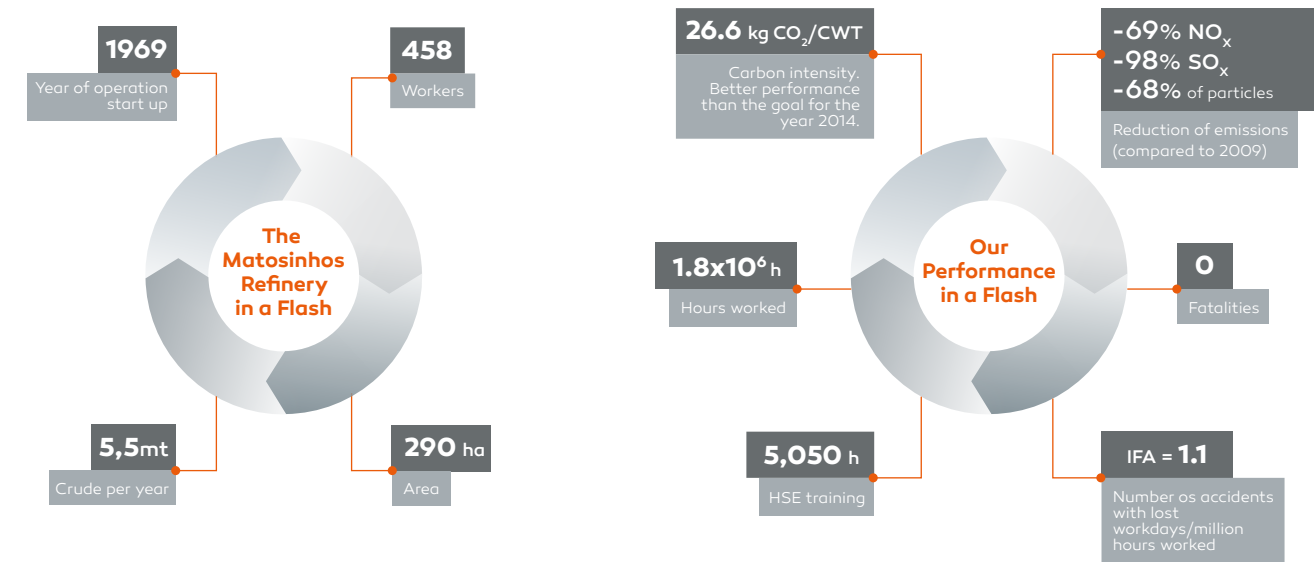
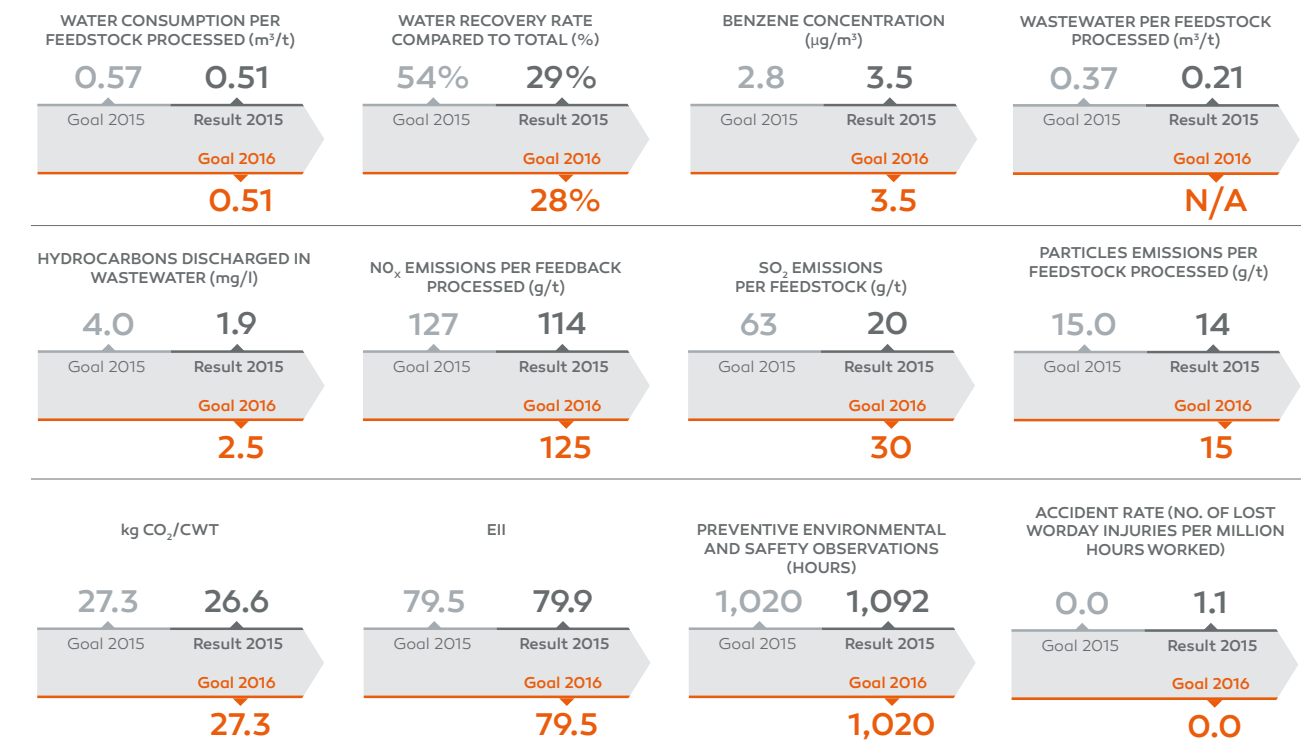


