galp

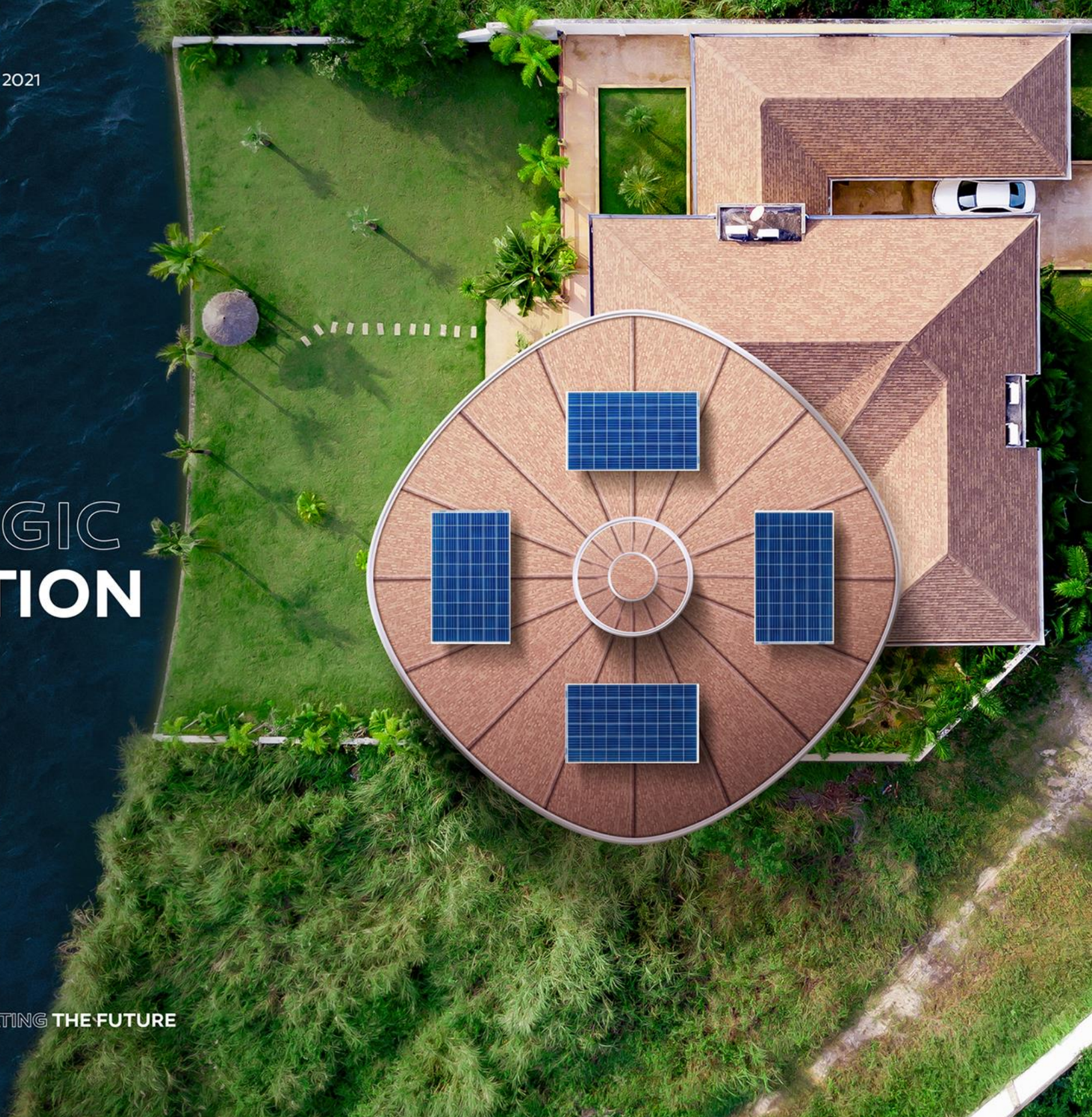
REGENERATING THE FUTURE

Integrated Management Report 2021

Index

Integrated Management Report 2021

STRATEGIC EXECUTION



galp | REGENERATING THE FUTURE

3.1 2021 highlights

Presenting a refreshed strategy to reshape the Portfolio, refresh Relations and reenergise People

Galp's aim is to thrive through the energy transition, continuing to deliver growth from one of the most efficient portfolios in the industry, whilst progressively transforming its activities in alignment with the energy transition.

We aim to have a more electrified, diversified and decarbonised global portfolio, offering a combination of long-term growth and value opportunities in the energy sector. Please find more details of our strategy (link here).

In that context, Galp established a new purpose, to "Regenerate the Future Together!", as we look forward to regenerating the future and our energy portfolio, as we refresh our relationship with society, and as we reenergise our talent. Find out more of Galp's purpose (link here).

Aiming to carbon neutrality by 2050

Galp is aiming to become a net zero emissions Company by 2050, with intermediary absolute and carbon-intensity reduction ambitions by 2030. For additional information regarding carbon reduction targets, see our website (link here).

The decarbonisation strategy will be based on pursuing opportunities for sustainable growth, namely in the renewables, biofuels, green hydrogen and e-mobility spaces.

Taking FID on Bacalhau development

Galp and its partners have made the Final Investment Decision to develop phase one of the project, located in the Brazilian pre-salt. The estimated overall investment for the project is approximately $8 bn.

The Bacalhau project is considered one of the most promising assets in the pre-salt of the Santos basin, given its estimated low breakeven and low-carbon intensity, which will significantly contribute to Galp's Upstream growth.

