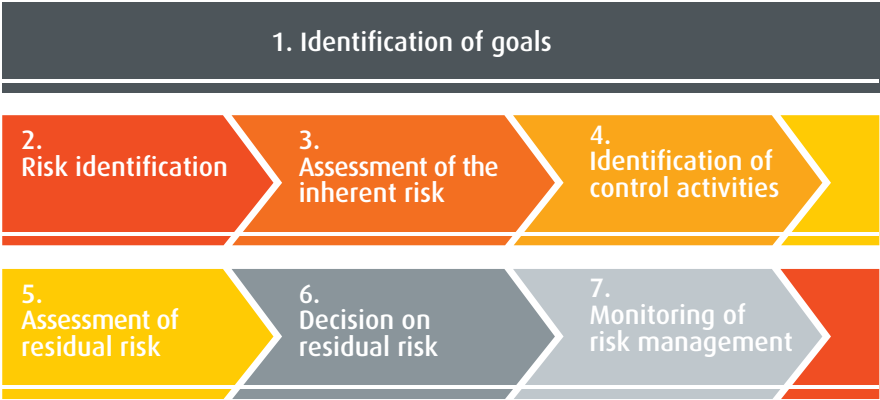
Generally, assessments of risk analysis and internal control start by identifying and classifying the main risks facing the achievement of the objectives of the business units, as well as the control systems in place to mitigate them. Under the assessment of the effectiveness of the portfolio of implemented control systems, residual risks are measured and the existence of possible deviations

from the risk appetite set for the unit is checked. Finally, business units announce their residual risk, committing to a response plan designed to mitigate, transfer, avoid or accept residual risk. This process is in accordance with the method illustrated by the following chart, which shows the sequence and dependencies of the several activities:



RISK MANAGEMENT IN THE GROUP IS ASSUMED AS A MULTIDIRECTIONAL AND INTERACTIVE PROCESS, IN WHICH THE COMPONENTS OF THE PROCESS ARE MUTUALLY INFLUENCED.

Implementation of a risk management programme



Methodology of risk assessment and internal control

As illustrated above, the Group’s risk management is viewed as a multifaceted and interactive process, in which the several components of the process influence each other.

Risk assessment and internal control adopted in the business units, as well as their plans in

response to risk, are reported to the chairman of the board of directors and all members of the executive committee. This will ensure proper communication with these governing bodies about the level of risk assumed by the managers of the business units.

### MONITORING

It is up to the supervisory board to supervise the adoption by the Company of principles and policies to identify and manage the main financial and operational risks related to Galp Energia's activities, as well as measures to monitor, control and disclose such risks.

Under the activity carried out by the corporate department of internal audit, operational audits, compliance audits, financial audits and revisions to information systems are conducted in order to test the effectiveness of implemented internal control mechanisms. Annually, an audit plan is set up based on the outcome of the assessment of the residual risk of several processes and business units, which is approved by the chairman of the board of directors. Audit reports are sent to the chairman of the board of directors and all members of the executive committee. A summary of half-year activity of the corporate department of internal audit is sent to the chairman of the board of directors, the executive committee and the supervisory board. In 2010, 12 auditors from the corporate department of internal audit conducted close to 70 audits in business units, service units and the Galp Energia group companies.

Under its remit, the statutory auditor and the external auditors conduct audits to internal control deemed necessary to issue the certification of accounts related to Galp Energia's separate and consolidated financial statements.

### INFORMATION AND COMMUNICATION

Galp Energia's annual report 2010 includes a brief description of some of the major risks affecting businesses, results and the Group's financial situation.

The process of disclosing Galp Energia's financial information is monitored by the management and supervisory bodies as well as the business units and corporate services. The investor relations and corporate communications department prepares the documents for presentation of financial information to capital markets based on information provided by the business units, accounting and treasury and the corporate planning and control departments. Prior to their disclosure, these documents are sent to the management and supervisory bodies. This way, all documents containing financial information are approved by these two bodies prior to their disclosure.



**THE AUDIT REPORTS ARE SUBMITTED TO THE CHAIRMAN OF THE BOARD OF DIRECTORS AND TO THE MEMBERS OF THE EXECUTIVE COMMITTEE.**



## FINANCIAL INCENTIVES

**Market operators recognise the financial support provided by the Community Support Frameworks and the parallel systems of financial/tax support that significantly contributed to modernisation and economic development.**

Since it follows this principle, the Galp Energia group submitted projects – for infrastructure, production, innovation, research and development, and training – to several support programmes.

The application of the conversion project of Galp Energia's two refineries

was notified to the European Commission after signing the contracts in 2008, since it is a large investment project. The application is still under analysis.

Taking into account the impacts of the project on the Portuguese trade balance, energy efficiency,

environmental protection and the development of regions, mainly with job creation, the application to PIN and, later, to PIN+ was approved. It is the first and unique project with this status.

The underground storage facilities in Pombal, the distribution networks, the autonomous gas units and other support facilities, and the conversion of client facilities to natural gas received EU funding.

In 2010, the application of an autonomous gas unit and related networks promoted by the distributor Beiragás was prepared and submitted to QREN, Energy Regulation.

Concerning cooperation with the Scientific and Technological System (SCT in Portuguese), the application submitted by Galp Energia, in co-promotion with the Instituto Superior Técnico, under the Incentive System to Technological Research and Development, was approved by QREN in 2010. The Petro Demetalizing project received a 47.35% incentive in the amount of €1,195,536.43.

Taking into account the positive effect that incentives have on projects, a partnership between Galp Energia, ISEL and IST submitted to the Foundation for Science and Technology (FCT) an application for the ECOZEMENT project, which aims at assessing the

mechanical properties of cement-based materials with the incorporation of exhausted FCC catalyst.

The Galp Energia Group submitted several training programmes to the POPH (Operational Programme of Human Potential in Portuguese).

Regarding tax benefits, there were eight applications to SIFIDE related to the expenses of seven companies of the Galp Energia Group and CLC in research and development during 2009, which amounted to €16.3 million.

Regarding financial incentives, the Galp Energia Group received in 2010 €1.2 million of subsidies, which corresponds to the following projects:

- QCA III, for the natural gas distributor Medigás, related to the distribution infrastructure;
- QREN, for the natural gas distributor, related to UAG (Beiragás and Tagusgás);
- FP7, for Petrogal, related to the GINSENG project;
- FP7, for Galp Energia, related to the COMET project.







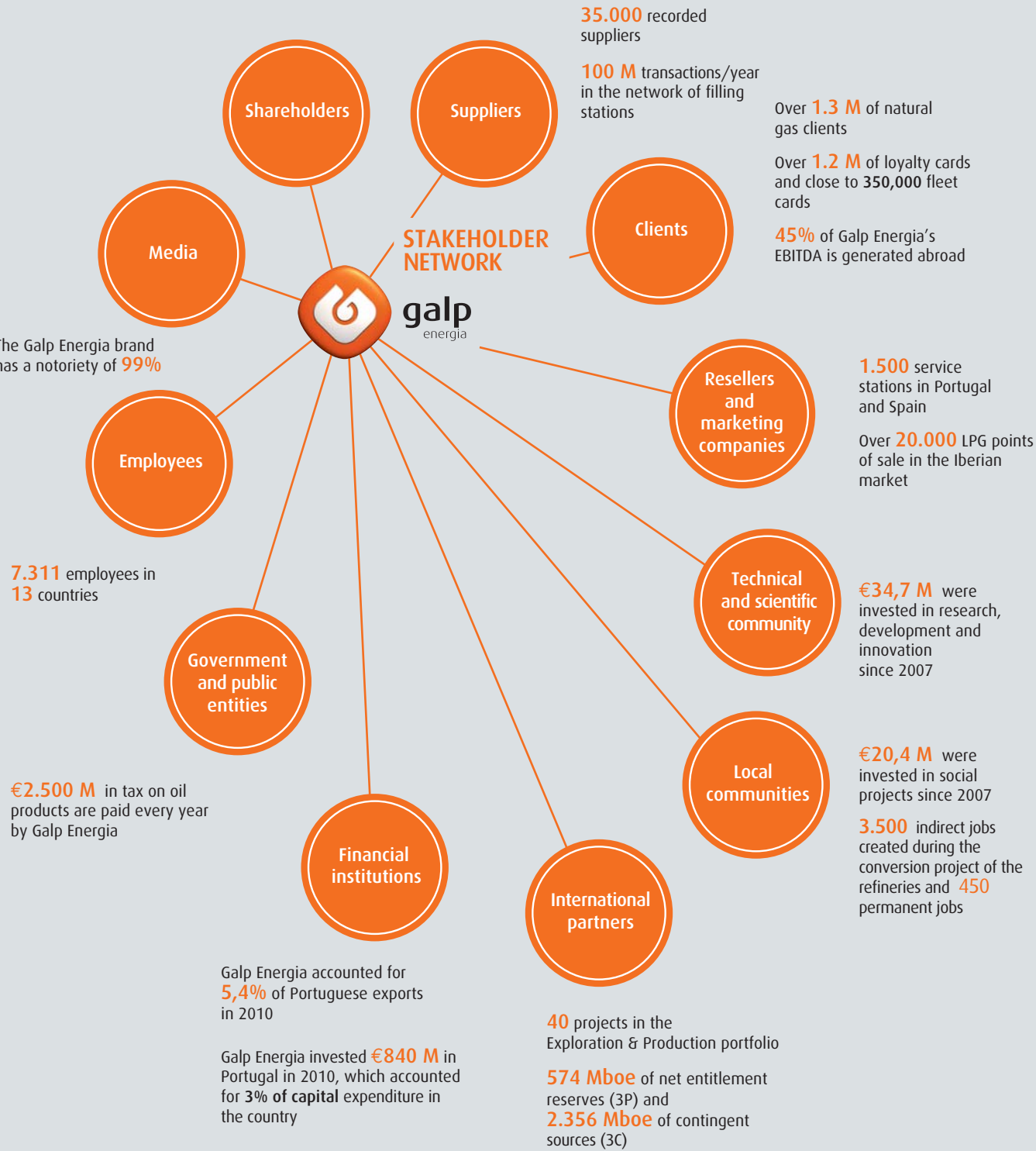
# 03

## DIALOGUE WITH STAKEHOLDERS

THE SYSTEMATIC IDENTIFICATION OF STAKEHOLDER EXPECTATIONS IS ESSENTIAL TO IDENTIFY IMPROVEMENT OPPORTUNITIES IN SUSTAINABILITY. GALP ENERGIA, IN 2010, CONDUCTED THE FIRST ENGAGEMENT OF THE ITS MOST RELEVANT STAKEHOLDERS.

The goal of this initiative is to obtain its assessment of the company’s sustainability activity and identify potential improvement areas.

Stakeholder network





To this end, a sample was composed of 207 stakeholders to be heard, chosen from Galp Energia's business areas and corporate services, including: Media, Shareholders, Clients, Employees, Suppliers, the Technical and scientific community, Governmental and official entities, Resellers and distributors, Financial entities, the Community, and Other entities.

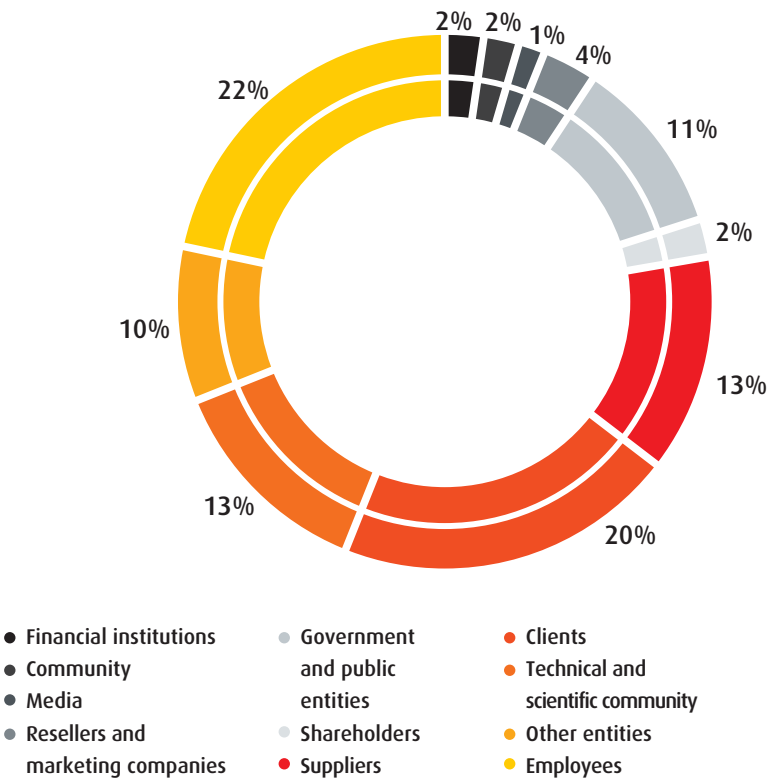
The effective response rate was 81%, that is, 167 interviews made personally or by phone in November and December 2010.

Overall, there is a positive perception regarding Galp Energia's proactivity in the performance of its sustainability responsibilities.



WHAT IS GALP ENERGIA'S DIRECT AND INDIRECT IMPACT ON THE COMMUNITIES WHERE IT OPERATES, EITHER BY RELATIONSHIPS WITH CLIENTS AND SUPPLIERS AND THE CREATION OF DIRECT AND INDIRECT JOBS?

Breakdown of answers by stakeholder group



THERE IS A POSITIVE PERCEPTION REGARDING GALP ENERGIA'S PROACTIVITY IN THE PERFORMANCE OF ITS SUSTAINABILITY RESPONSIBILITIES.

## GENERAL PICTURE

Stakeholder perception of Galp Energia's overall performance in image and reputation was very positive, which corresponds to the opinion of close to 86% of respondents.

The most valued features by stakeholders in the appreciation

of the sustainability performance are sorted in the following table according to the ranking obtained in the survey.

"What is more important for Galp Energia's stakeholders and what is the assessment of its performance in the dimensions of sustainability?"



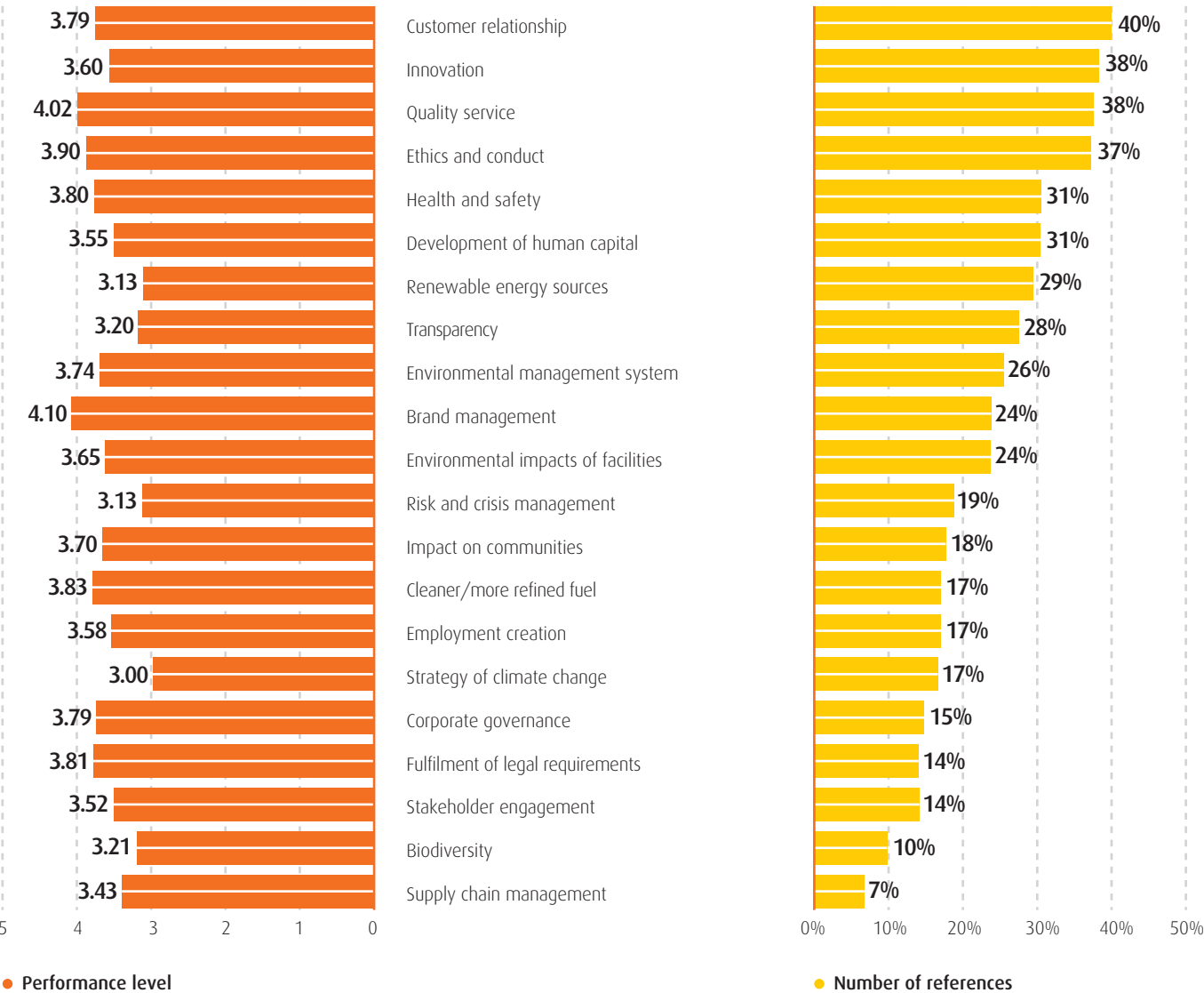
WHAT IS THE SATISFACTION DEGREE OF GALP ENERGIA'S STAKEHOLDERS?

The stakeholder engagement revealed that 43% of the sample was not aware of the publication of Galp Energia's sustainability report, nonetheless, the stakeholders that were aware of the sustainability report assessed it positively: 81% of respondents that answered this question ranked the information provided as "good" and "very good".

In 2011, Galp Energia is committed to develop new ways to communicate the sustainability report 2010 to its stakeholders.

Regarding the involvement level of stakeholders with Galp Energia, close to 78% considered it adequate, classifying it as "good" or "very good".

"What is more important for Galp Energia's stakeholders and what is the assessment of its performance in the dimensions of sustainability?"



THE PERCEPTION OF  
STAKEHOLDERS ON  
GALP ENERGIA

During the stakeholder engagement process, a set of statements on the

economic, environmental and social fronts of sustainability were presented to respondents and their degree of agreement was requested.



THE STAKEHOLDERS  
THAT KNEW ABOUT THE  
SUSTAINABILITY REPORT  
ASSESSED IT POSITIVELY.

Galp Energia...



ENVIRONMENTAL FRONT

Regarding environmental practices, most respondents considered that Galp Energia makes an effort and is responsible for these environmental impacts. Indeed, 72% of the stakeholders consider the company

makes an effort to minimise the global environmental impact of its activity.

Regarding main media used, stakeholders prefer bidirectional media with direct contact such as email, meetings and visits.



How did Galp Energia improve its environmental performance so significantly?

Galp Energia, in line with its mission and values, aims at the continuous improvement of its performance in Environment and Safety by promoting prevention and the minimisation of its activities. In recent years, the refurbishment of industrial infrastructure, particularly the alignment of refineries with the standards applicable to the sector, allowed the significant improvement of its performance.

Galp Energia had an important participation in the activities of sector associations, mainly European. The sharing of experiences and technical knowledge supported the accomplishment of continuous improvement goals, as well as the opportunity to benchmark against our peers.

Lastly, stakeholders showed interest in staying informed about events and Galp Energia’s performance, as well as establishing cooperation or integration partnerships in task forces or meetings.

SOCIAL DIMENSION

Regarding working conditions, close to two thirds of the inquired stakeholders considered Galp Energia as one of the best companies to work in Portugal.

Concerning stakeholders’ perception regarding Galp Energia’s

ethics and social responsibility, 84% of the stakeholders heard answered positively, stressing that “the company gives a positive contribution to society”.

In the dimension of product and service quality, stakeholders’ position is very positive: 89% stated that Galp Energia makes products whose quality satisfies consumers’ needs and 82% mentioned the company is concerned about developing innovative products and services with added value for its customers.



What are the actions developed by Galp Energia to ensure safety toward the society where it operates?

Galp Energia assumes that the Safety and Health of employees, the community and environmental protection are essential values. To this end, a SHE governance model with the following two principles was created:

1. Senior managers ensure the commitment of the entire Organisation to reach excellence in the SHE performance
2. The managers composing the organisational line respond individually for the SHE performance and for the availability of human, material and financial resources, within their remit.

To reinforce the commitment to the SHE features, employee compensation includes a component for Safety and Environment, called Safety Factor.

With this model, Galp Energia aims to ensure the fulfilment of legal requirements and the requirements applicable to the location where the activities take place, namely those arising from internal requirements, requirements from certifications or existing management systems.

This way, the SHE Management actively involves employees, the community and other stakeholders.

## ECONOMIC DIMENSION

Concerning the dimension of the economic performance, the perception of Galp Energia's stakeholders was very positive. Close to 89% of respondents agreed Galp Energia possesses interesting perspectives of growth and profitability improvement.

Regarding the perspective of vision and leadership, close to three fourths interviewees considered the company is innovative and recognised the management team exploits market opportunities.



**CLOSE TO 89% OF RESPONDENTS AGREED GALP ENERGIA POSSESSES INTERESTING PERSPECTIVES OF GROWTH AND PROFITABILITY IMPROVEMENT.**



**What is the mechanism for fuel price formation and what is Galp Energia's opinion on the similarity of prices between Galp Energia and its competitors?**

The prices of fuel in Portugal are strongly impacted by the following factors:

1. Price of products in international markets: in addition to the price of oil (crude oil), products have a listing of their own (in accordance to the law of supply and demand) that does not always follow the changes in the price of the commodity, thereby there may be periods when the oil price is falling but the price of diesel or gasoline is increasing. It is important to understand that the international prices of final products are in the origin of the prices of final products, not the international prices of crude oil, which only converge in a long time series.
2. Euro/dollar exchange rate: product prices are set out in dollars, thereby the exchange rate impacts the final value attending to appreciations and depreciations of euro against the dollar.
3. Tax policies: taxes on oil products – tax on oil products (ISP) and value added tax – directly impact its final price.

The third factor is essential, since tax policies have a 57.9% weight in the price of gasoline and a 46.9% weight in the price of diesel (excluding the biodiesel component).

During the engagement process, stakeholders identified several questions on which they would like to deepen their knowledge about

Galp Energia's performance, having drafted some questions that were answered throughout this report.







# 04

## **GALP ENERGIA'S STRATEGY FOR CLIMATE CHANGE AND ENERGY CHALLENGES**

GALP ENERGIA SET OUT FOUR STRATEGIC AXIS TO COMBAT CLIMATE CHANGES: REDUCTION OF EMISSIONS RELATED TO FUELS, PROMOTION OF ENERGY EFFICIENCY AND ENERGY RENEWABLE SOURCES, DEVELOPMENT OF SUSTAINABLE MOBILITY SOLUTIONS, COOPERATION WITH THE SCIENTIFIC SYSTEM IN THE AREA OF CLIMATE CHANGE.



## STAKEHOLDERS

## WHAT ARE THE POLICIES FOLLOWED BY THE COMPANY REGARDING CLIMATE CHANGE?

Galp Energia set out four strategic axis to combat climate change:

- Reduction of emissions related to fuels; promotion of energy efficiency and energy renewable sources;

development of sustainable mobility solutions; cooperation with the scientific system in the area of climate change.

### Axis I - Reducing emissions related to fuel in the different phases of its life cycle

		For more information check:
1.1 Exploration & Production	Maximising the use and protection of natural gas and minimising CO <sub>2</sub> emissions	Chapter 5
1.2 Refining	Capital spending in the conversion projects of the two refineries until 2011 to adjust them to the demand for fuel in the market.	Chapter 6
1.3 Biofuel	Reaching, in 2020, 10% of substitution by FER in fuel for road transport, ensuring a minimum of 60% in the reduction of GEE emissions in the life cycle.	Chapter 7
1.4 Fuel transportation	Promoting change to maritime and rail transport.	-
1.5 Life cycle and carbon footprint	Developing analysis models of the fuel life cycle and calculation of the carbon footprint.	Chapter 6

### Axis II - Promoting energy efficiency and the integration of renewable energy sources

		For more information check:
2.1 Refining	In 2012, achieving energy efficiency gains of close to 156,000 tep/year, which correspond to approximately 400,000 tCO <sub>2</sub> /year, in comparison with the basis year of 2007.	Chapter 6
	Reaching reductions of 26% of EII (Solomon Associates) in the Matosinhos Refinery and of 14% in the Sines Refinery.	Chapter 6
2.2 Natural gas-fired cogenerations	Promoting the installation and operation of natural gas cogeneration at industrial and service sectors.	Chapter 6
2.3 Natural gas	Promoting the use of natural gas as the cleanest fossil fuel.	Chapter 6
2.4 Fuel distribution	Implementing projects that promote energy efficiency.	Chapter 6
2.5 Biofuel	In Portugal, until 2014 incorporating 6.75% in volume of biodiesel, and until 2020 incorporating 10% of biofuel in energy content. In Spain, incorporating 5.9% of biofuel in energy content.	Chapter 7
2.6 Production of renewable electrical energy	Developing wind and solar projects.	Chapter 6
Programmes for the promotion of energy efficiency in Galp Energia's clients		
2.7 Galp Soluções de Energia	Supporting Galp Energia clients in the streamlining of energy use, promoting energy efficiency and sustainability in buildings, industry and transports.	Chapter 6
2.8 Galp 20-20-20 Programme	Fostering the practice and training of university fellows in processes of energy efficiency in buildings and industrial facilities.	Chapter 8
2.9 Smart Galp Programme	Developing user-friendly domestic systems of energy management, aimed at Galp Energia clients.	Chapter 8



### Axis III - Actively participating in the development of sustainable mobility solutions

		For more information check:
3.1 Electrical mobility	Participating in the Portuguese project of electrical mobility – Mobi-E – ensuring the installation of fast charging points for electrical vehicles.	Chapter 6
3.2 Natural Gas Vehicle	Incrementing the use of natural gas in cars.	Chapter 6
3.3 Road tests of new automobile technologies	Promoting partnerships with the automobile industry to test vehicles with new propulsion technologies.	Chapter 6
3.4 Strategic studies on mobility	Participating in strategic studies on the outlook of several new propulsion technologies and their supply infrastructure.	Chapter 6

### Axis IV- Developing with the Scientific and Technological System projects and activities that foster the combat against climate changes

		For more information check:
4.1 Capture and storage of carbon	Participating in the COMET project – Study of the possibilities of CCS in Southern Europe and Morocco.	Chapter 8
4.2 Intelligent management of electrical energy grids	Participating in the REIVE project – development of a technological platform for the intelligent management of electrical energy grids.	Chapter 8
4.3 New technological infrastructure	Participating in the creation and funding of the Institute of Offshore Energies, within WavEC.	-
4.4 PhD training in Refining	Promoting the advanced PhD training in energy and environmental efficiency in refining, within AIPQR.	Chapter 8

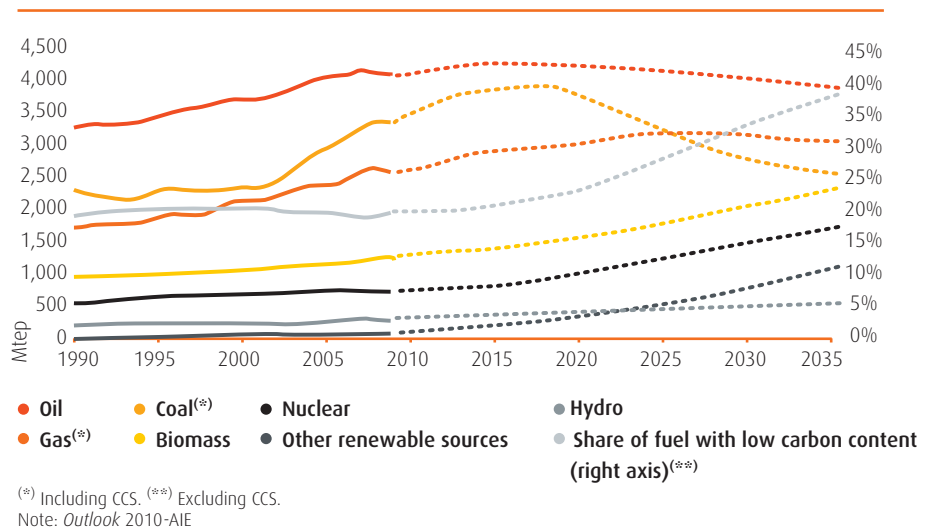
## STRATEGY RECITALS

### 1) The energy sector is at the centre of the discussion on the combat against climate changes

In this context, the International Energy Agency presented a scenario of global evolution of energy consumption until 2035, which would be compatible with the stabilisation of greenhouse gases in the atmosphere in a concentration of 450ppm CO<sub>2</sub>eq (the 450 scenario), opposed to the reference scenario that translates the maintenance of current policies. Forecasts also point to very different rates of energy consumption evolution,

depending whether the analysis is made to OECD countries or the so-called emerging countries.

#### Scenario of energy consumption





**GALP ENERGIA DECIDED TO FORMULATE ITS OWN STRATEGY TO FIGHT CLIMATE CHANGE.**

**2) This issue is particularly relevant to Galp Energia, which is an integrated energy operator with activities throughout the entire value chain of oil and natural gas,** highlighting the following activity and growth features:

#### **IN UPSTREAM**

- ongoing development of the production capacity, sustained on an oil resource base of 2,356 million barrels (base 3C) and 5,74 million barrels (base 3P);
- development of the integrated project and biofuels with the production of vegetable oils in Brazil and Mozambique.

#### **IN MIDSTREAM AND DOWNSTREAM**

- installed refining capacity in Portugal of 310,000 barrels per day;
- capacity of distribution and marketing of oil products in the

Iberian Peninsula equivalent to the refining capacity;

- capacity of distribution and marketing of natural gas in the Iberian Peninsula up to 6 bcm/year and with storage capacity.

**3) In this context, Galp Energia decided to formulate its own strategy of combat against climate change whose performance axis were built taking into account the company's know-how and a macroanalysis of the following dimensions: regulation, technology and consumer behaviour.**

The main findings of the analysis performed to those dimensions, namely in the perspective of its impacts on Galp Energia's value chain, may be summed up in the following four trend areas:

### 1. THE REDUCTION OF EMISSIONS IN THE TOTAL LIFE CYCLE OF FUELS:

European regulations on the specifications of road and non-road gasoline and diesel and the monitoring and reduction of GHGs set out that "the state members must demand suppliers to gradually reduce, until 31 December 2020, up until 10% of the greenhouse gas emissions throughout the life cycle, per unit of fuel energy and supplied energy". This determination must be made compatible with the demands for the use of energy from renewable sources in the transport sector.

### 2. ENERGY EFFICIENCY AND DEVELOPMENT OF RENEWABLE ENERGY SOURCES:

The "450 ppm" scenario of the International Energy Agency (2010) forecasts the reduction of global warming to 2°C will demand a decrease in 3.9 Gt of CO<sub>2</sub> until 2020, of which 65% have to be obtained by efficiency improvements in energy consumption and 19% have to arise from the use of renewable sources, including biofuel. The European energy policy set out ambitious targets for energy efficiency, namely the Energy and Climate Pack, highlighting "the need to increase energy efficiency in the EU to fulfil the goal of saving 20% of the energy consumption forecast for 2020". Consumers themselves reveal high sensitivity to the cause of energy economy and to its benefits for the planet.

### 3. SUSTAINABLE MOBILITY:

The regulation on the limit of CO<sub>2</sub> emissions of new passenger cars sets out that, from 2020, the average of emissions in the EU must be lower than 95g/km (temporary target), against 154g/km in 2008. At the same time, new propulsion solutions in the automobile industry (plug-in hybrid vehicles; electrical vehicles, fuel cell vehicles) and the experimentation of new mobility concepts in cities – promotion of intermodality, car sharing and restrictions to circulation in urban centres – were presented. Life quality has particular importance within development marked by the growth of car traffic and the population in large urban areas.

### 4. THE ROLE OF THE SCIENTIFIC AND TECHNOLOGICAL SYSTEM:

It will have a decisive importance in the development of science and new technological applications, thereby reducing emissions, increasing energy efficiency and mitigating other impacts.

### 4) Galp Energia's strategy to combat climate change is based on four axes, which correspond to the four identified trends:

The identification of these axes will guide a systematic process involving the organisation's areas aimed at setting out programmes, projects and initiatives that contribute to the goal of combating climate changes. This process includes the definition of targets and reporting on their execution. The potential effect that



**QUALITY OF LIFE HAS PARTICULAR IMPORTANCE IN A DEVELOPMENT CONTEXT MARKED BY THE GROWTH OF BOTH CAR TRAFFIC AND POPULATION IN LARGE URBAN AREAS.**



THE PERFORMANCE AXES OF GALP ENERGIA'S STRATEGY TO FIGHT CLIMATE CHANGE, AS WELL AS ITS EXECUTION, ARE PRESENTED IN THIS CHAPTER.

climate changes may have on Galp Energia's operational chain will be deepened.

**5) However, Galp Energia already has under way a number of programmes, projects and initiatives that contribute to the execution of the axes presented below, which are described in this report. The outstanding and pedagogical activities, whose good example may be spread out, are included.**

## AXIS 1

**Reducing emissions related to fuel in the different phases of the its life cycle**

### 1.1 E&P

(v.g. Chap. 5)

It is essential to maximise the use and preservation of the resource and to minimise CO<sub>2</sub> emissions under exploration and production activities, according to the following guidance:

1. maximising of the geological storing of natural gas and/or CO<sub>2</sub> related to oil production. For instance, there is capture and storage of natural gas in Block 14 in Angola, where Galp Energia participates, which is aimed at supplying the first LNG train of Angola. Regarding the production projects in the Pre-salt of Brazil, where a small CO<sub>2</sub> production is expected, studies are being

conducted to assess the storage capacity in the subsoil, in favourable geological formations, of the amounts of CO<sub>2</sub> that will be produced.

2. maximising the commercial use of related natural gas, as a structural criterion for the conception of development projects, namely through:

- development of transportation networks of natural gas from production systems and their integration with supply networks to end clients. For instance, natural gas related to the Tupi project in Brazil, in which Galp Energia participates, will be flowed to the national supply network of Brazil through a pipeline structure with close to 300 km in length (connecting the offshore platform to the shore).

- development of natural gas liquefaction projects. For instance, there are studies under way on the construction of a floating LNG production unit in the pre-salt area of Brazil, which may complete the pipeline network, thereby maximising the commercial use of produced natural gas resources.

3. streamlining of the use of natural gas as an energy source used by mechanical systems (engines, generators, pumps, etc.) of production structures, thereby contributing to reduce flaring.

**1.2 REFINING**

(v.g. Chap. 6)

Capital spending in the conversion projects of both refineries until 2011 to adjust them to the demand for fuel in the market, to increase its energy efficiency and to produce fuel with lower carbon content – hydrocracker diesel – reducing the emission of greenhouse gases in close to 72,000 tCO<sub>2</sub>/year in the consumption for the expected production following the completion of the conversion project.

**1.3 BIOFUEL**

(v.g. Chap. 7)

Reaching in 2020 a 10% replacement in fuels distributed in Portugal by renewable energy sources, and in Spain for road transports, ensuring a minimum reduction of 60% in the equivalent emissions of CO<sub>2</sub> in the life cycle of products.

To this end, an innovative project of integrated fuel production is under way, with the complete control of the value chain, which ensures the fulfilment of the environmental sustainability criteria imposed in the European Union.

Chosen oil crops, as well as adopted biofuel production technologies, will allow CO<sub>2</sub> reductions higher than those imposed by the EU Directive and those obtained by traditional production technologies, reaching a reduction of emissions higher than 60%. Production of

270,000 t/year of technologically advanced biodiesel, without use limits in vehicles and with an energy and environmental performance better than the mineral fuel itself, and 30,000 t/year of other bioproducts, a reduction of 685,000 t CO<sub>2</sub>/year, is expected.

**1.4 FUEL TRANSPORT**

Maximising the use of maritime and rail transport. For instance, biofuels are transported to refineries exclusively by maritime and rail transport.

**1.5 LIFE CYCLE AND CARBON FOOTPRINT**

(v.g. Chap. 6)

Development of analysis models of the life cycle of fuels with the calculation of GHG emissions related to fuel, gasoline and biofuels.

Preparation under way of procedures to collect and treat all indicators of energy consumption and completion of the models of life cycle of fuels, which allow the calculation of the carbon footprint within two years.

**AXIS 2:****Promoting energy efficiency and the integration of renewable energy sources****2.1 REFINING**

(v.g. Chap. 6)



**ACHIEVING IN 2020 A 10% REPLACEMENT OF FUELS DISTRIBUTED IN PORTUGAL BY RENEWABLE ENERGY SOURCES.**

With the ongoing projects until 2012 at the refineries of Sines and Matosinhos, the following results of energy efficiency and GHG reduction are aimed at, in comparison with the base year of 2007:

- reduction of close to 156,000 toe/year of energy consumption, a reduction of close to 400,000

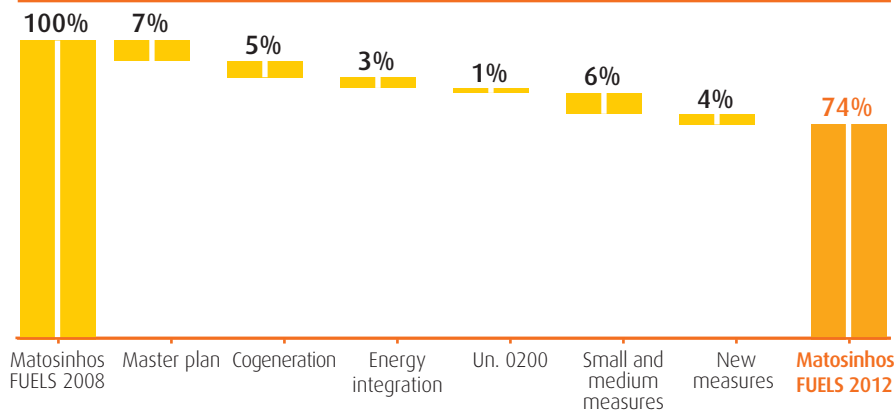
tCO<sub>2</sub>/year, without considering the consumption increase resulting from production increases.

- in terms of compared efficiency and using the concept of Energy Intensity Index (EII), the following outcome was achieved:



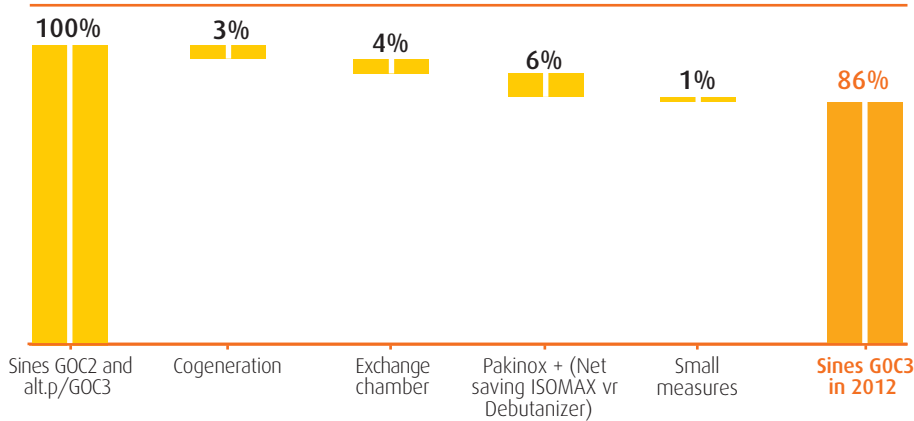
THE TARGETS FOR ENERGY EFFICIENCY IN GALP ENERGIA’S REFINERIES.

Matosinhos refinery



Reduction of 26% in the EII

Sines refinery (given the upgrade to a complexity level of G0C3)



Reduction of close to 14% in the EII

NOTE: EII – Energy Intensity Index of Solomon Associates

## 2.2 NATURAL GAS-FIRED COGENERATIONS

(v.g. Chap. 6)

In addition to capital spending in the cogenerations with gas-fired turbines in both refineries (164 MWe), the goal is to promote partnerships in the funding system with other entities for the installation and operation of natural gas-fired cogenerations in industrial and service units, allowing the reduction of GHG emissions in the Portuguese electrical system as a result of the high performance of those facilities and the use of a cleaner fuel.

## 2.3 NATURAL GAS

(v.g. Chap. 6)

Promotion of the use of natural gas as the cleanest fossil fuel, with the consequent decrease in the emission of GHGs and other pollutants.

## 2.4 FUEL DISTRIBUTION

(v.g. Chap. 6)

Development and extension of the Ecopostos concept to the supply network of Galp Energia and resellers.