# The Matosinhos Refinery in a Flash



# Targets and Goals 2016



All the data published herein was independently verified by PricewaterhouseCoopers which has issued a declaration of conformity that is available on the Galp website.

energy creates energy



Safety, Health and Environmental Performance 2015

# Matosinhos Refinery



# Refinery Management Message



J. Fonseca Fernandes  
Matosinhos Refinery Director

The refining activity in 2015 witnessed a dramatic recovery in terms of profitability after years of depressed operating results. The Matosinhos Refinery took part in that recovery as its production rose to higher levels. In fact, we beat the absolute record for crude oil processing in 2015 with 4.59 million tonnes processed. Nevertheless, as demonstrated by the indicators we provide in this Data Book, environmental performance improved significantly once again relative to previous years. In terms of Safety, we also observed a considerable decrease in the number of accidents reported.

This Data Book provides some of the most relevant indicators for our activity within the context of Environmental Management and Safety. Based on the improvement achieved over the years, thanks to the intense work and commitment of our teams and business partners alike, I would like to recognise a few of these indicators:

- Zero serious industrial accidents, i.e., fires, explosions and environmental accidents;
- Sharp reduction in standard sulphur dioxide emissions to one-third of 2014 levels, thanks to use of cleaner fuels like natural gas;
- Once again, reduction of standard nitrogen oxide and particulate emissions indicators, respectively;
- Standard carbon dioxide emissions, normalized to Production, were 26.6 kg CO<sub>2</sub>/CWT, or rather, 26.6 kilograms of carbon dioxide were emitted for each tonne of final products produced. This value is among the best relative to other European refineries. In fact, 10% of the most efficient European refiners emit an average of 29.5 Kg CO<sub>2</sub>/CWT;
- The number of accidents at work declined yet again from 29 occurrences in 2014, to 21 in 2015;
- We have successfully completed another audit of the Environment, Quality, Safety and Energy Integrated Management System.

Though, as stated before, the number of accidents has decreased, two accidents with lost workdays occurred among the 21 accidents recorded overall. As a result, our lost workday frequency index was 1.1, still slightly better than the European refining average of 1.2 (Concawe, report no. 5/15). Though, fortunately, no serious accidents have occurred, we are committed to eliminating these events.

I also would like to point out the operational availability of the refinery, which bears mentioning because of the implications on Safety and the Environment. In fact, the existence of serious failures not only jeopardises productive capacity but also may result in personal injury and environmental harm. In 2015, mechanical availability was 100%. In other words, none of these refinery units witnessed significant failures. This is clearly in line with the excellent results in Safety and Environment that we achieved and is a testimony to the adequate and effective maintenance plan for our facilities.