Submitting an updated Development Plan for Tupi and Iracema fields

The BM-S-11 consortium has submitted an updated Integrated Plan of Development (PoD) for the Tupi and Iracema fields to the National Petroleum, Natural Gas and Biofuel Agency (ANP). This submission includes a set of identified actions aimed at maximising the value creation from the Tupi and Iracema fields, identifying additional development projects, of low breakeven prices, which will increase the fields' total recoverability.

3.1 2021 highlights

Starting production on Galp's 12th FPSO in the Brazilian pre-salt

FPSO Carioca has started production in the Sépia field in the pre-salt region of the Santos basin in Brazil. This is the 12th unit installed in the Brazilian pre-salt region where Galp has a participation.

Expanding e-mobility footprint and launching new concept store

Galp reinforced its leading position in Portugal and more than doubled the number of charging points in operation in Iberia, with a total of 1,186 points, also driven by the Mobilectric acquisition.

In addition, Galp launched the first new concept hub in Lisbon, a store exclusively dedicated to non-fuel products and services, strengthening the positioning of the Galp brand.

Decarbonising Sines and transforming it into a green energy hub

The Company announced its ambition to transform the Sines industrial site into a green energy hub, improving its energy efficiency and expanding the products to a lower carbon offer.

Galp also announced its target to reduce its industrial operational emissions (scopes 1 & 2) by 50% by 2030 (vs. 2017). At the end of 2021 Galp had already reduced 30% of 2017 operational emissions.

The expansion of advanced biofuel production through the installation of a Hydrotreated Vegetable Oil (HVO) unit and the incorporation of opportunities related to green hydrogen will be important steps in this transition.

Advancing with the development of green hydrogen projects

Galp moved forward with the development of two 100 MW green hydrogen projects to accelerate the decarbonisation of its Sines Energy Hub.

Already in 2022, the Company expects the FID for the construction of the first green hydrogen pilot in Sines of 2 MW in order to accelerate its learning curve.

3.1 2021 highlights

Expanding its Renewables portfolio, entering the Brazilian market and reinforcing its position in Spain

Galp continued its renewable strategy execution, increasing its total gross capacity to c.4.7 GWp, including c. 1 GW of projects already under production, with the remaining under construction or being developed.

Galp entered the Brazilian sizeable renewables market, agreeing to acquire and develop projects of 594 MWp of solar PV capacity at the early stages of development. With the deal, Galp gained access to high-quality assets in a country where the Company has been present for more than 20 years.

We also reinforced our position in Spain, with the acquisition of nearly 400 MWp of new solar PV capacity under development.

Establishing partnerships towards the creation of a battery value chain in Portugal

Galp and Northvolt have established a joint venture (JV) company, Aurora, as a steppingstone for the development of an integrated lithium battery value chain in line with Portuguese and European ambitions.

The JV's main goal is to establish Europe's most sustainable integrated lithium conversion plant, by developing a plant designed to have an initial annual production capacity of up to 35,000 tons of battery-grade lithium hydroxide.

The JV will also continue to explore other business opportunities along the value chain and is committed to adopting the most environmentally sound approaches throughout all activities.

Maintaining recognition as a leader in sustainable practices

Galp's commitment to creating value through best practices in the environmental, social and corporate governance fields has once again been recognised by the most prestigious independent organisations.

In the Dow Jones Sustainability Index, for the first time, the Company was considered the most sustainable Company in the world in its sector.

During the year, Galp also confirmed its triple-A rating (AAA) at MSCI and reached the 7th position out of 48 integrated Oil & Gas companies assessed by Sustainalytics.

For more information about the recognitions awarded to Galp in 2021, please see our website (link here).

3.2 Upstream

2021 Highlights

- During 2021, the working interest (WI) production was 127 kboepd, a decrease of about 3% when compared to the previous year, which reflects the slightly lower contribution due to higher maintenance activities and operational limitations on the more mature projects in Brazil and Angola.

127 kboepd
Average WI production

10.3 $kgCO_2e/boe$
Carbon Intensity

1.6 $/boe
Production Costs

2.2 bn boe
2P Reserves and 2C Resources

- Galp and its partners have made the Final Investment Decision to develop phase one of the Bacalhau project, located in the Brazilian pre-salt. The estimated overall investment for the project is approximately $8 bn.
- FPSO Carioca has started production in the Sépia field in the pre-salt region of the Santos basin in Brazil. This is the 12th unit installed in the Brazilian pre-salt region where Galp has a participation.
- The BM-S-11 consortium has submitted an updated PoD for the Tupi and Iracema fields to ANP. This submission includes a set of identified actions aimed at maximising the value creation from the Tupi and Iracema fields, identifying additional development projects, of low breakeven, which will increase the fields' total recoverability.

The new framework for the natural gas market liberalisation in Brazil has opened marketing opportunities for Galp, with contracts already established for Galp to expand its presence along the gas value chain in the country, starting in 2022.

- In Mozambique, the Coral Sul floating, liquefied natural gas (FLNG) project continues to progress as planned, with the unit having arrived at its final location earlier this year. The partners also continue their efforts to optimise the development concept of the Rovuma LNG onshore project.
- 2P oil reserves increased 11% YoY to 612 mbbl. 2P reserves + 2C contingent resources stand at 2.2 bn boe.

Main indicators

	2020	2021
Reserves 1P (mboe)	385	410
Reserves 2P (mboe)	700	712
Reserves 1C (mboe)	525	417
Reserves 2C (mboe)	1,720	1,521
Average working interest production[1] (kboepd)	130	127
Average net entitlement production[1] (kboepd)	128	125
Carbon intensity in Upstream[2] ($kgCO_2e/boe$)	9.9	10.3
Oil and gas realisations - diff. for Brent ($/boe)	(5.6)	(8.5)
Production costs ($/boe)	2.4	1.6
DD&A[3] ($/boe)	14.6	14.0
RCA Ebitda (€m)	1,111	2,020
RCA Ebit (€m)	407	1,434
OCF (€m)	749	1,527
Investment (€m)	326	616

Note: unit values based on net entitlement production.
[1] Includes the production of exported natural gas, excludes consumed or injected natural gas.
[2] Considers 100% of emissions from oil and gas production from operated blocks and the working interest from non-operated blocks.
[3] Includes provisions for relinquishment and excludes impairments related to exploration assets.