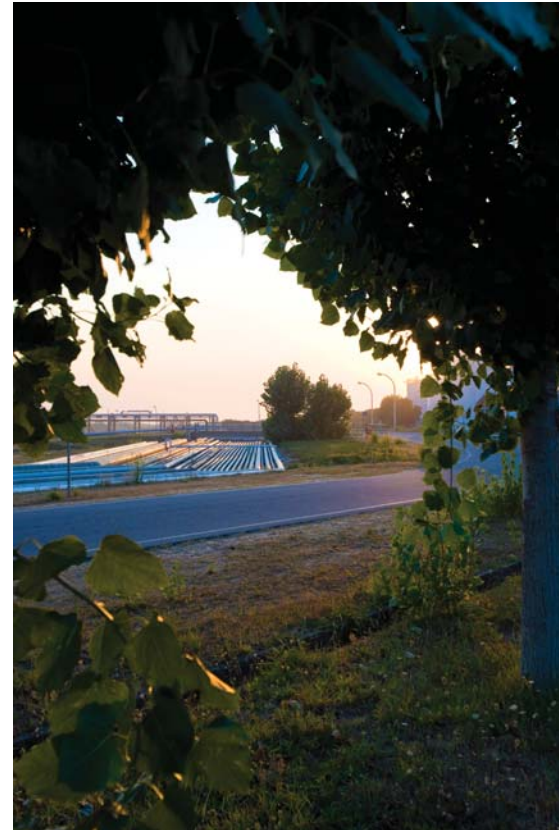
## 2.5 BIOFUELS

(v.g. Chap. 7)

Participating in the fulfilment of the goal of 10% of renewable energy sources for road transport, in accordance to the EU Directive on the promotion of the use of renewable energy sources in the end gross energy consumption, 2009/28/CE of 23 April, fulfilling the legislation of each country where Galp Energia operates as a distributor.

For Portugal, the interim targets are the following:

	Minimum percentage of biofuel in energy content	Biodiesel	Bioethanol
2011 and 2012	5.0%	Achieving 6.75% in content	Ensuring the incorporation of 2.5% of gasoline in energy content
2013 and 2014	5.5%		
2015 and 2016	7.5%		
2017 and 2018	9.0%		
2019 and 2020	10.0%		







## ACTIVE PARTICIPATION IN THE NATIONAL PROJECT FOR ELECTRIC MOBILITY MOBI-E.

For Spain, the indicative target is incorporating 5.9% of biofuel in energy content.

### 2.6 PRODUCTION OF RENEWABLE ELECTRICAL ENERGY

(v.g. Chap.6)

Development in Portugal of Ventinveste's wind projects up to 480 MW, in which Galp Energia has a 49% stake, and solar energy projects.

Programmes for the promotion of energy efficiency in clients.

### 2.7 GALP SOLUÇÕES DE ENERGIA

(v.g. Chap. 6)

Creation of an operational unit specialising in supporting Galp Energia's clients in the optimisation of energy use, thereby promoting energy efficiency and sustainability in buildings and in the industry, contributing to decrease CO<sub>2</sub> emissions, and in the decentralised production of electrical power generated from renewable energy sources.

### 2.8 GALP 20-20-20 PROGRAMME

(v.g. Chap. 8)

Cooperation programme with three universities (IST, UA and FEUP) to allow the training of fellows in energy efficiency processes at buildings and industrial facilities. Since the programme started in 2007, 53 fellows participated in this initiative, who studied in 53 entities. This programme will cover 30 fellows in 30 entities, in 2011.

### 2.9 SMART GALP PROGRAMME

(v.g. Chap. 8)

Developing user-friendly domestic systems of energy management, aimed at being installed in Galp Energia clients. The purpose is using intelligent trifuel meters based on innovative platforms that foster dialogue and interaction with the consumer, revolutionising its direct relationship with energy suppliers.

## AXIS 3

### Actively participating in the development of sustainable mobility solutions

#### 3.1 ELECTRICAL MOBILITY

(v.g. Chap. 6)

Active participation in the Portuguese project for electrical mobility – Mobi-e – ensuring the installation of fast charging points in 20 service stations in the first phase. This project increases the use of electrical vehicles and decreases GHG emissions in the sector.

#### 3.2 NATURAL GAS FOR VEHICLES

(v.g. Chap. 6)

Increase in the use of natural gas in cars, with priority for fleets of public transport of passengers and goods.

#### 3.3 ROAD TESTS OF NEW AUTOMOBILE TECHNOLOGIES AND PARTNERSHIP WITH THE AUTOMOBILE INDUSTRY

(v.g. Chap.6)

Actively promoting partnerships with the automobile industry for testing vehicles with new propulsion

technologies. This way, Galp Energia commits itself to maintain its positioning of energy supplier for mobility.

Currently, there are four prototype vehicles of Toyota Prius Plug-in integrated in Galp Energia's fleet, in road tests and demonstration.

### 3.4 STRATEGIC STUDIES ON MOBILITY (v.g. Chap.6)

Institutional, technical and financial participation in strategic studies on the outlook of new propulsion technologies and the respective supply infrastructure. Active cooperation in the measures to satisfy the 10% target of renewable energy sources in transports, namely in the diversification of those sources and in taxation.

## AXIS 4

**Developing in association with the Scientific and Technological System projects and activities that foster the combat against climate change**

### 4.1 CAPTURE AND STORAGE OF CARBON

(v.g. Chap. 8)

Participation in the COMET project (FP7): study of the possibilities of Capture and Storage of Carbon in Southern Europe and Morocco.

### 4.2 INTELLIGENT MANAGEMENT OF ELECTRICAL GRIDS

(v.g. Chap. 8)

Participation in the REIVE project (RAI): development of a technological platform aimed at identifying, specifying and testing innovative solutions for the active and intelligent management of electrical grids, integrating micro generation and electrical vehicles.

### 4.3 NEW TECHNOLOGICAL INFRASTRUCTURE

Participation in the creation and funding of the Institute of Offshore Energy, which provides scientific and technical support to the development of use systems of wind energy and the energy of waves of the Portuguese coast, through the participation in ENERGYIN (C.T.Energy Hub) and the WavEC (Centre of Wave Energy).

### 4.4 PHD TRAINING IN REFINING

(v.g. Chap. 8 and 10)

Advanced PhD training that generates positive impacts in terms of energy and environmental efficiency in refining within AIPQR (C.T. Petrochemistry and Refining Hub). There are eight research and development projects under way.





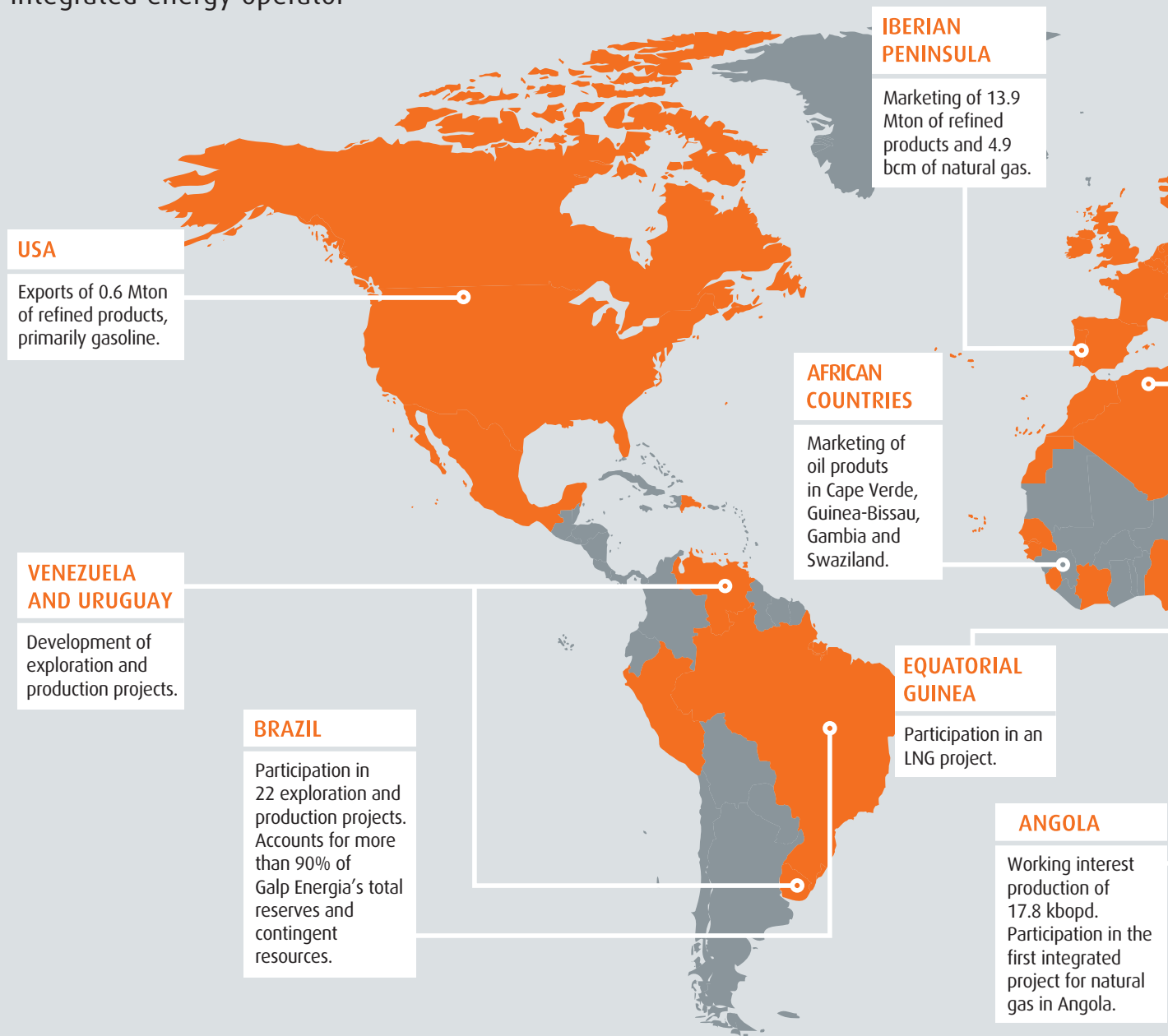


# 05

## AN INTEGRATED ENERGY OPERATOR

THE GREAT SUCCESS OF EXPLORATION IN RECENT YEARS ALLOWED GALP ENERGIA TO ACCUMULATE A RELEVANT RESOURCE BASE OF OIL AND NATURAL GAS, WHICH SUSTAINS ITS POSITION AS AN INTEGRATED ENERGY OPERATOR.





## EXPLORATION & PRODUCTION

**+574 Mboe**  
**NET ENTITLEMENT (NE) 3P RESERVES**

Galp Energia has a portfolio of 44 upstream projects in several geographical areas, in which the assets in Angola and Brazil – in the Santos basin's pre-salt layer – feature prominently.

The Declaration of Commerciality for the Tupi/Iracema project in late 2010 was an important milestone in the execution of the Company's strategy that presages accelerated growth as confirmed by the rise of 539 Mboe in 3P NE reserves.

The production of oil is concentrated on Angola's Block 14, where 17.8 thousand barrels are produced daily. However, the start-up of the pilot project in the Tupi field signalled the rise of Brazil as the focus of the Company's oil and natural gas production.

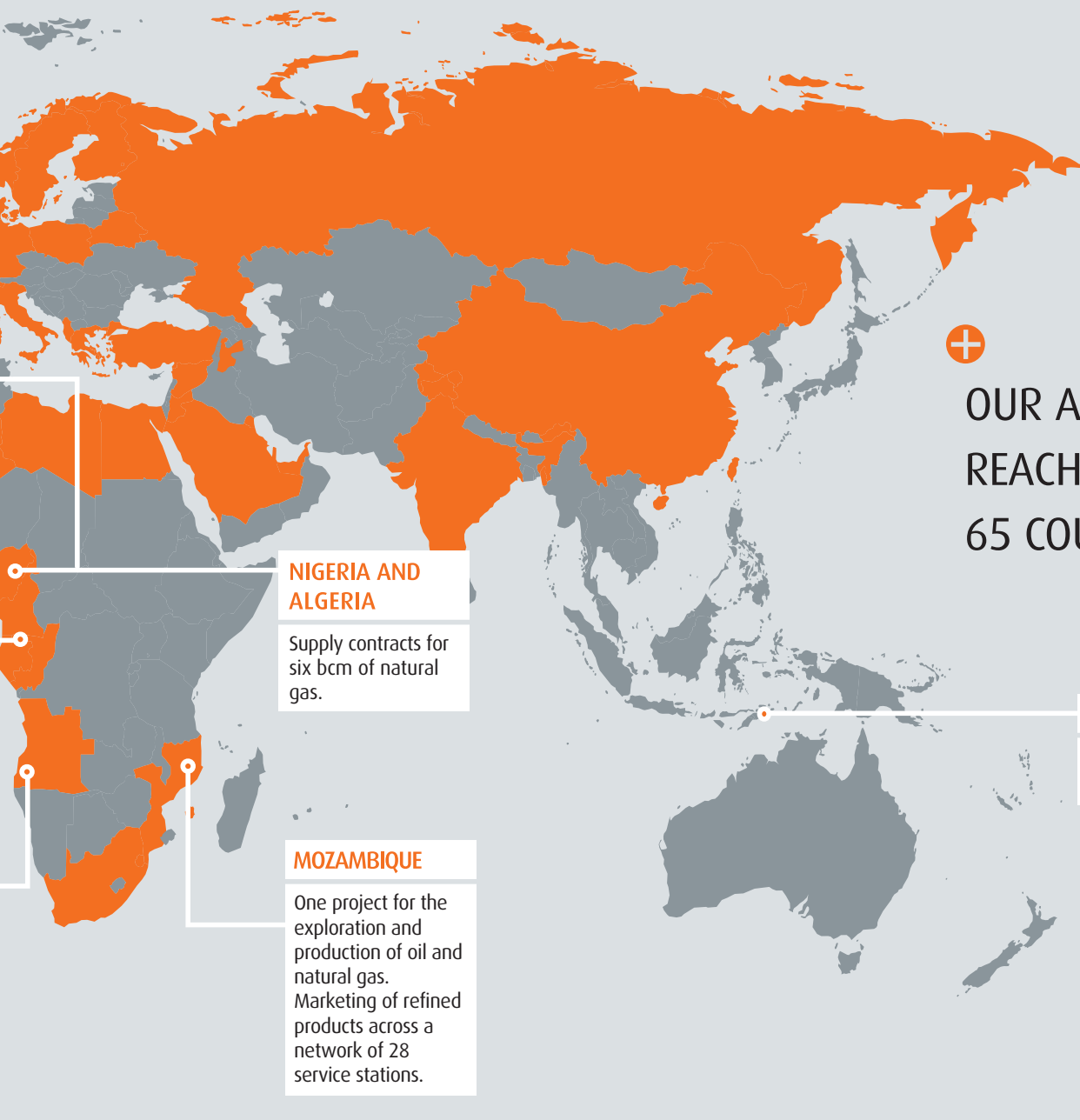
The results of exploration activities in 2010 were highly encouraging and contributed to increase the base of mean unrisks estimate prospective resources to 2,550 Mboe and to the 3C contingent resources of 2,356 Mboe.

## REFINING & MARKETING

**+17.3 Mton**  
**REFINED PRODUCTS SOLD**

Galp Energia's integrated refining base, which is located on Portugal's western seaboard, has a throughput capacity of 310 thousand barrels per day. The Company has an ongoing ambitious project designed to convert its two refineries for the triple purpose of maximising diesel production, raising the utilisation of their refining capacity and optimising the processing of heavy crude oil.





OUR ACTIVITIES  
REACH OUT TO OVER  
65 COUNTRIES

## GAS & POWER

# +4.9 bcm

### NATURAL GAS SOLD

Refined products are primarily marketed in the Iberian Peninsula but also in Africa, with sales to direct clients hitting 11.0 million tonnes in 2010. Exports of 2.8 million tonnes were achieved in 2010 on the back of a stronger position in existing markets and a broader client base.

Important synergies were achieved in 2010 as the former Iberian Agip and Exxon Mobil subsidiaries, acquired in 2008, were fully integrated into the Company.

Galp Energia has secured long-term contracts for the supply of close to 6 billion cubic metres of natural gas – from Algeria, by gas pipeline, and Nigeria by LNG tankers. The natural gas is sold in Portugal and Spain to over 1.3 million customers. In 2010, Galp Energia expanded its activities in Spain by acquiring from Gas Natural Fenosa a portfolio of marketing operations in the Madrid region.

The regulated activity of natural gas distribution in Portugal had an asset base of €1.2 billion.

In 2010, increases in the Company's power operations were driven by the Sines cogeneration plant, with a capacity of 80 MW. This contributed to the 70% increase in sales to the grid and the sale of 1.9 million tonnes of steam to the Sines refinery.

In 2010, construction of the cogeneration plant in the Matosinhos refinery progressed according to plan. Upon completion, Galp Energia's capacity from cogeneration plants will reach 240 MW.



EXPLORATION AND PRODUCTION

SHIPPING



PRODUCTION TARGET  
**200.000 barrels of oil/day**  
Production target 2020

Producing half of the Portuguese consumption

Increasing current production 10 times

THE DISCOVERIES  
**574 million barrels**

of 3P reserves, 16 times increase comparing with 2009.

BRAZILIAN PRE-SALT LAYER  
**3rd company**

developing the oil and natural gas reserves of the Brazilian pre-salt layer (the largest discoveries of the sector in the last 30 years)

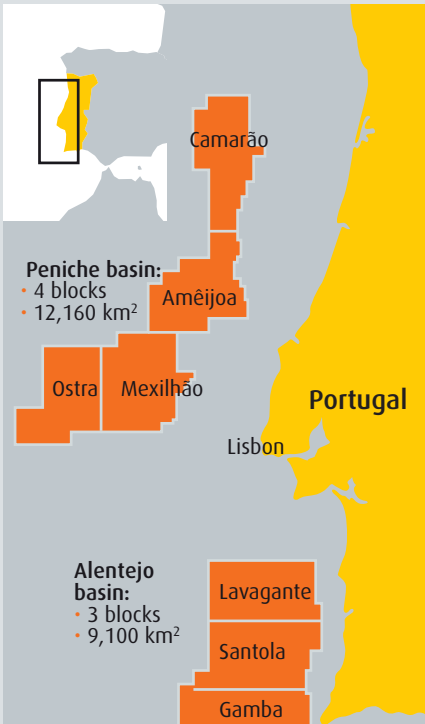


Transportation of commodities to the refineries



PORTUGAL

Oil exploration off the Portuguese coast by performing broad campaigns to obtain seismic information with ships (11,700 km of lines).  
Water depth ranges from 200 to 3,500 metres.



## REFINING



**Galp Energia, through its refining business, has an essential contribution to a broad range of sectors in the Portuguese economy**

Refining capacity of 310,000 barrels of oil per day (the equivalent of the amount of national consumption)

Largest ongoing industrial project in Portugal (capital spending of €1,400 million) in the conversion process of the refineries of Sines and Matosinhos

This project will significantly contribute to the production of 40,000 barrels of gasoline per day, with the consequent reduction of imports and the improvement of the Portuguese trade balance

It will allow the significant increase of the energy efficiency of Galp Energia's refining complex

## REFINING OUTPUTS

Products directly consumed by end consumers

- Gasoline
- GDiesel
- Jet Fuel (aviation)
- LPG (domestic and industry)
- Fuel oil (maritime transport and industry)
- Lubricants
- Bitumen (road construction)

Products that will be incorporated by the petrochemical industry for the production of:

- Textile fibers
- Plastics
- Coatings and insulations



## FUEL DISTRIBUTION

## NETWORK OF STORES

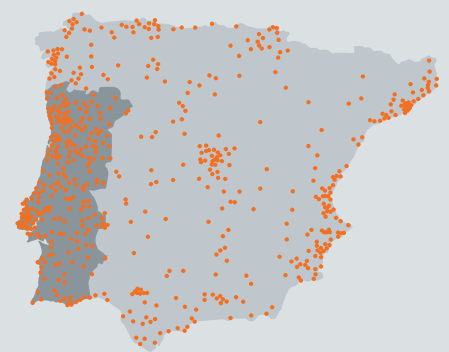
It focuses on a convenience approach, with innovative spaces and a new offer of fresh and high-quality products



**Last generation fuel, tested in the most reputed European laboratories**

**GALP GFORCE** | premium range of high-performance fuel, which increase engine power, reduce consumption and preserve the environment.

**GALP HI-ENERGY** | Fuel with additives for higher efficiency.



Strong presence in the entire Iberian Peninsula  
**Over 1,400 points of sale**, points of sale, providing a broad range of products and services that ease consumers' day-to-day

Galp Energia's distribution network extends to Africa, encompassing **Mozambique, Cape Verde, Guinea-Bissau, Swaziland and Gambia**



WHAT IS GALP ENERGIA’S STRATEGY IN THE ENERGY SECTOR?

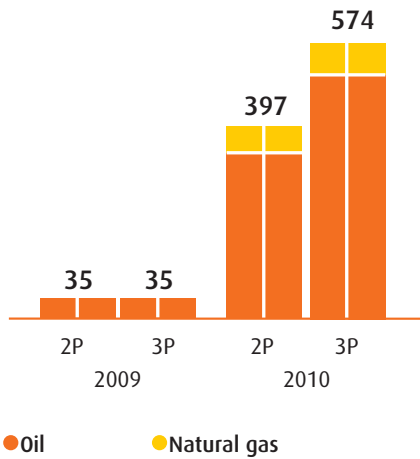
THE EXPLORATION AND PRODUCTION ACTIVITIES IN OIL AND NATURAL GAS

In the Exploration & Production activity, Galp Energia maintained its commitment to ensure new sources of oil and gas supply, highlighting the remarkable developments obtained in the Brazilian pre-salt.

As shown in the chart and the table, Galp Energia tripled in the last four years its base of contingent resources of recoverable hydrocarbons (3C) from 742 Mboe in 2007 to 2356 Mboe in 2010, and reserves (3P) increased 16 times from 35 to 574 Mboe in 2010, due to the success of the campaign of exploration and drilling appraisal in the Santos Basin.

In 2010, Galp Energia’s exploration activity continued to be very intensive in the regions where the Company operates, namely in the Brazilian pre-salt, which positively impacted the transition of contingent resources to proved resources. Galp Energia’s strong focus on the Exploration & Production activity must sustain the progressive increase in reserve volumes and production in the next years.

Net entitlement reserves (Mboe)



Reserves (Mboe)

	Unit	2007	2008	2009	2010
Proved reserves (1P)	Mboe	23	20	25	128
Proved and probable reserves (2P)	Mboe	31	28	35	397
Proved, probable and possible reserves (3P)	Mboe			35	574
Contingent resources (3C)	Mboe	742	2,113	3,065	2,356
Prospective resources	Mboe		1,976	1,640	2,550

GALP ENERGIA PARTICIPATES IN THE LARGEST OIL DISCOVERIES MADE IN THE AMERICAN CONTINENT SINCE 1976 – TUPI PROJECT

The pilot-project of Tupi gives experience in the reservoir management and in production behaviour to optimise production modules to be installed in the Santos Basin.

In October 2010, the FPSO Cidade de Angra dos Reis, the first definitive production system installed in the Tupi area, in the pre-salt of the Santos Basin, came into operation. This FPSO possesses a processing capacity of 100,000 oil barrels per day and 5 million cubic metres of natural gas per day and an injection capacity of 100,000 water barrels per day.

In the initial phase of the pilot-project, nine wells, which will be individually interconnected to the FPSO Cidade de



Angra dos Reis through lines and flexible risers, are expected. At production peak, six oil producing wells, one gas injector well, one water injector well and another well able to inject water and gas alternately will be connected to the FPSO.

Produced oil is flowed through tankers to terminals installed on land and natural gas that is treated, compressed and exported by a pipeline with 217 kilometres of length until the platform of Mexilhão, which operates in a gas field in the same shallow water basin. This pipeline was completed, and the export of natural gas to a gas treatment unit on land through a pipeline with 137 kilometres of length is being tested in order to be treated before being distributed to the consumer market. Part of the natural gas will be used to generate energy on board and will possibly be reinjected in the reservoir during the production process to assess the efficiency of the recovery method through gas injection.

The development of the Tupi area will be executed in strict compliance with the best practices and regulations applicable in terms of Operational Safety and Environment.

The main stages and development principles of the Tupi project were set out to face the main technological challenges of exploration in the Pre-Salt of the Santos Basin.

Given the dimension of the Tupi area, the execution of the development will have the following stages:



- execution of the appraisal plan of the discovery through the interpretation of seismic data, drilling of extension wells and performance of Long Duration Tests (TLD in Portuguese), where production units will be implemented;
- implementation of pilot-projects to anticipate production, test technologies on field scale, appraise the improved recovery process with water injection in carbonates and alternate injection of water and gas;
- projection and installation of production units flexible enough to receive the evolution of the reservoir behaviour throughout the life of the field and, at the same time, robust enough to operate in an optimised manner for many years;

The exploration of the field depends on economic variables and the purpose is to maximise hydrocarbon recovery and to reduce emissions, namely CO<sub>2</sub> emissions to the atmosphere.



**THE MAIN STAGES AND PRINCIPLES OF DEVELOPMENT OF THE TUPI PROJECT HAVE BEEN DEFINED TO FACE THE KEY TECHNOLOGICAL CHALLENGES OF EXPLORATION IN THE SANTOS BASIN'S PRE-SALT.**

**Some of the main technological challenges of exploration in the Pre-Salt of the Santos Basin:**

- Location (close to 300 kilometres away from the coast).
- Depth of ultra-deep water (~2,000 metres) and reservoirs between 5,000 and 6,000 metres.
- Type of reservoir – microbial and heterogeneous carbonate with variable quality, almost unique among reservoirs under production in the world.
- Existence of a thick layer of salt over reservoirs, which must be crossed with maximum safety.
- Presence of variable content of contaminants – mainly CO<sub>2</sub> – in produced fluids. These contaminants led to the need for using special materials in wells and in special projects for lines and risers, which must be qualified.
- Capture of produced CO<sub>2</sub> along with the oil of the reservoir and storage in a safe manner.

**GALP ENERGIA IS THE OPERATOR OF THE ONSHORE PROJECTS IN BRAZIL**

Galp Energia is present, in partnership with Petrobras, in onshore projects in three basins: Sergipe/Alagoas, Potiguar and Amazonas. Galp Energia is the operator of the two blocks it holds in the basin of Sergipe/Alagoas and is the operator of nine of the fourteen blocks where it holds a stake in the Potiguar Basin. Although the onshore operations are not comparable in size to those in the Brazilian offshore, Galp Energia sees its participation not only as a way to acquire experience as an operator but also as a way to increase production levels in Brazil.

For a more detailed description of exploration activities in Brazil, please check the Annual Report 2010.

**ANGOLA**

Galp Energia started its activity in Angola in 1982, in the Safueiro field. Currently, Galp Energia participates in the exploration and production of oil in four offshore blocks – Block 14, Block 14K-A-IMI, Block 32 and Block 33 – and in an integration project of exploration and production of offshore gas with Sonagás. Most of Galp Energia's production comes from its activities in Angola in Block 14, consortium where it holds 9%. This block is composed of five development areas: Kuito, Benguela- Belize-Lobito-Tomboco (BBLT), Tômbua- Lândana, Negage and Gabela. The first three development areas correspond to fields currently under production.

In 2010, Galp Energia had an average working interest production of 19,5 thousand barrels per day, up 25% than in 2009. The BBLT field continued to be the field with more weight,

with 54% of the working interest production of Block 14, with a production of 10.5 thousand barrels of oil per day.

For a more detailed description of exploration activities in Angola, please check the annual report 2010.

## MOZAMBIQUE

In early 2007, Galp Energia entered, through a farm-in agreement, in a consortium that had been formed to explore the area 4 in the Basin of Rovuma, which is operated by Eni. The period of exploration of this area, which is composed of three periods, is expected to end in February 2015.

The seismic interpretation, covering the entire area 4, revealed several prospects with potential above initial estimates, which led to the planning of another campaign of 1,520 square kilometres of 3D seismic, completed in June 2010.

The first well in this area is planned for 2011 and there are no environmental restrictions.

## EAST TIMOR

Galp Energia's participation in the exploration and production activities in East Timor dates back to 2007. The exploration period includes three stages, and it must be completed by November 2013.

The immediate goal of activities is drilling the first exploration well in Block C in early 2011, followed by a second exploration well in late 2011.

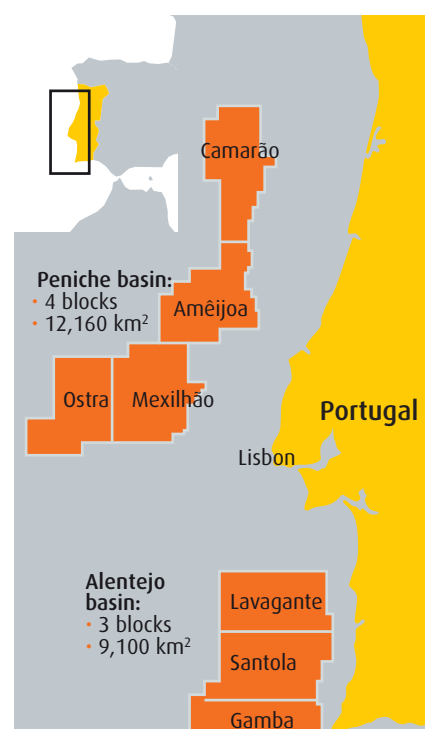
## PORTUGAL

Galp Energia restarted its exploration activities in Portugal in 2007 with the signing of two agreement contracts with the Portuguese state to explore seven blocks, covering an area of 21,258 km<sup>2</sup> and two basins: the basin of Peniche and the basin of Alentejo. These activities aroused the interest of the public opinion, the authorities and the Portuguese scientific community itself.

### BASIN OF ALENTEJO - GAMBA, LAVAGANTE E SANTOLA BLOCKS

In 2010, the operation of the three blocks of the Basin of Alentejo was transferred to Petrobras, which holds a 50% stake. Galp Energia increased its holding to 50%.

In 2010, geological and geophysical studies were performed with a view of identifying and assessing the potential prospects that may be subject to a 3D seismic acquisition in 2011. Collected data will be subject to seismic processing during 2011.







**BASIN OF PENICHE – CAMARÃO,  
AMÊIJOA, MEXILHÃO E OSTRÁ BLOCKS**

As scheduled, the bidding process for 3D seismic acquisition located for blocks Ostra and Mexilhão, which must be completed in January 2011, took place in early 2010. The area has approximately 2,096 km<sup>2</sup> and is located in blocks Ostra and Mexilhão in a water depth between 600 and over 3,000 metres. This area is located at close to 67 kilometres west of Lisbon and the seismic acquisition started on 20 September 2010. Seismic processing of this data will extend beyond the third quarter of 2011, and the start of its interpretation and integration in geological studies is planned for late 2011.

**URUGUAY**

In 2009, Galp Energia participated in the first round of bidding for offshore licences in Uruguay. The areas 3 and 4 of the Punta del Este basin were awarded to the consortium where Galp Energia participates.

Galp Energia participates with 20% in the consortium, along with Petrobras (40%) and Repsol YPF (operator, with 40%).

The year 2010 focused on 2D studies and interpretation. The consortium will continue the studies in 2011 to decide the future 3D seismic acquisition.

**VENEZUELA**

In 2010, Galp Energia kept its partnership with Venezuela's state-owned oil company PDVSA in both the project for certification of reserves in Block Boyacá 6, located in the Orinoco oil belt, and the LNG projects that will draw on the natural gas from the exploration fields on the Deltana and Mariscal Sucre platforms.

## LNG PRODUCTION IN GALP ENERGIA – REDUCTION OF CARBON INTENSITY IN THE ECONOMY

Galp Energia took on vertical integration in the area of natural gas as a target of its Strategic Plan, having been set out the goal of obtaining enough resources to ensure the supply to clients located in the Iberian market.

Considering the distance between the Iberian Peninsula and the countries that produce natural gas, the best solution consists of participating in production projects of Liquefied Natural Gas (LNG). With LNG, it is

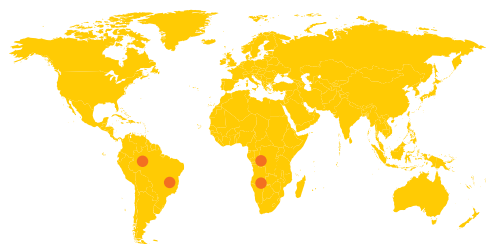
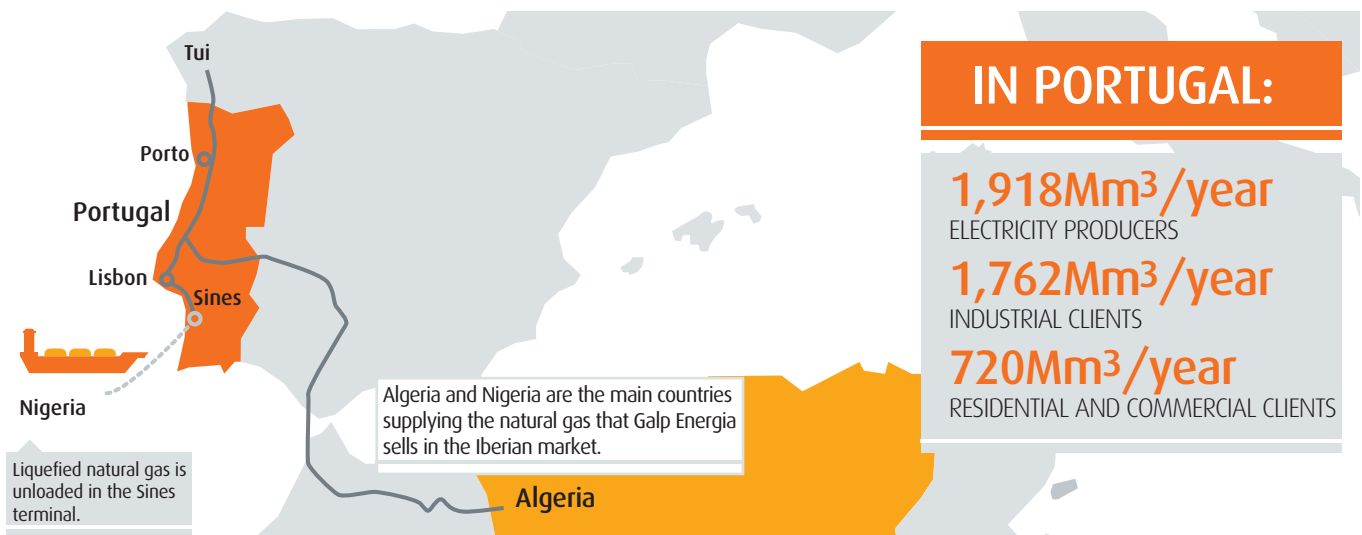
possible to supply natural gas to clients located at large distances of production sites, which could not be supplied by pipelines – the traditional solution – due to economic reasons.

# 40%





**NATURAL GAS**

Emissions per unit of energy produced based on natural gas account for close to 40% and two thirds of emissions from energy production based on coal or oil, respectively.

### Natural gas



Galp Energia participates in the study and development of projects of production and liquefaction of natural gas in several parts of the world.

Brazil	Angola	Venezuela	Equatorial Guinea
			
<b>Santos basin</b> A partnership with Petrobras to build a floating platform of natural gas liquefaction which may be the first unit of the kind to operate in the world.	<b>LNG II</b> The first integrated project of exploration and production of natural gas in Angola.	<b>Delta Caribe</b> 1 production unit of liquefied natural gas (gnl).	<b>Project 3G</b> Guinea Gas Gathering: collection and liquefaction system of natural gas produced in the country for exportation.

### A PORTFOLIO OF NATURAL GAS PROJECTS

The E&P activities in the Santos basin in Brazil may contribute to the goal of obtaining enough resources to supply the clients of the Iberian market, since significant amounts of natural gas are produced during oil production. This fact led to the recognition of the need for building infrastructure able to flow produced natural gas. The construction of several transport networks of gas is scheduled and a project for the construction of a floating LNG production unit, pioneer in the world, is under way. Recently, the phase of base engineering was completed, which consisted of the draft of three projects (FEED) within a tender launched to find the best solution, both technically and economically.

In 2011, the best option for flowing gas from the pre-salt of the Santos basin will be identified. If the FLNG project wins, the launch of the

tender for the construction and operation of the LNG unit will be decided.

Galp Energia also participates in two other natural gas projects in Africa, namely in Equatorial Guinea and Angola.

The project in Equatorial Guinea includes the construction of a system for collection, transportation and liquefaction of gas from several fields. Part of the gas that will be collected is currently burnt and, as a consequence, the project has environmental benefits.

The project in Angola, Angola LNG II, may be the first integrated natural gas project in Angola, which is in the exploration phase through the execution of the first exploratory well. The identification of enough resources to build a natural gas liquefaction unit is expected.

## GALP POWER IN THE TRADING OF POWER AND CO<sub>2</sub> LICENCES

### POWER TRADING

Complying with one of the Group's values, client focus, and aiming at being a multi-energy supplier, the process of strategic definition of the power trading activity in Galp Energia through Galp Power started in late 2009.

Under the development of the diversification strategy of its electricity offer, Galp Power assumes itself as a national alternative to electricity trading and aims at operating in the entire value chain in an integrated manner.





In 2010, Galp Power included in its portfolio a number of industrial and service clients, besides the Group's own facilities, which account for 44,924 MWh of annual consumption.

Currently, Galp Power focuses its sales approach on the set of Galp Energia's corporate clients of natural gas to sign multi-product contracts.

In the future, the goal is to keep increasing the number of clients and supplying power in all voltage levels.

### TRADING OF POWER AND LICENCES OF CO<sub>2</sub> EMISSIONS

In 2010, Galp Power, according to Galp Energia's positioning strategy

as a supplier of integrated energy solutions, created a department for trading power and licences of CO<sub>2</sub> emissions. The goals are creating conditions for the development of the electricity market to defend the natural gas client base in the scenario of a deregulated market and to centrally manage Galp Energia's portfolio of licences of CO<sub>2</sub> emissions, ensuring efficient management.

Galp Power is ready to trade licences of CO<sub>2</sub> and power, with physical delivery at the Portuguese, Spanish and French power markets, and in the German market. Galp Power is a member of the following exchanges: OMEL, OMIP, EPEX, EEX and ICE/ECX.



**GALP POWER FOCUSES ITS MARKETING ACTIVITY ON A NUMBER OF GALP ENERGIA'S BUSINESS CLIENTS OF NATURAL GAS TO SIGN MULTI-PRODUCT CONTRACTS.**





# 06

## ENERGY EFFICIENCY AND SUSTAINABLE MOBILITY

A SUSTAINABLE SOCIETY  
MUST BE BASED ON  
STANDARDS OF ENERGY  
CONSUMPTION AND  
EFFICIENT MOBILITY WITH  
LOW ENVIRONMENTAL  
IMPACT. GALP ENERGIA  
RESPONDS TO THIS  
CHALLENGE BY INVESTING  
IN INNOVATIVE SOLUTIONS.