If the analysis of past performance may be used to measure and classify our performance, the most important element is to use the information generated for continuous addressing of aspects that can be improved. The current year involves challenges that motivate us to overcome them, with the confidence we have acquired from the experience and expertise of our employees and service providers, who, in a spirit of partnership, share this aspiration of striving, every day, to be the best. Accordingly, the following are our priorities:

- Execute an incident-free technical shutdown for preventive maintenance of line II of the fuels plant in order to ensure a new cycle of failure-free operations;
- Renewal of integrated certification of the refinery pursuant to standards ISO 9001, ISO 14001, ISO 50001 and OHSAS 18001;
- Renewal of Environmental Licence in line with the new BREF REF (Best Available Techniques (BAT) Reference Document for the Refining of Mineral Oil and Gas), published in 2015;
- Adaptation of the Serious Accident Prevention System to the Seveso III Directive.

I would like to conclude with a few words directed to the community residing near the refinery. We are committed to ensuring the development of this important industrial facility in northern Portugal, a source of prosperity for the Matosinhos region. We are aware that this is only possible with the highest level of respect for the Environment as well as the safety of all residents, employees and anyone who benefits from the abundance of this modern municipality, including in terms of recreational and cultural plans, as well as plans corresponding to natural heritage where both the land and sea contribute to this setting of rare beauty.



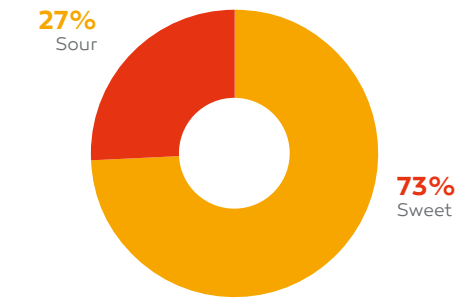
# Our activity

The Matosinhos refinery is an industrial complex consisting of a portfolio of 4 integrated but differentiated businesses: electrical energy, fuels, oils (base stocks, lubricants, bitumen and paraffin), aromatics and solvents. The refinery offers high productive flexibility and is able to respond to any challenge, with a diversified range of high quality refined oil products, thus guaranteeing the security of market supply.

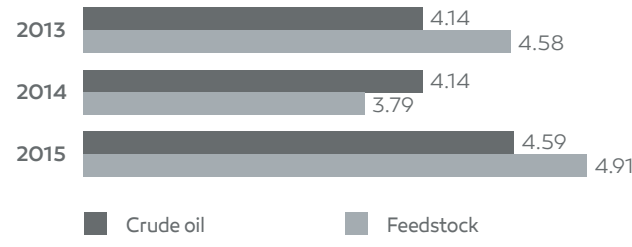
It has unique logistical facilities: The Leixões Oil Terminal, with an offshore monobuoy, pipeline to the Francisco Sá Carneiro airport and tanker filling equipment for fuels, bitumen and bulk chemicals. The refinery is complemented by a central, powered by natural gas, for cogeneration of electrical energy and steam.

## Raw Materials

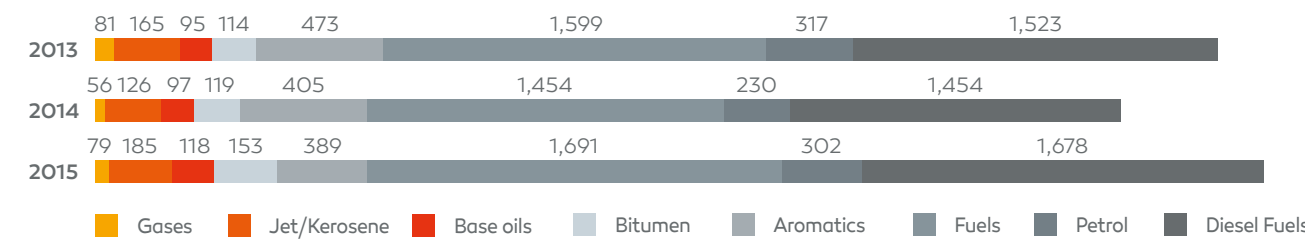
PROPORTION OF CRUDE OIL PROCESSED



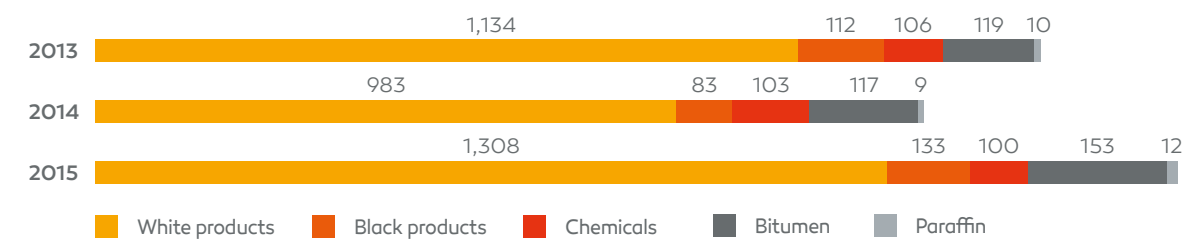
FEEDSTOCK AND CRUDE PROCESSED (10<sup>4</sup> t)