3.2 Upstream

Development of reserves and resources

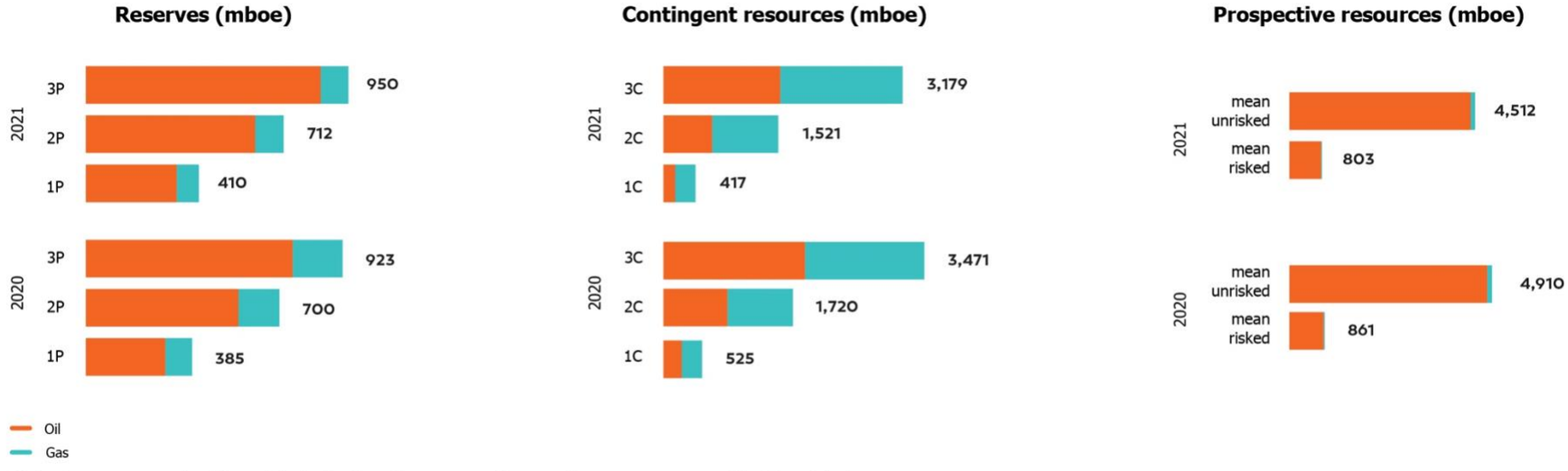
Bacalhau Final Investment Decision (FID) allowed Galp to high-grade its reserves & resources, more than offsetting the production in the period, increasing 1P reserves by 7% YoY.

2P reserves increased 2% YoY, to 712 mboe, mainly reflecting the Bacalhau FID made in 2021, although partially offset by production in the period and natural gas downwards revision, now tied with existing commercial contracts. Natural gas reserves represent 14% of current 2P reserves.

2C contingent resources stand at 1,521 mboe, 11.5% lower YoY, mainly due to portfolio restructuring, relinquished assets and the promotion of some Bacalhau field resources to reserves. Natural gas resources account for 57% of current 2C resources, mainly attributable to Mozambique.

Proven and probable reserves (2P), together with 2C contingent resources, amounted to 2.2 bn boe.

Galp's reserves and resources are subject to an independent assessment by DeGolyer and MacNaughton (DeMac).



Note: Reserves on a net entitlement basis. Contingent resources and prospective resources on a working interest basis.

3.2 Upstream

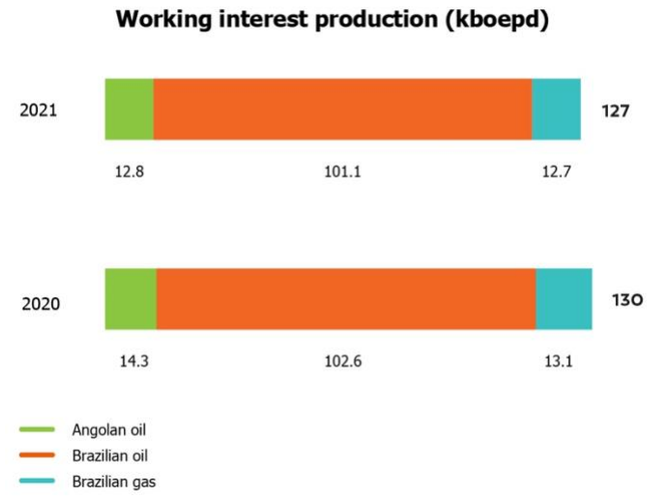
Production overview for 2021

WI production was 127 kboepd, which represented a contraction of 3% when compared to 2020, reflecting the plateau stage of the most relevant projects, as well as operational and logistic constraints during the period, partially offset by the start of production of Sépia and the ramp-up of Atapu and Berbigão & Sururu areas.

Natural gas production remained steady at around 10% of total production, exclusively related with associated gas from the projects in Brazil. The contribution of natural gas is expected to increase in 2022, with the start of production of the Coral FLNG project, in Mozambique.

In Brazil, WI production was 113.8 kboepd. During the period, the Atapu unit in Brazil completed its ramp-up, while the Berbigão & Sururu unit continued to increase its production. The start of production of the FPSO Carioca in August, marked the beginning of Sépia's accumulation development, being Galp's twelfth unit in the Brazilian pre-salt area.