# ENERGY EFFICIENCY

## ENERGY EFFICIENCY IN REFINERIES

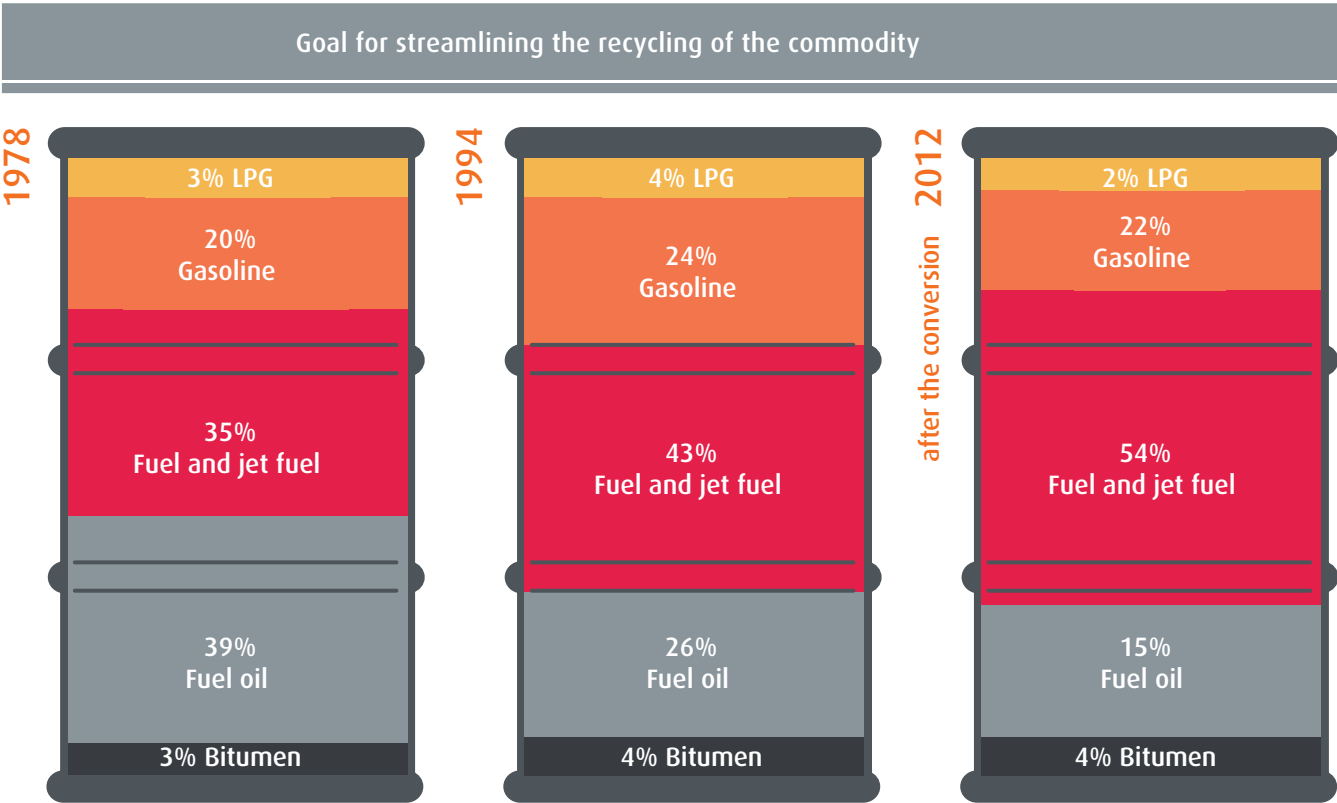
In addition to streamlining the use of the commodity, with higher capacity of diesel and higher flexibility in the selection of crude, the conversion project of the two refineries, which was started in 2008, aimed at achieving higher energy efficiency in its operation.

This improvement is also a consequence of the change from fuel to natural gas in several units,

such as the new natural gas-driven cogenerations and the steam reformers for hydrogen production.

As a result, there will be a significant decrease in the emission of greenhouse gas emissions and other effluents, answering the need for approximating the refineries' consumption and emissions to those of peers and decreasing the amount of emission licences to be acquired, by auction, in the new period that will start in 2013, following the end of the validity of the Kyoto Protocol.

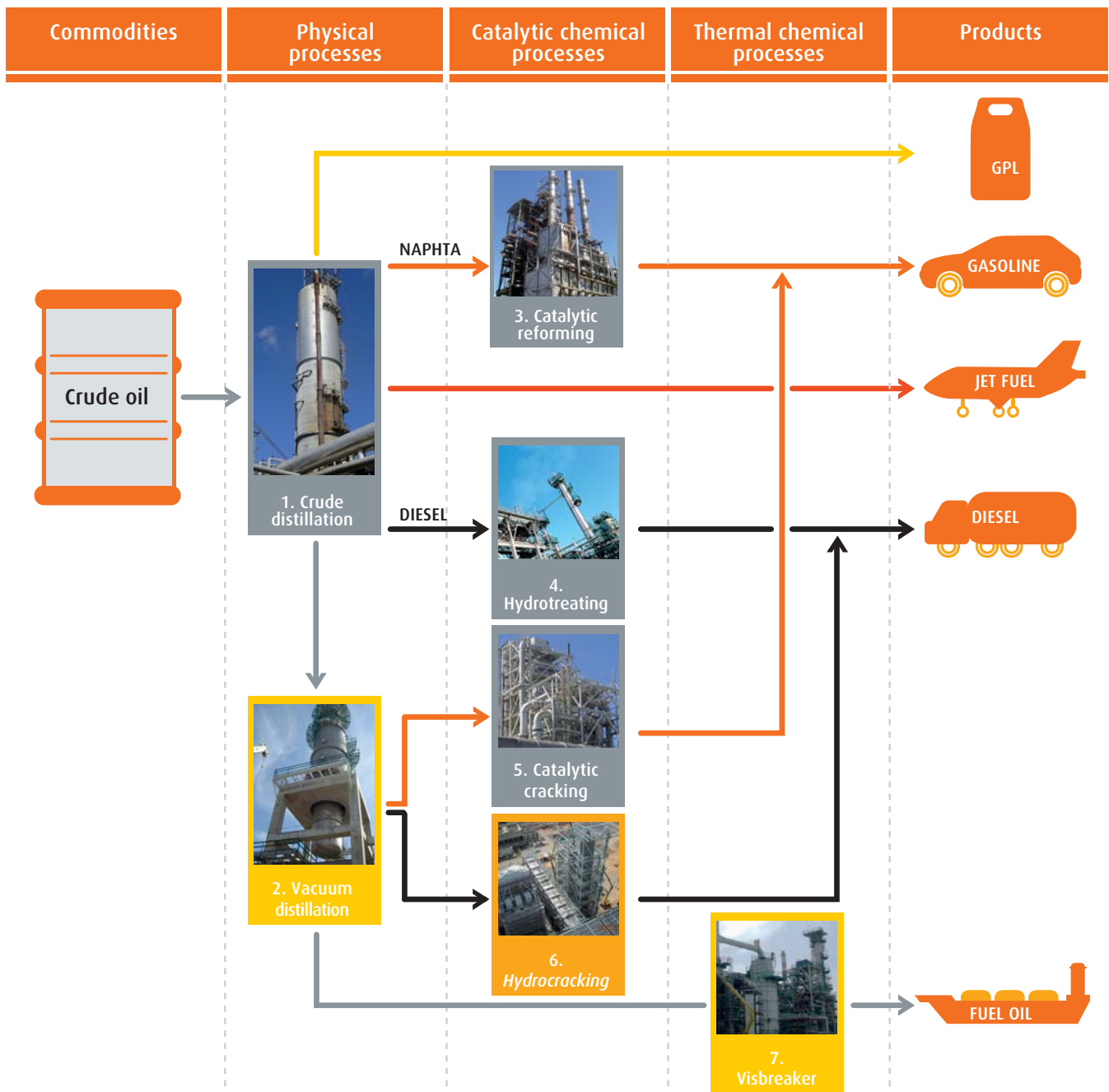
### Ongoing conversion project in refineries: the new industrial units in Sines and Matosinhos



Need to adjust Galp Energia's refining complex to the evolution of the fuel market.

**Trends in Europe:**

- In the last 10 years, demand for diesel in Europe increased by 40% while consumption of gasoline went down by 20%.
- Gradual replacement of fuel by cleaner and more environmentally-friendly fuel.
- Galp Energia is investing in the conversion project of its refineries by adjusting its activities to new market demands.



- Units under construction - Matosinhos; similar units are already operating in Sines (figures 2 and 7)
- Existing units
- Units under construction - Sines (figure 6)

**PHYSICAL PROCESSES:** Operations exclusively involving physical separation without transformation of commodities on the molecular level.

1 • **Crude distillation:** Crude separation following the order of boiling temperatures. Lighter compounds (LPG, gasoline) go out through the top and heavier compounds (diesel, fuel oil) go out through the bottom of the column.

2 • **Vacuum distillation:** Separation under vacuum of crude's heavier components. It obtains cargo for catalytic cracking for the Hydrocrack. The new unit of the Matosinhos refinery is under construction. A unit with the same characteristics is already operating in the Sines refinery.

**CATALYTIC CHEMICAL PROCESSES:** Chemical transformations that allow the change of the intrinsic properties of the several crude fractions. The reactions are triggered by a catalyst, a substance that accelerates desired transformations, without being consumed during the process.

3 • **Catalytic reforming:** Chemical process that allows the increase in the insaturation in the distillation of crude and, this way, increases the index of octane of gasoline. During this stage, significant amounts of hydrogen are also produced. Sulphur contained in naphtha is removed during pre-treatment (maximum content of sulphur in gasoline: 10 ppm).

4 • **Hydrotreatment:** Stage aimed at eliminating sulphur contained in diesel under hydrogen pressure. The specification for road diesel in Portugal is only 10 ppm. Diesel obtained from crude distillation has content that may be up to 1,000 times higher.

5 • **Catalytic cracking:** Catalytic conversion stage aimed at producing gasoline from a heavy fraction of crude with low valued added. Gasoline produced needs a posterior stage of hydrotreating to fulfil the sulphur specification.

6 • **Hydrocracking:** Catalytic conversion stage under hydrogen pressure that mainly produces diesel from the most heavy fractions of crude. The new unit is under construction in the Sines refinery.

**THERMAL CHEMICAL PROCESSES:** Chemical transformations exclusively triggered by heat.

7 • **Visbreaking:** Thermal conversion that decreases the viscosity of the fuel oil produced in the vacuum distillation. The new unit of the Matosinhos refinery is under construction. A unit with these characteristics is already operating in the Sines refinery.



Upgrade works at the Sines refinery.



**OVER 3 MILLION WORKED HOURS WITHOUT PERSONAL ACCIDENTS AT MATOSINHOS REFINERY.**

The execution of the investment project proceeded in 2010 at the expected pace and without serious accidents, highlighting:

**IN THE MATOSINHOS REFINERY:**

- the delivery of the new vacuum distillation unit and visbreaker, which will be commissioned in the first quarter of 2011 and whose start of production is planned for the following quarter;
- the completion of the new auxiliary units of Logistics, Desulfurization, Treatment of Acid Waters and Sulphur Recovery and its delivery for commissioning is expected for the first quarter of 2011;
- the completion of the interconnections to the Refinery during the scheduled stop of the refinery in the fourth quarter of 2010.

The construction of the new cogeneration plant, whose start of operations is scheduled for the second quarter of 2011, was started in April.

Over 3 million worked hours without personal accidents.

**IN THE SINES REFINERY:**

The Sines Refinery is being built as planned. The delivery to the Refinery to start commissioning activities is expected for the third quarter of 2011.

The connection of the Substations of the new units to the internal supply grid at 150 kV happened in January 2011. Many mechanical connection activities of new units to those already existing will take place during the Refinery's expected stop period, which occurred in early 2011.

Over 4 million worker hours without serious accidents.

The natural gas-driven cogeneration plant is in full operation since October 2009. Under the management of the refinery itself, the cogeneration plant has received general satisfaction.



**OVER 4 MILLION WORKER HOURS WITHOUT SERIOUS ACCIDENTS AT SINES REFINERY.**



As a consequence of these projects, taking the year 2007 as a benchmark and not considering the increases in consumption due to the production increases expected after 2012, the following is expected for both refineries:

- reduction of 15% in energy consumption, or close to 156,000 toe/year;
- reduction of close to 400,000 tCO<sub>2</sub>/year of CO<sub>2</sub> emissions.

There will also be savings of fuels and emission licences, in addition to the increase in reliability and availability.

Hence, it will be possible to improve compared efficiency and the Energy Intensity Index (EII) of refineries, as a consequence of the upgrade of the refining systems, as shown in the graphs:

At this refinery, new energy efficiency projects will be added to the ongoing conversion, namely:

#### The installation of variable speed drives (VSD)

Pumps with VSD are still underused at refineries. However, refineries with high variability of loads, as is the case with this, are adequate to implement this technology.

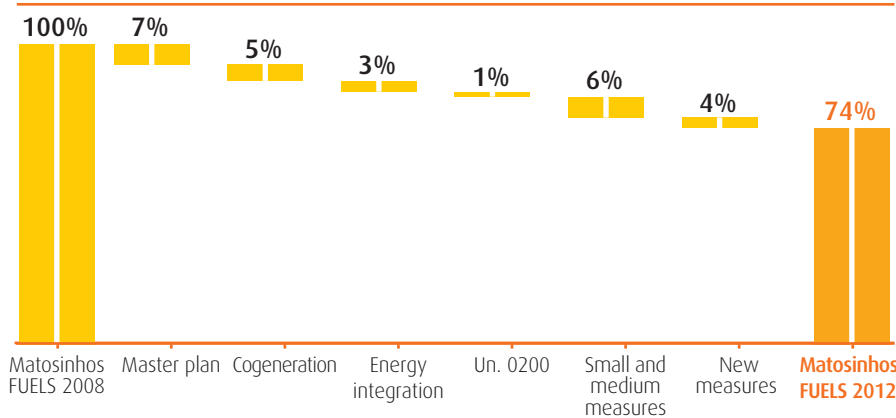
#### The revamp of air distribution in crude oil ovens (CC-H1A/B)

Installation of an automatic control system achieving the optimal excess air in each burner (O<sub>2</sub>=3%). The control technology of burning conditions is recent.

#### The pre-heating of air in the platform oven (PP-H3)

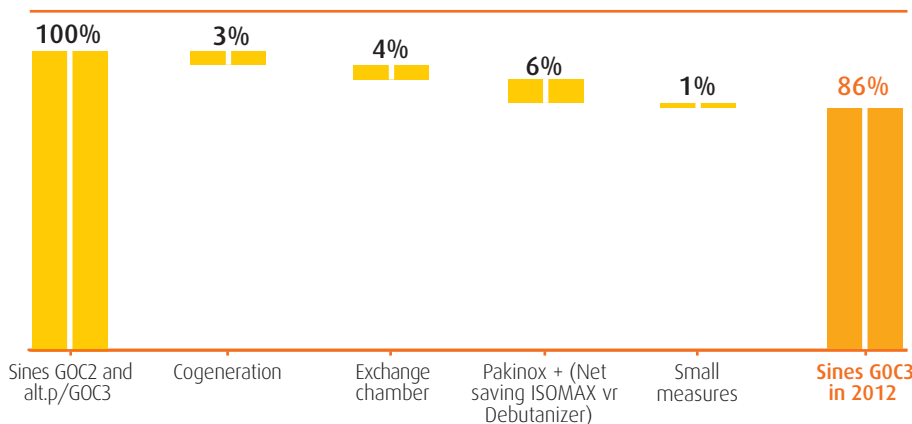
Set-up of a system for pre-heating burning air in oven PP-H3.

#### Matosinhos refinery



Reduction of 26%.

#### Sines refinery (given the upgrade to a complexity level of G0C3)



Reduction of close to 14%.

NOTE I: EII – Energy Intensity Index of Solomon Associates

NOTE II: This Energy Intensity Index (EII), created by Solomon Associates, compares the consumption of primary energy sources of a refinery with the consumption of a benchmark refinery with similar complexity and measures its energy performance. The decrease in the EII leads to lower energy consumption for the same level of production and accounts directly for a relative reduction of both GHG emissions and regulated pollutants.



STAKEHOLDERS

WHAT IS THE EVOLUTION OF GALP ENERGIA’S ECOLOGICAL FOOTPRINT?

CALCULATION OF THE CARBON FOOTPRINT OF GASOLINE AND DIESEL

Galp Energia developed a method and a model for calculating greenhouse gas emissions generated during the life cycle of fossil fuels.

The Life Cycle takes into account the environmental impacts of the entire life of a product, from the origin of the commodity until the end use of the product. This cycle is named Well-to-wheel.

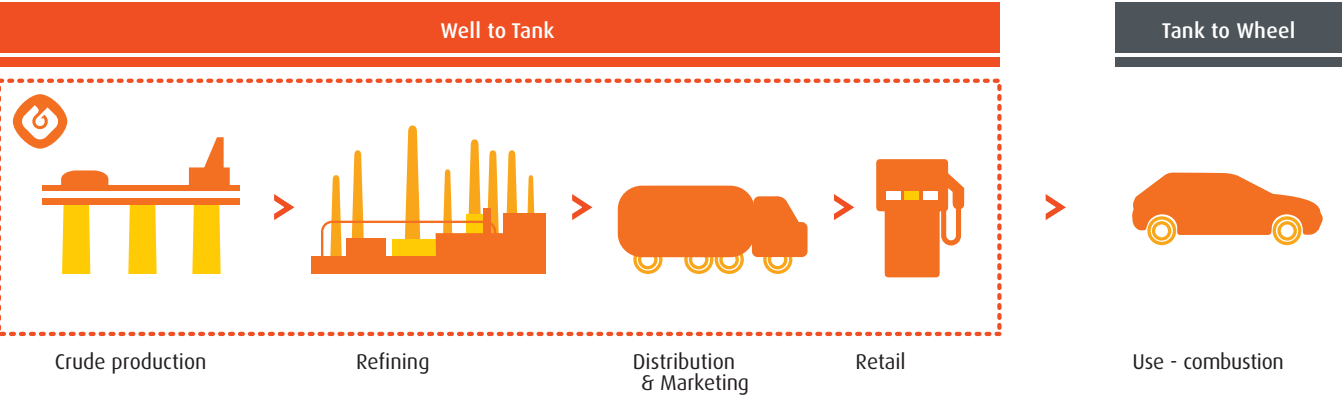
Concerning the fossil fuel, emissions generated in the extraction of crude, in transportation, in refining, in fuel distribution and in combustion were considered.

The study included the comparison of software systems and databases and the counting of the emissions from the life cycle of Galp fuels and gasoline. Some critical limitations to this calculation were identified, such as:

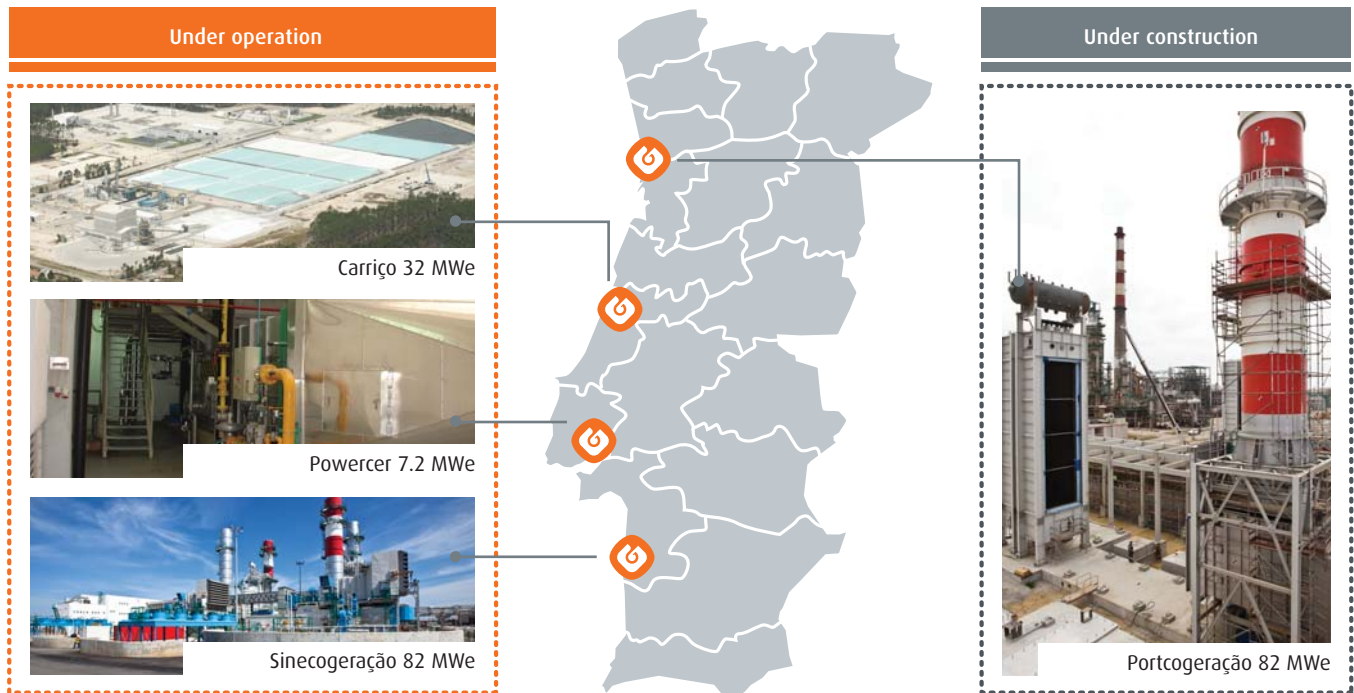
- the absence of official European criteria for the development of the methodology;
- the existence of databases with very different amounts for the emissions of crude exploration and production;
- the difficulty in the determination of the amounts to be used for the imports of intermediate and end products.

The calculations identified the most important points for the reduction of footprint and checked that the data of Galp fuels is in accordance with European averages.

Galp Energia committed itself to collect and treat, within two years, all energy consumption indicators to complete the calculation of its carbon footprint.



## Cogenerations



## THE COGENERATION PLANTS AS CAPITAL SPENDING OF HIGH ENERGY EFFICIENCY

Galp Power operates the cogeneration plants belonging or majority owned by the Galp Energia Group. Its first plant started operations in 2004 and, since then, the company developed its know-how in the project, the licencing, the construction, the operation and the maintenance of cogeneration plants.

The Powercer plant, which supplies saturated steam to the facilities of Sociedade Central de Cervejas, and the Plant of the Carriço Cogeração, which supplies hot water to the salt factory of Renoeste, are part of this group. In November 2009, the Sinecogeração plant, which supplies overheated steam to the Sines refinery, came into operation.

Overall, the installed electrical capacity of 121.2 MWe, allowing an annual production of approximately 933 GWh, which corresponds to 348 Mm<sup>3</sup> of natural gas consumption.

Galp Power holds a 35% stake in the cogeneration plant of Energin, which has an installed power of 42 MWe and supplies high-pressure overheated steam to Solvay's chemical process.

In 2011, steam production of both refineries will be based on cogeneration systems with natural gas burning, which will substitute to a large extent current fuel boilers.

With the coming into operation of Portocogeração in the second half of 2011, an increase of 670 GWh in power generation and of 270 Mm<sup>3</sup> in gas consumption is expected.

The Portocogeração Plant is similar to the plant of Sinecogeração, which will



**IN 2011, STEAM PRODUCTION OF BOTH REFINERIES WILL BE BASED ON COGENERATION SYSTEMS WITH NATURAL GAS BURNING, WHICH WILL SUBSTITUTE TO A LARGE EXTENT CURRENT FUEL BOILERS.**





THE START OF OPERATIONS OF THESE PLANTS MAKES GALP ENERGIA THE OPERATOR OF THE TWO LARGEST COGENERATION PLANTS IN PORTUGAL.

supply overheated steam to the Matosinhos Refinery, improving its energy performance.

Comparing the production of both electrical and thermal energy by the cogeneration with the same production through the conventional methods, it was found that there are high gains of energy efficiency and reduction of CO<sub>2</sub> emissions and other pollutant gases.

In the case of Portcogeração, to reach the expected production of power and thermal energy, a reduction of close to 18% in primary energy is expected. Overall, emissions of close to 526,527 tCO<sub>2</sub>/year, in the whole country, will

be avoided in comparison with the separate production of the same amounts of steam and power.

The start of operations of these plants makes Galp Energia the operator of the two largest cogeneration plants in Portugal.

Concerning power generation, the three facilities avoided the emission of 730,000 tonnes of CO<sub>2</sub> in 2010 in the Portuguese electroproducing system, by replacing close to 900 GWh produced in conventional thermal power stations for a correspondence of 750 gCO<sub>2</sub>/kWh.

Performance in 2010

	Carriço	Powercer	Sinecogeração	Total 2010
Installed electrical power (MW)	32	7,2	82	121.2
Natural gas consumption (Mm³)	52.6	15.6	251.9	320.2
Thermal production (GWh)	250	98	1,666	2,014
Electrical energy generation (GWh)	206	30	661	897
CO <sub>2</sub> emissions (t)	112,925	33,552	549,012	695,488



Soluções de Energia



Commercial brochure of Galp Soluções de Energia

GALP SOLUÇÕES DE ENERGIA

Galp Soluções de Energia (GSE), a unit created in 2009, specialises in the development and implementation of technological solutions and integrated services of energy efficiency, focusing on renewable energy sources. This unit provides Galp Energia’s clients with a wide range of services especially designed to meet the needs of the segments of industry, buildings and transport in the Portuguese market.

In 2010, the first year of operations of this unit, several activities were undertaken, namely the presentation and communication to the market and the organisation and launch of the actual provision of services included in the offer.

GSE's public presentation took place in an event on 24 March 2010. To promote its activity, there were two seminars targeted at some client groups and at close to 100 meetings to present and train close to 75 managers from some of Galp Energia's main clients.

With the purpose of adjusting the offer to the needs of the market segments, standard proposals of integrated solutions were created, whose implementation is technically and economically viable and allows clients to significantly improve its operating conditions regarding energy efficiency. In this context, the concepts of the Sustainable Campus, the Energetically Efficient Hotel and the Energetically Efficient Parking were created.

GSE developed its first electrical power station, which is expected to have an annual production of 157,000 kWh and have a global production of close to 2,200,000 kWh.

#### **SUSTAINABLE CAMPUS:**

In order to strengthen the cooperation with the academic world, GSE created the Sustainable Campus concept. This concept aims at helping universities achieve energy efficiency standards in line with the best practices of international university campuses, as well as stimulate the autonomous production of energy through renewable sources. Its implementation leads to the performance of an energy diagnosis



Galp Soluções Energia presentation.

especially designed from the outside to provide a detailed characterisation of the structure of the energy consumption of the Campus and an identification of the improvement measures of its energy performance. The practical application of this concept started at the Universidade de Aveiro. Galp Energia signed an agreement with this university in November. This project will intervene in a set of 47 buildings that occupy a total useful area of 120,000 m<sup>2</sup>. The agreement also comprises the set-up of a laboratory for energy efficiency that contributes to the creation of a R&D unit at the Universidade de Aveiro to develop skills in areas such as the dynamic simulation of the thermal behaviour of buildings.



**THIS PROJECT WILL INTERVENE IN A SET OF 47 BUILDINGS THAT OCCUPY A USEFUL FLOOR SPACE OF 120,000 M<sup>2</sup>.**





#### ENERGETICALLY EFFICIENT HOTEL:

Galp Soluções de Energia created this concept taking into account the particular characteristics of the hotel segment. The application of energy efficiency solutions and the autonomous production of energy in this segment are particularly important, since this segment has high energy needs, mainly in heating, ventilation, air conditioning, production of hot water and lighting. This concept was applied to a project in Hotel Corinthia Lisboa, which is one of the largest hotels in Lisbon, having 518 rooms.

example in the efficient use of energy, namely for lighting and ventilation, as well as in the use of renewable energy sources, particularly for loading electrical vehicles. An agreement was signed with EMEL for the development and implementation of this concept.



In addition to the provision of several energy and training services on energy efficiency, many of which were jointly purchased with the offer of other Galp Energia business units, GSE developed other projects, highlighting the following:

#### ENERGETICALLY EFFICIENT PARKING:

This concept, which was developed to promote energy efficiency and sustainable mobility, aims at creating car parks that are an



## NATURAL GAS AND ENERGY EFFICIENCY

Under Galp Energia's strategy for climate changes, the importance that the supply of natural gas to a high number of clients has to reduce GHG emissions from end consumption, namely domestic and industrial facilities, was confirmed.

### SET-UP OF NEW HIGHLY PRODUCTIVE BOILERS

Directive n.º 2006/32/CE, of the European Parliament and the Council, of 5 April, on the efficiency of the end use of energy and energy services, is adopted to the Portuguese law by the government decree 319/2009, of 3 November.

The EU Directive sets out that the member states must create conditions for the promotion and development of the market of energy services for the development of improvement measures of energy efficiency aimed at end consumers.

It is under the context of the promotion of consumption efficiency that Galp Energia is preparing the launch of a Plan for Boiler Renovation in 2011 and 2012 close to domestic clients with natural gas-driven boilers, typically with over eight years. The goal is to replace conventional boilers by wall condensing boilers, fostering solutions that promote safety and energy efficiency in natural gas use, through:

- awareness of natural gas consumers for energy efficiency and safety of equipments and facilities;

- replacement of facilities installed by more efficient equipment, ensuring the inspection of the facilities that use natural gas.

In 2010, the selection of partners was started – boiler manufacturers and communication companies – was started, along with Galp Energia, to launch the plan in 2011 and 2012.

### CLIENT SUPPORT IN ENERGY EFFICIENCY

The use of a cleaner fuel will not be enough for Portugal to comply with the reduction targets of GHG, both in the current period of the Kyoto Protocol and in the following periods. Galp Energia aims at encouraging its customers to use natural gas in an efficient and rational manner in all circumstances.

Continuing programmed activities, the following initiatives were undertaken in 2010:

- the performance of an energy audit in the facilities of a pharmaceutical company, with a detailed characterisation of the energy use mode in the installation and draft of the plan for Rationalization of Energy Consumption (PREn in Portuguese);
- the organisation of three thematic initiatives on Energy Efficiency in the ceramic and food sectors, aimed at fostering the awareness of the employees of companies operating in those sectors for the importance that simple routines have in the efficient use of energy;
- the performance of 11 thermographic analysis in customers of the ceramic

and textile sectors. Thermography is a technology that captures the thermal radiation emitted by a body (industrial equipment) and converts it into an image representing the distribution of surface temperature allowing the identification of thermal isolation faults in equipments and tubings or abnormal heating due to electrical defects. The implementation of good preventive maintenance practices translated into both a reduction of energy losses and a more rational use of energy.

Other initiatives related to safety were developed, which will have effects on the rational use of natural gas, even indirectly:

- the draft of two Handbooks of Protection Against Explosive Atmospheres respecting the ATEX Directives in clients of the paper and aluminium sectors. The measures to be implemented aimed at protecting the health of employees exposed to risks from explosive atmospheres;
- the performance of 22 inspections that receive natural gas to check its state of conservation and the fulfilment of legal requirements in clients of the ceramic, textile, glass, services, sport and steel sectors;
- the organisation of 14 thematic initiatives for the industrial clients of natural gas from ceramic, glass and automobile sectors to raise the awareness of the clients' employees for safety procedures related to the use of natural gas as well as to the operation of the Natural Gas Receiving Facilities.

## ECO POSTO - ORANGE

In 2010, the Eco Posto concept was expanded in Galp Energia's reseller network in the entire country.

Started in 2009, the Eco Posto project, whose purpose is developing and implementing measures of energy optimisation, was integrated in the action plan for the Orange project, which is under way and is applicable to the Tangerina shops in service stations.

This decision led to the use of operational synergies and combined refurbishment components of the shop's concept with the reduction of energy consumption in 23 more service stations of Galp Energia's own distribution network during 2010. The concept was also expanded to Galp Energia's reseller network in 12 stations distributed from North to South of Portugal, reiterating the company's positioning in the sharing of solutions and training with its business partners.

In the 12 own service stations affected in 2009 and where photovoltaic micro-plants of 3.6 kW were installed, production reached 63,538 kWh in 2010. Solar thermal energy used for hot water must also be considered.





## ENERGY FOR SUSTAINABLE MOBILITY

**Under electrical mobility, Galp Energia aims at asserting itself as an operator of charging infrastructure and as a marketer of mobility solutions.**

Galp Energia gives great importance to partnerships with the automobile industry for testing vehicles with innovative technologies, since it is committed to sustain the positioning of universal supplier of energy for mobility throughout the next decades.

### PHEV PROJECT WITH GALP ENERGIA

In late 2009, Galp Energia signed an agreement with Toyota Motor Europe and Toyota Caetano Portugal through which it became the partner in Portugal for the performance of road tests of the prototype vehicle Toyota Prius Plug-in.

It is a technological innovation that relates the full-hybrid concept to the possibility of electrical charging from the grid (PHEV – Plug-in Hybrid Electric Vehicle). In this way, vehicles will have an electrical autonomy up until 20 km, if they only use the electrical engine of 60 kW, and will have both a gasoline-driven internal combustion engine of 73 kW with 1,800 cm<sup>3</sup>, which provides an autonomy similar to any conventional vehicle, combining the best of each type of vehicle.

In the case of this prototype, the battery is composed of lithium-ion, thereby possessing more capacity than the batteries used in the hybrids available on the market.



STAKEHOLDERS

**HOW IS GALP ENERGIA ABLE TO ENSURE THE SUSTAINABILITY OF ITS BUSINESS WITH THE INTRODUCTION OF ELECTRICAL VEHICLES?**



**VEHICLES WILL HAVE AN ELECTRICAL AUTONOMY UP UNTIL 20 KM, IF THEY ONLY USE THE ELECTRICAL ENGINE OF 60 KW, AND WILL HAVE BOTH A GASOLINE-DRIVEN INTERNAL COMBUSTION ENGINE OF 73 KW WITH 1,800 CM<sup>3</sup>.**

With this innovation, PHEVs are 100% electrical until they reach 100 km/h (or until they run out of stored energy), becoming in May 2010 the first cars to run under normal conditions in Portugal with the possibility of using power from the grid. Each loading lasts between 1.5 and 2 hours.

With a view of showing the potentiality of the technology, Toyota launched, in May of 2010, a global programme involving approximately 600 vehicles (200 in Europe) that will be delivered to selected users for a three-year period. Five of the PHEVs came to Portugal and Galp Energia was chosen as a partner of the initiative.

To support Galp Energia in data analysis, a partnership was made with IDMEC – IST, which extends the protocol ruling in previous years.

The other two vehicles of the project will have short-term usage with the purpose of promoting the PHEV concept to entities that are stakeholders. With this initiative, over 55 people tested the technology between May and December 2010. Each stakeholder filled in a questionnaire with questions on their preferences as a driver and their experience with the vehicle.

The following stakeholders drove and gave their opinion on vehicles with innovative technologies.



OVER 55 PEOPLE TESTED THE TECHNOLOGY BETWEEN MAY AND DECEMBER 2010.

LONG-TERM ROAD TEST

For Galp Energia, this is an opportunity to take part in a significant innovation related to sustainable mobility.

Of the five vehicles of the programme, three were assigned to Galp Energia employees as service vehicles for a three-year period, with the purpose of better understanding the impact of PHEV on the future of mobility in several domains:

- actual effectiveness of PHEVs in various mobility standards;
- impact of PHEVs on energy consumption and CO<sub>2</sub> emission;
- reaction of users to technology;
- usage standards of the network of electrical charging points.

FIRST FAST-CHARGING POINT INSTALLED IN A EUROPEAN SERVICE STATION

Since October 2010 Galp Energia's first fast-charging point for electrical vehicles is operating at the service station of Oeiras (A5 Cascais-Lisbon direction), which is, at the same time, the first to be installed in a European service station.

Fast-charging points have 50 kW of power and charge an electrical vehicle in less than 30 minutes (in a battery with 25 kWh of capacity), while a normal charging, typically that made in homes, with 3.45 kW of power, lasts between 6 and 8 hours.

In addition to the technical reliability of the infrastructure, design features and the ease of usage with safety were considered, with a view of reinforcing

The Stakeholders of Galp Energia

1 • Quercus	
2 • Lisboa eNova	
3 • Apetro	
4 • Roland Berger	
5 • CM Lisboa	
6 • APREN	
7 • Agência de Energia de Sintra	
8 • Jesus Ferreira Consultores	
9 • Brisa	
10 • Adene	
11 • The Boston Consulting Group	
12 • GASPE	
13 • Petrotec	
14 • British Embassy in Portugal	
15 • Efaced Renováveis	



the company's positioning related to mobility.

Following the installation of the first fast-charging point, Galp Energia is preparing to increase the number of points as an energy operator for mobility. This increase is related to the participation in Mobi-E, a programme promoted by the Portuguese government aimed at creating a national network of electrical charging to supply power to electrical vehicles.

Galp Energia has worked in partnership in developing this project for replication and installation of the prototype of the fast load installed, in the pilot phase, at the service station of Oeiras. The goal is to create a network of 20 fast-charging points distributed by the main national roads.

## NATURAL GAS FOR VEHICLES

Galp Energia developed efforts to consolidate the use of Natural Gas for Vehicles, namely:

- the development and consolidation of sales offers for Natural Gas for Vehicles;
- the draft of technical and financial feasibility studies for opportunities of consumption conversion to Natural Gas for Vehicles;
- the signing of partnerships with specialist entities in the sector.

Of the current clients of Natural Gas for Vehicles, the public transports of Lisbon (Carris) and Porto (STCP) and

Galp Energia were the pioneers in the introduction of natural gas mobility in the Portuguese market. Fleets currently running on Natural Gas for Vehicles of Carris, composed of 60 buses, of STCP, with 260 buses (60% of the fleet), and of Valorsul, with 40 heavy vehicles – that collect urban solid residues – and light vehicles, which are supplied by Galp Energia, consumed 13.2 Mm<sup>3</sup>.

For upcoming years, efforts to consolidate the use of natural gas in cars, focusing on fleets of public transportation of passengers and goods, will continue given the reduction of GHG emissions that was achieved.

## MOBILITY AND TRAINING STUDIES

Concerns with efficiency also include the concern with future technologies that demand thought and training activities.

### A PORTFOLIO OF POWER-TRAINS FOR EUROPE: A FACT-BASED ANALYSIS STUDY

This study aimed at comparing the economic feasibility, the sustainability and performance of four types of vehicles and infrastructure regarding their propulsion means:

- internal combustion engine;
- electrical vehicle with battery for charging in conventional plugs;
- hybrid vehicle with plug-in (rechargeable);
- electrical vehicle with fuel cell.



Fast electrical charging in service area of Oeiras.



**FAST-CHARGING POINTS HAVE 50 KW OF POWER AND CHARGE AN ELECTRICAL VEHICLE IN LESS THAN 30 MINUTES (IN A BATTERY WITH 25 KWH OF CAPACITY).**

To respond to current concerns with climate change and the participation of transports in that context, this study compares the economic feasibility, sustainability and performance of four types of vehicles and infrastructure, based on information supplied by large car manufacturers, companies of industrial gases, companies in the technological field of electrolysis, utilities, and oil and gas companies.

The open cooperation between 29 participating companies, among which Galp Energia, reached findings that defend the absence of trade barriers to the development of the entire portfolio of solutions and the need to consider all technologies.

The complete report of this study may be found in the following websites:

[www.zeroemissionvehicles.eu](http://www.zeroemissionvehicles.eu)  
[www.now-gmbh.de](http://www.now-gmbh.de)  
[http://www.europeanclimate.org/documents/Power trains for Europe.pdf](http://www.europeanclimate.org/documents/Power%20trains%20for%20Europe.pdf)

#### STUDY OF THE ENERGYIN ON AUTOMOBILE TAXATION

Under its performance in ENERGYIN (Energy Competitiveness and Technology Centre), Galp Energia cooperated in a study on Portuguese taxation applied to road transport. Under its performance in ENERGYIN, of which it was one of the founders in 2009, Galp Energia was invited to participate in a study that was completed in February 2011 on Portuguese taxation applied to road transport, its comparison with the new propulsion systems or with new energy sources, as well as the forecast

of its effect on public accounts, in accordance with the following four theoretical scenarios that will be compared with the basis scenario (business as usual):

- A** – Scenario of higher technological neutrality – It seeks to ensure competition between technologies based on their energy and environmental performance.
- B** – Scenario of electrical mobility promotion – It includes State intervention by favouring the promotion of various electrical vehicles.
- C** – Scenario of biofuel promotion – It includes State intervention by promoting instead of using biofuels, besides the European targets of incorporation.
- D** – Scenario of replacing taxation by tolls – For each type of vehicle, environmental performance, route or used infrastructure and per hour of use.

TIS – Transporte, Inovação e Sistemas, S.A., the consultancy firm chosen by ENERGYIN and supported by the coordinator of Energy for sustainable mobility, will present proposals of principles and measures related to taxation and for each scenario.

As a result of this study, an original model of automobile taxation (both light and heavy) applicable to the domestic car park was created and improved, allowing the simulation of the basis assumptions of any scenario and the combination of several evolution scenarios of the car park and technologies.

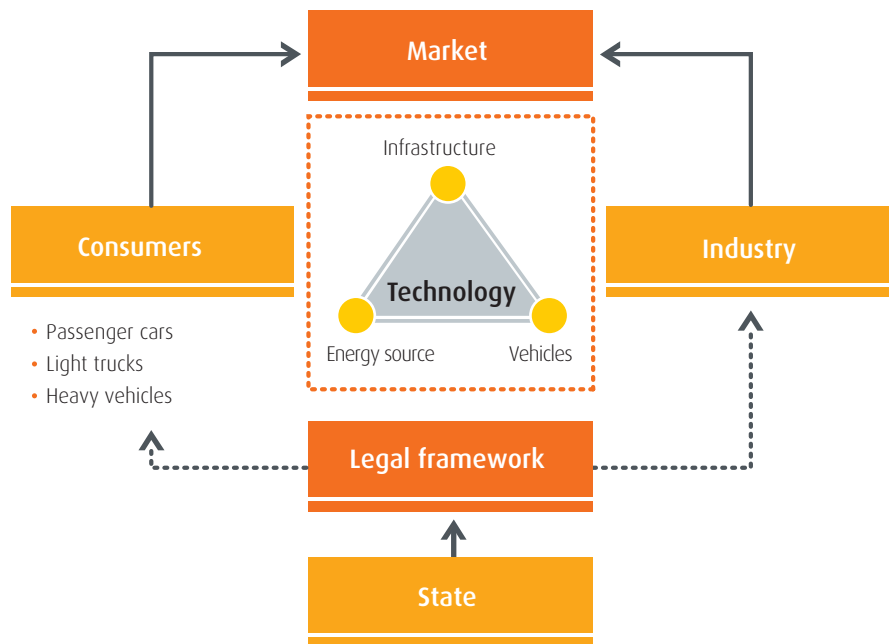


### TRAINING ON DEFENSIVE AND ECONOMIC DRIVING FOR CLIENTS

Building on the success of pilot initiatives undertaken in 2009, Galp Energia organised in 2010 training initiatives on defensive and economic driving for its clients that are operators in the transport market. The training, both practical and theoretical, was given by CARRISTUR, a company of the CARRIS Group, to the LASO and Transportes Gama companies and addresses prevention and safety, cost control, quality of life, resource use and environmental protection.