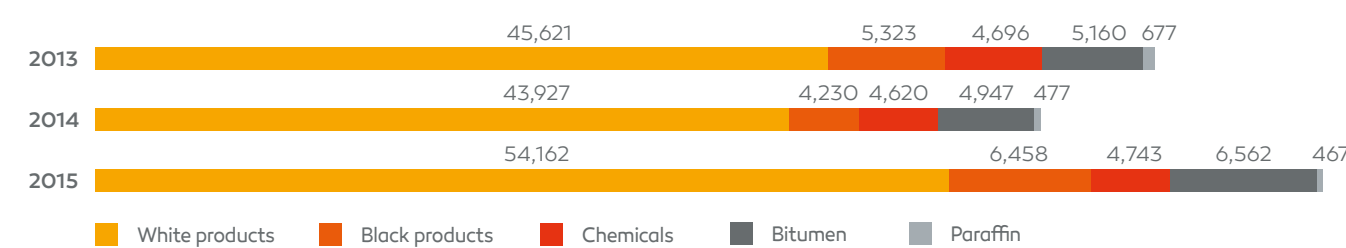
FINISHED PRODUCTS (10<sup>3</sup> t)



PRODUCTS DISPATCHED PER TANKER VEHICLE - BOA NOVA DEPOT (10<sup>3</sup> t)

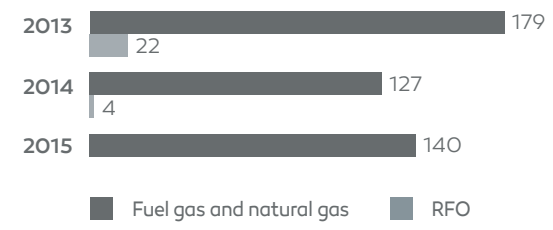


NUMBER OF DISPATCHED ORDERS PER TANKER VEHICLE - BOA NOVA DEPOT

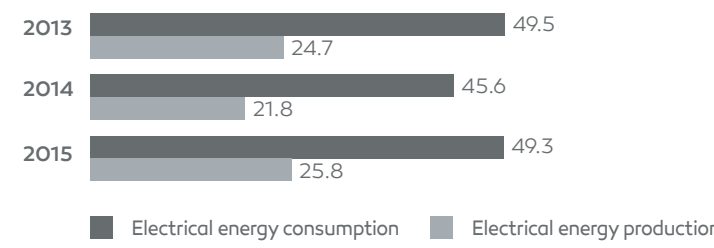


## Consumption of resources

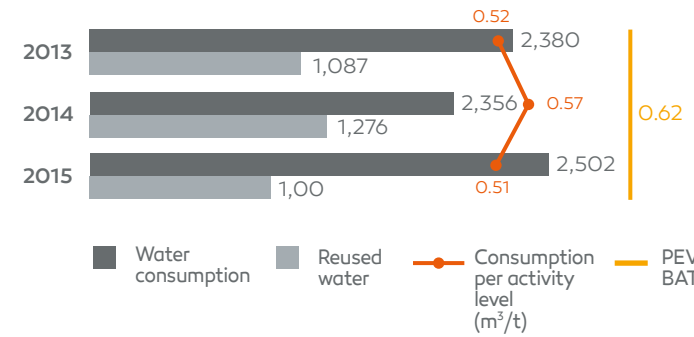
CONSUMPTION OF NATURAL GAS VS CONSUMPTION OF DE RFO (10<sup>3</sup> t)



ELECTRICAL ENERGY CONSUMED AND PRODUCED (10<sup>3</sup> tep)

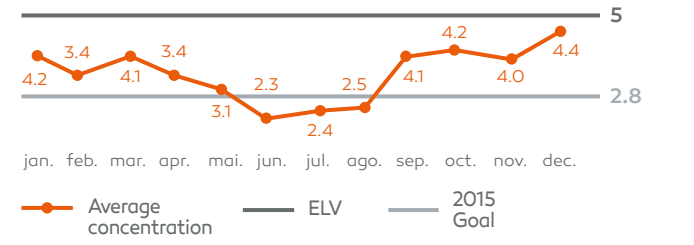


WATER CONSUMPTION (10<sup>3</sup> m<sup>3</sup>)