In Angola, WI production was 13 kbpd, a decrease of c.11% YoY, reflecting production constraints in the Kaombo North area, in block 32, and the natural decline of production in Block 14.



Galp continues to focus on optimising its portfolio, strengthening plans of development and implementing all the steps to ensure all value extraction initiatives are executed on its key projects, with the Company predicting sustainable growth based on its highly competitive portfolio.

Galp's Upstream growth profile will continue, with a 25% expected increase in production in 2025, when compared to 2021, mainly supported by the Bacalhau project, highlighting the efficient and resilient portfolio.

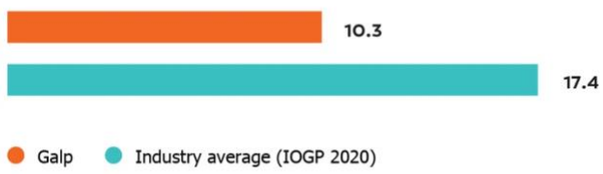
3.2 Upstream

Galp's Upstream Portfolio

Galp has 28 upstream projects at different states of maturity, ranging from exploration to production and located mostly in deep waters. The most relevant projects include the development of the BM-S-11 block in the Brazilian Santos basin, where one of the world's largest oil discoveries in recent decades is located, major natural gas discoveries in the Rovuma basin in Mozambique, and developments in the Congo basin in Angola.

Galp's Upstream enviable position is recognised by its low-cost base combined with its low carbon intensity, at almost half of the industry's average

Carbon Intensity in Upstream[1] ($kgCO_2e/boe$)



[1] Considers 100% of emissions from oil and gas production from operated blocks and the working interest from non-operated blocks.

Commitment to energy transition

Galp's growth profile is based on a distinct Upstream portfolio, with resources that are characterised by its high sustainability, namely considering the low production costs and the lower carbon footprint. The competitiveness of these developments enables a carbon intensity of 10.3 $kgCO_2e/boe$, well below the industry average of 17.4 $kgCO_2e/boe$ (source: International Association of Oil and Gas Producers (IOGP) 2020), thus promoting a sustainable and value-based approach.

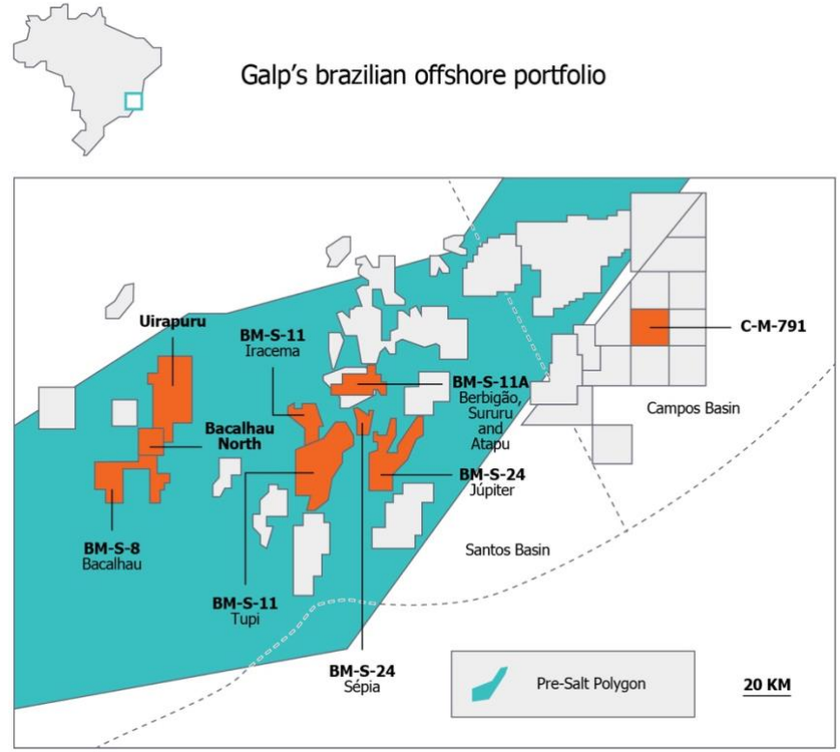
3.2 Upstream

Brazil

Offshore

Galp's offshore portfolio in Brazil focuses mainly on the pre-salt polygon, where the Company has been present since the exploration and assessment phases of the first prospects. The Brazilian pre-salt is a reference in the industry, mainly due to the size and quality of its resources, which, along with the advanced technology used in the development concepts, place these projects among the most competitive and sustainable worldwide.

Galp is one of the key players in Brazil, currently the third largest producer in the country, with several projects in the pre-salt of the Santos and Campos basins, both in exploration, appraisal, development and production phases.



3.2 Upstream

Producing units in the pre-salt in the Santos basin

Galp started production in the pre-salt in 2010, through the FPSO Cidade Angra dos Reis allocated to the area of Tupi Pilot. By the end of 2021, Galp had 12 operating FPSO units, seven of which in the Tupi accumulation, two in the Iracema, one developing the Berbigão & Sururu accumulations, another in the Atapu field and finally one allocated to the Sépia project.