The results were significant. During practical sessions, fuel consumption decreased by 6.1% and the use of brakes fell 61.5%, on average. The impact of these results was substantial, since fuel consumption accounts for over 40% of total costs for companies operating in this sector.

### ENERGYIN's study on automobile taxation









# 07

## RENEWABLE ENERGY SOURCES AND BIOFUEL

IN RENEWABLE ENERGY, THE YEAR 2010 WAS MARKED BY THE GROUP'S DEBUT IN SOLAR ENERGY, BY THE DEVELOPMENT OF THE BIOFUEL INITIATIVE AND BY THE CONTINUATION OF THE IMPLEMENTATION OF THE WIND PROJECT.





Algarve Motor Park.

## PHOTOVOLTAIC PLANT AT PARKALGAR

The year 2010 was marked by Galp Energia’s debut, through GSE, in solar energy with the construction of a photovoltaic plant for the production and sale of power to the grid.

The plant is composed of 504 polycrystalline photovoltaic modules installed in a fixed structure composed of 21 countertops. The inverter has 100 kW of nominal power and it is estimated that the plant will have an annual production of close to 156,000 kWh and a global production of close to 2,200,000 kWh. Energy produced by this source will avoid, in reference to the Portuguese electrical system, emissions of close to 74 tonnes of CO<sub>2</sub>/year.

Under an agreement with Parkalgar – Parques tecnológicos e desportivos S.A., north of Portimão, GSE, in partnership with Efacec, built and operated a photovoltaic plant for

production and sale of power to the grid. Parkalgar is an entity that manages the Autódromo do Algarve and is one of Galp Energia’s clients.

## BIOFUELS

Galp Energia’s strategy for biofuels includes, from the outset, the presence of biofuels along the value chain to ensure the social, environmental and economic sustainability of biofuel produced and marketed.

## PORTUGAL AND SPAIN – THE INCORPORATION OF BIOFUELS AND THE REDUCTION OF EMISSIONS

Galp Energia introduced, through its own distribution network, close to 176,000 m<sup>3</sup> of biodiesel in the Portuguese market throughout 2010, thereby contributing to fulfil the obligation to introduce biofuels in the transport sector.

These amounts accounted for close to 5% of renewable energy incorporated in road transports, or over 6.5% of volume of substituted diesel for transports. This corresponds to a reduction higher than 230,000 tCO<sub>2</sub>/year of GHG emissions related to fuel consumption, an essential factor to meet the targets set by the Portuguese government in the European Union. Galp Energia has ensured the introduction of over 128,000 m<sup>3</sup> of biodiesel through other distributors, which corresponds to an extra GHG reduction of close to 174,000 tCO<sub>2</sub>/year<sup>(1)</sup>.

In 2010, preparation measures for the implementation of a recording system of commodities and the origin of incorporated biodiesel were taken. Specific information on delivered biofuel was requested to all suppliers.

In 2011, Galp Energia will continue incorporating in Portugal the equivalent of 5% of energy in road fuel, marketed with the assurance system of the fulfilment of the Portuguese sustainability criteria of biofuel, ensuring a more strict control over used products.

In the Spanish market, close to 220,000 m<sup>3</sup> of biofuels that replace diesel and gasoline were introduced, complying with the obligation imposed by the government. This introduction of biofuels in Spain led to the reduction of close to 260,000 tCO<sub>2</sub>/year of greenhouse gas emissions.

With the entry into force, also in Spain, of the sustainability criteria imposed by Directive 2009/28/CE, Galp Energia will fulfil in 2011 its obligation to introduce renewable energy in marketed fuels, requiring information on the sustainability of acquired biofuels to its suppliers. Indications for Spain consisted of the mandatory introduction of 5.9% of renewable energy in fuels for transport.

## PRODUCTION OF SUSTAINABLE COMMODITY FOR BIODIESEL (VEGETABLE OILS)

Under the fulfilment of the formulated strategy, prospection for land and the constitution of partnerships in Mozambique and Brazil for the production of vegetable oils started in 2007. Projects are currently in the deployment phase of cultures in the ground.

In Mozambique, activities were developed with two partners: Moçamgalp, a joint company with PETROMOC and ECOMOZ, and Galpbuzi, a joint company with Companhia do Búzi.



## WHAT IS GALP ENERGIA'S STRATEGY FOR RENEWABLE AND ALTERNATIVE ENERGY SOURCES IN THE MEDIUM AND LONG TERM?

<sup>(1)</sup> The reduction potential of GHG emissions, in Portugal and Spain, was calculated by using default amounts specified in Appendix V of the Directive n°2009/30/CE, of the Council and the European Parliament, of 23 April and, for Portugal, adopted by the government decree n°117/2010, of 25 October.



Jatropa plantation



Palm nursery

Overall, culture areas of *Jatropa Curcas* Linn installed by the two companies totalled approximately 600ha. These areas are sites of experimentation for the improvement of production technologies, training of teams and seed production.

In addition to the Centre of Staff Training and Seed Production of Chimoio, with close to 150 ha of physic nut plantation, Moçamgalp started activities in the province of Zambézia, in the region of Mocuba. Infrastructuring and preparation of the ground is under way to deploy the physic nut crop on a new area for which a DUAT<sup>(1)</sup> was granted. The project for this new area was approved by Mozambique's Centre for the Promotion of Investments (CPI in Portuguese) for the set-up of an area of up to 10,000 ha.

In Galpbuzi, over 70 ha of plantations were installed in 2010, totalling 450 ha in operation. The first areas produced over 7 tonnes of seeds, used in new plantations and in tests.

In Brazil, Belém Bioenergia was created, together with Petrobras Biocombustíveis. The preparation of areas for planting a million palm seeds (*Elaeis guinnensi*), which completed development in a nursery, started in October. Until late 2010, an area of 4,500 hectares to receive plants was being prepared.

Plantation areas are scattered within a radius of 15 kilometres in what will be the hub located in the

municipality of Tailândia, where the first crushing unit prepared for a total area of 12 thousand hectares of Palm fruit production (FFB<sup>(2)</sup>) will be located. In this project, the deployment of two additional Palm nurseries was started for the production of two million seeds in 2011, thereby continuing the project.

## FULFILMENT OF SUSTAINABILITY CRITERIA

In 2010, Galp Energia's Unit of Biofuels updated, according to the sustainability criteria of the government decree 117/2010, of 25 October, assessment procedures of forest coverage of the land where it wants to expand its activities. Through this method, it is possible to measure the amount of carbon stored in these lands and, depending on the outcome, decide whether these areas are suitable for the plantation of the crop, based on the sustainability criteria.

All collected information is part of the database of characterising areas of projects, both in the plantation of physic nut in Mozambique and in Palm plantation in Brazil, representing a geographic information system (GIS), an important element of the verification and confirmation of the sustainability of oil produced. At the same time, Galp Energia has continued the life cycle assessment (LCA) of biodiesel production from palm oil and physic nut through hydrogenation (HVO). In

<sup>(1)</sup> DUAT, Right to Use and Explore Land

<sup>(2)</sup> FFB, Fresh Fruit Bunches



this way, the analysis models were updated by consolidating them with the latest information on production technologies.

In Brazil, the Belém project is also applying the principles, criteria and indicators set out by the voluntary certification schemes of the Roundtable on Sustainable Biofuels (RSB) and the Roundtable on Sustainable Palm Oil (RSPO) and by the Social Fuel Seal<sup>(1)</sup>.

In this framework, only deforested land is used until November 2005 and land use is necessarily related to the maintenance of an area called Legal Reserve, consisting of the region's native vegetation, already existing or for its recovery, with minimum area equal to the area planted with palm.

In addition to environmental concerns arising from European requirements and voluntary schemes, there are the standards laid down in the Forest Code and the State Legislation of Pará, imposed for the licencing of agricultural activities. The standards include the Areas of Permanent Preservation, which are important for the environment since they protect slopes, house animals, avoid erosion and siltation of rivers and protect the soil with the maintenance of native vegetation.

In this way, the Belém project used external entities – Instituto Peabirú and Instituto Ecology – to develop a field survey of fauna, flora and the social and economic situation and

to propose a set of measures to mitigate impacts.

According to the law in Mozambique, production of vegetable oils for biofuels must be produced on marginal soils, being a condition for assigning the Right to Use and Explore Land (DUAT in Portuguese). This criterion leads to land covered by trees and shrubs, very heterogeneous, with characteristics determined by the dry tropical climate (Aw, according to the Köppen-Geiger climate classification).

To assess the direct impact of the change of land use (DLUC) and, as a result, to delimit the land suitable for the physic nut crop, a procedure based initially on the use of cartographic information available to characterise the land and, where necessary, on a forest inventory (Figure on the next page) was developed. In this case, the work is prepared by an independent team, which was hired at the Faculty of Agronomy and Forestry Engineering of Universidade Eduardo Mondlane, in Maputo, Mozambique, in cooperation with the Institute of Tropical Scientific Research, in Lisbon.

In addition to the breakdown of areas by the previous environmental variables, there is a complementary approach to deploy parts of the crop, which results in even less usable area.

In the project of the implementation of parts of the crop, areas inhabited by populations should be preserved from deforestation and agricultural

<sup>(1)</sup> The Social Fuel Seal is a set of specific measures to stimulate social inclusion in agriculture by assigning a special status to projects that include family agriculture in their supply chain or guarantee the purchase of raw material from this type of agriculture.

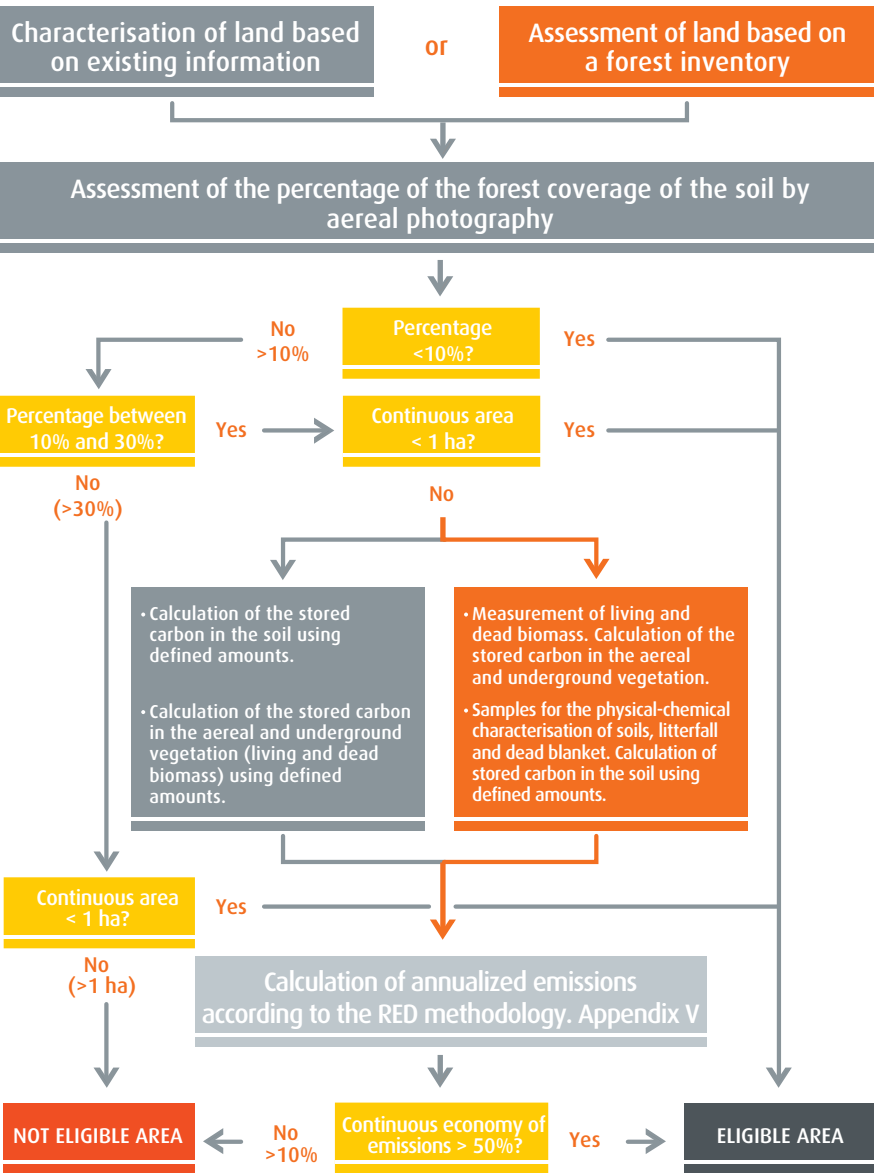


THESE PROCEDURES REINFORCE THE GUARANTEE OF CONTINUITY OF THE FUNCTION OF PREVIOUS SOIL USE, IN ONE PART OF THE AREAS ALLOCATED TO THE PRODUCTION OF VEGETABLE OIL, AND ECOSYSTEM INTEGRITY.

use, including buffer zones to ensure shifting cultivation; the channels of watercourses, even if temporary, with their unique vegetation, given their role of stabilising margins; and zones with steeper slope (> 10%) to reduce the risk of erosion. A criterion

to preserve the landscape, which requires the discontinuity of the parts of the crop with areas greater than 200ha, should be applied.

Biofuel - sustainability criteria



Decision tree adopted by Galp Energia to classify the lands' ability to produce bioenergy cultures based on vegetable carbon, in accordance to the sustainability criteria set out by the government decree nº 117/2010, of 25 October.

## INVESTMENT PROJECTS, SOCIAL DEVELOPMENT AND ENVIRONMENTAL COMMITMENTS

### MOZAMBIQUE

The investment projects of Galpbúzi and Moçamgalp were submitted to the approval of the Centre for the Promotion of Investments in Mozambique, and include several social and environmental initiatives. Both received the Approval Terms in September 2010.

These projects make commitments in the areas of food safety, support to the most urgent needs of people with priority, which were identified and agreed with local authorities, and energy safety and efficiency of Mozambique.

### Contributing to food safety

Food crops, such as maize, sunflower and sorghum, have a growing importance due to the gradual implantation of industrial oil crops and will be planned according to the needs of local communities, developers of the project and the suitability of available soil.

### Contributing to the people's needs

Projects comprise initiatives in partnership with local, regional and national authorities. A survey of the local needs of schools, health centres, water abstraction boreholes, roads and bridges, as well as local structures for support and technical and agricultural advice to people living in surrounding areas, is under way.

### Contributing to the energy safety and efficiency of Mozambique

The projects of Moçamgalp and Galpbúzi contribute to this goal for the following reasons:

1. they fall into the political guidance lines for biofuels set out by the Government and anticipate the legislation regarding the mandatory incorporation planned for Mozambique;
2. they are the result, in the case of Moçamgalp, from a strategic partnership with Petromoc and Ecomoz, state-owned companies that participate in the fuel sector and shareholders of Moçamgalp;
3. they may be classified as a Clean Development Mechanism (CDM) reinforcing the goal of allocating part of the production of vegetable oil to the Mozambican market.

### Social responsibility

Regarding social responsibility, Galpbúzi has from the outset a clear direction for the protection of employees and their families against food unsafety. Areas are planted to produce food in cooperation with employees residing in the surroundings of the project.

In 2010, an area of close to 110 hectares of maize was planted, whose ground seeds are the staple of the local population. Difficulties arising from adverse weather conditions in the year 2009/2010





Petrogal Moçambique, in partnership with the Biofuel Development Unit, started in 2010 the support to the ESMABAMA project, led by the Comboni Fathers, with the supply of 1,200 litres/year of fuel, improving the autonomy of this important institution for Mozambique. Its project in the schools of the four missions located in the area of influence of Galp Energia's projects support over 6,500 students, of whom over 3 thousand live in the homes of each mission. In addition to teaching, students receive health care and learn how to cultivate vegetables and deal with small animals.



led to the collection and storage of only 17 tonnes of maize. However, this amount, which was fully available to the rural population that cooperates with the project at a price less than or equal to that practiced in the local market, helped to mitigate the enormous difficulties in obtaining food.

### Encouraging the production of physic nut in Mozambique

As a result of initiatives in favour of families, a programme to encourage the production of physic nut in the District of Búzi by natives was created, where, besides ensuring the purchase of oil seed, technical support is provided in two ways:

- training on the main characteristics of the species and their cultivation techniques;
- provision of inputs, namely plant seeds, insecticides and, for each community, spraying equipment.

Riconde. A memorandum of understanding with one middle school was signed to accommodate students attending internships on the promotion of the physic nut crop in families.

Since early 2010, the programme was extended to other communities and regions within the Province of Sofala. Close to 4,800 kg of physic nut seeds were bought for individuals, about four times the amount acquired in previous years. As a result of the performance of an encouraging entity that

acquires seeds, supply has grown exponentially, which provides for the success of the project and more ambitious objectives.

Currently, the company interacts with over 200 farms, half of which have plants in production. Taking into account that only in the central region of the country there are about 60 districts with environmental suitability for the physic nut crop, it is possible to extend its activities until the inclusion of close to 10,000 farms.

### BRAZIL

#### The integration of familiar production

In the project of palm oil production in Brazil, the model provides for the integration in the production Project of small family-owned companies, which may allocate up to 10 hectares to palm crops, supported by a programme of technical and financial support designed for this purpose (PRONAF). In 2010, the starting year of the final planting of the first palm trees, initiatives were held to promote the programme and identify the farmers interested in joining the project. This project falls within the National Programme for Palm Oil, which was presented in 2010 with the presence of President Lula da Silva in the municipality of Tomé-Açu in Pará.

Encouraging the participation of households in the production of palm has the following goals:

- increasing to 10 times the income of rural households;
- fixing the rural populations in the field by offering the best alternatives for land use and avoiding the exodus to the cities and the loss of quality of life;
- ensuring the end of the household's production.

The participation of Households will constitute up to 20% of the total area of 48 thousand hectares to plant, which means that approximately 1,000 families will benefit.

For the region of Pólo de Dendê in Pará, the change of economic model based on disorderly exploitation of the forest – for wood and coal – and extensive cattle in itinerant pastures, after exhaustion of soils, is a key goal. The Belém project contributes to this goal by creating direct employment and an economy of support services.

#### **Social and environmental protocols**

In 2010, a Cooperation Agreement between Galp Energia, Petrobras and the State of Pará was signed to support the development of the production of oil palm in this state. This agreement includes technical, social and environmental concerns related to the expansion of the State's production capacity. Galp Energia signed, along with eleven companies, a Social and

Environmental Protocol with the State of Pará, which had the following guidelines:

- the non establishment of new productive enterprises in areas where deforestation of primary forest cover had been done after 2006;
- the implantation of productive areas to avoid the occurrence of continuous planting (monoculture) between two or more productive units and the uniformity of the landscape;
- the integration of family farmers and of small, medium and large producers;
- the non establishment of planting in areas of traditional, indigenous and Quilombola populations without their free, prior and informed consent;
- the adoption of labour relationships characterised by trust, commitment and respect by labour law.

#### **COOPERATION AND INVOLVEMENT OF THE SCIENTIFIC COMMUNITY**

In 2010, the first three years of cooperation with the Universidade Eduardo Mondlane (UEM), the Universidade de Trás-os-Montes e Alto Douro (UTAD) and the Instituto Superior de Agronomia (ISA) were completed with a very positive balance that suggested the extension of existing agreements.

#### ORGANISATION OF THE SYMPOSIUM FOR AGRICULTURAL RESEARCH IN MOZAMBIQUE

Moçamgalp and Galp Energia participated in the organisation and supported the organisation of the 2nd Symposium for Agricultural Research in Mozambique, which took place between 15 and 17 September 2010 in the UEM/Faculty of Agronomy and Forest Engineering in Maputo. As in the previous year, the initiative was well attended and had 75 addresses organised in thematic panels.

Galp Energia's participation included five addresses reflecting the main concerns with streamlining the production of the *Jatropha curcas* Linn crop and its experience. One of the addresses was presented by two fellows, in 2009, in Moçamgalp.

Galp Energia's support included the invitation to Professor Francisco Ferreira, vice president of QUERCUS, to intervene in the seminar. His address was entitled "Assessment of

the Biofuel Policy. The perspective of QUERCUS as an Environmental NGO."

#### SCHOLARSHIPS AWARDED TO LOCAL STUDENTS

Under the support granted by Moçamgalp to scholarships of UEM, two bachelor degree scholarships were awarded for the development of research on the identification and control of plagues and diseases, and a master degree scholarship was awarded for the development of a research paper entitled "Analysis of the Social, Economic and Cultural Impact of the plantation of *Jatropha curcas* in the Province of Manica".

#### PROTOCOL WITH D1 PLANT SCIENCE LTD

In 2010, a test, in cooperation with D1 Oils Plant Science Ltd (currently called Quinvita Plant Science Ltd), to the behaviour of a collection of 12 genotypes (accesses) obtained in the programme of physic nut improvement was performed in Chimoio and Búzi in Mozambique.

## VENTINVESTE WIND PROJECT

**Ventinveste, where Galp Energia is the largest shareholder with a 49% equity stake, has a project aimed at building wind farms with total power up to 480 MW, besides the creation of an industrial cluster for manufacturing and assembling aerogenerators in Portugal to sell in the domestic market and mainly export, under licence of the German company REpower.**

The year 2010 was an important milestone in the development of Ventinveste with the start of construction of its first wind farm, the

Wind Farm of Vale Grande, in Arganil. In 2010, power increase of this wind farm was allowed from 10 to 12 MW (six MM92 aerogenerators from

REpower). Licencing was completed with the issue of the Construction Licence.

The Engineering, Procurement and Construction contract of this wind farm in Vale Grande was also signed, in a model that will be used for Ventinveste's remaining projects.

Throughout the year, the development team of the wind component of Ventinveste proceeded the draft of studies and projects to obtain the required licences for the construction of additional wind farms. This work was marked by the effort to minimise possible negative environmental impacts of the projects and maximise the positive impact on the communities where they are located, ensuring at the same time their economic feasibility.

In late 2010, Ventinveste obtained the Environmental Impact Statements (EIS) for over 50% of the 400 MW of nominal power purchased to DGEG.

In 2010, the Licence of Establishment of the Wind Farm of Picos and Vale do Chão, increased to 24 MW, was obtained, and the start of construction is scheduled for 2011. For the Wind Farm of Douro Sul, Ventinveste's largest project with 172 MW, the execution projects were started to complete the Environmental Licencing and the Establishment Licence was obtained. The Project of the Electrical Line, at 400 kV, of interconnection to the grid at the Substation of Armamar, which was under licencing in DGEG in late 2010, was completed. The construction of this project might start in 2011.

The project of the Wind Farm of S. Bento (70 MW), which would be built in the area of the Parque Natural das Serras de Aire e Candeeiros, achieved an unfavourable Environmental Impact Statement. This project was under study and licencing since 2008, and Ventinveste is studying alternative locations for the contracted power. Environmental licencing of wind farms is one of Ventinveste's main challenges and has caused delays in the development of the projects.

In the industrial cluster, the year 2010 was marked by the start of operations of its largest unit, Fábrica de Pás, in which close to 26.7 M€ were invested and at peak will it have capacity to produce at least 267 sets of turbine blades per year. In the commissioning stage, 38 turbine blades were produced, of which 6 were exported.

Like the remaining units of the cluster, most of the production of Fábrica de Pás will be exported.

Fulfilling the compensation set out with DGEG in 2007, three of the six instalments, in the total sum of €12.6 million, were delivered to the Support Fund to Innovation. The Support Fund to Innovation, managed by the Portuguese state, assists projects in the areas of renewable energy and energy efficiency by promoting innovation, technological development and the reinforcement of the Portuguese corporate sector.



Construction site of the wind farm of Vale Grande.



**A TOTAL SUM OF €12.6 M WAS DELIVERED TO THE SUPPORT FUND TO INNOVATION, WHICH ASSISTS PROJECTS IN THE AREAS OF RENEWABLE ENERGY AND ENERGY EFFICIENCY.**





# 08

## INNOVATION, TECHNOLOGY AND THE RELATIONSHIP WITH THE SCIENTIFIC COMMUNITY

THE NETWORKS OF  
INNOVATION AND  
SCIENTIFIC KNOWLEDGE  
ARE ESSENTIAL TO  
COMPETITIVELY PROMPT  
CORPORATE SUSTAINABILITY  
IN GALP ENERGIA.





STAKEHOLDERS

**TO WHAT EXTENT WILL THE INVESTMENT IN INNOVATION AND DEVELOPMENT OF PROPRIETARY PRODUCTS CONTINUE BEING A PRIORITY FOR THE COMPANY?**

## INNOVATING FOR SUSTAINABILITY

**In times of change marked by uncertainty, investment in new knowledge is essential to creating a culture of sustainable innovation that differentiates Galp Energia.**

This is why the company has been developing a R&D and Innovation strategy based on cooperation with the Scientific and Technological System (SCT in Portuguese), which consists of a nimble network that permanently develops shared skills.

Given current energy challenges, Galp Energia will be able to offer its customers energy solutions, products and services that are increasingly competitive regarding quality and price thanks to innovation.

The three main axes of our R&D and Innovation strategy are:

- 1) the promotion of closer links with the SCT as well as with customers;
- 2) the differentiation in the markets where we operate by creating new services that meet the needs and expectations of customers;
- 3) the active participation in the development of sector policies that will underpin the future development of the energy sector.

### GALP INNOVATION NETWORK

In 2010, the Galp Innovation Network, the digital platform of relationship with the Scientific and Technological System, quadrupled the number of registered scientists, technology entrepreneurs, partners and suppliers when it reached close to 480 members. In addition, interactions between the members of the Network and the adoption of this channel by entities of the SCT to present innovative proposals to Galp Energia increased steadily. This network includes 12 innovation communities.



**THE GALP 20-20-20 PROGRAMME COVERED 53 STUDENTS UNTIL 2010, CONTRIBUTING TO THEIR EMPLOYABILITY.**

### THE GALP 20-20-20 PROGRAMME: AN INITIATIVE ADDING VALUE TO GALP ENERGIA'S CLIENTS

The Galp 20-20-20 aims at the annual development of 30 studies drafted by students and candidates for Master of Science degrees for the identification of rational energy systems and behaviours applicable in industry and buildings. These studies are generally based on the conduction of energy audits, including the verification of compliance with the technical



regulations of energy and safety of networks and equipment involved, to be held in client companies that are chosen by Galp Energia.

The Galp 20-20-20 is based on a tutorial system shared between Galp Energia – the client manager –, the client company and the university. In addition to the scholarship, the young people involved in this programme are automatically qualified to participate in a contest, which awards the three best studies in each university. The prizes for the top three are €6,000, €3,000 and €1,000, respectively.

The newly-created Galp Soluções de Energia follows the conduction of these studies with the purpose of applying then to energy efficiency projects executed at Galp Energia clients.

Since the Galp 20-20-20 programme started in 2007, 53 entities, state-owned or private, have participated in this initiative. The Galp 20-20-20 is assisted by the Support Fund to Innovation, which reveals the social importance of the initiative in the promotion of efficient energy management skills. All the information of the initiative can be found in [www.galp202020.com](http://www.galp202020.com).

## GALP INNOVATION CHALLENGE: AN INNOVATION CONCEPT IMPLEMENTED IN GALP ENERGIA

The Galp Innovation Challenge is one of the open innovation channels with the scientific and technological system. It consists of a challenge to the university community and to technology-based companies for the presentation of proposals of technological solutions to problems faced by Galp Energia. As a reward, winners receive a prize and a proposal for cooperation in the project to be developed.



### WHAT IS THE INVOLVEMENT AND CONTRIBUTION OF PARTNERS AND SUPPLIERS TO INNOVATION?

#### Companies and entities that participate in Galp 20-20-20



1 • Portucel	28 • ANA – Aeroportos de Portugal
2 • Lactogal	29 • Panrico
3 • Amorim	30 • Sovena
4 • BOSCH Termotecnologia SA	31 • Abridada
5 • CIRES	32 • Sotancro
6 • Sonae Indústria	33 • Tate&Lyle
7 • Margres	34 • Grupo Pestana Pousadas
8 • BA Vidro SA	35 • Instituto da Segurança Social
9 • BLB Indústrias	36 • IST
10 • Metalúrgicas SA	37 • Fapajal
11 • Cerâmica Castros	38 • Iberol
12 • CUF Químicos Industriais	39 • Hospital Curry Cabral
13 • Funfrap	40 • Sheraton
14 • Matceramica	41 • Inapal
15 • Refinarias de Açúcar Reunidas, SA	42 • Rodoviária de Lisboa
16 • Revigrés	43 • Barraqueiro Transportes
17 • Cinca	44 • APICER
18 • Monteiro Ribas	45 • Celbi
19 • Celticerâmica	46 • Cerâmica Sotelha
20 • Gresart	47 • Frulact
21 • Diatosta	48 • Labesfal
22 • Cerâmicas Quintas	49 • Crisal
23 • Vista Alegre	50 • Cliper
24 • Sorgal	51 • Joalto Transdev
25 • TST	52 • Campoaves
26 • Copam	53 • Estamparia Adalberto Pinto da Silva
27 • Sogapal	





SINU model.



Easys model.

The Hotspot Design – Innovation Challenge by Galp Energia was the first edition of this initiative, started in the second half of 2009 and focused on the development of a new concept of terrace heater to integrate the offer Esplanadas Confortáveis. The requirements to participate in the contest were training in Industrial Design and

Engineering. Over 370 projects were submitted by 800 candidates.

The winning projects were SINU and Easys, which shared ex aequo the prize of €20,000. The two new heaters that won the contest will be manufactured and marketed by Galp Energia in domestic and international markets.

## R&D PROJECTS

### COMET- INTEGRATED INFRASTRUCTURE FOR TRANSPORT AND STORAGE OF CO<sub>2</sub> IN THE MEDITERRANEAN COAST

In 2010, Galp Energia cooperated in three of the seven research activities of the COMET project by identifying, locating and characterising the sources of historical CO<sub>2</sub> emission and forecasts, and participated in the identification of possible locations of CO<sub>2</sub> storage in Portugal, with more detail in the offshore of the Sines region and the Peninsula of Setúbal, until the batimetric of 200m.

The next steps will consist of a survey of the costs of possible drilling operations in the Portuguese offshore and CO<sub>2</sub> transport.

The project considers several development scenarios of the energy systems in the region for the period between 2010 and 2050 with the corresponding consequences on the CCS infrastructure.

In 2010, the website of the project <http://comet.lneg.pt> was created.

### ENGIQ PROGRAMME OF TRAINING AND PHD – REFINING

In the cycle of 2010-2011 of the PhD and Advanced Training Programme EngIQ, over 14 employees participated in the advanced training, totalling 22 since the start of the programme.

Classes are taught in the Sines Refinery, the Matosinhos Refinery and Galp Energia's head office in Lisbon, which are attended not only by students from Galp Energia but also other companies from the petrochemical sector. The videoconferencing system installed integrates the three hubs in a single classroom, enabling participation in the course of the five universities in their areas of expertise.

In 2010, two new PhD projects in corporate environment in the EngIQ, which are R&D initiatives, were started:

- characterisation of the various components available to produce bitumen and study of the technological changes allowing the production



#### STAKEHOLDERS

### WHAT ARE THE PLANS FOR TRAINING PROGRAMMES INVOLVING UNIVERSITIES AND RESEARCH CENTRES?

of bitumen that meets the new specifications of the Iberian market;

- quality of the Industrial Effluent of the Sines refinery.

The following R&D projects are under way, under the EngIQ Programme:

- extraction of Mercaptans by Ionic Liquids;
- streamlining of the Parex Unit;
- development of the Hydro-demetalization Catalyst;
- oligomerization of C5 – C8 Olefins;
- improvement of Alquilation.

The following R&D and Innovation projects in the area of Refining were executed:

### STREAMLINING BITUMEN PRODUCTION

In 2010, a study was conducted to adapt production to new specifications, the flexibility of crude and the streamlining of the production system of the refineries of Sines and Matosinhos.

Critical points and the investments to be made to streamline the production, and the increase of knowledge on bitumen and its interconnection with crude and the production system were identified. Experiences between different departments of the company and with international experts were exchanged.

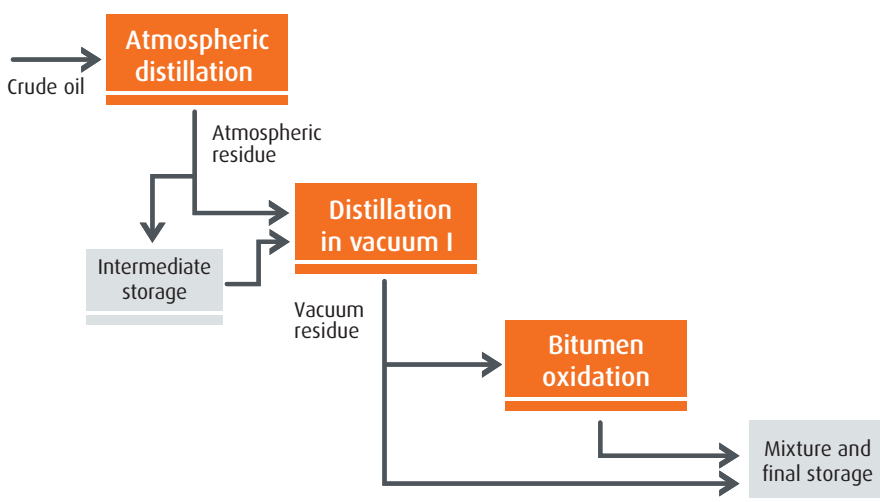
### SOFTWARE FOR MONITORING THE EXCHANGE CHAMBER

The exchangers of the exchange chamber accumulate fouling that is dragged by crude and other products, which means the amount of transferred heat decreases over time. Therefore, it is necessary to burn more fuel in furnaces, leading to an increase in the consumption and emission of CO<sub>2</sub> and, ultimately, to a decrease in the amount of crude processed.

The monitoring software quantifies the economic costs of fouling regardless of the amount and quality of cargo handled. With this measure, one can forecast the optimal time to stop and clean the unit, thereby minimising energy costs and CO<sub>2</sub> emissions in each operation cycle.



### Bitumen production



### **SIMULATION OF THE FLUID CATALYTIC CRACKER (FCC) UNIT**

The simulation model of the Fluid Catalytic Cracker (FCC) Unit, developed in the area of Streamlining of Basic Data and Process Simulation, accurately forecasts the performance and characteristics of fractions compared to the quality of the feeding cargo and operating conditions that are provided (calibrated model). In this model, not only the reactor but also fractionation columns, separators and other systems inherent to the process are represented.

Accuracy is ensured through periodic monitoring of the operations of the unit in the refinery, studying the results and measuring the differences with actual data. This tool simulates essential information to represent the Delta Base technique in the linear programming model, that is, from a base situation, the linear programming model forecasts the results for an optimum loading.

The results of this innovation impact the improvement of the Variable Contribution Margin of Refining by streamlining the cargo, performance and quality of the FCC Unit, which is currently the component with the largest margin per unit.

### **PROTOCOL WITH FEUP – GREEN ADDITIVE**

In 2010, 10 litres of Green Additive, created in cooperation with the Laboratory of Separation and Reaction Engineering (LSRE) of the Faculty of Engineering of the Universidade do Porto, were produced and delivered to Galp Energia for analysis. In 2011, Galp Energia will check the properties

of the additive, and the outcome will lead to the next steps, which will aim at incorporating the additive in the fuel produced by the company.

### **GINSENG PROJECT**

The main purpose of the GINSENG project is creating a network of wireless sensors (WSN) that achieves specific performance targets, which will be integrated with the industrial management systems and be proven through the implementation in a real industrial environment (Sines refinery) where performance is critical.

The GINSENG project planned significant progress by developing a reliable WSN with the purpose of working in industrial environments. In these environments, the WSN technology can lead to significant savings in implementation and maintenance costs by offering a system with easy reconfiguration and rapid implementation and by adapting to the changing needs of the company.

The project started in September 2008 and the test scenario was implemented in the zone of Water Treatment (Utilities area) with four wireless transmitters, replicating the signal from other wired transmitters in the Refinery.

In 2010, the test scenario was expanded to 30 wireless transmitters, from which a critical analysis will be conducted to the data generated by wireless transmitters, in comparison with wired transmitters, to obtain an estimate of the performance and reliability of the new system.

## SCIENTIFIC AND TECHNOLOGICAL FORUM ON REFINING – A CHALLENGE OF THE BUSINESS TO THE SCIENTIFIC COMMUNITY

Galp Energia's Scientific and Technological Forum on Refining took place on 16 March 2010 and existing scientific and technological challenges in Galp Energia's refining system were discussed.

This initiative, organised under the Associação das Indústrias da Petroquímica e Refinação (AIPQR), embodies Galp Energia's intentions to nurture increasingly strong ties with Portuguese universities, while it fills an existing opportunity with the creation of knowledge in specific areas such as refining.

In the event, the following technological themes were discussed:

- intensification of the production of aniline;
- micro mixture in the nitration of aromatics;
- increase in the return of the resin plant;
- solid catalyst for alkylation of isobutane and mixture of butylenes;
- extraction of mercaptans in the jet using ionic liquids;
- streamlining of the Parex Unit;
- catalyst of de-metallizing for the purification of heavy fractions of crude;

- catalyst and process of oligomerization of light distillates to produce middle distillates (diesel);
- NMR technology to characterise crude oil;
- study of purification and recovery of a stream of brine;
- study and assessment of the cooling tower.

In the second part of the forum, there was a discussion on the future of the refining and petrochemical industries.

The five following innovation projects, started in 2009 in the area of E&P as a result of the first Scientific and Technological Forum, are under way:

1. modelling and characterisation of fractured reservoirs;
2. seismic imaging in reservoirs beneath masses of evaporites;
3. integration of the seismic with Soft Data in modelling and characterising reservoirs;
4. study of depositional environments and diagenetic processes in carbonated reservoirs;
5. measurements of thermal conductivity and magnetic susceptibility in wells.

## PROTOCOL WITH THE UTAD

Study of the effect of fungi basidiomycetes in the detoxification of eau de vie from *Jatropha curcas* L.





This research sought to allow the use of eau de vie from physic nut as a protein source in animal feed. The solution was the treatment with fungi basidiomycetes.

This research is under way in the Centre of Animal and Veterinary Science (CECAV in Portuguese) of the university. The results confirmed the possibility of successfully using a treatment with fungi for the detoxification of bagasse.

### PROTOCOL WITH THE ISA/ UNIVERSIDADE TÉCNICA DE LISBOA

Sponsorship of BioEnergiSA, Teaching Field of Bioenergetic Plants.

The bioenergetic fields is a place of continuous observation of species that produce biomass and are able to transform it into solid, liquid or gaseous fuel, and convert it into energy. BioenergiSA serves as an experimental field where research and training studies have been performed. It has already received three master's theses. It is a space for secondary schools and is promoted by ISA. It is an important means of promotion of bioenergy in schools and for the society. A photography contest was organised in 2010 with the same promotion purpose.

## INNOVATION FOR ENERGY EFFICIENCY

### SMARTGALP PROJECT

Rising energy costs and the growing consensus regarding the impact of energy consumption on the climate puts energy efficiency on the top of the agenda for energy policies.

However, the trend in recent years is the increase of energy consumption in the residential segment. In this way, consumers' access to detailed information in real time about where, when and how they expend energy, as well as the costs and environmental

impact, allows them to take a more active role in energy efficiency. Studies point to a potential reduction of energy consumption in the residential sector over 10% by changing consumer habits. Cost savings could be even greater if cheaper fare periods are taken advantage of.

It was with this goal that Galp Energia launched in 2010 SmartGalp, a pilot project aimed at assessing the impact of smart metering on the improvement of efficiency and the reduction of costs.

With this project, Galp Energia will set up smart meters of electricity and natural gas in a small sample of homes and develop innovative platforms for dialogue with clients that may revolutionize the direct relationship between the consumer and the energy supplier. The client will monitor the detailed consumption, implement opportunities for improvement suggested by the system, have real-time control over equipments and manage invoicing and payments. Information collected by smart meters will be integrated with the data from existing support systems to Galp Energia's business that manage information on the sales cycle of customers.

For this project, Galp Energia has partnered with MIT-Portugal, through the Instituto Superior Técnico, and obtained a loan of 50% of the investment by the Innovation Support Fund.

The expected duration of the pilot phase of the project is 22 months.