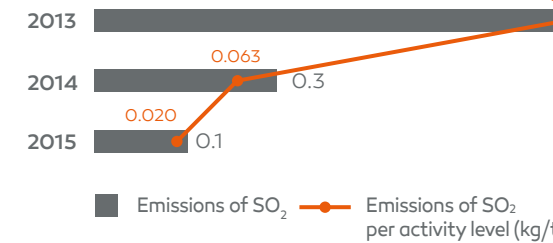


## Impact management

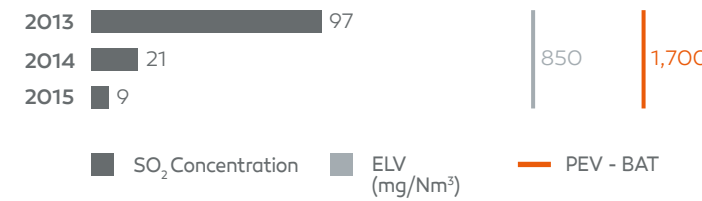
MONTHLY AVERAGE CONCENTRATION OF BENZENE (µg/m<sup>3</sup>)



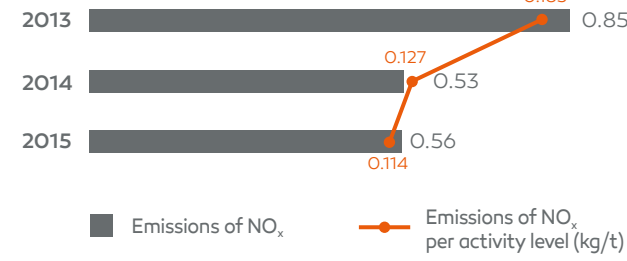
EMISSIONS OF SO<sub>2</sub> (10<sup>3</sup> t)



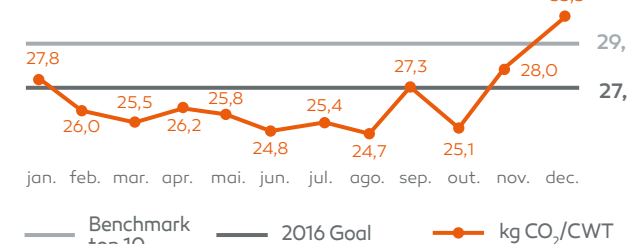
SO<sub>2</sub> BUBBLE (mg/Nm<sup>3</sup>)



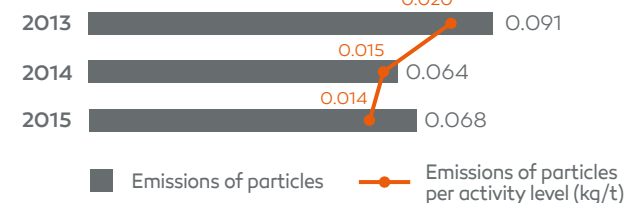
EMISSIONS OF NO<sub>x</sub> (10<sup>3</sup> t)



kg CO<sub>2</sub>/CWT

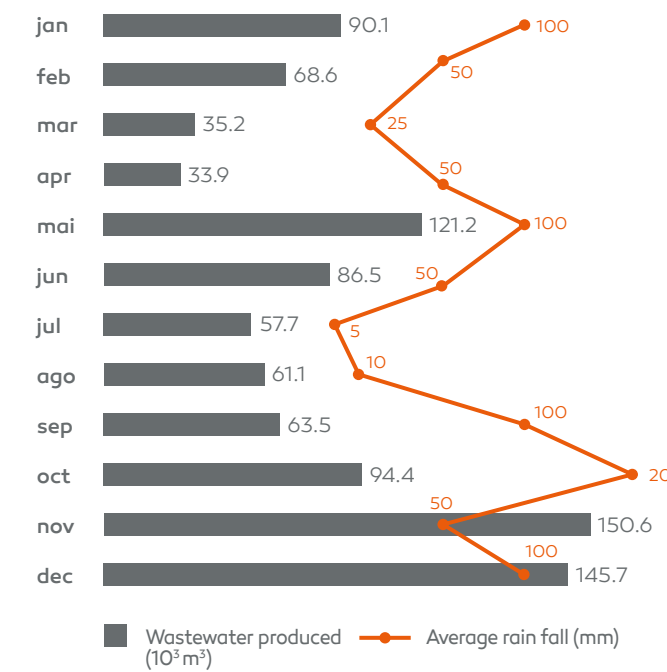


EMISSIONS OF PARTICLES (10<sup>3</sup> t)