Unit	Designation	Location	Oil | Natural Gas Capacity	Production Start	Ramp-up	Plateau since	Galp's stake
FPSO #1	Cidade Angra dos Reis	Tupi Pilot	100 kbpd | 5 mm^3/d	Oct. 2010	19 months	Apr. 2012	9.2%
FPSO #2	Cidade de Paraty	Tupi North East	120 kbpd | 5 mm^3/d	Jun. 2013	15 months	Aug. 2014	9.2%
FPSO #3	Cidade de Mangaratiba	Iracema South	150 kbpd | 8 mm^3/d	Oct. 2014	13 months	Oct. 2015	10.0%
FPSO #4	Cidade de Itaguaí	Iracema North	150 kbpd | 8 mm^3/d	Jul. 2015	13 months	Jul. 2016	10.0%
FPSO #5	Cidade de Maricá	Tupi Alto	150 kbpd | 6 mm^3/d	Feb. 2016	10 months	Nov. 2016	9.2%
FPSO #6	Cidade de Saquarema	Tupi Central	150 kbpd | 6 mm^3/d	Jul. 2016	11 months	May 2017	9.2%
FPSO #7	P-66	Tupi South	150 kbpd | 6 mm^3/d	May 2017	11 months	Mar. 2018	9.2%
FPSO #8	P-69	Tupi Extreme South	150 kbpd | 6 mm^3/d	Oct. 2018	10 months	Jul. 2019	9.2%
FPSO #9	P-67	Tupi North	150 kbpd | 6 mm^3/d	Feb. 2019	18 months	Jul. 2020	9.2%
FPSO #10	P-68	Berbigão and Sururu	150 kbpd | 6 mm^3/d	Nov. 2019	Ongoing	-	10.0%[1]
FPSO #11	P-70	Atapu	150 kbpd | 6 mm^3/d	Jun. 2020	14 months	Jul. 2021	1.7%
FPSO #12	Carioca	Sépia	180 kbpd | 6 mm^3/d	Aug. 2021	Ongoing	-	2.4%

[1] Subject to approval of the unitisation agreement.

3.2 Upstream

Production and development in Brazil

Tupi and Iracema

The Tupi and Iracema projects started production in 2010, through the Tupi Pilot area, and contribute the most to Galp's production. From inception to date, nine production units have been installed in these accumulations, with a combined capacity to process up to 1.3 mbbl of oil and 56 million m^3 of natural gas per day, having delivered more than 2.5 bn boe of accumulated production so far.

By the end of 2021, 132 wells (72 producers and 60 injectors) were drilled, out of the 149 wells planned. Currently, 125 wells are connected to the installed FPSO units.

Partners are committed to maximise the value extraction from their assets, optimising operations and increasing the recoverability of the discovered resources.

In late 2021, Galp, together with its partners, submitted an updated PoD for the Tupi and Iracema fields to ANP. This submission includes a set of identified actions aimed at maximising the value creation from the Tupi and Iracema fields, identifying additional resources of low breakeven prices, which will increase the fields' total recoverability.

The updated PoD will now be subject to ANP's evaluation and approval, with its content to be detailed once this process is completed.

This submission is another relevant milestone in the execution of Galp's Upstream strategy and aligned with the Company's capital allocation guidelines, targeting additional value enhancement and sustainable development opportunities in these two core assets, which are among the largest and most productive offshore fields in the industry.

Berbigão, Sururu and Atapu

Through the BM-S-11A consortium, Galp holds stakes in Berbigão, Sururu and Atapu, three accumulations located in the central pre-salt area of the Santos basin, northeast of the Tupi and Iracema fields.

The Berbigão and the western flank of Sururu accumulations are under development through the FPSO P-68, which is in the ramp-up phase. At the end of 2021, the unit had six producing wells connected, out of a total of 10 planned. It also had two injector wells connected, out of the seven planned.

The FPSO P-70, in the Atapu accumulation, started production in 2020, and, by the end of 2021 was producing at plateau, with only four producing wells connected, out of a total of eight planned.

The drilling campaign in the three accumulations is proceeding according to plan, with 15 producing wells and 10 injection wells already drilled by the end of 2021, out of the 33 wells planned.

In the Sururu area, Galp and its partners continued to study the subsurface of the accumulation, and the Sururu Main RDA (Reservoir Data Acquisition) well was drilled in 2020 with the goal of reducing volumetric uncertainty and improving the development concept of the area. An EWT (Extended Well Test) is ongoing, producing through FPSO P-68 since June and providing important data for reservoir study.

3.2 Upstream

The Berbigão and Sururu accumulations extend beyond the limits of block BM-S-11A, towards a Transfer of Rights (ToR) area, and will be subject to unitisation with the surrounding areas. Regarding the ToR area, in 2018, the members of the consortium, along with Petrobras, submitted the Production Individualisation Agreements (AIP) to the ANP for the development of these accumulations and await the agency's approval.

In late 2021, ANP hosted the second bid round for the surplus volumes of the ToR of Sépia and Atapu areas, having awarded the Atapu rights to the consortium composed of Petrobras, Shell and TotalEnergies. Galp's stake in the project remained unchanged at 1.7%.

Preventive maintenance for production optimisation

Within the scope of the ANP's RD&I regulation, Galp, in partnership with Simeros and Petrobras, is developing a modular system – PipeACOM – capable of mitigating the accelerated consumption of the operational life of flexible lines. The project stands out for its agility in qualifying the technology with a pilot being tested by Petrobras pre-salt operations. The innovative and disruptive character of the technology was recognised by the ANP's 2020 Awards, which were presented in 2021.

Bacalhau

The Bacalhau project extends through blocks BM-S-8 and Bacalhau North, with Galp holding a 20% stake in both.

In 2021, Galp and its partners made the Final Investment Decision to develop phase 1 of the Bacalhau field. The total investment for this phase is estimated at c.$8 bn.

The Bacalhau project is considered one of the most promising assets in the pre-salt of the Santos basin due to the high-pressure conditions of the reservoir and its high-quality resources. It is a highly competitive and sustainable project, both in economic and environmental terms, with phase 1 having an estimated NPV_{10} breakeven well below $35/bbl and a carbon intensity below 9 $kgCO_2e$/boe.