### **REIVE PROJECT – INTELLIGENT ELECTRICAL GRIDS WITH ELECTRICAL VEHICLES**

This project started in March 2010 and its main goal is the development of a technological platform aimed at identifying, specifying and testing innovative solutions for the active and intelligent management of power

grids in order to achieve the technical and sales integration of both micro generation systems and electrical vehicles.

The reinforcement of grids is avoided and, at the same time, the maximisation of the integration of renewable energy sources in the system is sought, thereby ensuring its operation with high levels of energy safety and efficiency.

Galp Energia is one of the industrial partners that, together with REN, EDP, Efaced, Contar and Logica, co-financed in equal parts the project led by INESC Porto, which also receives the co-financing of 50% from the Innovation Support Fund.

The technical and scientific work done so far created new concepts and simulation models corresponding to the advanced and intelligent platforms related to electrical vehicles and units of micro generation. Developed simulation models equip simulation tools with advanced features. In this way, they support the studies of assessment of impacts arising from the progressive and simultaneous integration of micro generation and electrical vehicles in the distribution grids of power.



**WITH THIS PROJECT,  
GALP ENERGIA WILL SET  
UP SMART METERS OF  
ELECTRICITY AND NATURAL  
GAS IN A SMALL SAMPLE  
OF HOMES AND DEVELOP  
INNOVATIVE PLATFORMS  
FOR DIALOGUE WITH CLIENTS  
THAT MAY REVOLUTIONIZE  
THE DIRECT RELATIONSHIP  
BETWEEN THE CONSUMER  
AND THE ENERGY SUPPLIER.**

## PROCESS INNOVATION



### MIGRAR GALP – EXPANSION OF THE VIA VERDE CONCEPT

The Migrar Galp project, which aims at changing the current concept of Via Verde by simplifying payments and extending this service to more petrol pumps of Galp Energia's service stations, improves the quality of this service. In 2010, the action plan included the expansion of the system to 13 service stations and the improvement of the solution in 40 other service stations. For 2011, the expansion of the new solution to 45 additional service stations is expected.

### GESTÃO DE FUGAS – A PARTNERSHIP WITH THE UNIVERSITY

The main purpose of the project of Gestão de Fugas, arising from the shared development by Galp Energia and ISEL, is reducing drivers' running off in service stations. This project includes the creation of a system to manage permits of fuel supply based on the identification of registrations. The system prevents supply if the registration already has a history of run off in its database. The solution is being tested in a pilot project in the service stations of Queijas and Montijo, which will test the technology and the solution of automatic blocking of supply.

### CONTINUITY OF THE TIGER PROJECT – AN ONLINE PHILOSOPHY

The TIGER programme consists of restructuring information systems that support the area of fuel distribution by integrating them with an internationally recognised platform of card management capable of meeting the needs of Galp Energia's customers.

In 2010, besides the consolidation of the use of the WM-Card platform for the management of transactions and own cards, the last stage of the programme – the implementation of new local systems in Galp Energia's distribution network and the transition of an offline approach to an online approach regarding network management – was prepared.

In 2010, the first pilot experience was started in a filling station operating with the new architecture of local systems, locally focused on a new console connected in real time (online) to the central system of transaction control.

The TIGER project generates streamlining benefits for processes and cost-cutting by standardising the infrastructure of the entire network and the use of standard industry solutions. The major advantage is the online operation, which enhances a qualitative leap in both the development of new value offerings to customers and the streamlining of relationship processes with reseller partners.

## LPG VESSELS

The LPG business area studied the technical, environment and economic feasibility of the change of fishing vessels from gasoline engines to LPG. The cost of fuel accounts for about 60% of the operating costs in this sector.

Changing vessels to LPG will reduce the weight of fuel prices in the small fishing activity, leading to positive impacts on the competitiveness of the sector, besides environmental and social benefits. With an initial minimum intervention in the engine, there are savings between 20% and 49% compared to gasoline.

Hence, two phases were set out in the definition of the innovation strategy of this project:

- phase I: Analysis of the technical and environmental feasibility through the pilot project of the change of four vessels to LPG based on the change experience and the tests to a first pilot vessel.
- phase II: Analysis of the economic feasibility of the installation of a nautical filling station of LPG in order to make this solution economically feasible for fishermen.

The application of this project to PROMAR will be completed in 2011.

## MARKETING, PRODUCT AND SERVICE INNOVATION

### FUEL DISTRIBUTION – NEW OFFER FOR PAYMENT MODES

In 2010, Galp Energia rebranded the Cartão Galp Frota card and launched a reinforced value proposal translated into a new offer mainly targeted at clients that are carriers: the Cartão Galp Frota Profissional.

Rebranding of the Cartão Galp Frota included an update of all channels and communication means between Galp Energia, the client manager and the client, namely:

- new Galp Frota manual;

- new sales proposals;
- new electronic communication means;
- new Galp Frota stationery and other sales support materials such as maps of the Iberian Peninsula, adverts and advertorials placed in selection publications.

The Cartão Galp Frota was improved in two interaction moments between Galp Energia and customers:

- hiring: A Welcome Pack was developed for direct clients;



Galp Energia's service station.



- delivery of cards: All of the users of the card received an informative leaflet and the card inserted in a Galp Frota wallet. This booklet answers frequently asked questions about the service, trying to simplify communication between Galp Energia and its customers.

NEW PHASE OF THE PROJECT OF ELECTRONIC INVOICING

The project of electronic invoicing ended in 2010 phase III, with the inclusion of Galp Frota’s invoicing

and the legal certification of the documents in PDF format.

The features allow the issue and reception of invoices in electronic format, with legal value, dispensing the need to send paper. Hence, this translates into an increase in security, speed and efficiency for Galp Energia and its client. In addition, it promotes the improvement of communications channels with the client and facilitates access to information.

Some advantages of the service of electronic invoicing:

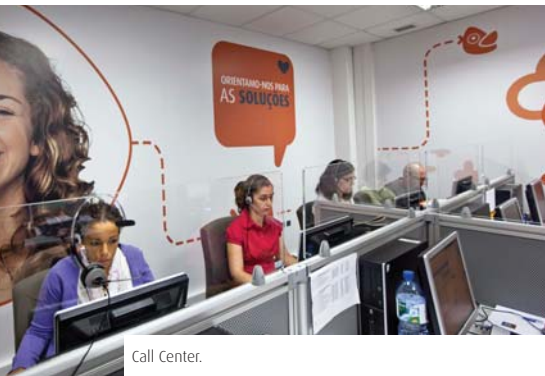
Higher efficiency	Reduction of costs through the automatic integration of invoices in the system, without manual entry Absence of errors in the launch of invoices in the system.
Higher effectiveness	Electronic confirmation of the delivery of the invoice– impossibility of loss of invoices by errors in envelopes or mail.
Higher value	Reduction of payment deadlines.
Higher convenience	Operation of the system 24 hours a day.
Higher ecological value	Provision of invoices in PDF format, thereby promoting non-impression of paper.
Higher safety	All invoices are signed electronically and may not be changed.

SERVICE OF CUSTOMER CARE TO GALP FROTA’S MOST VALUABLE CLIENTS (PORTUGAL AND SPAIN)

To offer a service with higher levels of quality and excellence to Galp Frota’s most valuable clients, a service of special customer care was provided to Galp Frota’s most valuable clients in Portugal – in October 2010 – and to Galp Frota’s most valuable clients in Spain – in November 2010.

With a phone number and an email, this service operates from 9AM to 7PM for regular requests, and after 7PM for issues such as the cancellation of cards under Serviço 24h. Service levels are different and the clients are accompanied until the close of the request or the complaint.

To ensure the desired quality, specific training was provided on customer care techniques, the business and specific aspects highly valued by these clients.



Call Center.

The purpose of this service is to be dynamic, flexible and oriented towards the satisfaction of customer needs. Hence, mechanisms of continuous communication were created, which receive customers' opinion and assessment and integrates them into the definition of the service.

### QUALITY OF CUSTOMER CARE AND SERVICE EXCELLENCE OF GALP FROTA

To guarantee the quality of customer care and service excellence in Galp Frota, the company created a quality system with several components:

- monthly conduction of external audits to customer care, checking the compliance with processes and the recording in CRM systems. These audits cover the activities of both the front and back office;
- monthly conduction of customer satisfaction surveys by an external company to identify improvement opportunities;
- monthly issue of monitoring reports of business indicators and service levels.

As a result, besides the potential adjustment of resources, plans for

continuous improvement were set out, namely redesigning processes and procedures and reinforcing training mainly on business, customer care techniques and stress management.

### QUALITY OF USE OF ELECTRONIC CHANNELS

As a consequence of the start of operations of the new platform of card management hosted on the WM-Card platform, it became necessary to reassess the online portal of card management (Galp Frota Online) in order to ensure the maintenance of levels of ease of use for customers.

Although most features did not change, the approach of the application was adapted to the new card management and, therefore, the development of the main pages of the Galp Frota Online website was necessary. To simplify the process of creating a new card, the pages of Request for New Card – Plafond and Products and Services were reformulated.

Galp Energia ensured its responsiveness to customer needs and that it continues working to improve its tool of card management, in accordance to market best practices.



**GALP ENERGIA ENSURED ITS RESPONSIVENESS TO CUSTOMER NEEDS AND THAT IT CONTINUES WORKING TO IMPROVE ITS TOOL OF CARD MANAGEMENT, IN ACCORDANCE TO MARKET BEST PRACTICES.**







# 09

## ENVIRONMENT, QUALITY AND SAFETY

THE CREATION OF A GOVERNANCE MODEL OF SAFETY, HEALTH AND ENVIRONMENT (SHE) AND THE INTRODUCTION OF THE SAFETY FACTOR IN THE ASSESSMENT OF EMPLOYEES' PERFORMANCE WERE TWO DECISIONS SHOWING THE COMPANY'S STRONG COMMITMENT TO SHE AND QUALITY POLICIES.



## ORGANISATION IN SAFETY, HEALTH AND ENVIRONMENT (SHE)

### THE GOVERNANCE MODEL IN SHE

By assuming in its SHE policy that the Safety and Health of employees and environmental protection are essential values, Galp Energia recognises the need to ensure that the Organisation defines the means to implement and control the SHE Management System. In this way, Galp Energia ensures its continuous improvement and clarifies the responsibilities of both the hierarchical chain and the structures of SHE. This management structure, named Integrated Organisation, complies with the following basic principles:

- senior managers guarantee the commitment of the entire Organisation to reach excellence in the SHE performance;
- those that compose the organisational line respond individually to the performance in SHE and to the availability of needed human, material and financial resources.

With this model, Galp Energia aims at ensuring that:

- the legal requirements and other requirements applicable to the

location of the activities are fulfilled, namely those related to internal requirements, certifications or existing management systems;

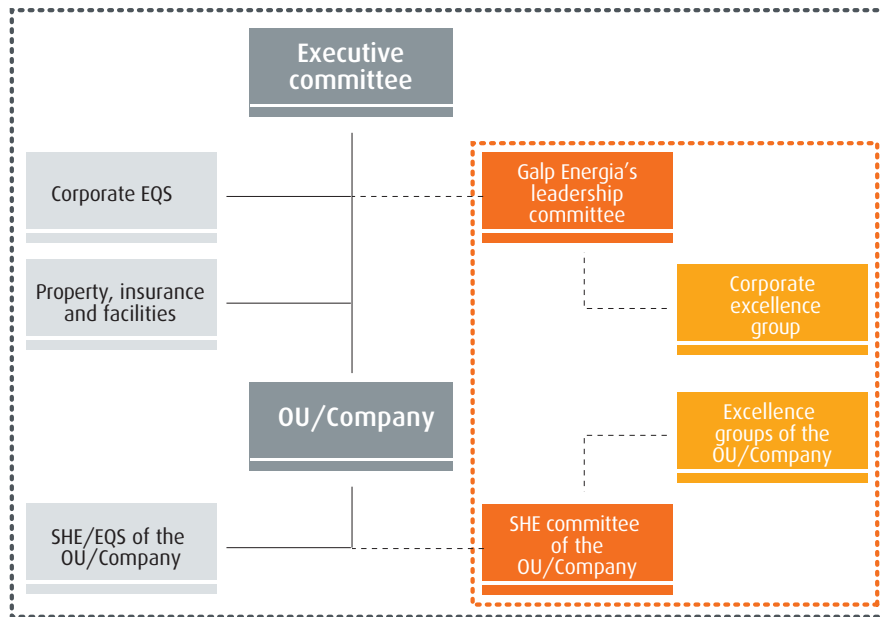
- the SHE Management is participated by actively involving employees, the community and other stakeholders;
- the main roles of the SHE structures are the support and consultancy of SHE to the remaining roles of the Organisation, the coordination of the SHE Management System at its performance level and checking the fulfilment of legal requirements and other requirements.

### THE SHE COMMITTEES

As basic structures of Galp Energia's Integrated Organisation of the SHE Management System, the Committees of Safety, Health and Environment (SHE Committees) were created.

The SHE Committees complete the structure set out in the Organic Standard and are devoted to making management decisions. Their members remain individually responsible for the SHE issues and do not represent structures to delegate collective responsibility.

## Integrated organisation of SHE



--- Integrated organisation of SHE

--- Hierarchy

The structure of SHE Management is replicated through the creation of SHE Subcommittees and Excellence Groups in Galp Energia's operational levels.

## SAFETY FACTOR

For Galp Energia, environmental protection and the safety and health of employees are essential values for the sustainability of the Company. Galp Energia is aware of its responsibility in the management of the impact of its activities, products and services on society.

The Organisation works every day to ensure the Safety and Health of all employees, both direct employees and service providers. This effort is objectively measured to improve performance continuously.

To strengthen commitment to all SHE aspects, the performance assessment of Galp Energia's employees, with the consequent reflection in their compensation, includes a component of Safety and Environment, which is translated by the inclusion of the Safety Factor.

## APPROACHES TO THE LEGAL DEVELOPMENT

**Galp Energia follows and actively participates in the legal development processes regarding the Organisation's chain value.**

In particular, Galp Energia has continued following, through European associations – Concawe, Europa - and Portuguese institutions - Direcção Geral de Energia e Geologia (DGEG), Direcção Geral de Actividades Económicas (DGAE), Portuguese Association of Oil Companies (APETRO) – the EU policies and the Portuguese legal framework regarding the most relevant Safety and Environment matters. On the one hand, the Organisation seeks to prepare itself to formulate strategies that fulfil the law. On the other, Galp Energia is aware that industry experience is essential to ensure proper execution and effectiveness of policies advocated.

### REVISION OF THE BEST AVAILABLE TECHNIQUES REFERENCE DOCUMENT OF THE REFINING SECTOR

The reference document applicable to the refining sector, under the Integrated Pollution Prevention Control (IPPC), named by Reference Document on Best Available Techniques for Mineral Oil and Gas Refineries (BREF REF), maintained revision during 2010. Galp Energia has been following this process, namely the discussion and technical analysis of documents proposed by the European IPPC Bureau. The

revision is being performed along with the European associations representing the sector, in particular Concawe, through the participation of the Company in a specific workgroup.

The revision of this document set out the framework of technological and environmental requirements to be followed by each facility in the medium-term, being a key tool in planning investments and in setting out performance targets.

### ENVIRONMENTAL RESPONSIBILITY

In February 2010, under the Regime of Environmental Responsibility, an Agreement of Partnership between the Portuguese Environmental Agency (APA in Portuguese) and the Portuguese Association of Oil Companies (APETRO in Portuguese) was signed. Its main goal is creating and developing technical guidance related to the application of the government decree n.º147/2008, of 29 July, to the distribution and marketing activity of oil products.

This project led to the publication of the "Sector guide for the application of Regime of Environmental Responsibility to the distribution and marketing activity of oil products", and had the active participation

of Galp Energia has a member of APETRO.

The specific goals of this project are:

1. survey and benchmarking of existing methodologies, legislation and regulation and applicable to the sector;
2. draft of a sector guide on each target activity, guided to several content;
  - a) Communication or reporting of the existence of an imminent threat of environmental damage;

b) Methodology of risk assessment applicable to the activity;

c) Quantification and characterisation of environmental damage;

3. technical support of sector characterisation, under the consultation to competent entities.

The guides mentioned above will be available in APETRO's website ([www.apetro.pt](http://www.apetro.pt)).

## CORPORATIVE GUIDELINES

### THE SHE FRAME OF REFERENCE

Galp Energia manages complex industrial assets and distributes high-risk products. This responsibility may only be assumed by establishing a set of rules that guarantee the continuous prevention of incidents, through the continuous identification and monitoring of risks to ensure the Safety and Health of people and environmental protection.

These rules are contained in the SHE Internal Frame of Reference, published as an appendix to Galp Energia's SHE Policy. This document identifies and organises the process of identification, control and monitoring of risks arising from the Company's operations, and sets out the minimum requirements for its implementation.

The SHE Frame of Reference is composed of 22 management elements that set out the minimum requirements to be followed in different areas, thereby ensuring a good SHE performance, and may be organised into two large groups:

- 12 members in charge of the intangible issues of Organisational Culture.
- 10 operational elements in charge of issues related to risk management (people, facilities and technology).

Galp Energia's Procedure Standards and other guidelines were published according to the Elements of the Frame of Reference that have been published. Next, the themes that were subject to internal regulation in Galp Energia are presented.



**THE SHE FRAME OF REFERENCE IS COMPOSED OF 22 MANAGEMENT ELEMENTS THAT SET OUT THE MINIMUM REQUIREMENTS TO BE FOLLOWED IN DIFFERENT AREAS.**





**GALP ENERGIA’S CONCERNS INCLUDE THE SEVERAL PHASES OF THE LIFE CYCLE OF FACILITIES, SERVICES AND PRODUCTS.**

**NEW CORPORATE GUIDELINES**

Galp Energia’s concerns include the several phases of the life cycle of facilities, services and products. The following scheme contains the issues on which revolved the publication of Galp Energia’s Procedure Standards in 2010, framing them in the cycle of activities.

**SHE REQUIREMENT STANDARD IN INVESTMENT AND DIVESTMENT PROCESSES**

For sustainable management and the alignment of Galp Energia’s Safety, Health and Environment Policy, planning and controlling the life cycle of facilities and equipment (from the phase of project, conception and/or acquisition, until the end of the useful life of vital facilities and equipment) must take into account, when applicable, the analysis of factors related to SHE.

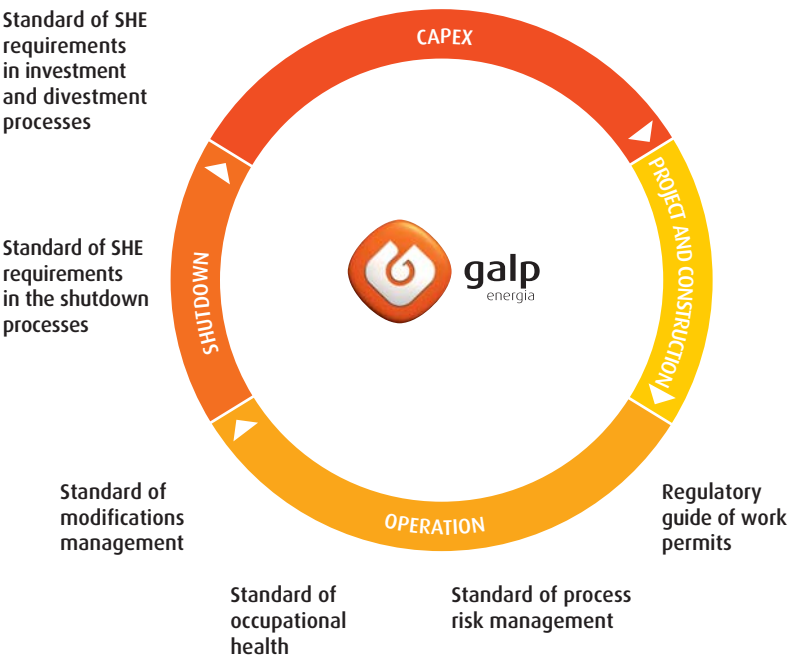
Galp Energia’s processes of investment and divestment management analyse the SHE conditions, assess risks and hazards for employees’ Safety and Health, and assess risks and impacts on the environment and the surrounding community related to an acquisition or an asset disposal.

Rules introduced provide the Organisation with an integrated knowledge of the SHE conditions, restrictions and technical or other constraints, legal demands and the respective technical, operational, economic and legal implications on SHE related to the transmission of a certain asset.

**SHE REQUIREMENT STANDARD IN SHUTDOWN PROCESSES**

All establishments and facilities where Galp Energia’s companies operate are related to a life cycle. At the end of

**SHE management standard of service providers**



this cycle, the Company has to decide on the best purpose to give to land, facilities, infrastructure and equipment that are part of its assets and under its responsibility.

To eliminate, minimise and prevent the maintenance or creation of any liabilities of Safety and Environment, shutdown processes must be established in accordance with SHE requirements appropriate to the nature of the divestment.

In this way, Galp Energia develops and promotes the harmonised application of the minimum SHE requirements in the shutdown processes of establishments and facilities from the Galp Energia Group. Business Units, Management Units and group companies must apply shutdown plans adapted to the characteristics and the risk related to establishments and facilities.

#### **STANDARD OF MODIFICATION MANAGEMENT**

Galp Energia is committed to protecting employees, clients, partners and the community, and protecting the environment, thereby contributing to the well-being of society. It is essential to ensure the application of requirements of Modification Management, temporary, permanent or urgent, by ensuring that new hazards and risks are identified and assessed, allowing a preventive performance for their mitigation or elimination.

Galp Energia applies a methodology that sets out the scope, the application

mode and the criteria that make the application of the formal methodology of Modification Management mandatory.

#### **MANAGEMENT MANDATORY. STANDARD OF OCCUPATIONAL HEALTH MANAGEMENT**

Galp Energia defends an integrated approach of occupational health to prevent all risks related to professional activities. The Company maintains working conditions which contribute to the existence of high levels of physical, mental and social well-being in both employees and the surrounding community.

Galp Energia applies methods internally published as Galp Energia Standard Procedure regarding occupational health. In this way, there are stages of anticipation, recognition, assessment and control of risks related to professional activities, keeping them in acceptable levels.

#### **STANDARD OF ANALYSIS AND MANAGEMENT OF PROCESS RISK**

It is essential, given the complexity of some of Galp Energia's activities, to identify, assess and manage risks appropriately to minimise exposure to the risk of accidents during processes involving employees, facilities, the environment and society.

The Galp Energia Procedure Standard regarding the Analysis and Management of Process Risk was drafted, whose purpose is to set out the minimum requirements for the analysis and management of process risks.



WHAT ARE THE ANALYSIS  
CRITERIA FOR THE SELECTION  
AND ASSESSMENT OF  
SUPPLIERS?

STANDARD OF SHE MANAGEMENT OF  
SERVICE PROVIDERS

The Galp Energia Procedure Standard regarding the SHE management of service providers was drafted to promote the alignment and compliance of the activity of service providers with legal requirements and SHE requirements set out by Galp Energia, and to ensure the fulfilment of these requirements and the involvement in the Company’s culture.

This standard sets out, in several stages, the criteria for the adequate management of the SHE requirements to be applied to companies that provide services to Galp Energia: from pre-qualification and qualification of suppliers, the definition and management of the contract, training and guidance previous to the execution, coordination and inspection of works, audits, to the assessment of the contract and performance, the high level of demand in SHE aspects is clear.

The adopted method includes a judicious selection of suppliers and a strict assessment of condition and SHE risks of the service, completed by audits and inspections, in a relationship of closeness and communication with companies. These companies are followed in the implementation of improvements needed to fulfil the goals and requirements of SHE, to motivate and to encourage service providers to

reach a performance level that corresponds to Galp Energia’s expectations.

REGULATORY GUIDE OF WORK  
PERMITS

In Galp Energia, works developed in heights, excavations, confined spaces or involving dangerous energies are critical and have increased risks when they are run in facilities that operate large amounts of toxic and inflammable substances. To prevent undesirable events arising from these activities, the adoption of safe working methods, properly planned and based on the correct analysis of risks performed by authorised and training people is imposed.

These premises are part of a System of Work Permits and were already comprised in the standards. Given their relevance, the Regulatory Guide regarding the Monitoring of Systems of Work Permits was developed, which, performing as a tool for its continuous improvement, provides guidance to an adequate and more effective monitoring in the control of the execution of works identified as potentially dangerous.

The Regulatory Guides regarding the management of asbestos, polychlorinated biphenyls (PCB) and substances that deteriorate the ozone layer remain in force, aligning and improving the management practices of regulated substances in their life cycles.

## MANAGEMENT OF CRISES AND EMERGENCIES

### CRISIS

Galp Energia is proactive towards the risks inherent to its activities. The Company believes in the evolution of the Safety Culture to promote prevention in the way to reach zero accidents. In addition, a set of standards and procedures that define minimum requirements to be applied in the several day-to-day activities was developed. These requirements include the prevention of serious occurrences that may put people, the environment, goods, business and image at risk. Required initiatives were developed to minimise the consequences of situations originated from outside the Company that may have negative repercussions on its activities.

Galp Energia developed a Management System of Crisis, which sets out guidelines for the management and coordination that complete the local response to potential or actual crisis scenarios, thereby ensuring communication and the internal and external platforms needed to deal effectively with the situation. This system is based on the Crisis Management Manual and complements emergency plans and contingency plans.

Prevention is one of the Company's priority and scenarios and a risk matrix was developed to help top management to take decisions. Based on the scenarios, the Organisation prepared itself to undesirable situations by simulating and planning a coordinated response to an abnormal situation with transparent, objective and timely communication and information.

### EMERGENCIES

Galp Energia assumes a prevention culture based on a solid SHE management lived by everyone. Simulation programmes and training exercises were implemented, where the response to emergencies of several Units is tested. These exercises are based on risk scenarios previously identified for each facility and activity.

The performance, preparation and training of intervention teams and brigades are periodically assessed to identify areas of improvement.

Galp Energia recognises the importance of simulations in the involvement and promotion of cooperation with external entities, which allows a more effective response in emergency situations.



**GALP ENERGIA TAKES ON A PREVENTION CULTURE BASED ON SOLID SHE MANAGEMENT AND LIVED BY EVERYONE.**





## STRENGTHENING THE SHE CULTURE

The performance in SHE depends on the approach to issues in the Organisation and on the way these issues are integrated in day-to-day activities. Thus, there is an effort to prepare people – own employees and service providers – to align with the best behavioural and technical standards. Galp Energia possesses several tools.

### ASSESSMENT OF THE SHE CULTURE

The Management Elements of the Internal SHE Frame of Reference are reflected in requirements and internal standards, in training sessions, in coaching and in workshops. Given the need to assess the implementation level of the Elements of the Management System, developed work was assessed in 2009, which characterised the Business Units/Management Units and compared the results with those from the first assessment (benchmark) made in 2005, during the diagnosis phase that preceded Galp Energia's Safety Programme.

The evolution in operational and cultural aspects was due to the initiatives that the Programme has promoted since 2006 – Publication of the Vision, the SHE Policy and Behavioural Training at several levels –, related to the development and implementation of cultural elements.

To ensure the continuous improvement and the effectiveness of the Management System, a mechanism of internal audits was implemented. These audits continuously assess and monitor the

evolution of the SHE culture and the implementation of processes and procedures in all units and activities.

Galp Energia developed the Assessment Matrix that unfolds the Internal SHE Frame of Reference and is a benchmark for assessment. The matrix was used in the sessions of self-assessment, attended by the heads of each unit and other senior managers indicated by them.

Auditors were prepared to assess the implementation of the Elements of the SHE Frame of Reference. In this context, several crossed audits were performed, which monitored and assessed the level of implementation and the evolution of the SHE Management and Culture System of several units in an independent, objective and comparable manner. It started including Galp Energia's annual audit programme.

### TRAINING AND COACHING ON SHE

In 2010, several training, awareness and coaching sessions on SHE were organised, which were attended by close to 620 employees, equipping them with the necessary knowledge



STAKEHOLDERS

**WHAT IS THE TYPE OF PROJECTS AND INVESTMENTS MADE FOR THE ENVIRONMENT AND SAFETY?**



**DURING 2010, SEVERAL TRAINING AND AWARENESS-RAISING AND COACHING SESSIONS WERE ORGANISED IN THE SHE AREAS, IN WHICH CLOSE TO 620 EMPLOYEES PARTICIPATED.**

and techniques to implement several areas of the SHE Management System, namely:

- motivation (workshop);
- SHE Management of service providers;
- training of auditors from the Management System/SHE Frame of Reference;
- analysis of process risk;
- operational discipline.

In addition to these trainings, several coaching sessions on the commitment and the role of leadership, aimed at front line managers, and on the SHE responsibilities of the hierarchical line and the SHE professionals were organised.

### PREVENTIVE OBSERVATIONS OF ENVIRONMENT AND SAFETY

In 2010, Galp Energia continued committed to the consolidation and

improvement of the SHE performance by adjusting the monitoring process, with proactive and reactive indicators, and encouraging reporting.

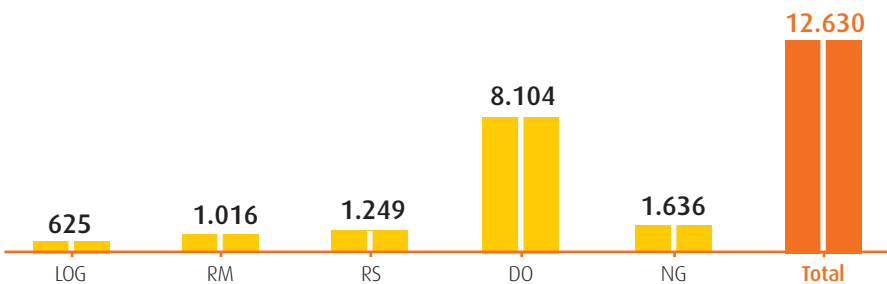
Preventive Observations of Environment and Safety (OPAS in Portuguese) are one of the main proactive tools and have proved very useful, being part of the routine in several areas of the Company. OPAS consist of the observation of own employees or service providers during activities, followed by a positive approach to commend proper behaviour or correct unsafe practices. This approach encourages employees to comply with the SHE requirements by achieving their commitment.

In several areas of the Company, in 2010 were more than 12,500 hours of OPAS, provided by employees with credentials and trainers, were organised, having monthly targets in accordance to Galp Energia's Procedure Standard.



**CLOSE TO 12,500 HOURS OF OPAS, PROVIDED BY EMPLOYEES WITH CREDENTIALS AND TRAINERS, WERE ORGANISED.**

### Number of preventive environment and safety observation hours



In 2010, 18 Alerts of SHE by the Corporate EQS were disclosed, 11 on which to the entire Group, while seven were targeted at a specific area, due to its nature. Among the alerts, four referred to internal occurrences and 14 were related to accidents outside Galp Energia's universe, whose lessons and recommendations are important to prevent similar occurrences.

A Quick Win is an initiative that, due to its visibility and coverage, speed and simplicity of implementation, leads to an effective SHE improvement. During 2010, close to 400 Quick Wins were reported by Galp Energia's areas, which, arising from situations of easy solving and quick implementation, contributed to the SHE improvement.

**SHE MEETINGS**

Quarterly, Galp Energia organises SHE seminars joining the SHE managers from the Company's departments in sessions

with the average length of a day. In these sessions, relevant themes are presented, experiences are shared and the closeness between colleagues is fostered.

Driving a car is one of the most dangerous activities that many of Galp Energia's employees are exposed to, both during service or out of service. Annually, vehicles in the service of Galp Energia cover over 60 million kilometres. From this perspective, promotion of road safety is a priority for the Organisation, which adopts a policy of road safety that affects employees on professional driving and stipulates minimum requirements for vehicles being used. This policy actively promotes the proper training of drivers by establishing a periodicity set out in accordance to distances covered during professional driving for defensive training courses. To reduce the likelihood of accident, initiatives that minimise driving errors and promote the adoption of a conduct suitable to traffic and road conditions are highly praised.

- During the transport of Galp Energia's products, such as fuel, chemicals and asphalts, demands regarding passive safety of vehicles (tractor and tank), driver training and complementary equipments that exceed legal requirements are set out.
- Galp Energia believes that the adoption of this posture has been determinant for the reduction of accidents of vehicles that are used on a day-to-day basis at its service. Medical fitness and the training of drivers of these vehicles are periodically assessed. These initiatives contribute to improve the safety performance.

- With this programme, the goal is reducing the number of road accidents, personal damage and its seriousness by continuing to train and use cars with high safety standards.

## REPORTING OF THE SHE PERFORMANCE

**Galp Energia reports SHE indicators for over 10 years.**

Galp Energia reports SHE indicators for over 10 years. Throughout this period, the reporting system gained maturity, allowing the Organisation to build reliable communication instruments with customers, stakeholders and public entities and to participate in studies and statistics of the sector and industrial and business associations. This system consolidates the Organisation's knowledge as an essential factor to improve performance. Because who does not know where he is does not know where he is heading. And Galp Energia knows where it is heading.

### THE PROJECT OF THE REPORTING MANUAL AND THE GUIDE OF EQS INDICATORS

In 2010, Galp Energia started developing a project for the draft of a Corporate Manual of Monitoring and Reporting and a Guide of Environmental, Quality and Safety Indicators.

With this project, the definition and uniformity of determining and reporting criteria, language and the scope of indicators will be consolidated, contributing to a better knowledge of the Organisation's

performance and to a reporting system that is more comprehensive and auditable, less vulnerable and with higher levels of information quality. The goal is to improve the systematic analysis of the Organisation's performance indicators by providing the best support tools to the management of each Unit and Galp Energia.

The Guide of Indicators will reassess the current list of the main operational indicators applicable to each management unit of the Group, starting with a benchmarking analysis, stakeholder engagement and the identification of the needs of the businesses. Indicators include sustainability indicators from GRI. The project will be completed in the first half of 2011.

### DATA BOOKS OF REFINERIES

The SHE data books of refineries show Galp Energia's determination in creating effective communication mechanisms with entities and society. For the third year running, these reports were published, whose goal is to present the main SHE indicators of these industrial facilities by informing



STAKEHOLDERS

**WHAT IS THE TYPE OF PROJECTS AND INVESTMENTS MADE FOR THE ENVIRONMENT AND SAFETY?**



society and the national, regional and local authorities. In 2010, English versions were published for the first time to share information with

European peers and associations that represent the sector and European industrial activities.

## HEALTH AT WORK



**IN GALP ENERGIA, THE GUARANTEE OF THE EXISTENCE OF HYGIENE AND SAFETY CONDITIONS NEEDED TO SAFEGUARD THE HEALTH OF EMPLOYEES IS ESSENTIAL.**

### NOISE

In Galp Energia, the guarantee of the existence of hygiene and safety conditions needed to safeguard the health of employees is essential.

Hence, monitoring noise at working places and employees' exposure according to specificities related to each facility is guaranteed. These campaigns lead to several measures that minimise exposure to noise and inform employees.

agents were followed to objectively assess exposure and to identify areas of improvement. Monitoring chemical agents is ensured by previously defined programmes that involve isolated campaigns along with continuous individual monitoring.

### MEDICAL EXAMS

Galp Energia performs proactively by providing health care, thereby promoting the health of employees.

### EXPOSURE TO CHEMICAL AGENTS

In Galp Energia, employees' health is a priority. In a company with activities that involve several chemical agents and products, controlling employees' exposure is necessary. In the several facilities, monitoring programmes of chemical

On admission, future employees are subject to tests to assess their physical and psychological capacities for the position. They are periodically subject to exams and reassessments to monitor and ensure their health and well-being.

## PRODUCT SAFETY

### REACH

On 1 June 2007, the European Regulation, REACH – Registration, Evaluation, Authorisation and Restriction of Chemicals

(1907/2006), entered into force. According to this regulation, the possibility of continuing production and marketing of isolated end and intermediate substances depends on the timely recording on the website

of the European Chemicals Agency (ECHA).

Fulfilled the pre-recording phase until 30 November 2008, Galp Energia recorded the 58 substances covered by this legislation until the planned data of the first phase, 30 November 2010.

Following REACH, the initiatives to draft new Safety Data Files – an essential communication element of dangers to downstream users – are under way, which will start including exposure scenarios necessary for the implementation of measures of risk management by clients.

This way, handling products preserves human health and the environment.

## CLP REGULATION

In late 2008, a new European Regulation on chemical products was published. It is Regulation (CE) n.º 1272/2008, regarding classification, labelling and packaging of substances and mixtures, known as CLP. It came into force on 20 January 2009.

This regulation is based on the Globally Harmonised System of Classification and Labelling of the United Nations, aiming at contributing to the world harmonisation of the criteria of classification and labelling of substances and mixtures.

The Safety Data Files and the labels of products marketed by Galp Energia are under revision to start including new information on the classification and classification set out by the CLP. Wide activity is being developed on this subject.

## PROCESS SAFETY

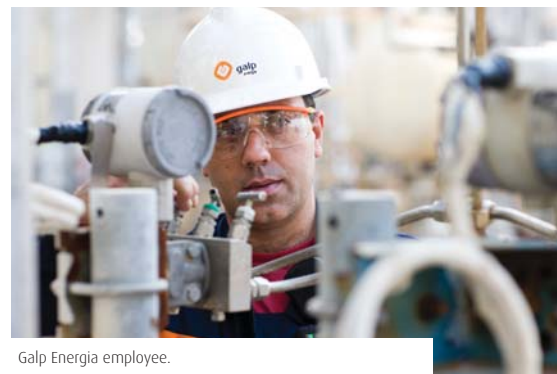
The safety of facilities and operations and respect for the environment and the community where the Organisation operates is a critical goal for Galp Energia.

The safety in facilities and operations starts in the project phase. In this phase, risks are identified and analysed to implement the technically suitable solutions to eliminate or reduce them to acceptable levels.

In the exploration phase, it is ensured that the facilities are safely maintained and operated. Risk analyses are periodically performed to reassess existing risks and guarantee that they are maintained in acceptable levels. In this context, indicators of Process Safety were created, which are reported and compared to the data available for the industry.



**THE SAFETY OF FACILITIES AND OPERATIONS AND RESPECT FOR THE ENVIRONMENT AND THE COMMUNITY WHERE THE ORGANISATION OPERATES IS A CRITICAL GOAL FOR GALP ENERGIA.**



Galp Energia employee.