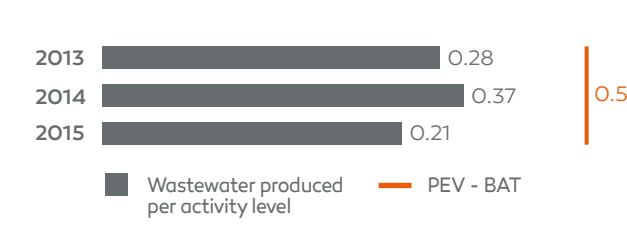


## Production of wastewater

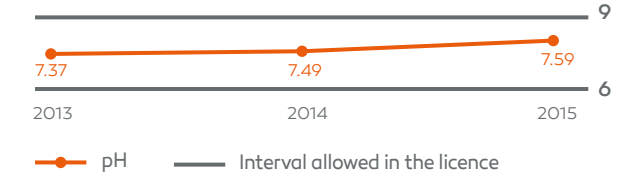
RELATIONSHIP BETWEEN WASTEWATER PRODUCED AND AVERAGE RAIN FALL IN THE REFINERY AREA



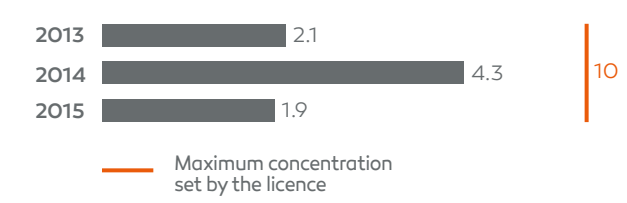
WASTEWATER PRODUCED PER ACTIVITY LEVEL (m<sup>3</sup>/t)



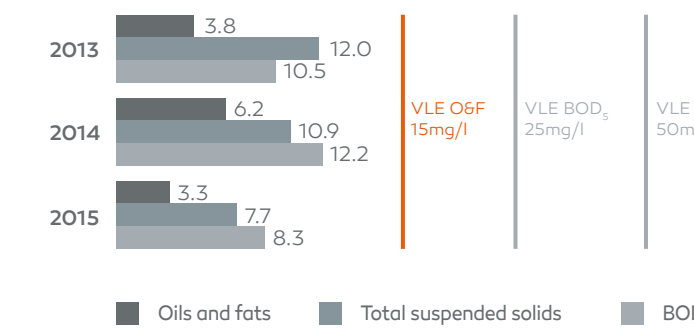
pH LEVEL OF WASTEWATER



CONCENTRATION OF HYDROCARBONS DISCHARGED INTO WASTEWATER (mg/l)

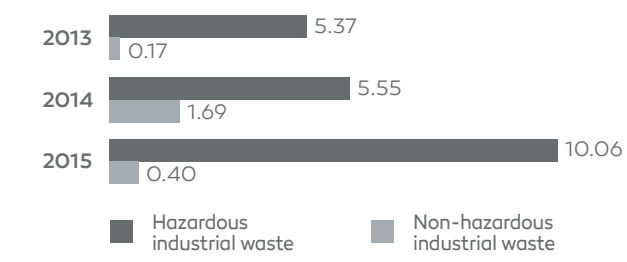


CONCENTRATION OF TOTAL SUSPENDED SOLIDS, BIOCHEMICAL OXYGEN DEMAND AND FAT IN WASTEWATER (mg/l)

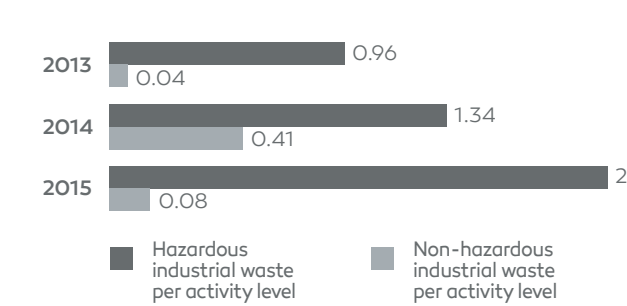


## Waste production

INDUSTRIAL WASTE PRODUCED (10<sup>3</sup> t)