The development of phase 1 will consist of 19 subsea wells tied back to an FPSO located at the field. This will be one of the largest FPSOs in Brazil with a production capacity of 220,000 barrels per day and two million barrels in storage capacity. The stabilised oil will be offloaded to shuttle tankers and the gas will be re-injected in the reservoir.

A Reservoir Data Acquisition (RDA) well is expected to be drilled in the first half of 2023 and will help further define the Bacalhau Phase 2 project. Recently, an Ocean Bottom Node (OBN) seismic campaign has been completed and is being processed for further appraisal of the area.

The Bacalhau project will significantly contribute to Galp's continued competitive Upstream growth.

3.2 Upstream

Sépia

Galp has a small stake in the Sépia project, which started production last August, through FPSO Carioca, located approximately 200 km off the coast of the state of Rio de Janeiro, at a water depth of 2,200 metres. The unit, chartered from Modec, has a daily processing capacity of up to 180,000 barrels of oil and 6 million m³ of natural gas, being the largest operating unit in the Santos Basin in terms of complexity, contributing to Galp's expected growth in production.

The offloading of the oil production will be carried out by shuttle tankers, while the gas production will be exported through the pre-salt gas pipelines.

The drilling campaign is proceeding according to plan, with seven producing wells and four injection wells already drilled by the end of 2021, out of a total of 15 planned wells. Currently, three producer wells are connected to the installed FPSO.

In late 2021, ANP hosted the second bid round for the surplus volumes of the ToR of Sépia and Atapu areas, having awarded the Sépia rights to the consortium composed of Petrobras, TotalEnergies, Petronas and Qatar Petroleum. Galp's stake in the project remained unchanged at 2.4%.

Exploration and appraisal in Brazil

Júpiter

The discovery of Júpiter, located entirely within block BM-S-24, is a large-scale accumulation, still under assessment.

The results from the DST performed in 2020 reinforced the potential of the Júpiter reservoir, with high added value condensate sample, and Galp and its partner are committed to continuing development studies for the discovery.

During 2021, the partners continued the technological development studies and the analysis of additional assessment activities in order to support the project's conceptual solution.

Block C-M-791

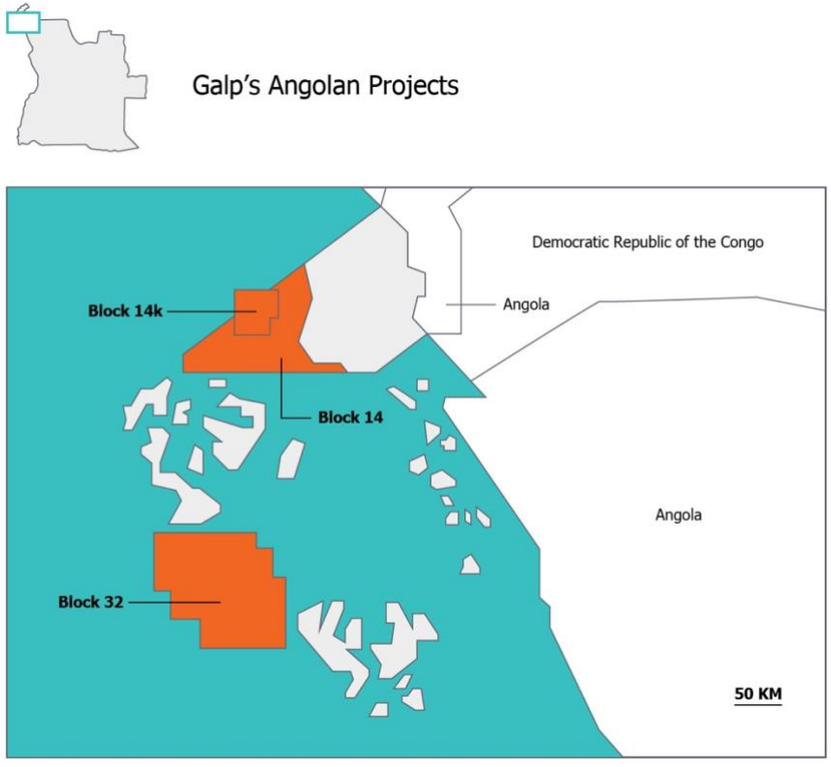
Block C-M-791 is an exploration asset in the Campos basin with pre-salt geological potential, although located outside the pre-salt polygon.

In 2019, the consortium started an exploration program with the acquisition of around 2,800 km^2 of 3D seismic in the region, more than covering the area of block C-M-791. The data was processed leading to the identification the Bob prospect, with drilling activities of this exploratory well having started in early 2022.

3.2 Upstream

Angola

Galp has a stake in block 32, which contains the Kaombo project, currently one of the most relevant upstream projects under development in Angola, as well as a long-standing stake in blocks 14 and 14k.



Block 32

The Kaombo project, in block 32, is located in an ultra-deepwater area of the Angolan offshore and its development is expected to recover around 630 mbbl of oil through two FPSO units.

The consortium continues to work to optimise oil recovery and maximise value extraction, through the execution of a well campaign focusing on drilling of remaining Field Development Plan (FDP) & approved pop-up wells, enhancing production efficiency with reservoir management, and continuing evaluating potential upsides.

At the end of 2021, the consortium had drilled and delivered 47 wells from the 62 planned for the development of the Kaombo field.

Block 14/14k

Galp and its partners are continuously focused on optimising the efficiency and costs of block 14/14k, given the current state of natural decline of the field. Recently the consortium executed with the Angolan energy sector regulator (ANPG) a Heads of Agreement and PSA amendment, leading to the unification of the development areas of Kuito, Benguela-Belize-Lobito-Tomboco (BBLT) and Tomboa-Landana (TL), enhancing the economics of the projects through an increase in cost oil.