## ENVIRONMENTAL PERFORMANCE

## OPERATIONAL DATE

	CORE ENVIRONMENTAL INDICATORS	2009	2010	CHANGE (%)
Refineries (includes the Lubrificant Plant, the Aromatic Plant and Sinecogeração)	Processed cargo (kt)	12,173	13,249	8.84%
	Energy consumption			
	Consumption of Fuel Gas (kt)	306	310	1.26%
	Consumption of Natural Gas (kt)	171	251	46.79%
	Consumption of Fuel Process Residue (kt)	319	252	(21.00%)
	Consumption of power (GWh)	536	566	5.60%
	Consumo de Gás Natural para produção de H <sub>2</sub> (Mm <sup>3</sup> )	-	62,6	-
	Produção de hidrogénio (t)	-	17,550	-
	Electrical production (GWh)	685	1,121	63.65%
	Consumption of water (10 <sup>3</sup> m <sup>3</sup> )	7,464	7,827 <sup>(4)</sup>	4.86%
	Volume of reused water (10 <sup>3</sup> m <sup>3</sup> )	830	951	14.58%
	Volume of effluents (103 m <sup>3</sup> )	4,778	4,449	(6.89%)
	CO <sub>2</sub> emissions (including the Aromatic Plant) (t)	2,616,075	2,832,143	8.26%
	NO <sub>x</sub> emissions (t)	4,404	5,193	17.91%
	Total emissions of NO <sub>x</sub> per processed cargo (kg/t)	0.3618	0.3920	8.33%
Cogenerations (3)	SO <sub>2</sub> emissions (t)	9,384	7,629	(18.70%)
	Total emissions of SO <sub>2</sub> per processed cargo (kg/t)	0.771	0.5758	(25.31%)
	Particle emissions (t)	657	514	(21.80%)
	Total particle emissions per processed cargo (kg/t)	0.054	0.0388	(28.19%)
Exploration	Thermal production (GWh)	377	348	(7.69%)
	Power production (GWh)	255	236	(7.45%)
	Power consumption (MWh)	528	398	(24.62%)
	Consumption of natural gas (Mm <sup>3</sup> )	73	68	(6.85%)
Logistics	CO <sub>2</sub> emissions (t)	156,087	146,481	(6.15%)
	Burnt gas (MMSCF)	722	1,525 <sup>(2)</sup>	120.78%
	CO <sub>2</sub> emissions (t/ano)		98,278	
	Total movement in Liquid Fuel Parks - Portugal (kt)	7,250	4,925	(32.07%)
	Total movement in Liquid Fuel Parks - Spain (kt)	-	1,267	-
	Total movement of LPG Parks (kt)	417	334	(19.90%)
	Consumption of fuel for the tracer in the Mitrena Park (t) - liquid fuel	414	240	(42.03%)
	Consumption of power in Liquid Fuel Parks - Portugal (MWh)	2,404	1,586	(34%)
	Consumption of power in Liquid Fuel Parks - Spain (MWh)	-	933	-
	Consumption of power in LPG Parks (MWh)	2,208	1,502	(31.97%)
	Consumption of water in Liquid Fuel Parks - Portugal (10 <sup>3</sup> m <sup>3</sup> )	18.3	11.4	(37.70%)
	Consumption of water in Liquid Fuel Parks - Spain (10 <sup>3</sup> m <sup>3</sup> )	-	4.6	-
	Consumption of water in LPG Parks (10 <sup>3</sup> m <sup>3</sup> )	-	0.719	-
	Effluents - rejected volume in Liquid Fuel Parks - Portugal (m <sup>3</sup> )	70,631	33,111	(53.12%)
	Effluents - rejected volume in Liquid Fuel Parks - Spain (m <sup>3</sup> )	-	8,343	-
	Distance in Portugal for product transportation (km)	32,311,431	30,005,240	(7.14%)
Terminals (Sines and Leixões)	Power consumption in terminals (MWh)	-	2,945	-
	Water consumption in terminals (10 <sup>3</sup> m <sup>3</sup> )	-	115	-
	Total movement in terminals (kt)	-	7,376	-
	Power consumption (MWh)	1,735	1,292	(25.53%)
Sigás	Water consumption (10 <sup>3</sup> m <sup>3</sup> )	-	41.8	-
	Total movement (kt)	-	863	-
	Power consumption in the buildings of distribution companies (MWh)	1,129	857	(24.09%)
Service areas in Portugal	Water consumption in the buildings of distribution companies (10 <sup>3</sup> m <sup>3</sup> )	-	2.5	-
	Power consumption (MWh)	31,830	32,144 <sup>(1)</sup>	0.99%
	Water consumption (10 <sup>3</sup> m <sup>3</sup> )	1,042	1,275 <sup>(1)</sup>	22.36%
	Power production (kWh)	62,473	63,538	1.7%
Service areas in Spain	LPG consumption (t)	-	5 <sup>(1)</sup>	-
	Power consumption (MWh)	15,482	35,971 <sup>(1)</sup>	132.34%
	Water consumption (10 <sup>3</sup> m <sup>3</sup> )	232	395 <sup>(1)</sup>	70.16%
	Power consumption (MWh)	4,112	4,355	5.91%
Buildings (Towers of Lisbon and R. Alecrim)	Gas consumption (m <sup>3</sup> )	26,281	29,667	12.88%
	Water consumption (m <sup>3</sup> )	17,390	18,223	4.79%
	Power consumption (MWh)	563	394 <sup>(5)</sup>	-
	Water consumption (m <sup>3</sup> )	4,042	2,142 <sup>(5)</sup>	-
Aviation	Non-hazardous industrial residue (t)	2,546	2,280	(10.45%)
	Hazardous industrial residue (t)	17,768	12,160	(31.56%)
Refineries, plants of lubricants and aromatics, parks of logistics and LPG, aviation	CO <sub>2</sub> emissions from Galp Energia's fleet (t)	14,625	12,147	(16.94%)
Galp Energia's fleet	CO <sub>2</sub> emissions with flights (t)	1,728	1,479	(14.41%)
Flights				
TOTAL				
Power production (GWh)		940	1,357	
Power consumption (GWh)		596	648	
Fuel consumption	Natural gas (Mm <sup>3</sup> )	289	384	
	Fuel gas (kt)	306	310	
	Fuel processing residue (kt)	319	252	
		8,778	9,633	
Water consumption (10 <sup>3</sup> m <sup>3</sup> )				
Direct emissions of CO <sub>2</sub> (t) - Refineries (including H <sub>2</sub> ) and cogenerations		2,772,162	2,978,624	

(1) Indicators that were not audited

(2) Includes Kuito FPSO Norte+ BBLT - CPT+ TL - CPT+ FPSO Cidade São Vicente+ FPSO Cidade Angra dos Reis. In Kuito the gas injection did not occur due to a technical problem detected in the injection riser.

As a consequence, there was an increase in burnt gas.

(3) The data includes the cogenerations of Carrico and Powercer.

(4) This amount includes 10.7 103m3 related to the water consumption in the office, the filling building and the LPG Park in Perafita.

(5) The data relates to the period from January to August 2010.

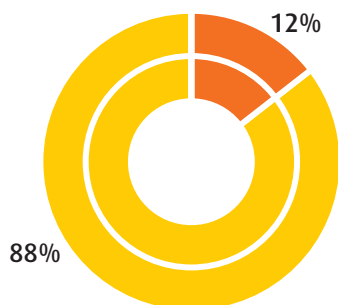
## RESOURCE CONSUMPTION

Galp Energia has undertaken several initiatives for the effective use of natural resources, namely reducing water consumption and increasing its reuse. In addition, streamlining the use of natural resources is a concern that is present in all stages of the life cycle of facilities, products and

services. This concern is reflected on the implementation of measures of energy efficiency and on the selection of fuel, technologies and materials.

Industrial facilities consume water from waterholes, abstractions, or supplied by municipal services:

### Matosinhos refinery



● Public network  
● Águas do Noroeste

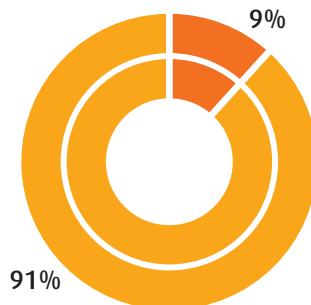
#### Carriço Cogeneration

Abstraction of underground water for industrial and domestic use, washing and watering, included in a REN area.

#### Powercer Cogeneration

Water consumption from Central de Cervejas.

### Sines refinery



● Boreholes  
● AdSA

#### Service areas

Abstraction of underground water and/or supply through municipal services.

#### Fuel parks

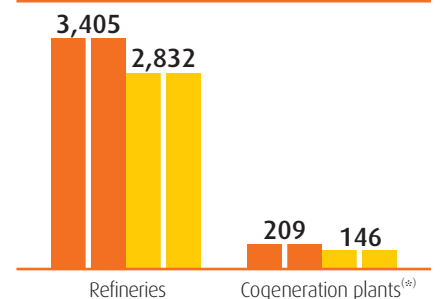
Abstraction of underground water and/or supply through municipal services.

## ATMOSPHERIC EMISSIONS

In atmospheric emissions, the highlight was CO<sub>2</sub> emissions of Galp Energia's facilities under the European Union Emissions Trading System. In 2010, surplus of emission licences was

recorded again. The good performance resulted from efforts and investments, mainly in the consumption of cleaner fuel and in the refurbishment of facilities.

### CO<sub>2</sub> emissions in 2010 (kt)



● Awarded emission licences ● Emissions

<sup>(\*)</sup> Includes Powercer and Carriço



BIODIVERSITY

In the Iberian Peninsula, most industrial facilities are not located in protected areas and, when they are close, adequate protection measures to prevent accidents that may threaten the environment, such as impact mitigation, and to possess the combat means for environmental

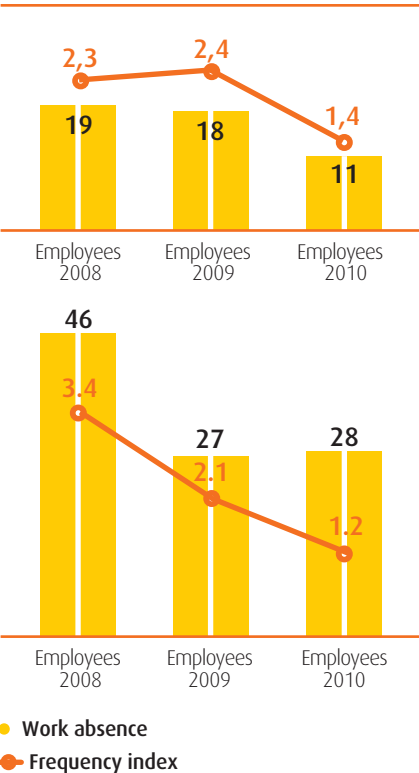
emergency are put in place. Activities that may damage biodiversity and ecology are subject to environmental impact assessment studies, in which not only measure impacts but also proposes monitoring and measuring measures that safeguard the protection of environmental values, which include ecological ones.

Risk analysis of filling stations

Following the project started in 2008, 144 filling positions of high-risk Retail were identified. Based on this information, correction initiatives were defined and implemented, taking into account technical and operational aspects. These initiatives include the placement of devices of overfilling control in some reservoirs, vitrification of reservoirs, implementation of the daily control of breaks and leftovers, cleaning of hydrocarbon separators, distribution of safety procedures, etc.

In 2010, a study of risk analysis to a universe of 100 fuel positions of clients from the transport sector and the industry of the Companies Management Unit was started. Throughout 2011, the continuation of the project for the remaining positions of the management units of Companies, Specialities and “Management Ilhas” is scheduled.

Personal accidents leading to work absence Galp Energia + service providers



SAFETY

In 2010, continuing the alignment effort with the best international practices of communication of performance indicators, the frequency index (FI) of personal accidents with absence for Galp Energia’s employees, excluding in itinere accidents, the FI with absence of service providers and the global index were disclosed.

The global frequency index, which is Galp Energia’s benchmark frequency index, reveals the accident rates of

Galp Energia’s employees and service providers.

In 2010, there was a close to 42% decrease in Galp Energia's global frequency index compared with a year earlier. Comparing with CONCAWE, the usual benchmark of the European sector, whose frequency index in 2009 was 1.8 (own and suppliers, marketing and refining), there was an improvement, due to the awareness initiatives and the training provided in 2010 to service providers.

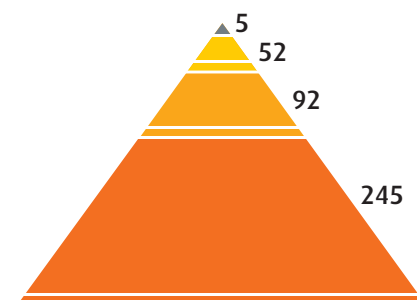
In 2010, 578 accidents were reported and distributed through levels 1 to 4. Level 1 related to accidents that led to injury without absence (with first aid) and level 4 related to accidents

that resulted in permanent disability or death. Accidents involving the community, customers and service providers are included when there was material damage or Galp Energia's services were involved, even if they not occurred during the regular development of the Company's activities.

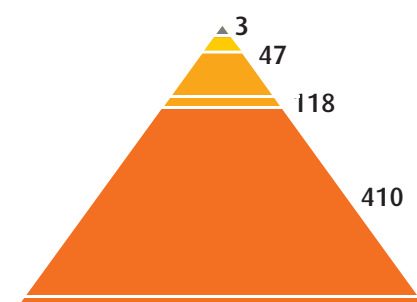
In 2010, as in the previous year, the significant improvement in incident report (accidents and quasi-accidents) caused an increase in the total number of incidents, particularly in less serious classes, which translates a higher sensitivity to the importance of reporting every occurrence.

### Occurrences

2009



2010



### Type of accident

- Class 1
- Class 2
- Class 3
- Class 4



## QUALITY

### QUALITY MANAGEMENT

In Galp Energia, quality is managed in order to guarantee that processes and systems achieve consistent and balanced results.

To achieve this objective, a management strategy was

consolidated, which defends that the intrinsic quality of an organisation comes from its culture and the values of its employees. The employees know that the quality of the company's products and services depends on the performance of each one of them.

### Model of quality management



In 2010, the performance model for quality management was maintained. This model performed:

- in the inter-functional articulation and in the alignment of Business Units with the strategic priorities of the organisation for quality management;
- in the following of the legal and regulatory environment;
- in the consolidation of processes and activities that ensure quality;
- in the monitoring and assessment of the performance of environment, quality and safety management systems;
- in resource management.

In 2010, several interaction forums between the quality managers of several units of the organisation took place. The main goals of the forums:

- promoting alignment between corporate strategies and the goals of the Business Units;
- analysing business indicators on audits, corrective actions and quality control;
- disclosing current issues and relevant initiatives regarding quality;
- monitoring the activity plans;
- organising workshops and promotion sessions;
- obtaining data for the EQS improvement process.

In this context, three workshops took place: Quality Management at Galp Energia, Management of Non Conformities, and Dashboards – Management tool.

In the first workshop, issues such as handling complaints, the role of quality managers in the Organisation, documentation for product conformity, nonconformities and corrective actions were discussed. In the second workshop, participants analysed the following issues:

- classification of problems;
- accountability of problems;
- creation of teams to investigate problems;
- investigation and analysis of the cause;

- classification of the priority of corrective actions.

In the session regarding the dashboards, its main functionalities were presented, and quality managers were encouraged to apply and disclose this tool in their Management Units. This tool provides the status of several processes in real-time, namely actions, audits and nonconformities.

Throughout the year, issues on the development and specification of products and EQS indicators were discussed. Projects related to SHE were disclosed by members of several departments of the company that shared their experience and knowledge.

## EVOLUTION OF THE QUALITY OF FUEL

**The products marketed by the company are handled throughout a complex logistics chain until their end – Galp Energia’s customer.**

The existence of internal specifications that are strict and submitted to a judicious control process ensures that, throughout this chain, the characteristics of products are maintained within agreed levels, ensuring customers’ trust and loyalty in the Company.

To monitor legal changes in 2010 and meet contract requirements made with clients, several Internal Specification Files were reviewed, including diesel, fuel oil, bitumen, base oils and other chemical products. Fuel of the internal market



**THE EXISTENCE OF INTERNAL SPECIFICATIONS THAT ARE STRICT AND SUBMITTED TO A JUDICIOUS CONTROL PROCESS ENSURES THAT, THROUGHOUT THIS CHAIN, THE CHARACTERISTICS OF PRODUCTS ARE MAINTAINED WITHIN AGREED LEVELS.**





STAKEHOLDERS

## WHAT ARE THE LEGAL STANDARDS OF FUELS AND WHAT IS THE COMPOSITION OF PRODUCTS?

### FUEL OF THE INTERNAL MARKET

In June 2009, the Directive 2009/30/CE, known as the Directive of Fuel Quality (DQC in Portuguese), was published. This directive enforces changes in the specification of fuels and the definition of targets for the reduction of emissions of greenhouse gases as well as mechanisms for their measurement. The adoption of DQC to the Portuguese Law enforced the revision of the government decrees n.º 89/2008 and n.º 281/2000 and the revision of other aspects of the government decree n.º 89/2008 not included in the DQC.

The government decree n.º 142/2010, published on 31 December, revises the legal specification of fuels to be placed on the Portuguese market from 1 January 2011.

The maximum content of ethanol in the Superplus gasoline was set at 10% (v/v). The Eurosuper gasoline was maintained as a protection grade with a maximum level of 5% (v/v) of Ethanol.

For the two grades of gasoline, the Vapor Pressure and Evaporate at 70°C in the transition period are changed. This change was included in the Portuguese standard NP EN 228 of 2009 and its change in the legal specification is very important, since it allows a more adequate and coherent transition when compared with gasoline volatility in October and April.

Regarding road diesel, the government decree n.º 142/2010 sets out a maximum content of 7.0% (v/v) of FAME and includes a new requirement of Oxidation Stability for road diesel containing over 2% (v/v) of FAME. This new requirement is very important to guarantee that the product is suitable for the intended use, thereby ensuring its quality.

Following the adoption of DQC, the government decree n.º 142/2010 also reduces the maximum content of polycyclic aromatic hydrocarbons allowed in diesel from 11% to 8.0% (m/m).

The new specifications also limit the content of metallic additives in road fuel.

Observing the effort of regulators, Galp Energia followed in 2010, through the participation in several committees and entities, the project of change in fuel specifications. To this end, Galp Energia developed the necessary changes in its quality assurance system in order to ensure the application of the legal diploma from 1 January 2011, the date of entry into force.

### MARINE FUEL

As a consequence of the implementation of the revision to Appendix VI of MARPOL by the International Maritime Organisation (IMO), which introduces a set of significant changes regarding Safety, Health and the Environment, with impact on the specification of marine fuel, the International Standards

Organisation (ISO) started a revision process of standard ISO 8217, regarding the specification of marine fuel, which was published in June 2010.

This is the fourth revision of this standard, in which the grades of marine fuel are changed and deep modifications in the specification applicable to each grade are introduced.

One of the aspects included in this revision of the standard is the limitation of the use of FAME in marine fuel.

The limit of sulphur content applicable to each grade of marine fuel is no longer included in the standard, referring it to the legislation, given the multiplicity of legal diplomas in the world applicable to sulphur content of fuel.

The specifications of marine fuel are now much more strict in several properties, including ash, aluminium, silicon, H<sub>2</sub>S and acidity, among others.

Galp Energia readily adopted the new specification ISO 8217 in its internal specifications relating to the marketed grades of distillates and residual fuel oil.

## **BITUMEN**

Directive 89/106/CEE of the Council of 21 December 1988, relating to the approximation of legal, regulatory and administrative dispositions of the member states on construction products, was adopted to the

Portuguese law through the government decree n.º 113/93, of 10 April, changed by the government decree n.º 4/2007, of 8 January. This led to the need of assigning the CE mark to paving bitumen until late 2010.

Galp Energia successfully developed the process that led to the CE mark for all bitumen products marketed through Petrogal S.A. and Probigalp S.A.

From 25 November 2010, the Company's production sites were allowed to place the following products in the European Economic Areas:

### **Probigalp (facilities of Rio Maior and Amarante)**

Bituminous emulsions according to standard EN 13808:2005 – Bitumen and bituminous binders – Framework for specifying cationic bituminous emulsions

### **Sines Refinery, Matosinhos Refinery/Parque da Boa Nova and Terminal of Viana do Castelo**

Paving bitumen according to standard EN 12591:2009 Bitumen and bituminous binders - Specification for paving grade bitumens

### **Sines Refinery**

Hard paving bitumen according to standard EN 13924:2006 Bitumen and bituminous binders - Specification for hard paving grade bitumens

## PARTICIPATION IN COMMITTEES AND ENTITIES

**Galp Energia's commitment to its stakeholders of placing in the market products that meet or exceed the legal or contract requirements applicable, and ensuring the efficient use of resources by investing in innovative technologies and in the best operational techniques available creates efficiency and effectiveness challenges.**

These challenges are only achievable by sharing knowledge supported on the scientific, technical, economic and legislative areas with impact on the quality of products. In this way, Galp Energia maintains several participations in external entities in both Portugal and abroad.

In the context of the participation in CONCAWE – Fuel Quality and Emissions Management Group and in the respective task forces, Galp Energia ensures a number of connections with bodies that lead the evolution of fuel quality.

In 2010, the projects under the development of specifications of road gasoline and diesel by monitoring the works of CEN/TC19 – Petroleum products and CEN/TC383 – Sustainably produced biomass for energy applications are highlighted.

An intense revision of standards related to fuel specifications, leading to the growing incorporation of biofuel, was developed in 2010. However, technical issues and the strong economic pressures with contradictory interests make it difficult to achieve consensus

necessary for the publication of standards. Galp Energia monitored the work developed in both the CONCAWE and the Technical Committee - CT38, under the Portuguese Quality System, to prepare itself in advance to have the most developed fuel.

Concerning marine fuel, Galp Energia participated in the ADH - Marine Fuels groups and, regarding aviation fuel, in the ADH - Aviation Fuels group. By creating these groups, connections are strengthened with bodies such the International Petroleum Industry Environmental Conservation Association (IPIECA), the International Standards Organisation (ISO)-ISO/TC28/SC4/WG6 and the International Maritime Organisation (IMO), concerning marine fuel and with the Joint Inspection Group (JIG) and the Aviation Fuel Committee do Energy Institute (AFC), in aviation fuel.

Task forces cover several important areas for the fuel quality and foster interaction with other companies operating in the market. Galp Energia placed itself in an advantageous position allowing the anticipation of risks and the consolidation of strategic scenarios.



**AN INTENSE EFFORT OF REVIEWING THE STANDARDS RELATED TO FUEL SPECIFICATIONS WAS UNDERTOOK IN 2010, LEADING TO AN INCREASING INCORPORATION OF BIOFUEL.**

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In bitumens, developments in standards were monitored through the participation in the EUROBITUMEN and, in Portugal, in

the Technical Committee CT153. In 2010, the work developed by this committee included the publication of the Portuguese appendix to standard EN12591, which sets out specifications for paving bitumen.

### CONCAWE's working group / CONCAWE's performance areas

Legislation and standards	Refining and Marketing	Renewable energy and alternative fuel	CONCAWE relations
			

## CERTIFICATIONS

Galp Energia possesses several certifications of management systems in the areas of Environment, Quality and Safety and Occupational Health. In 2010, the covered systems maintained their certifications.

NP EN ISO 9001	NP EN ISO 9001 AND/OR OSHAS 18001/NP 4397 AND/OR NP EN ISO	NP EN ISO 9001/ OSHAS 18001/ NP 4397 NP EN ISO 14001	OSHAS 18001/ NP 4397 NP EN ISO 14001
Lubricants business, Aviation fuel, Base oils, Galp Químicos, Galp Gás, Inspection of the Sines refinery, Bitumen business, Probigal, Production and marketing of Lubricants (Gavà, Barcelona), Galpgeste, Retail	SAAGA Ptroval (Valencia)	CLC, Setgás, Beiragás, Lisboa, Lusitaniagás, Duriensegás, Retail sale of the last-resort marketing company (natural gas)	Sines refinery

In 2010, three new certifications were obtained: production and marketing of Lubricants (Gavà, Barcelona), Duriensegás and retail units.

These certifications completed a project that was undertaken with the efforts of employees at various levels and, regarding Retail, entailing the close involvement of concession holders and resellers of the entire network.





THE GOAL IS TO EQUIP THE ORGANISATION AND ITS PARTNERSHIPS WITH TOOLS AND METHODS ABLE TO CONTINUOUSLY IMPROVE THE EFFECTIVENESS OF INTERNAL PROCESSES AND CONTRIBUTE TO A BETTER CUSTOMER PERCEPTION REGARDING THE QUALITY OF PRODUCTS AND SERVICES PROVIDED WITH THE GALP ENERGIA BRAND.

The certification of Duriensegás covers the Environment, Quality and Safety and Occupational Health for all its activities. The certification of the Retail unit covers the management of the operation of supply positions for the following activities:

- the reception, storage and marketing of Galp Energia fuel;
- the marketing of consumption goods in Tangerina shops;
- Galp Energia’s washing services.

The goal is to equip the organisation and its partnerships with tools and methods able to continuously improve the effectiveness of internal processes and contribute to a better customer perception regarding the quality of products and services provided with the Galp Energia brand.

**GALP ENERGIA  
LABORATORIES –  
CONTROLLING QUALITY  
WITH EXCELLENCE**

In 2010, all laboratories of Galp Energia maintained accreditations granted by IPAC, in accordance to standard NP EN ISO/IEC17025. This qualification remains a cornerstone of quality management ensuring the trust of stakeholders. This qualification is the highest level of demand for testing laboratories and is recognised around the world.

Galp Energia’s laboratories have been distinguished by their excellent performance in interlaboratory comparisons, as shown by the numerous certificates of excellence achieved.



L0037  
Ensaíos

Laboratory of the Matosinhos refinery is accredited since 1990.



L0093  
Ensaíos

Laboratory of Galp Lubrificantes is accredited since 1993.



L0190  
Ensaíos

Laboratory of the Sines refinery is accredited since 1997.

## INNOVATING AND DEVELOPING

**Galp Energia's laboratories ensure the execution of inspection and testing plans to the quality control of raw materials, process chains and other projects relating to analytical control.**

These laboratories permanently oversee the relevant scientific areas to their performance.

### MELTING POINT OF PARAFFINS

The determination of the melting point of paraffins is a decisive test to the control of the manufacturing process and the assessment of its compliance with specifications.

Currently, the test is performed at the Laboratory of the Matosinhos Refinery based on the ASTM D87 method. The procedure is completely manual and prolonged, uses old equipment and performs only one test at a time. The market research has not found an automatic equipment to improve this procedure.

Galp Energia decided to develop a system that carries out this determination automatically or semi-automatically. In conjunction with the Chemistry Department of the Faculty of Sciences of Porto, a project for the Design, Construction, Test and Validation of an Instrumental System for determining the melting point of macrocrystalline paraffins was drafted.

The project was completed in late 2010. The system performs up to three tests at the same time, with analysts' occupation not exceeding 20 minutes. With the ASTM D87 method, a single test would take close to 45 minutes.

### QUALITY TEST TO THE IGNITION OF DIESEL THROUGH THE EN15195/IP498 METHOD

The laboratory of the Sines Refinery possesses the most recent equipment to assess the ignition quality of Galp fuel.

Following a validation study with monthly participations in inter-laboratorial comparison tests in which excellent results were achieved, this test was accredited in 2010. This parameter of the specification was assessed in only 30 minutes.



## STUDIES OF CRUDE OIL IN THE LABORATORY OF THE SINES REFINERY

Flash Assay is a pilot test allowing the distillation of crude oil and its blends. Through this test, it is possible to determine the performance and properties of several cuts of a crude sample.

This tool is intended to be increasingly used when monitoring the quality of grades, under production planning, to maximise

the efficiency of the operation and, under procurement, to acquire the best crudes from a large variety of sources available.

The equipment available in the Sines Refinery has capacity to perform close to 20 studies of crude oil per year. In 2010, 18 studies were performed, contributing to a higher operational efficiency and to the improvement of refining performance.

## PROGRAMME OF ENVIRONMENT, QUALITY AND SAFETY (EQS) AUDITS



THE DEADLINE FOR THE ESTABLISHMENT OF CORRECTIVE ACTION PLANS HAS BEEN PROGRESSIVELY REDUCED.

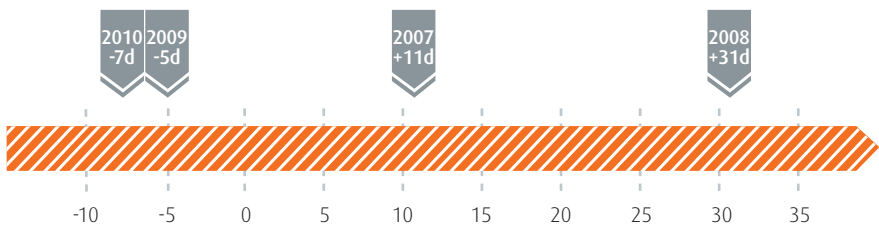
**The programme of EQS internal audits for 2010 was approved at the highest level and 52 audits were conducted, involving 72 internal auditors with 114 participations overall.**

The programme of EQS internal audits for 2010 was approved at the highest level and 52 audits were conducted, involving 72 internal auditors with 114 participations overall. During this period, the management was strategically guided by the introduction of visible improvements, which consolidated the involvement of senior managers in the audit process. The purpose was reinforcing technical aspects related to the draft of the audit report and the classification of findings, making the follow-up process of corrective actions arising from audits more effective.

Galp Energia is aware that challenges arising from the need to improve the

performance of the EQS internal audit plan can only be achieved with the audited areas' perception of this process. In 2010, a survey to management units was launched and over thirty improvements were identified, which were subject to an action plan due to be implemented in 2010/2011.

Some of the main management indicators of this process showed a positive evolution. For instance, plans of corrective actions arising from the audits were drafted, which evolved from an unfavourable variance of over 31 days in 2008 to less than seven days in 2010.

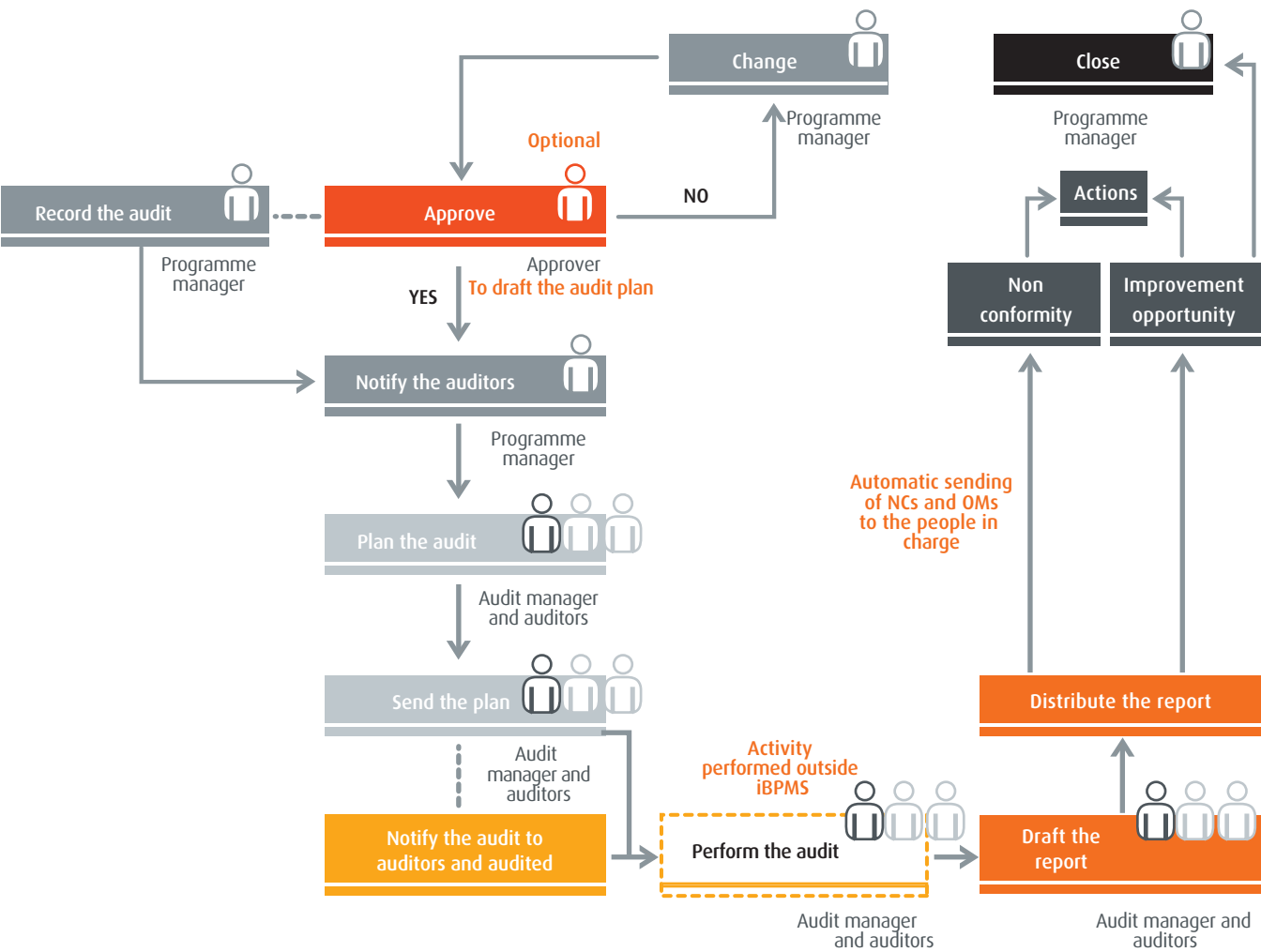


MANAGEMENT OF THE EQS  
AUDIT PROGRAMME

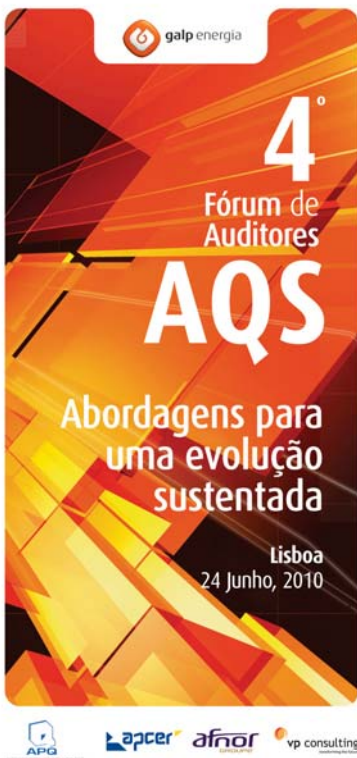
The EQS internal audit programme  
is managed in Galp Energia by

the iBPMS platform. The platform  
manages the activities that underlie  
the conduction of audits and  
maintains the records.

iBPMS™ Audit Manager; Audit management - Activity workflow







In the new version launched in 2010, the recording of both the audit plan and the findings of the report was streamlined.

At the end of the audit, the auditors can deliver the report to those that were audited, recording findings at the same time. In this way, it is possible to start immediately the identification and the record of corrections and corrective actions.

Given the challenges that Galp Energia is facing, the need to assign priorities to the corrective actions resulting from the EQS audits is important. In this way, criteria were set out to assign priorities to actions.

This approach to the management of actions carries new challenges to EQS auditors. More and more, it is necessary to deepen the underlying themes to the audit's findings, preferring quality to quantity.

## RESOURCE MANAGEMENT – 4TH FORUM OF GALP ENERGIA'S EQS AUDITORS

Promoted by the area of Corporate Quality, the 4th Forum of EQS auditors was held in June 2010. The forum involved close to 80 participants and was mainly targeted at Galp Energia's EQS auditors and senior managers.

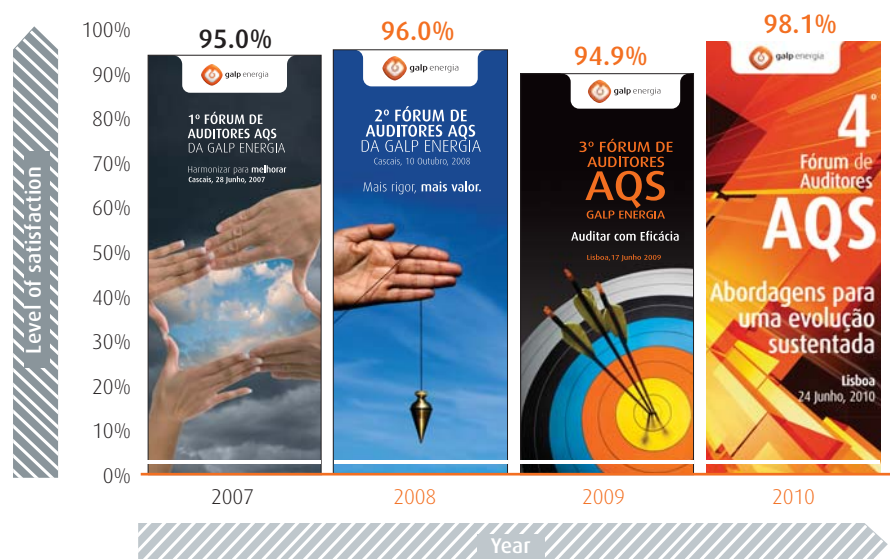
The acknowledgment of the need to involve all the stakeholders in the EQS audit process was underlying the theme "Approaches to sustained evolution". Auditors from the pool were invited to participate and presented their vision of the EQS internal audit process in several areas, such as Quality, Environment, Safety, laboratories and legal compliance, and shared their experience as auditors.



### WHAT IS EXPECTED FROM THE EQS INTERNAL AUDITORS?

- AVAILABILITY;
- GOOD AUDIT PREPARATION;
- INVOLVEMENT;
- PARTICIPATION IN TRAINING;
- GOOD PLANNING;
- DRAFT OF AN ACCURATE AND CONCISE REPORT;
- GOOD JUDGMENT.

### Forum of EQS auditors



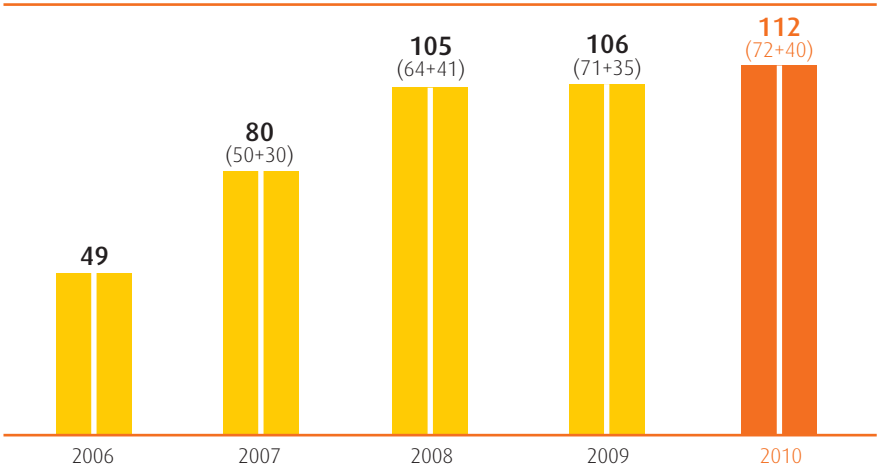
POOL OF EQS AUDITORS

To keep up with the evolution of the EQS systems and business needs, the pool of auditors was consolidated in the various specialties. In 2010, it was possible to achieve the highest number of auditors in the pool (72) and technical auditors (40). This success is the result of the training programmes in previous years, which were systematic and guided towards Galp Energia’s strategic priorities.

There are no auditors assigned to this task. All the auditors conduct audits along with their regular tasks and are made available by the management units for this purpose. In 2010, Galp Energia, by acknowledging this fact, delivered participation diplomas during the open session of the Forum of EQS Auditors to all EQS auditors who conducted audits in 2009.



Number of EQS internal auditors







# 10

## DEVELOPING THE POTENTIAL OF HUMAN RESOURCES

THE IMPLEMENTATION OF  
A LONG-TERM ADVANCED  
TRAINING POLICY SETS OUT  
THE BASES TO MAXIMISE  
THE POTENTIAL OF OUR  
HUMAN CAPITAL.





## TALENT ATTRACTION, DEVELOPMENT AND RETENTION

**Galp Energia strongly invests in training and in the development of human capital, which is a strategic priority with accurate goals.**

### ADJUSTMENT OF TRAINING CONTENTS TO THE DEVELOPMENT NEED OF HUMAN RESOURCES

In 2010, processes and internal standards that guide training were reviewed, updated and simplified, introducing more effectiveness and efficiency in operations. Quality control mechanisms were improved, thereby ensuring a better adjustment of contents to the development needs of its employees and implementing well-structured processes that maximise return on investment with an accurate assessment of the effectiveness of training.

Throughout the year, there were 130,320 training hours, up 5.3% from the previous year. Under the subject of the development of skills for on- and offshore operations, 1,332 training hours were held abroad, in 16 countries.

Training consisted of a plan that reflected the needs for developing behavioural and technical skills aiming at the improved performance of employees. This training executed transversal plans of strategic development for businesses and

safety, health and environment (SHE). It used traditional training based on interactive pedagogical methods supported by multimedia technology, as well as long-distance learning, e-learning and b-learning, supported by the Intralearn platform.

The “Terças Temáticas” conference cycle was resumed, a fortnightly event on Tuesdays that connects hundreds of employees to Lisbon by videoconference from Brazil, Spain, Porto, Sines, Madeira, Azores, Venezuela and other countries. It allows employees to share knowledge about several subjects, ranging from business units to health, safety, citizenship, the new spelling agreement for the Portuguese language, motivation and resilience.

### THE PROFESSIONAL DEVELOPMENT PLAN

An internal website exclusively dedicated to professional development to inform employees about possible career opportunities is being created.



**THROUGHOUT THE YEAR, THERE WERE 130,320 TRAINING HOURS, UP 5.3% FROM THE PREVIOUS YEAR. UNDER THE SUBJECT OF THE DEVELOPMENT OF SKILLS FOR ON- AND OFFSHORE OPERATIONS, 1,332 TRAINING HOURS WERE HELD ABROAD, IN 16 COUNTRIES.**

## Developing the potential of human resources



### THE GENERATION GALP PROGRAMME

The Generation Galp programme exists for 12 years and intends to train young people with indisputable potential to join Galp Energia's strategic staff in the medium term.

Some of the best students of the main Portuguese universities are invited to participate in the recruitment process.

The Generation Galp programme includes two professional experiences in different areas of the company – the first goes from September to February and the second goes from March to August – and several

initiatives designed to get to know the company and create a contact network that may facilitate future performance through greater integration.

The young trainee is monitored by a mentor – a senior manager of the company – with whom he shares its activity. The mentor integrates the new member in his team, supplies the resources for work, drafts and presents the traineeship programme, ensures specialised training, assigns tasks, monitors the trainee's performance and assesses his results.

This is a successful programme, which was attended by many current senior managers occupying highly



STAKEHOLDERS

**WHAT IS GALP ENERGIA'S COMMITMENT TO THE TRAINING AND INCLUSION OF YOUNG PORTUGUESE TECHNICIANS AND GRADUATES?**



## THE GALP ENERGIA ACADEMY IS A TRAINING & ASSESSMENT CENTRE.



STAKEHOLDERS

## WHICH ARE THE DEVELOPMENT OPPORTUNITIES OF SKILLS AND TRAINING FOR GALP ENERGIA'S STAFF?

specialised technical or management positions and team integration positions.

From 1998 to 2010, 300 young people have participated in the Generation Galp programme, 80% of which remained in the company.

### GALP ENERGIA ACADEMY

The Galp Energia Academy is the result of the determination and commitment to complementary training intended to maximise the abilities of the Group's staff, leading to the emergence of new leaders capable of taking rising responsibilities in businesses and the company's corporate roles.