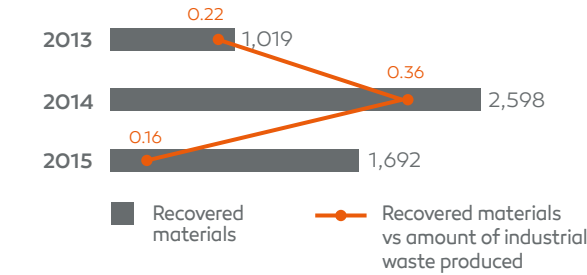
INDUSTRIAL WASTE PRODUCED PER ACTIVITY LEVEL (kg/t)



WASTE EQUIVALENT TO URBAN SOLID WASTE PRODUCED (t)

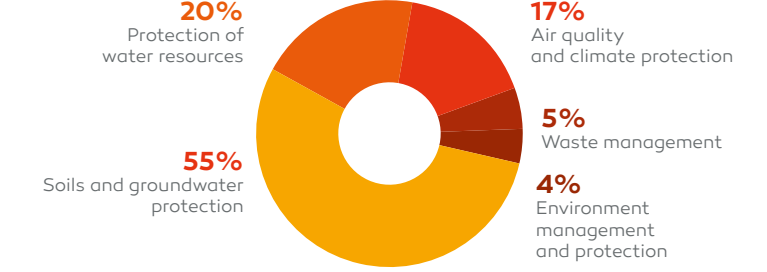


RECOVERED MATERIALS (t)



## Costs and Investments in the environment

COSTS AND INVESTMENTS IN THE ENVIRONMENT - 4.7 M€



# Safety: from prevention to monitoring

## SGSPAG

The prevention of industrial accidents is a priority for the Matosinhos refinery. To this end, a robust management system has been implemented to achieve continual improvement in accident prevention, in line with best practices in the industry and the stipulations of Directive 2012/18/EU (Seveso III Directive), transposed into Portuguese law. The Safety Management and Serious Accident Prevention System is annually audited by qualified personnel of the Portuguese Environment Agency (APA) to evaluate the effectiveness of the system and issue a declaration of conformity, as per current legal requirements.

TRAINING IN HSE (HOURS)



SIMULATIONS EXERCISES (NUMBER)

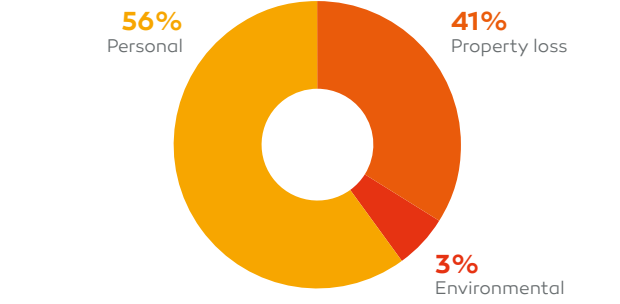


PREVENTIVE ENVIRONMENTAL AND SAFETY OBSERVATIONS (HOURS)

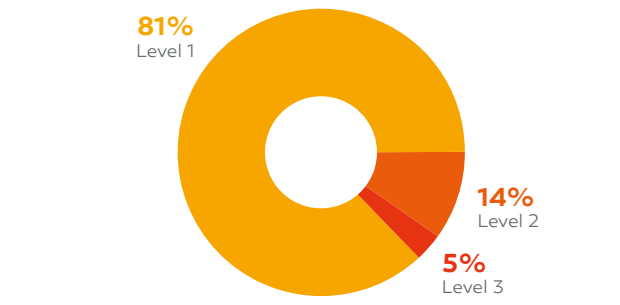


## Accidents

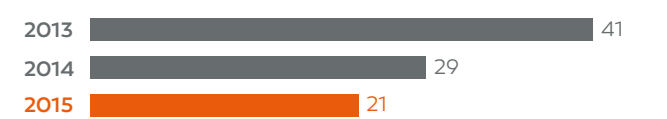
ACCIDENTS PER TYPE



TOTAL ACCIDENTS BY LEVEL



TOTAL NUMBER OF WORK ACCIDENTS (GALP+CONTRACTORS)



NUMBER OS LOST WORKDAYS AND FREQUENCY INDEX (GALP+CONTRACTORS)