This agreement extends the Block 14 economic limit until end of licence, allows the continuity of the infill drilling campaign in place and increases the recoverable costs amount, through a higher Cost Oil rate.

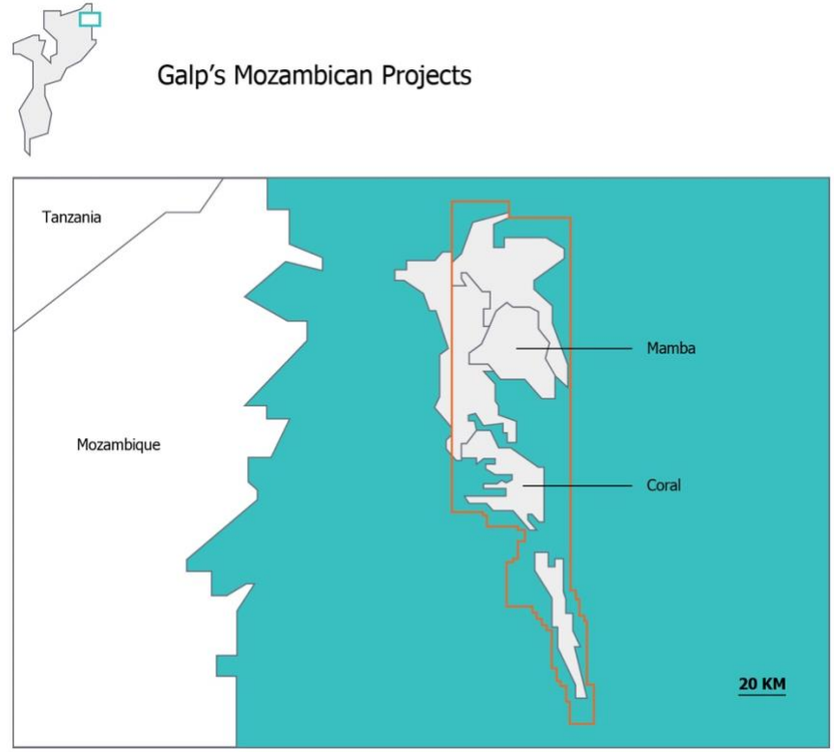
3.2 Upstream

Mozambique

Natural gas will play a key transitional role to a lower-carbon economy, and the discoveries in the Rovuma basin will enable Mozambique to become one of the world's leading natural gas suppliers.

The size and quality of the resources discovered will bring profound changes to the country and will also play a key role in Galp's production profile, in line with the Company's energy transition strategy.

The development of Area 4, in the Rovuma basin, includes the Floating Liquified Natural Gas (FLNG) Coral Sul offshore project and the Rovuma Liquified Natural Gas (LNG) onshore project.



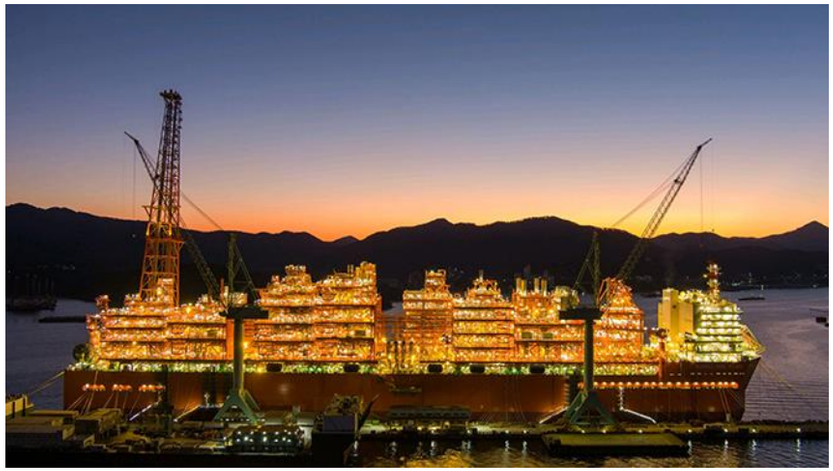
3.2 Upstream

Coral South

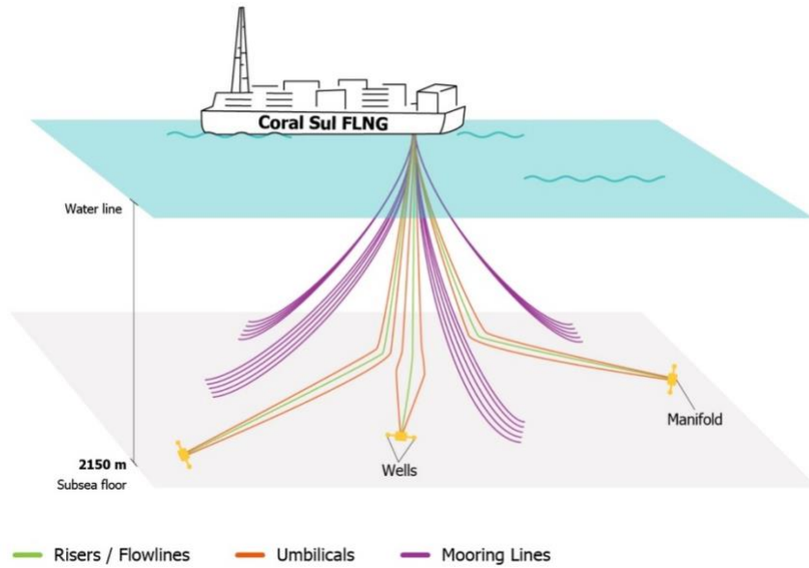
After being sanctioned in 2017, the Coral South project will be the first development of the large-scale natural gas resources of Area 4.