The training roles of the Academy extend to distinct areas of knowledge, mainly those that are essential for the development of employees' know-how, thereby integrating training courses or sessions intended to accomplish the targets that have been set out. This is the case of the Advanced Training Course on Management (which is related to the inception of the Academy) and the EngIQ – PhD Programme in Business Environment and Advanced Training in Refining Engineering, Petrochemistry and Chemistry.

As a structural project of advanced training, the Academy intended to

cooperate with a set of renowned institutions from the Portuguese academic world in various degrees.

The Galp Energia Academy is a training & assessment centre.

Currently, the Galp Energia Academy cooperates with the Universidade Católica Portuguesa, Universidade do Porto, the Universidade de Coimbra and the Universidade Nova de Lisboa. These universities have significantly contributed to the quality of the degrees in which they participate, allowing the Galp Energia Academy to be recognised as a renowned and valued training & assessment centre.

Supported by the Group's intranet, a channel dedicated to the Galp Energia Academy was created in MyGalp website (<http://mygalp/academiagalpenergia>), which contains the documentation of the courses. Trainees may access the management of papers and the delivery date, and communication

### ADVANCED TRAINING COURSE ON MANAGEMENT

With the main purpose of providing management and behavioural training to senior managers and to high-potential employees specialising in energy management, the Advanced Training Course on Management was launched, which was related to the foundation of the Academy.

The predominant scientific area of the first course lectured in the Academy is Management. In this context, behavioural skills of the trainees will be developed as well as their knowledge on Galp Energia's activities and businesses.

The main goal of the course is to professionally qualify employees, with a view of harmonising knowledge and consolidating concepts related to Galp Energia. It also intends to create internal contact networks that promote interaction among peers in the context of decision-making, whether operational or strategic.

The course also intends to prepare senior managers and future leaders for their management positions in Galp Energia's structure. In addition, it is another tool for supporting career management as it provides concrete measures of support to progression within the professional stages allowed by the system.

#### **EngIQ – PHD PROGRAMME IN REFINING ENGINEERING, PETROCHEMISTRY AND CHEMISTRY**

This PhD programme, innovative in both Portugal and Europe, gathers the best schools in chemical engineering in Portugal and ensures that research projects needed for the course take place in corporate environment and address subjects previously agreed between universities and companies.

Focused on chemical engineering, the PhD Programme in Refining Engineering, Petrochemistry and Chemistry was designed as a more specialised course than training usually offered by Portuguese

universities in doctoral level degrees. In this way, it was planned to meet training needs in a field where several domestic and multinational companies operate, which recently formed the Industrial Association of Refining, Petrochemical and Chemical Companies (AIPQR in Portuguese). These companies generate significant revenues, thereby explaining the creation of a Competitiveness and Technology Centre (PCT in Portuguese), recently recognised by the Portuguese state as an initiative worth supporting by the Portuguese development fund (QREN in Portuguese).

With the creation of this programme, the purpose is to promote the competitiveness of those industries through the creation and dissemination of scientific knowledge that will support new technologic developments in this field.

The expected results include the target of training 20 specialised senior managers every year in:

- PhD programmes in Business Environment;
- advanced Studies degrees (Advanced Training);
- attendance of specific curricular units (bespoke modules).

Under the EngIQ programme, R&D projects are being developed in Galp Energia's refining area, which are addressed in the chapter of Innovation, technology and relationship with the scientific community.







## INTEGRA PROGRAMME – OPERATORS OF GALP ENERGIA'S REFINING SYSTEM

The INTEGRA programme was developed with the purpose of structurally and systematically monitoring the integration of new operators in the refining system by setting out specific goals in accordance to the goals of the team, assessing and identifying difficulties in integration and technical and behavioural development, promoting team spirit and creating a space for communication.

This programme aims at supporting the integration of new operators and, consequently, improving their ability to participate, take responsibility and actively contribute to Galp Energia's goals by reinforcing their commitment towards the company.

The INTEGRA programme is based on tutoring as the key element for integration and development. At first, it involved the definition of the tutor's role and skills and, from this, the identification of potential tutors among experienced senior managers of the refining system.

For each new operator, the programme will last for 24 months and will consist of four one-to-one meetings for the structuring, monitoring and development with tutors. The meetings will be alternated with the same number of group sessions, intended to reinforce essential skills, such as communications and team spirit, and to promote participation and involvement aspiring to continuous improvement. Thus, a dynamic relationship between the

employee and the company is created. The programme was officially launched in July 2010, and the first one-to-one and group meetings took place until late 2010. Group meetings were held under the theme of Environment and Energy in the refineries of Sines and Matosinhos, respectively.

## MANAGEMENT OF HUMAN CAPITAL ABROAD

In 2010, there was one more phase in the integration process of human resources from former Agip and Esso subsidiaries in Portugal with the merger in Petrogal of Galp Comercialização Portugal and Galp Distribuição Portugal, and in Spain with the merger of Galp Comercialización España and Ptroval in Galp Energia España SAU. As a result, there was a previous process of harmonisation of terms and conditions for admissions to the companies as well as a personal adjustment of the employee's profile and the profile for the position.

In 2010, the know-how of the main structure of Exploration and Production was consolidated by the structure's reinforcement with some employees experienced in this area. For positions deemed critical, external recruitments were made in the global and competitive job market for exploration and production.

The recruitment plan of technical staff in Brazil was started to set up, in quantity and quality, a local team able to face the growing challenges of the country. At the same time, the adaptation process of the guidelines of human resources policies for the

Brazilian affiliates, adjusted to the law and regional practices, proceeded.

In African downstream affiliates, there were works in Mozambique for the establishment of a pilot project to train and prepare managers, during the fourth quarter of 2010. The ethics code with all employees of the Mozambican affiliate was published. The employees signed the statement of agreement with the principles of the document.

In Swaziland and Gambia, the ethics code was translated and technically verified in view of the law and local customs. After it was published, statements of agreement from Galp Energia's employees were gathered. In both countries, there were processes of Job Description and identification of the main skills for the full accomplishment of the roles.

## UNDERTAKEN INITIATIVES FOLLOWING THE RESULTS OF THE DIAGNOSIS OF ORGANISATIONAL CLIMATE IN 2009

**Following the publication in the number of Energia da Semana especially dedicated to the results of the diagnosis of organisational climate conducted in 2009, which had a 50.2% participation rate, six working groups were created, being led by an executive director, consisting of managers of all business/management units and supported by a human resources technician.**

Each group analysed the results of one climate factor and drafted proposals of initiatives to improve the satisfaction and motivation levels in the Company, which were presented in the meeting of senior managers of April 2010.

### PRESENTATION OF THE WORKING GROUPS' PROPOSALS

Following the meeting of senior managers, there were, between May and July 2010, presentations to the executive committee of the proposals of each working group. The executive committee decided to give priority to the following four goals in August 2010:

#### 1. MOBILITY

Establishment of a goal of 8% minimum mobility for senior managers during 2011.

#### 2. PERFORMANCE ASSESSMENT

Implementation of auditable mechanisms that guarantee the feedback from the assessment of skills and the assessment of goals to all employees involved.

#### 3. ACKNOWLEDGEMENT

Identification, under proposal of first-line management, and acknowledgement by the executive committee of exceptional performance in non-recurrent works with the broad

publication of accomplished results and joint celebration of successes in the meetings of senior managers.

4. WHO IS WHO

Emphasis of the importance of knowing who is who in the Organisation, allowing closer contacts between all people. To this end, the Organisation Area provides in Mygalp a card in which employees may write and update personal information.

DISCLOSURE OF RESULTS BY BUSINESS UNITS/ MANAGEMENT UNITS

A detailed report was delivered to each business unit/management unit with the respective results, which

supported the analysis made with the respective employees.

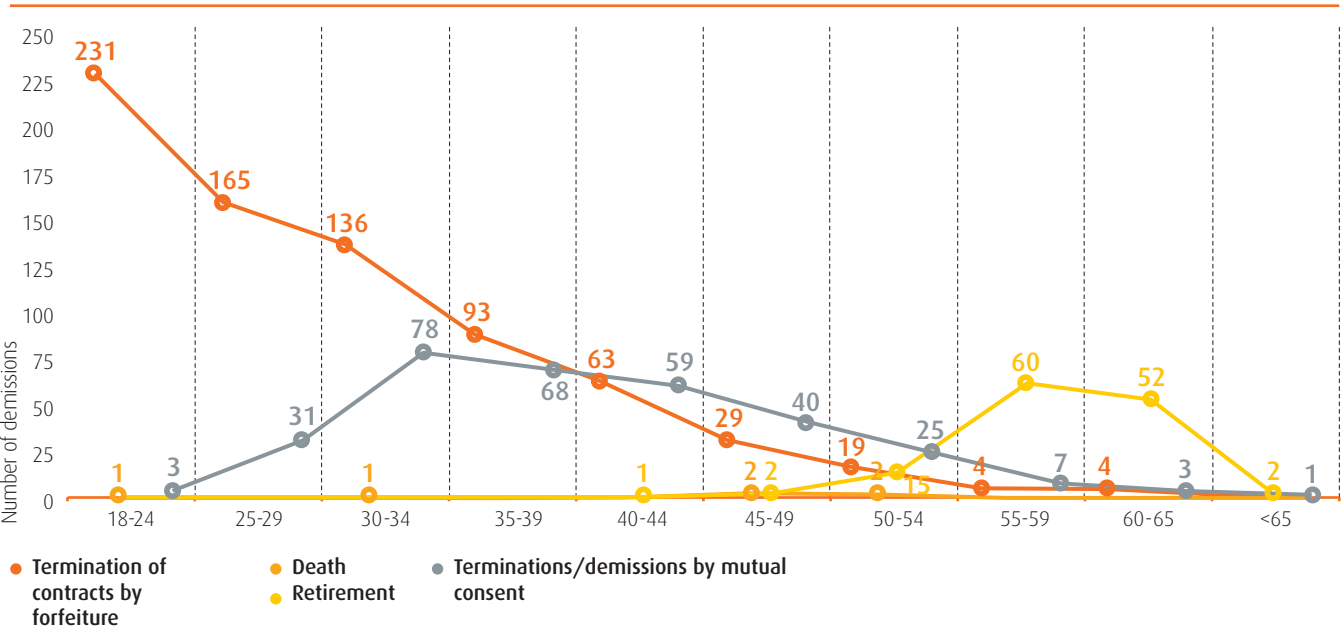
NEXT STEPS

Continuation of the analysis and implementation of other proposals presented by several work groups.

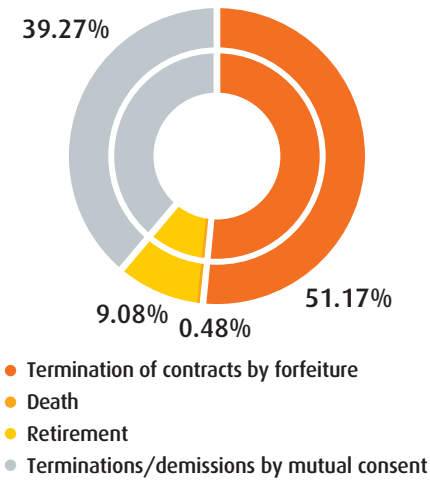
Launch of the climate survey 2010, whose purpose is continuing to monitor employees' perception of seven aspects related to their professional activity (reward, clarity, flexibility, team commitment, responsibility, training, demand levels), comparing the evolution of results and deepening the initiatives to be undertaken in order to achieve continuous improvement of the organisational climate.

LABOUR INDICATORS – HOW WE ARE ORGANISED

Distribution by reason for demission and age group



### Breakdown by reason for demission

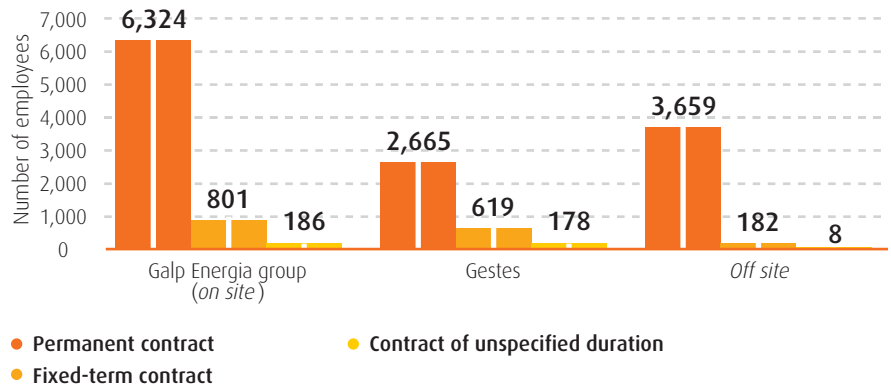


The Galp Energia Group prefers permanent contracts. At 31 December 2010, 86% of its 7,311 employees had permanent contracts. Excluding the workers in areas of service, 96% of the employees have permanent contracts.

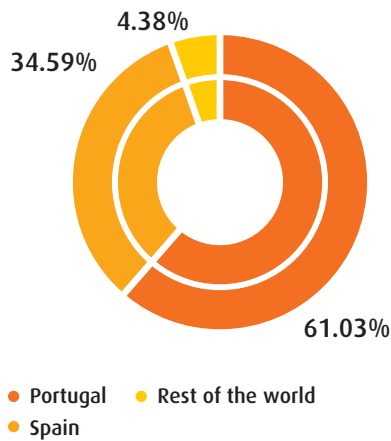
The geographical spread of the Galp Energia Group's employees did not change significantly in 2010 due to the consolidation of existing businesses. The number of employees in Spain and the remaining countries where Galp Energia operates increased less than one per cent.

The distribution by gender remained the same as in previous years, with predominance of male employees. This imbalance was largely explained by the predominance of activities of refining and in Africa.

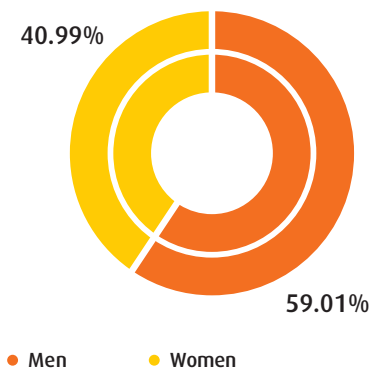
### Number of employees by contract type at 31 December 2010



### Geographical breakdown



### Distribution of employees by gender in 2009









# 11

## SOCIAL RESPONSIBILITY

IN 2010, GALP ENERGIA  
GAVE PARTICULAR EMPHASIS  
TO EDUCATING ON ENERGY  
EFFICIENCY AND TO  
DEVELOPING SOCIAL INITIATIVES  
IN THE COMMUNITIES WHERE IT  
OPERATES.





STAKEHOLDERS

## WHAT ARE GALP ENERGIA'S MAIN ACTIVITIES OF SOCIAL RESPONSIBILITY?



ALTOGETHER, ACTIVITIES COVERED SEVERAL ORGANISATIONS FOR A TOTAL SUM OF €5.9 MILLION IN ADDITION TO CONTRIBUTIONS IN KIND.



## SOCIAL RESPONSIBILITY

To coordinate all social responsibility initiatives, a renewed social responsibility unit was set up in June 2010 under corporate affairs. The purpose is to assemble in one single unit the Company's work in this area.

The purpose of this unit is to integrate and manage social and environmental endeavours in the Company's culture and activities as well as its interaction with all stakeholders while applying best practice, ethical, transparency and good governance principles and developing social responsibility projects. In this manner, all employees can be engaged in all countries where the Company operates.

Altogether, activities covered several organisations for a total sum of €5.9 million in addition to contributions in kind.

### GALP VOLUNTÁRIA

The Galp Voluntária concept was launched, whose purpose is to involve Galp Energia employees in volunteer work developed by the Company.

An internal survey was launched to evaluate employee willingness to participate in volunteer projects and, in a sample of over 700 employees, the rate of favourable replies exceeded 84%.

Galp Voluntária uses an online platform to encourage volunteer work by employees as well the organisation of specific community projects, furthering permanent contact among volunteers.

### GALP ENERGIA SUPPORTS AJUDA DE BERÇO

Associação Ajuda de Berço, a private charity, develops valuable work in safeguarding children's basic rights.

Moved by the association's difficult financial situation in late 2010, Galp Energia encouraged all its employees to give a contribution in kind on 16 and 17 November. This initiative succeeded in collecting enough goods to secure the operation, for an additional six months, of the association's Casa de Monsanto, which houses 20 out of a total of 40 children in the charity's custody.



## MISSÃO UP

**Missão UP | Unidos pelo Planeta is an educational project developed by Galp Energia under its strategy to promote efficient energy use. It is a project with national coverage that is directed to the first six school years.**

To inform and sensitize a school community with 700,000 pupils, 60,000 teachers and 5,135 schools to existing energy sources, energy efficiency, sustainable mobility and the energy footprint, Missão UP explains the impact of energy use on everyday life and which practices should be adopted to lower the impact on the environment.

### TO PROVIDE INFORMATION AND TRAINING IN- AND OUTSIDE SCHOOL

This programme aims to build an enlightened opinion in our children as they are involved and made accountable to adopt certain attitudes and change their behaviour. By way

of the children, the programme hopes to bring these issues to both families and local communities.

Educational communication targeted at schools and a communication campaign on television, the press and the internet spread knowledge about the project and encourage children, schools and parents to participate.

### SUPPORT FROM OFFICIAL EDUCATIONAL, ENVIRONMENTAL AND ENERGY BODIES

The project, which relies on advisory from Sair da Casca, a consultancy specialising in sustainable development, is sponsored by





**PROJECT MISSÃO UP | UNIDOS PELO PLANETA WAS SET UP AND DEVELOPED TO PROGRESS AT SCHOOLS WHILE MAKING PUPILS, TEACHERS AND PARENTS AWARE OF THE NEED TO ADOPT A MORE RATIONAL BEHAVIOUR IN THE USE OF OUR ENERGY RESOURCES.**

the Education Department (DGIDC – Direcção Geral de Inovação e de Desenvolvimento Curricular), APA, the national energy agency, DGE – Direcção Geral de Energia e Geologia and Unesco's local committee.

### **INITIATIVES BY PROJECT MISSÃO UP | UNIDOS PELO PLANETA**

This project offers a website – [www.missaoup.com](http://www.missaoup.com) – which describes existing energy sources in a pedagogical and playful way and provides an archive of relevant content that is organised in different blocks directed to teachers, parents and pupils. The website includes supporting materials for teachers, interactive games for children and advice and hints for parents.

In addition to this content, the project includes the Concurso Brigadas Positivas contest, whereby schools, teachers and pupils are

encouraged to organise brigades, i.e. groups of pupils sponsored by teachers whose duty is to create missions designed to further energy efficiency and sustainable mobility both at school and at home.

A jury composed of project sponsors will shortlist the three best projects and award prizes to involved pupils, teachers, schools and parents.

Project Missão UP | Unidos pelo Planeta was set up and developed to progress at schools while making pupils, teachers and parents aware of the need to adopt a more rational behaviour in the use of our energy resources. The purpose is to extend the project into coming years with more content and new challenges for the schools.

## **CAMPAIGN TO SUPPORT MADEIRA**

**Several initiatives were taken to support the community on Madeira.**

Several initiatives were taken to support the community on Madeira.

One of the main actions was the donation to the local government to repair the damage caused by the floods in February 2010. This action consisted of donating 1 cent for

each litre of fuel sold for two weeks at Galp stations.

Galp Energia also made a warehouse available to Caritas, which made the charity better equipped to help people most affected by floods. On top of these

one-off measures, Galp Energia also made a donation to the island's

association for support to people in need.

## IN PORTUGAL, IN THE EXPLORATION & PRODUCTION

**In Portugal's seven-block area of 21,258 km<sup>2</sup> that includes the Peniche and Alentejo basins where Galp Energia has participated since 2007, each consortium has undertaken to contribute annually to technology transfer programmes in the following way:**

- conservation of technical data in the DGEG's archive, e.g. scanning old seismic lines or well profiles that exist only on paper archives;
- training of DGEG's technical staff;
- renewal of DGEG's specific equipment and technical means for hydrocarbon appraisal and exploration.

In addition, the consortium for the Peniche basin will continue up to 2012 to fund projects at the universities of Lisbon and Coimbra, which will support special studies, training courses and the transfer of technology.

The 3D seismic acquisition under way in the Peniche basin since September 2010 has proceeded with no incidents. The master vessel M/V Geowave Endeavour, which is in charge of the 3D seismic campaign, has ten seismic cables, each one 8,000-metre long and 100 metres apart from each other. This vessel

is followed by two supporting vessels, the Mare Verde and the Thor Supporter.

Fishing activities are quite significant in this area. Therefore, there is extensive cooperation between fishing organisations, the consortium and the service provider so as to make sure that activities develop without harm to any party.

Aboard the vessel, there is a team to permanently observe sea mammals in the acquisition area in accordance with best practice published by the Joint Nature Conservation Committee ([www.jncc.gov.uk/marine/seismic\\_survey](http://www.jncc.gov.uk/marine/seismic_survey)).

Since the start of the acquisition campaign, over one hundred cetaceans were sighted. Because they did not come within 500 metres of the sources, there was no need to interrupt work.

In 2010, Galp Energia sponsored two international scientific events



in geosciences, which were held in Lisbon in September:

- the II Central & North Atlantic Conjugate Margins Conference (<http://www.conjugatemargins.com.pt/>);

- geoMod 2010 – Modelling in Geosciences (<http://geomod2010.fc.ul.pt/>).

The former event was opened by Galp Energia's chief executive officer Eng. Ferreira De Oliveira and had technical presentations by Galp E&P geoscientists.

## INTERNATIONAL COOPERATION

### ANGOLA – IN MARKETING

Sonangalp supported two institutions, Lar do Maculusso and Lar Dona Ema, with Usd 3,000 worth of goods.

- supporting the vaccination of over 1 million children and adults;
- buying refrigeration equipment for the municipalities of Cabinda, Northern Luanda and Southern Luanda;

### ANGOLA – IN EXPLORATION AND PRODUCTION

Together with its partners in Block 14, Galp Energia continues to co-invest with the Angolan government in programmes designed to boost access to more and better local educational and health systems.

In 2010, the sums spent were channelled to:

- refurbishing and buying equipment for Colégio das Irmãs Doroteias in the Namibe province, covering 15 classrooms, 10 toilets, offices, laboratories, training workshops and multi-purpose sports spaces;
- canhe school, in Huambo, where four additional classrooms were built;

To mitigate the impact on the environment and protect biodiversity, several activities were undertaken such as:

- a programme for monitoring sea turtle nesting;
- a programme for protecting cetaceans during seismic trials in Block 14, including monitoring and the definition of protected areas where operations are suspended when cetaceans swim by.

### MOZAMBIQUE

Major social responsibility initiatives in 2010 by the consortium for Area 4 in the offshore Rovuma Block were the following:

- continued implementation of a medical emergency plan with national coverage;

- environmental impact studies prior to the drilling campaign in 2011;
  - continued implementation of social projects in Cabo Delgado province in cooperation with both the Department of Mines and local authorities for the renewal of water supply infrastructure in Palma, Mocímboa da Praia and Macomia;
  - health pre-feasibility study in Cabo Delgado province to prioritize actions for improving health services in Palma (the final report is under preparation);
  - training and institutional support to staff from Instituto Nacional de Petróleo and Empresa Nacional de Hidrocarbonetos;
  - participation in the Extractive Industries Transparency Initiative, an action to enhance transparency in mining industries, sponsored by Mozambique's Department of Mines (MIREM).
- islands Coche and Margarita and La Guajira;
  - preparation of bid terms for the purchase of studies into bird life and the interconnection of wind farms with the power grid;
  - hiring of consultants to evaluate the environmental impact of the wind power project in Estado Nueva Esparta (islands Coche and Margarita);
  - development of the environment feasibility study and the birdlife baseline in Guamache and Coche;
  - development of the environmental, social and cultural impact study for La Guajira;
  - training of staff for the operation and maintenance of wind measurement stations;
  - coordination meetings with local authorities.

## VENEZUELA

In line with the previous year's activities and under the cooperation established between Galp Energia, LNEG and INESC Porto:

- seven out of the ten planned measurement towers were erected as decisions are expected about management of the project in other locations;
- preparation of half-yearly reports to evaluate the wind power potential and estimated production on

However, the project was stalled for close to nine months as Venezuelan authorities transferred management for the newly-created Department of Energy and Electricity in replacement for PDVSA and the former Department of Energy and Oil. Consequently, work was delayed by approximately one year.

Under the memorandum of understanding signed with Galp Energia, the need arose to review the strategy for the project and its funding.





## EAST TIMOR

Galp Energia participates in a consortium led by ENI to explore five

blocks in the East Timor Sea. This consortium is engaged in a number of social development activities.

### Social responsibility and skills development by the five-block consortium in East Timor

- Integrated rural development programme;
- National programme Breastfeeding Association;
- Improvement of water and wastewater conditions in schools;
- National Civic Education Curriculum Development Project (NCECD);
- Computer Resource Centre;
- Hydrocarbon prospects: Research and post-graduate programme for East Timor;
- ENI Corporate University: Funding of Master's scholarships in ENI Master MEDEA's programme;
- Expansion of micromatchmaking services;
- Overall strategy for curbing poverty in remote areas (water and wastewater treatment).

## GUINEA-BISSAU

Petromar supports Instituto Camões in a project for continuous training of Portuguese-language teachers

Petromar, Guinea-Bissau's leading fuel marketer where Galp Energia owns an energy stake, renewed in 2010 its support to Instituto Camões for the development of training initiatives and the post-graduation of Portuguese-language teachers at Escola Normal Superior Tchico-Té.

The Portuguese language is spoken in Guinea-Bissau by less than 10% of the population.

For the 2010/2011 term, 1,602 trainees have enrolled and over 97,000 pupils are expected to benefit indirectly from this training programme, which is administered by Escola Normal Superior Tchico-Té. The cooperation covers also a degree in the Portuguese language.

## GAMBIA

Galp Gambia sponsored the Cycle Race 2010 under Unicef's campaign Road to Awareness

Galp Gambia sponsored, for the second year in a row, the cycle race Galp Unicef Sheraton, which took place in the first weekend



of October outside Banjul, the Gambian, Banjul. This initiative was part of Unicef's Road to Awareness campaign, whose purpose was to collect funds for Unicef's School for African programme in partnership with the Nelson Mandela Foundation Unicef School for African desenvolvida em parceria com a Nelson Mandela Foundation Institute.

The race, which started at Galp Energia's Kairaba filling station and ended with a lunch event at Hotel Sheraton, had the participation of tens of cyclists.

The event was staged in the month of Galp Gambia's second anniversary.

#### **GALP ENERGIA SPONSORS BUSINESS COALITION AGAINST HIV/AIDS**

The Business Coalition Against HIV/AIDS (BUCAHA) was set up by Gambia's Chamber of Commerce and Industry (GCCI) in 2006 to raise awareness in the private sector of the need to gather resources against AIDS through partnerships as well as encourage private and public-sector workers to use volunteer advice and testing.

The funds donated by Galp Energia for the last two years have been used by the BUCAHA mission in the following way:

1. to develop and implement policies and programmes for managing HIV/AIDS;

2. to plan and allocate resources for actions to prevent HIV/AIDS/STD in private-sector workers;
3. to extend services to vulnerable groups in cooperation with other employer associations, social services and civil society;
4. to extend services to vulnerable groups in cooperation with other employer associations, social services and civil society civil;
5. participation in the last two business fairs (2008/9) to raise awareness of HIV/AIDS in Gambia.

## **SWAZILAND**

### **GALP SWAZILAND SUPPORTS THE REMAR ORPHANAGE**

To further social integration in Swaziland, Galp Energia supported in 2010 REMAR Swaziland.

REMAR is a non-governmental organisation whose acronym means rehabilitation of marginalized people and operates in approximately 60 countries in Asia, Africa, America, Oceania and Europe.

REMAR's mission is to improve living conditions for children, families and communities in poor regions and countries by working for structural change to eradicate poverty.



**THIS INITIATIVE WAS PART OF UNICEF'S ROAD TO AWARENESS CAMPAIGN, WHOSE PURPOSE WAS TO COLLECT FUNDS FOR UNICEF'S SCHOOL FOR AFRICAN PROGRAMME IN PARTNERSHIP WITH THE NELSON MANDELA FOUNDATION.**



**TO FURTHER SOCIAL INTEGRATION IN SWAZILAND, GALP ENERGIA SUPPORTED IN 2010 REMAR SWAZILAND.**





## CAPE VERDE

Enacol supports municipalities in Cape Verde by delivering buses for the transport of pupils

On 2 October, Enacol delivered a bus to the municipality of Ribeira Grande de Santiago.

Enacol, S.A., Empresa de Distribuição de Combustíveis de Cabo Verde, which is partly owned by Galp Energia, delivered on 2 October the latest bus for school transportation under an agreement with Carris, the Lisbon public transportation company.

Vice-mayor Alcides de Pina thanked

for the donation that facilitates access to the school, particularly for lower-grade pupils, and said the ENACOL initiative would foster school success for the children of Ribeira Grande de Santiago.

This bus was the latest in a series of 15 vehicles delivered by ENACOL to Cape Verde municipalities.

The purpose is to facilitate transportation of young students, primarily from the earliest stages, who live in scattered locations and face long distances before reaching their school. This initiative supported education and social development.

## CLUBE GALP ENERGIA: SOCIAL RESPONSIBILITY AND THE GALP ENERGIA EMPLOYEES

**Clube Galp Energia consolidated in 2010 a spirit of collective unit among those in Galp Energia's sphere, including its surroundings as well as civil society.**

The initiatives by the club's northern section centred on making sports, cultural and leisure activities available to members and their families as a cluster for personal and professional integration.

The section's basketball team participated in the final stage of the regional Fundação INATEL championship and the athletics team participated in several championships in several age classes. For the first time, the northern section

participated in Fundação INATEL's indoor football championship.

In culture and leisure, several initiatives were taken to encourage contact with nature such as hikes on Spain's Picos de Europa, the Rota do Larouco hike, the hike through the Gerês region and a walk on Rota dos Mouchões.

In the club's central section, the culture and leisure desk developed several initiatives including a lunch

event to celebrate Clube Galp Energia's anniversary jointly with other sections, the S. Martinho party and the organisation of several walks in Portugal and abroad.

Photography in the Anniversary lunch  
In 2010, the Vamos ao(s) Museu(s)... (Let's go to the museums...) was launched for taking club members to museums and other interesting monuments.

Several activities were developed for members' children, namely leisure activities in school holidays, like in previous years.

In addition to the traditional championships of futsal, karting, women bowling and the athletic races over the 25 de Abril and Vasco da Gama bridges, the Lisboa Bike Tour took place, which brought together 160 participants and provided a bike ride started at Vasco da Gama bridge and ended at Parque das Nações.

In the south section of Club Galp Energia, the year 2010 was marked by the consolidation of the activities developed in previous years and by the refurbishment of its facilities.

Concerning sports, artistic roller skating was developed. This sport is practiced by 60 athletes that participate annually in competitions and tournaments organised by the Associação de Patinagem de Setúbal and in national championships organised by the Portuguese Federation of Artistic Roller Skating. In 2010, Club Galp Energia hosted in its facilities the National Championship



in the Cadet category. Athletes representing clubs from north to south of Portugal, including the Azores, participated in this championship.

Regarding culture, the Meeting of Choirs in the summer and Christmas concerts stood out. In 2010, the most relevant initiative of the Choir of the Clube Galp Energia was the performance at the opening ceremony of the Galp Energia Academy.

Clube Galp Energia's three sections competed in regional tournaments of Sport River Fishing, which ended at the National Final of the Internal Sport Fishing Championship, organised by the south section.



### Social solidarity

In 2010, social initiatives were undertaken, among which:

- The promotion of a campaign to collect goods (clothes, footwear, toys and books), which were delivered to charities. This action was reproduced on a national scale at the end of the year;
- The contribution for the 1st Book Fair of the Escola + Project, in São Tomé e Príncipe, on the occasion of the commemoration of the International Book Day, by collecting books and school books from its members;
- The cooperation with the Fundação O Século, an association that, besides organising holiday camps for children in need, develops social initiatives;
- The organisation of a solidarity campaign for the most needy of the parish of Leça da Palmeira, which included the collection of basic goods for Christmas dinner and the delivery of food baskets.

### Christmas parties

The Christmas parties that the Clube Galp Energia organised at Coliseu do Porto, at Coliseu dos Recreios in Lisbon and at Pavilhão de Vila Nova de Santo André, were attended, in 2010, by close to 2,000 children and young people and their families.

## STAKEHOLDER COMMUNICATIONS

### INTERNAL COMMUNICATION WITH EMPLOYEES

#### MYGALP INTEGRATED SYSTEM

In 2010, Galp Energia's internal communication department continued to use its communications channels, primarily mygalp Energia da Semana, mygalp magazine and mygalp employee portal (intranet). The purpose of these channels is to inform all employees about the most important Galp Energia events.

In 2010, a digital version of weekly newsletter mygalp Energia da Semana was launched.

The second anniversary of mygalp integrated system and mygalp magazine, with the publication of issue nº 9 in December was the moment chosen to start a new stage in information channels.

#### INTERNAL EVENTS

Managers' meetings stand out among Galp Energia's internal events.

On 15 and 16 April 2010, a managers' meeting was held in Coimbra. The findings of the organisational climate survey were discussed and a social volunteering action was undertaken in Lar de S. Martinho, a charity founded 36 years ago to take care of children and youths at risk.

On 12 November, a senior managers' meeting was held in the University of Lisbon's campus.

Both events were organised under the motto Positive Leadership.

#### ENGAGEMENT WITH INTERNAL AUDIENCES

As internal communications aim to serve employees as internal

customers, these should express their needs, expectations and ideas.

Several workshops were held in partnership with the innovation department and involved employees from all countries where the Company operates.

#### IMAGE BANK

In 2010, Galp Energia took the first steps to set up an image bank and thus assess, collect and process its imagery assets.

In this way, an important project was started to keep the records of this Group that dates back to the 19th century.



## CUSTOMER SATISFACTION

**As client focus is part of Galp Energia's strategic orientation, customer service management is one of the tools to achieve that goal.**

As client focus is part of Galp Energia's strategic orientation, customer service management is one of the tools to achieve that goal.

It is crucial to know which perception customers have of service quality. Therefore, Galp Energia prepares a survey of customer service satisfaction.

The findings of this survey are based on telephone calls to mass-market

customers who have used customer service units by phone, mail, fax, email or the complaint book.

The survey's findings are a frequent input to continuous service improvement.

In 2010, 19,442 inquiries were made and average satisfaction with remote service was 77.3%, a 1% improvement on a year earlier.

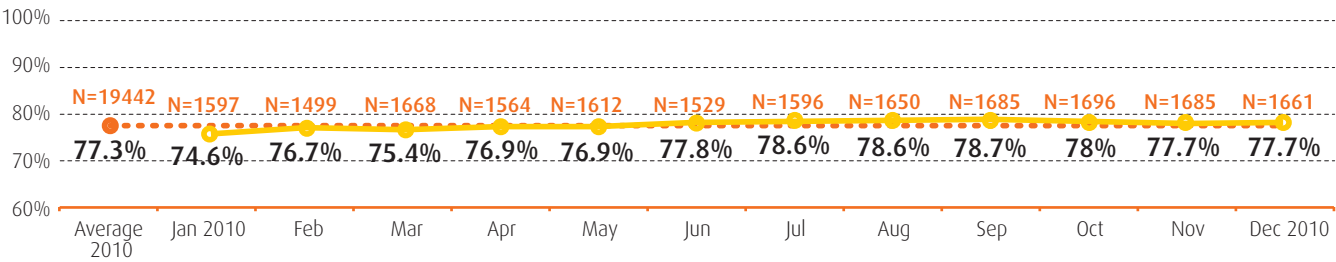


**IN 2010, 19,442 INQUIRIES WERE MADE AND AVERAGE SATISFACTION WITH REMOTE SERVICE WAS 77.3%, A 1% IMPROVEMENT ON A YEAR EARLIER.**

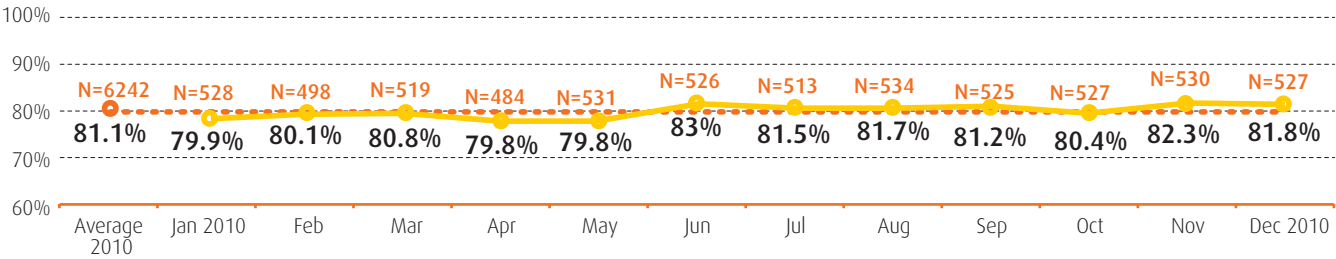
Satisfaction with face-to-face service for natural gas customers was 81.1%, also a 1% improvement on a year earlier.

Analysis of overall satisfaction

How do you classify Galp Energia's customer care?  
Not personally



Personally - Natural gas



CUSTOMER SATISFACTION  
IN NATURAL GAS

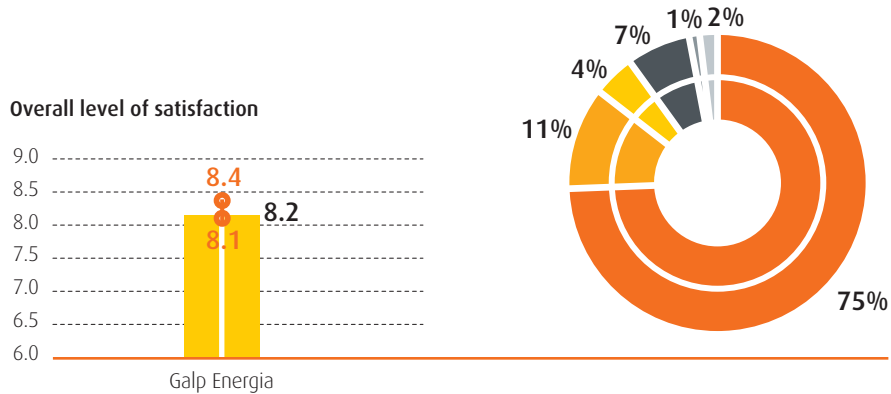
In November 2010, a survey was conducted on service quality

perception in the distribution and marketing of natural gas. The findings from the 1,102 interviews with Group clients were the following:

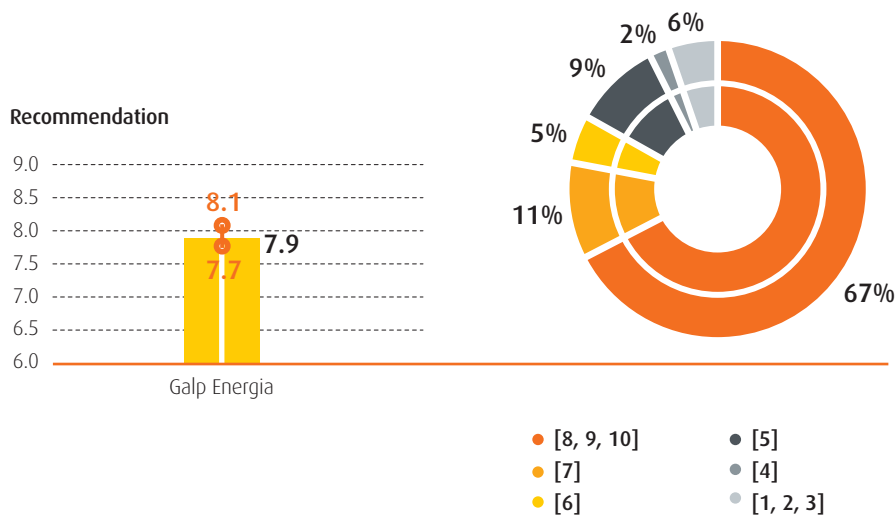
For Galp Energia, answers better than 7 (8, 9 and 10) are in the 75% percentile. Expectations management, considering developments after the service was first used, is favourable.

Distributors stated that they had exceeded customer expectations after the service was first used.

#### Given your experience with the company, what is your overall level of satisfaction?



#### What is the likelihood of recommending the company to friends and/or relatives?

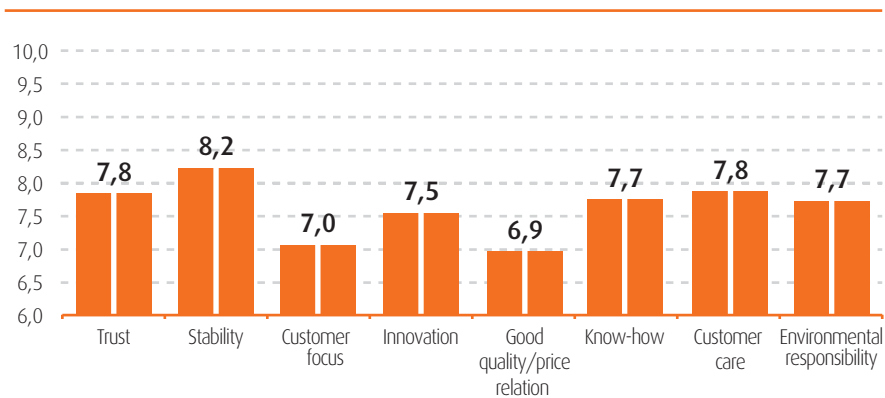


Here, answers better than 7 (8, 9 and 10) were in the 67% percentile.

Findings in 2010 were in line or slightly better than in earlier years.



Your distribution company is a company with...



Most answers said the strengths of Galp Energia’s distribution companies were stability, trust, service, environmental responsibility, know-how and service capacity.

INSTITUTIONAL RELATIONSHIPS

The institutional relationship department, whose primary remit is to represent the Company’s interests in its stakeholder relationships, was restructured for a new approach to community organisations.

Galp Energia participated actively in the organisation in 2011 of East Timor’s Energy Conference, which will discuss the technological and human capital challenges in the exploration and production of oil and natural gas.

- CCIAP, the Arab-Portuguese chamber of commerce and industry;
- Portugal’s centre for wave energy (WavEC);
- Porto’s energy agency (AdePorto).

In 2010, Galp Energia continued to participate in major industry and business associations and refreshed its institutional relationships with the following associations:

- CIP, the Portuguese employers’ confederation;

Galp Energia applied to become a member of the World Petroleum Council (WPC). The WPC was founded in 1933 in London and its primary goals are to facilitate the dialogue between internal and external stakeholders in order to seek improved technical, social, environmental and energy-efficient

solutions to achieve a sustainable development. WPC is a forum for debate, has no political or party affiliation and its membership includes 95% of large-scale oil companies and major petroleum-consuming countries.

"It aims to encourage the application of scientific advancements, technology transfer and the consideration of economic, financial, management, environmental and social effects on petroleum issues. (...) As a neutral forum, the World Petroleum Council has been given United Nations accreditation."  
<http://www.world-petroleum.org/>

To endorse the sector's most relevant projects, Galp Energia formalised in December 2010 its support to A Energia em Portugal: a Perspectiva de Quem a Utiliza, a user-side study by APE, the Portuguese energy association.

This study, in which Galp Energia became involved in 2006, will assess developments in the subject from the user's, either consumer or business, perspective and in several respects: electricity, natural gas and liquid oil derivatives. Like in the previous study, both market liberalisation and energy use and management will be covered.

## 4<sup>TH</sup> RSO FORUM

Galp Energia, through its social responsibility department and the Galp Energia Foundation, participated in the 4<sup>th</sup> Forum for Social Responsibility and Sustainability, an event organised by Associação Industrial Portuguesa (AIP) in the European year for the fight against poverty and social exclusion and the international year for biodiversity, which was held on 21 October in Lisbon's Congress Centre.

This forum had the theme Value networks and sought to be a space for thought, discussion and presentation of solutions to the challenges currently faced by business, academia, government and civil society.



**"IT AIMS TO ENCOURAGE THE APPLICATION OF SCIENTIFIC ADVANCEMENTS, TECHNOLOGY TRANSFER AND THE CONSIDERATION OF ECONOMIC, FINANCIAL, MANAGEMENT, ENVIRONMENTAL AND SOCIAL EFFECTS ON PETROLEUM ISSUES. (...) AS A NEUTRAL FORUM, THE WORLD PETROLEUM COUNCIL HAS BEEN GIVEN UNITED NATIONS ACCREDITATION."  
[HTTP://WWW.WORLD-PETROLEUM.ORG/](http://www.world-petroleum.org/)**





# 12

## GALP ENERGIA FOUNDATION

THE GALP ENERGIA FOUNDATION HAS UNDERTAKEN SEVERAL INITIATIVES IN THE SOCIAL, ENVIRONMENTAL, CULTURAL AND EDUCATIONAL FIELDS, THEREBY SUPPORTING THE COMPANY'S SURROUNDING COMMUNITY IN A SUSTAINABLE MANNER.



## THE GALP ENERGIA FOUNDATION

The year 2010 was a year of consolidation of multi-annual projects started in 2009.

The Galp Energia Foundation sought to identify new challenges and make projects with the purpose of strengthening its relationship with society and diversifying

its performance. The projects undertaken in each of the fields – Environment, Energy and Knowledge, Society and Culture – are presented.

## MULTI-ANNUAL PROJECTS STARTED IN 2009

### SOCIETY

The performance of the Portuguese Paralympic team strongly contributed to draw the attention of the public opinion to adapted sports in Portugal, to its achievements and mostly to the great difficulties faced.

The patronage to the **Paralympic Preparation Project – London 2012** aims to mobilise the society to support and recognise the Paralympic Movement, promote new sports, attract new participants and provide the necessary means and conditions to the preparation of Paralympic athletes;

In 2010, the construction of Casa dos Marcos was started. Casa de Marcos is a reference centre in the civil, social and educative fields of rare diseases, with occupational activities for youths and adults and a permanent telephone line for

information and assistance to family and caregivers, 24 hours a day. These projects of **Raríssimas** – the Portuguese Association of Mental and Rare Illness have the support of the Galp Energia Foundation.

Partnership with **EPIS – Businessmen for Social Inclusion** – in its activity of combating the dropout and failure of students in the 3rd cycle of schooling, based on a new methodology in Portugal to train young people and their families through the work developed by a wide network of professional mediators.

In this context, initiatives were held with Galp Energia' employees, such as "Family conversations" with EPIS trainers on the school success of children and young people.



The Galp Energia Foundation is one of the patrons of the **100 Patrons United for Diabetes** campaign, organised by the Ernesto Roma Foundation and the Portuguese Association of People with Diabetes, and aimed at the construction of the Ernesto Roma Diabetes School. The future diabetes school, whose building is being recovered, was publicly presented in July 2010 and is intended to train health professionals and patients enabling to deal with diabetes and treatment procedures on a day-to-day basis. It is a pioneering school having unique characteristics and features in the world.

## ENERGY AND KNOWLEDGE

**Eco Escolas** project – This partnership with the Blue Flag Association for Europe (ABAE) aims to contribute to the environmental education of children and young people, mainly about energy. Currently, the project involves the maintenance of the website of the Galp Energia Energy School <http://vidas.galpenergia.com/escoladaenergia/index.html>, especially dedicated to the school community, and the organisation of contests for essays on energy use, energy efficiency, sustainable mobility and climate changes. In 2010, the winners of the several contests were the Agrupamento de Escolas de Santa Catarina, the Escola E.B. 2º e 3º Ciclo João Villaret, the Centro de Estudos de Fátima, the Escola Básica Integrada Infante D. Pedro and the Externato Capitão Santiago de Carvalho.

Besides continuing the historical reconstitution of the Galp Energia Group through the testimony of its employees (part of which is available at <http://vidas.galpenergia.com>), the Galp Energia Foundation collects, organises and recovers documents and photographs, as well as historical pieces and objects. It is a strict project carried out in partnership with the Mário Soares Foundation and is extremely important for the Galp Energia Group, since it recovers historical and collective memory.

## ENVIRONMENT

Since 2010 was declared as the International Year of Biodiversity by the United Nations General Assembly, the Galp Energia Foundation continued to support the **M@rbis-NATURA 2000 Project – Information System for Marine Biodiversity**. This project seeks to organise existing scientific information on biodiversity in the waters under Portuguese jurisdiction, including the creation of an integrated information system, databases and a network for sharing information between institutions.

Acknowledging the importance of the development of initiatives to preserve and promote biodiversity, the Galp Energia Foundation maintains an active strategy in this field by supporting this project.

To test the data model of the system and the computer structure, the Savage Islands, in the Madeira archipelago, was chosen as a target.



In the EMEPC/M@rbis/Selvagens 2010 Oceanographic Campaign, held in June, 1,000 species were identified in the largest marine scientific campaign ever made in Portugal.

## CULTURE

Concerning the preservation of Portuguese heritage, works of full restoration and historical reconstruction of the Sala D. João VI at the Palácio Nacional da Ajuda proceeded, under the agreement with the Portuguese Institute of Museums and Conservation (IMC in Portuguese).

The restoration of Sala D. João VI, started in mid 2009, will take two years and involves over twenty

specialised technicians. The operation that is being made will change substantially the look of the space. Therefore, curators, technicians, art historians, researchers, architects and engineers were consulted. All were unanimous about the importance of this reconstruction.

Participation in **IASI – International Institute for Asian Studies and Interchange** regarding the promotion and financial support to the “East Timor Archive and Library” project. This project consists of organising, cataloguing, scanning and updating, by 2011, documentation on East Timor, Indonesia and the region, so that this collection may be transferred to East Timor within 10 years.



## NEW PROJECTS IN 2010

**In addition to the ongoing projects described, other initiatives were undertaken in 2010:**

### ASSISTED CARE TO PEOPLE WITH REDUCED MOBILITY

The Galp Energia Foundation and the Associação Salvador signed an agreement to promote Assisted Care Service and distribute 500 electronic devices for free. This will allow customers with reduced mobility and adapted vehicle to benefit from customised service when buying products in the convenience stores located in Galp Energia’s service stations.

The Assisted Care Service to customers with reduced mobility in Galp Energia’s service stations has as main goals:

- providing levels of high autonomy and service quality to physical handicapped customers during fuel filling and in auto and shop services at Galp Energia’s service stations;
- contributing significantly to an increase in mobility and, as a consequence, to improve the life

quality of disabled people, thereby strengthening their integration in society.

The registration to obtain the electronic device is available at [www.fundacaogalpenergia.com](http://www.fundacaogalpenergia.com). One must fill a form, referring the vehicle's licence and the chosen filling station to pick up the device.

### SOLIDARITY ENERGY CAMPAIGN – OFFERING OF NATURAL GAS HOUSEHOLD APPLIANCES TO SEVERAL PRIVATE CHARITIES

Regarding the Natural Comfort services – a range of exclusive services to natural gas customers, the Galp Energia Foundation, in partnership with Gás Natural Gás&Power – Galp Energia, carried out, in 2010, the Solidarity Energy Campaign to donate natural gas household appliances (stoves, hobs, water heaters and boilers) to private charities in need in the districts of Lisbon and Setúbal.

This offer was made in partnership with Vulcano for the equipments and with Gasfomento for the set-up, verification of the existence of leaks by performing tightness testing, and the assessment of ventilation conditions and installation exhaustion through the measurement of carbon monoxide levels.

The charities were chosen according to the following criteria: geographical coverage, diversification of both audiences and performance, and equipment needs.

The campaign, exclusively targeted at private charities in the districts of Lisbon and Setúbal, took place throughout 2010 in five phases, covering close to one hundred institutions.

### EXHIBITION OF WORKS OF ART

From 11 to 29 October, the **Exhibition of the most emblematic Works of Art** of the Galp Energia Foundation's estate was shown in Galp Energia's premises. The assets include works acquired over time by Petrogal, Transgás, Lisboagás and Esso, which are currently owned by the Foundation. This initiative is part of the preservation and promotion of the historical heritage of the Galp Energia group.

### CICLO DE JAZZ GALP AT CASA DA MÚSICA

Under patronage of the Galp Energia Foundation to the Fundação Casa da Música, the **Ciclo de Jazz Galp** was created, where great names from world contemporary jazz were presented, as well as the new national and international names of jazz. Throughout this cycle in 2010, several renowned artists like Dee Dee Bridgewater, Carla Bley, Chucho Valdés or Omara Portuondo performed on the stage of the Casa da Música.

It was a cycle of cultural events with great quality and a high demand from the audience, having received more than 8,000 people.





## EXHIBITION “BRIDGES FOR A MORE POSITIVE FUTURE”

Following the international competition launched in the context of Experimenta Design in 2009, the Galp Energia Foundation organised an exhibition to show the works that stood out for their quality and diversity. Overall, 60 projects had participated from several parts of the world for a cycling and pedestrian bridge over the Segunda Circular road in Lisbon.

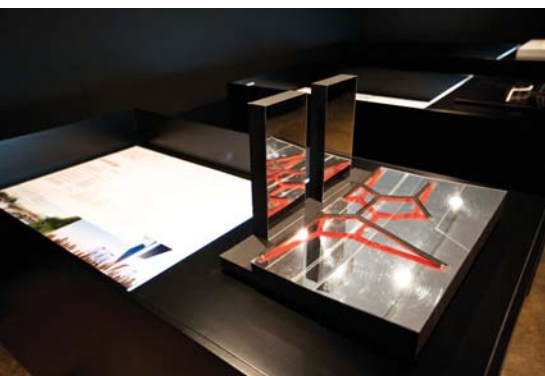
In a new partnership with Experimenta Design, more than 50 competing models were exhibited at the Palácio Quintela from 17 September to 17 October.

The exhibition “Bridges for a more Positive Future” gathers two priorities for the Galp Energia Foundation: the

support to culture and arts, an expression of the development of societies, and the promotion of a more sustainable urban mobility, which directly benefits the people, in this case, the residents in Lisbon.

## TELHEIRAS – BENFICA CYCLEWAY

Under the agreement with the Municipality of Lisbon, the cycling route in Lisbon (Telheiras – Benfica cycleway segment) is being completed. The goals of this infrastructure are supporting environment preservation, promoting sustainable mobility and, at the same time, promoting health and sports in the community. The section of 5.3 km may be used for commuting, as well as for leisure activities by connecting parks and gardens.

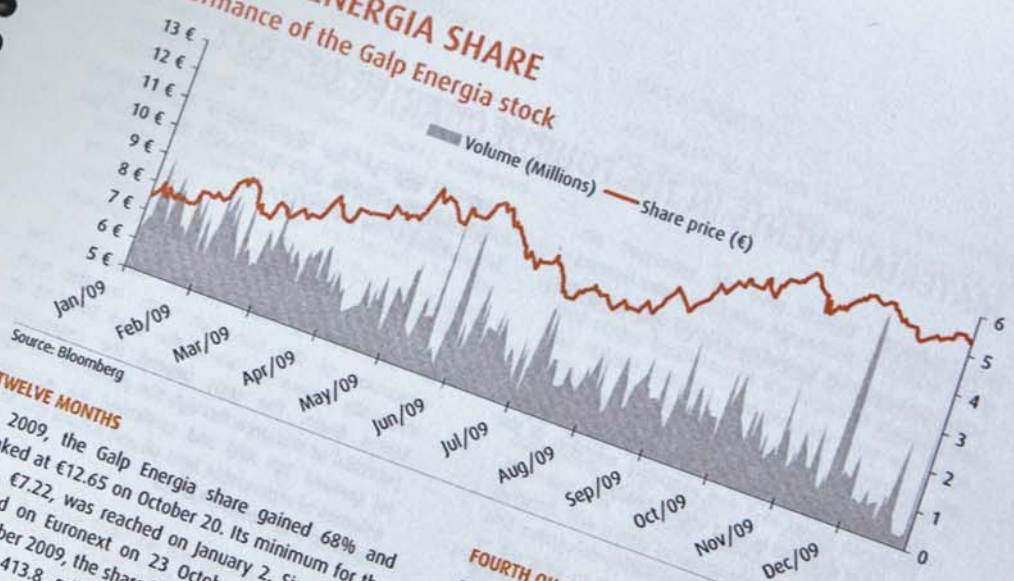


# 13

## APPENDICES

Do sucesso para  
novos desafios

### THE GALP ENERGIA SHARE Performance of the Galp Energia stock



#### TWELVE MONTHS

In 2009, the Galp Energia share gained 68% and peaked at €12.65 on October 20. Its minimum for the year, €7.22, was reached on January 2. Since it was floated on Euronext on 23 October 2006 up to 31 December 2009, the share has gained 108%. Over this period, 413.8 million shares, equating to a daily average of 1.6 million shares, have been traded. At 31 December 2009, Galp Energia had a market capitalisation of €10,017 million.

#### FOURTH QUARTER

The stock gained 2% in the last quarter of the year, when 98.9 million shares, the equivalent of a daily average of 1.5 million shares, were traded.

ISIN  
Reuters  
Bloomberg  
Number of shares

Share detail

Min (€)  
Max (€)  
Average (€)  
Close price (€)  
Volume (M shares)  
Average vol.

Main indicators

PTGALDAM0009  
GALP.LS  
GALP



## APPENDIX I. External verification

### INDEPENDENT VERIFICATION OF THE 2010 SUSTAINABILITY REPORT 2010

To the Board of Directors of Galp Energia, SGPS, S.A.

#### INTRODUCTION

In accordance with the request of Galp Energia, SGPS, S.A. (Galp Energia), we performed an independent verification of the “Sustainability Report 2010” (Report), regarding the performance indicators listed in the Scope below, included in the “GRI index” and presented in different sections of the Report. Independent verification was performed according to instructions and criteria established by Galp Energia, as referred in the Report, and according to the principles and extent described in the Scope below.

#### RESPONSIBILITY

Galp Energia’s Board of Directors is responsible for all the information presented in the Report, as well as for the assessment criteria and for the systems and processes supporting information collection, consolidation, validation and reporting. Our responsibility is to conclude on the adequacy of the information, based upon our independent verification standards and agreed reference terms. We do not assume any responsibility over any purpose, people or organization.

#### SCOPE

Our procedures were planned and executed using the International Standard on Assurance Engagements 3000 (ISAE 3000) and having the Global Reporting Initiative, version 3 (GRI3) as reference, in order to obtain a moderate level of assurance on both the performance information reported and the underlying processes and systems. The extent of our procedures, consisting of inquiries, analytical tests and some substantive work, was less significant than in a full audit. Therefore, the level of assurance provided is also lower.

The verification of the management self declaration on the application level of the Global Reporting Initiative GRI3, based on GRI’s Reporting Framework Application Levels, consisted on the verification of consistency with the applicable requirements. Part of the information required by GRI3 is available

on the “Annual Report and Accounts 2010” and the “Corporate Governance Report 2010”, documents that should be used to obtain a full understanding of the developed activities, the corporate governance and the Group’s performance.

The following procedures were performed:

- (i) Inquiries to management and senior officials responsible for areas under analysis, with the purpose of understanding how the information system is structured and their awareness of issues included in the Report;
- (ii) Identify the existence of internal management procedures leading to the implementation of economical, environmental and social policies;
- (iii) Testing the efficiency of process and systems in place for collection, consolidation, validation and reporting of the performance information previously mentioned;
- (iv) Confirming, through visits to sites, that operational units follow the instructions on collection, consolidation, validation and reporting of performance indicators;
- (v) Executing substantive procedures, on a sampling basis, in order to collect sufficient evidence to validate reported information;

- (vi) Comparing technical data related to greenhouse gas emissions and primary energy consumption validated by the independent assurer under the European Emission Trading Scheme;
- (vii) Comparing financial and economic data with those in the “Annual Report and Accounts 2010” audited by the external statutory auditor, to appraise the external validation of the reported information;
- (viii) Comparing data related to refineries with previous data verified by us in the scope of the assurance of Sines and Matosinhos Data Books;
- (ix) Validation of the material themes included in the Report based on the materiality principle of standard AA1000APS and GRI3, through the comparison of the Report’s content with the content of peer companies’ Sustainable Reports;
- (x) Verifying the existence of data and information required to reach level B, self declared by Galp Energia for applying the GRI3.

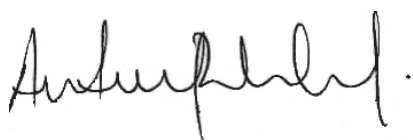
## CONCLUSIONS

Based on our work described in this report, nothing has come to our attention that causes us to believe that internal control related to the collection, consolidation, validation and reporting of the performance information referred above is not effective, in all material respects.

Based on the assumptions described on the scope, we conclude that the Report includes the data and information required for level B, according to GRI3.

Lisbon, May 17, 2011

PricewaterhouseCoopers & Associados SROC, Lda.  
Represented by:



António Joaquim Brochado Correia, ROC



## APPENDIX II. GRI indicators

### GRI 3

<b>1</b>	<b>Strategy and analysis</b>	
1.1	Chairman's statement	Pages 8-11
1.2	Description of the main impacts, risks and opportunities	Pages 14, 15, 18-23, 36-37
<b>2</b>	<b>Profile of the organisation</b>	
2.1	Name of the reporting organisation	Cover
2.2	Primary brands, products and/or services	Pages 48-51
2.3	Operational structure	Pages 50, 51, CRG 2010 Pages 19-22, AR 2010 Pages 134-138
2.4	Location of the organisation's head office	On the back cover
2.5	Countries in which the organisation operates	Pages 48-50
2.6	Nature of ownership and legal form	AR 2010 page 82
2.7	Markets	Pages 48-51
2.8	Scale of the organisation	Pages 18, 48-51, 145
2.9	Significant changes	Pages 16, 52-54, 89-90
2.10	Awards received	Page 17
<b>3</b>	<b>Report parameters</b>	
3.1	Reporting period	Pages 14-15
3.2	Date of the most recent report	Pages 14-15
3.3	Reporting cycle	Pages 14-15
3.4	Contact information	On the back cover
3.5	Definition of report content	Pages 14-15
3.6	Boundary of the report	Pages 14-15
3.7	Specific limitations	Pages 48-51 For the purposes of this report, information provided is limited to businesses developed by companies whose equity holding is over 50%, except for offshore projects of the Exploration & Production business segment.
3.8	Reporting on other entities	Pages 54-55, 81-82, 88-89
3.9	Criteria and bases of calculation	Pages 14-15
3.10	Re-statements of information provided in earlier reports	No re-statements or significant changes occurred in comparison to previous reports.
3.11	Significant changes in relation to previous reports	Pages 14-15
3.12	GRI content index	Appendix II
3.13	External assurance	Pages 14-15, Appendix I
<b>4</b>	<b>Corporate governance, commitments and involvement</b>	To avoid redundancy, information on corporate governance is available in the corporate governance report 2010. Click here for more information: <a href="http://www.galpenenergia.com/EN/investidor/Relatorios-e-resultados/relatorios-anuais/Paginas/Arquivo-de-relatorios-anuais.aspx">http://www.galpenenergia.com/EN/investidor/Relatorios-e-resultados/relatorios-anuais/Paginas/Arquivo-de-relatorios-anuais.aspx</a>
4.1	Corporate governance structure	CRG 2010 pages 19-23
4.2	Indicating whether the chairman of the board of directors has an executive role	CRG 2010 pages 42
4.3	Independent and non-executive members of the board of directors	CRG 2010 pages 42
4.4	Mechanisms that allow shareholders and employees to submit recommendations or guidance to the board of directors	CRG 2010 pages 26-27
4.5	Relationship between the remuneration of the members of the board of directors and management positions and the organisation's performance	CRG 2010 pages 50
4.6	Conflicts of interest	CRG 2010 pages 17, 38
4.7	Qualifications and skills	CRG 2010 pages 85-90
4.8	Mission, values, codes of conduct and principles	Pages 14-15 Click here for more information: <a href="http://www.galpenenergia.com/EN/agalpenenergia/ogrupa/Paginas/MissaoeValores.aspx">http://www.galpenenergia.com/EN/agalpenenergia/ogrupa/Paginas/MissaoeValores.aspx</a>
4.9	Processes of the board of directors to supervise the management of economic, environmental and social performance and risk management	CRG 2010 pages 18-19
4.10	Processes for the assessment of the board of directors' performance	CRG 2010 pages 21, 26
	<b>Commitment to external initiatives</b>	
4.11	Explanation of how the principle of precaution is approached by the organisation	pages 19-23

4.12	Documents, principles or other externally developed initiatives related to economic, environmental and social matters that the organisation subscribes or defends	Pages 18, 129-130																																												
4.13	Significant participation in associations and/or organisations of national/international defence	Pages 76, 108, 141, 162																																												
4.14	List of the groups that compose stakeholders	Page 28																																												
4.15	Process of identifying and selection stakeholders	Stakeholders were identified according to the criteria of the AA1000 Standard, namely influence, dependence and responsibility criteria in order to identify critical stakeholders and key stakeholders.																																												
4.16	Approaches used to involve stakeholders	Pages 28-33, 74, 93, 143-144, 158-161																																												
4.17	Key issues and concerns identified by involving stakeholders	Pages 28-33, 143-144, 158-162 Throughout the sustainability report, the questions made by stakeholders were answered.																																												
Economic performance																																														
	Management approach, goals, performance, policies and framework	Pages 18-23, 123-125,132 e 133																																												
EC1	Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other investments in the community, retained earnings and payments to capital providers and governments	Pages 18																																												
EC2	Financial implications and other risks and opportunities for the organisation's activities due to climate change	Pages 36-45, 58-59																																												
EC3	Coverage of the organisation's defined benefit plan	AR 2010 Pages 124, 141																																												
EC4	Significant financial support received from the government	Pages 24-25																																												
EC5	Range of ranges of standard entry level wage compared to local minimum wage at significant operational units	3,37 This value is an arithmetic average of units Petrogal Moçambique, Galp Gâmbia, Petromar, Petrogal Angola, Petrogás GB, GESB and Petrogal Brasil. (This indicator was not assured)																																												
EC6	Policies, practices and weight of spending with local suppliers at significant operational units	Galp Energia has not applied any policy for local suppliers at operational units – the policy is the same for all countries where Galp Energia operates. Whenever possible, Galp Energia makes a similar contract for all companies and businesses.																																												
EC7	Procedures for local hiring and proportion of senior management hired from the local community at the most significant units	Hiring criteria are similar for the Galp Energia group. Whenever possible, there is internal recruitment. In need of recourse to the external market, at least three candidates are considered.																																												
		<table><tr><td></td><td colspan="3">Employees with senior management positions</td><td rowspan="2">% of senior management hired from the local community</td></tr><tr><td>Countries</td><td>Expatriates</td><td>Local</td><td>Total</td></tr><tr><td>Spain (without Gestes)</td><td>2</td><td>18</td><td>20</td><td>90%</td></tr><tr><td>Guinea-Bissau</td><td>1</td><td>4</td><td>5</td><td>80%</td></tr><tr><td>Angola</td><td>1</td><td>5</td><td>6</td><td>83%</td></tr><tr><td>Swaziland</td><td>1</td><td>3</td><td>4</td><td>75%</td></tr><tr><td>Gambia</td><td>1</td><td>3</td><td>4</td><td>75%</td></tr><tr><td>Mozambique</td><td>1</td><td>4</td><td>5</td><td>80%</td></tr><tr><td>Brazil</td><td>3</td><td>0</td><td>3</td><td>0%</td></tr></table> (This indicator was not assured)		Employees with senior management positions			% of senior management hired from the local community	Countries	Expatriates	Local	Total	Spain (without Gestes)	2	18	20	90%	Guinea-Bissau	1	4	5	80%	Angola	1	5	6	83%	Swaziland	1	3	4	75%	Gambia	1	3	4	75%	Mozambique	1	4	5	80%	Brazil	3	0	3	0%
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Brazil	3	0	3	0%																																										
EC8	Development and impact of investments in infrastructure and services primarily aimed at providing public benefit through commercial engagement	Pages 45, 152-156																																												
EC9	Identification and description of significant indirect economic impacts, including the extent of its impacts	Pages 81-82, 88-89																																												
Environmental performance																																														
	Management approach, goals, performance, policies and framework	Pages 36-45, 62-65, 73, 74, 77, 80, 81, 98-100, 108-119, 125, 126, 132-135																																												
EN1	Breakdown of raw materials used by weight or volume	Galp Energia does consider this indicator to be relevant.																																												
EN2	Percentage of raw materials used that are recycled	Galp Energia does consider this indicator to be relevant.																																												
EN3	Breakdown of direct energy consumption by primary energy source	Pages 68, 120																																												
EN4	Breakdown of indirect energy consumption by primary energy source	Page 120																																												
EN5	Energy saved due to conservation and efficiency improvements	Pages 42, 62-65, 68																																												
EN6	Initiatives to provide energy-efficient or renewable energy-based products and services, and reductions in energy requirements as a result of these initiatives	Pages 36-45, 68-70, 80																																												
EN7	Initiatives to reduce indirect energy consumption and reductions achieved	Pages 67-68, 73																																												
EN8	Total water consumption	Page 121																																												

EN9	Water sources significantly affected by water consumption	Page 121
EN10	Percentage and total volume of water recycled and reused	Page 121
EN11	Location and size of land owned, leased or managed by the organisation in protected areas or areas of high biodiversity value	Page 122
EN12	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas	Pages 83, 122, 151, 167
EN13	Protected or restored habitats	Page 83
EN14	Management of impacts on biodiversity	Pages 87, 122, 151, 152, 167
EN15	Number of IUCN Red List species (The World Conservation Union)	The studies on environmental impact performed at refineries did not show significant impacts on species included in the IUCN Red List.
EN16	Total greenhouse gas emissions	Pages 68, 120
EN17	Other relevant emissions	Page 121
EN18	Initiatives to reduce greenhouse gas emissions and reductions achieved.	Pages 36-37, 54, 65, 68, 80, 81
EN19	Emissions of ozone-depleting substances	Galp Energia does not produce any depleting ozone substances.
EN20	NOx, SOx and other significant air emissions by type and weight	The emissions are calculated according to the methodologies set out by CONCAWE and other good practices. Read pages 88-90.
EN21	Total water discharge	Page 121
EN22	Total amount of waste by type	Page 121
EN23	Total number and volume of significant discharges – spills	Galp Energia reports this information according to an internal standard which reflects environmental, material and human accidents
EN24	Weight of transported hazardous waste	N.A.
EN25	Biodiversity of water organisms	N.A.
EN26	Impacts of services and products	Pages 36-37, 68-70, 80-81, 99-100
EN27	Percentage of packaging materials that are reused	N.A. – it is not possible to track the amount of recycled packages.
EN28	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	Overall, 26 fines were filed by the Department of Environment and Territory Planning, whose amount is still not calculated since it is located between a very broad range of amounts.
EN29	Environmental impacts arising from transportation	Pages 41, 121
EN30	Total expenses and investments with environmental protection	Page 18
<b>Social performance</b>		
	Management approach, goals, performance, policies and framework	Pages 114-118, 129, 130, 132, 133, 138, 140-144
LA1	Total workforce by employment type, employment contract and region	Pages 144-145
LA2	Total number of employees and turnover by age group, gender and region	Pages 144-145

LA3	Benefits provided to full-time employees that are not provided to temporary or part-time employees by main operations	<p><b>Mandatory benefits/conditions laid down in the Labour Code:</b></p> <ul style="list-style-type: none"> <li>• Employment security/prohibition of sack without just cause;</li> <li>• Maximum duration of working period;</li> <li>• Minimum period of rest;</li> <li>• Holidays and allowance;</li> <li>• Christmas subsidy;</li> <li>• Minimum compensation and payment of supplementary work;</li> <li>• Conditions for the occasional cession of employees;</li> <li>• Training;</li> <li>• Safety, hygiene and health at work;</li> <li>• Insurance against accidents at work/right to compensation for damage arising from accidents at work;</li> <li>• Protection of parenting;</li> <li>• Protection of the employment of underage people;</li> <li>• Status of worker-student;</li> <li>• Equal treatment and non discrimination;</li> <li>• Prohibition of harassment.</li> </ul> <p><b>Bonuses and variable compensation:</b></p> <ul style="list-style-type: none"> <li>• Bonus for reducing labour accidents;</li> <li>• Productivity bonus (Galp Energia group);</li> <li>• Productivity bonus at Petrogal;</li> <li>• Variable compensation (system of performance management);</li> <li>• <i>Spot bonus</i>.</li> </ul>
LA4	Percentage of employees covered by collective bargaining agreements	The percentage of employees is up to 85.10%.
LA5	Minimum notice periods regarding operational changes, including whether it is specified in collective agreements	There is no minimum notice period regarding operational changes. Whenever changes occur, employees are warned.
LA6	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programmes.	The percentage of employees represented at HSST committees is 34.14%.
LA7	Percentage of occupation diseases, lost days, absenteeism and fatalities related to work by region	<p>Pages 122-123</p> <p>The absenteeism rate is of 3.61%.</p> <p>Note – Absenteeism rate = ((Number of days of absenteeism/(average number of permanent workers*11*22))</p>
LA8	Education programmes, training, advisory, ongoing prevention and risk control to guarantee assistance to employees, their families or members of the community affected by serious diseases	Page 155
LA9	Health and safety topics covered by formal agreements with trade unions	For more information, read page 70 of the sustainability report 2005-2006 at <a href="http://www.galpennergia.com">www.galpennergia.com</a> .
LA10	Average hours of training per year per employee by employee category	Page 138
LA11	Programmes for skill management and continuous learning that support continued employability and assist them in managing career ends	Page 138-143
LA12	Percentage of employees receiving regular performance and career development reviews	The percentage of employees receiving regular performance and career development reviews is 56%.
LA13	Composition of governance bodies and breakdown of employees by category, according to gender, age group, minority group membership and other indicators of diversity	CRG 2010 pages 85-90
LA14	Ratio of base salary of men and women by category	After analysing all employees, the ratio between men and women's base salary is the following: 2009 – 1.06 e 2010 – 1.05.
	<b>Social performance – Human rights</b>	
	Management approach, goals, policies and framework	Pages 15, 18, 123 and 124
HR1	Percentage and total number of significant investment agreements that include human rights clauses or that have been submitted to human rights screenings	Galp Energia's policy does not include human rights clauses in investment agreements. However, companies are subject to a certification process before becoming suppliers.
HR2	Percentage of significant suppliers and contractors that were submitted to screenings on human rights	Galp Energia does not include human rights clauses in the assessment of suppliers and contractors. However, companies are subject to a certification process before becoming suppliers. This process focuses on financial and tax issues, as well as quality and safety processes.



HR3	Total hours of employee training on policies and procedures concerning human rights issues for operations, including the percentage of employees who received training	Galp Energia does not have any training programme on human rights for employees.
HR4	Total number of incidents of discrimination and actions taken	In 2010, Galp Energia did not have or start a process with the described features. Read page 15
HR5	Operations identified in which the right to exercise freedom of association or collective bargaining may be at significant risk, and actions taken to support these rights	There were no changes since the sustainability 2005-2006 (pages 44, 45).
HR6	Operations identified as having significant risk for incidents of child labour, and measures taken to contribute to the elimination of child labour	Galp Energia considers there is no risk of child labour in its operations. Read page 15
HR7	Operations identified as having significant risk for incidents of forced or compulsory labour, and measures taken to contribute to the elimination of forced or compulsory labour	Galp Energia considers there is no risk for incidents of forced or compulsory labour in its operations. Read page 15
HR8	Percentage of security personnel trained in the organisation's policies or procedures concerning aspects of human rights that are relevant to operations	Galp Energia has no training programme of security personnel concerning aspects of human rights.
HR9	Total number of incidents of violations involving rights of indigenous people and actions taken	In 2010, no process was filed with the described features. Read page 15
<b>Social performance - Society</b>		
	Management approach, goals, performance, policies and framework	Pages 28-33, 92, 123, 124, 148-151
S01	Nature, scope and effectiveness of any programmes and practices that assess and manage the impacts of operations on communities, including the start and end of operations	N.A.
S02	Percentage and total number of business units analysed for risks related to corruption	In 2010 there was no process with the described features. However, disciplinary proceedings were filed against 2 employees, leading to the disciplinary sanction of dismissal for breach of professional duties.
S03	Percentage of employees trained in the organisation's anti-corruption policies and procedures	Galp Energia did not organise any training session on anti-corruption policies and procedures.
S04	Actions taken in response to incidents of corruption.	In 2010, 2 employees were made defendants in lawsuits related to allegations of crimes of corruption, which are still under way. Disciplinary proceedings were filed against these employees, leading to the disciplinary sanction of dismissal for breach of professional duties.
S05	Public policy positions and participation in public policy development and lobbying	Pages 108-109, 128-129
S06	Total amount of financial and in-kind contributions to political parties, politicians, and related institutions by country	Galp Energia did not fund any political party or related institutions.
S07	Total number of legal actions for anti-competitive behaviour, anti-trust and monopoly practices and their outcomes	In 2010, there was no process with the described features.
S08	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations	102 fines, which may amount to €82,125.25.
<b>Social performance - Product</b>		
	Management approach, goals, performance, policies and framework	Pages 123-126, 130-133
PR1	Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures.	Pages 81-84
PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services by type of outcomes.	None
PR3	Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements.	Galp Energia provides information on possible hazards related to products sold, as well as recommendations for safe use, through safety data files and labelling instructions drafted according to the law and subsequently placed on the packaging. There is an internal procedure that regulates the draft, attainment and internal and external spread of safety data files and labelling instructions.
PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labelling, by type of outcomes	None
PR5	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction	Pages 159-162
PR6	Programmes for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion and sponsorship	All marketing communications, including advertising, promotion and sponsorship, fulfil the government decree Decreto-Lei nº. 300/90, of 23 October.
PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion and sponsorship, by type of outcomes.	None

<b>PR8</b>	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data	None
<b>PR9</b>	Total number of fines and non-monetary sanctions for non-fulfilment of laws and regulations concerning the provision and use of products and services	102 fines, which may amount to €82,125.25.

## APPENDIX III. CRONYMS LIST

**ADENE** – Portugal's agency for energy  
**AIPQR** – Portugal's association of the industries of petrochemicals, chemicals and refining  
**APA** – Portuguese agency for the environment  
**APETRO** – Portugal's oil trade association  
**APREN** – Portugal's association of renewable energy sources  
**AR** – Annual report  
**ATEX** – Explosive atmospheres  
**BBLT** – Benguela- Belize-Lobito-Tomboco  
**bcm** – Billion Cubic Metres  
**CCS** – Carbon capture and storage  
**CGR** – Corporate governance report  
**CLC** – Companhia Logística de Combustíveis  
**CO<sub>2</sub>** – Carbon dioxide  
**COMET** – Integrated infrastructure for CO<sub>2</sub> transport and storage in the west Mediterranean  
**CONCAWE** – European Association for Environment, Health and Safety in Refining and Distribution  
**COSO** – Committee of Sponsoring Organizations  
**DGAE** – Department of Economic Activities  
**DGEG** – Department of Energy and Geology  
**DJSI** – Dow Jones Sustainability Index  
**EBITDA** – Earnings before interest, taxes, depreciation and amortisation  
**EII** – Energy Intensity Index  
**EITI** – Extractive Industries Transparency Initiative  
**ENERGYIN** – Competitiveness and Technology Hub of Energy  
**EQS** – Environment, Quality and Safety  
**EU** – European Union  
**EUROPIA** – European Petroleum Industry Association  
**EV** – Electric Vehicle  
**FAI** – Portugal's support fund to innovation  
**FCT** – Portugal's foundation for science and technology  
**FEED** – Front End Engineering Design  
**FEUP** – Faculty of Engineering of Universidade do Porto  
**FLNG** – Floating Liquefied Natural Gas  
**FP7** – Seventh Framework Programme  
**FPSO** – Floating production storage and offloading  
**GALPGESTE** – Companies for Galp Energia's filling stations  
**GHG** – Greenhouse gases  
**GNV** – Natural gas for vehicles  
**GRI G3** – Global Reporting Initiative, third issue  
**GSE** – Galp Soluções de Energia  
**HVO** – Hydrogenated vegetable oil  
**IDMEC** – Institute of Mechanical Engineering  
**IEA** – International Energy Agency  
**IFRS** – International Financial Reporting Standards

**INESC** – Institute of Computer Engineering  
**ISEL** – Higher Engineering Institute of Lisbon  
**ISP** – Tax on oil products  
**IST** – Instituto Superior Técnico  
**km** – Kilometre  
**kt** – Kiloton  
**LNEG** – Portugal’s laboratory of energy and geology  
**LNG** – Liquefied natural gas  
**MMSCF** – Million standard cubic feet  
**Mobi-e** – Portuguese network of electrical mobility  
**MWh** – MegaWatt-Hour  
**NG** – Natural gas  
**NOx** – Nitrogen oxide  
**OECD** – Organisation for Economic Co-operation and Development  
**PHEV** – Plug-in Hybrid Electric Vehicle  
**QCA III** – European Union support fund  
**QREN** – Portuguese strategic support fund  
**Quercus** – Portuguese association of nature conservation  
**R&D** – Research and Development  
**REIVE** – Intelligent Electric Grids with Electrical Vehicles  
**SCT** – Scientific and Technological System  
**SHE** – Safety, Health and Environment  
**SIFIDE** – tax support system to corporate R&D  
**SO<sub>2</sub>** – Sulphur dioxide  
**STCP** – Porto’s local transportation company  
**t** – tonne  
**toe** – tonne of oil equivalent  
**UA** – University of Aveiro  
**UAG** – Autonomous Gas Unit  
**VAT** – Value added tax



EDITION



REVISION



DESIGN AND CONCEPTION







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