The Coral discovery, located entirely in at Area 4 concession, is defined by a reservoir with approximately 16 tcf of gas in place. The project consists in a Floating Liquified Natural Gas (FLNG) unit to be connected to the southern region of the Coral discovery, with a processing capacity of about 3.4 mtpa of LNG.

The construction of the FLNG started in 2018, with a controlled execution which led to the unit sail away from South Korea in November 2021, as per plan and despite the pandemic scenario. The FLNG arrived in Mozambique in January 2022, mooring and offshore commissioning activities are currently ongoing. First gas planned for the second half of 2022.



Coral South FLNG project Development Concept



3.2 Upstream

Rovuma LNG

The development of the Rovuma basin project is one of the most competitive green field developments in the world, benefiting from Mozambique's privileged geographical position, the quality of the gas and the proximity of the discoveries to shore.

In May 2019, the Government of Mozambique approved the Plan of Development for Phase I of the Rovuma LNG project, which will produce, liquefy and export natural gas from Mamba.

Currently, the Area 4 Joint Venture is focused on optimising the development concept and evaluating options to ensure the robustness of the project.

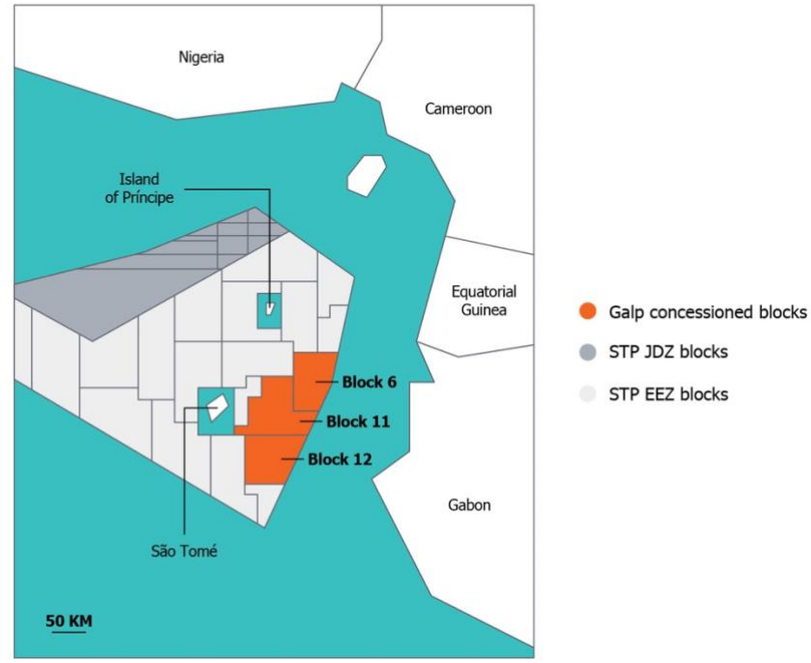
The consortium is equally evaluating potential synergies and closely monitoring the security situation in-country.

3.2 Upstream

São Tomé and Príncipe

Galp's exploration portfolio in São Tomé and Príncipe currently includes three offshore blocks, namely Blocks 6 and 12, where Galp is the operator with 45% and 41% participating interest, respectively, and block 11, in which the Company holds a 20% participating interest.

Following the geological and geophysical studies carried out on Block 6, Galp and the other partners have identified a drill-worthy prospect, which will be the first exploratory well in São Tomé and Príncipe. The well, known as Jaca, will be spud in 2022, and its results will be central to proving the play's potential and determine any subsequent appraisal strategy.



Support to the community

Galp's aim is to make a positive impact on the communities where it is present and is funding a school refurbishment in the town of Madalena in São Tomé and Príncipe, including the building of a new sports infrastructure.

This social investment will impact the daily life of approximately 600 children and surrounding communities.

3.2 Upstream

Current

Current

Project

Project

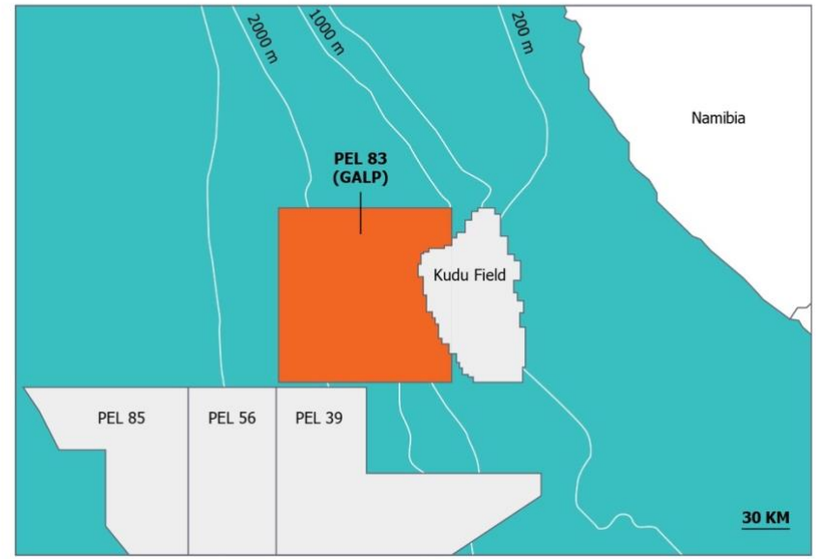
3.2 Upstream

Namibia

Galp's exploration Assets in Namibia consist of Petroleum Exploration Licence No 83 (PEL83) which covers an area of almost 10,000 km^2 in the Orange Basin in the southern part of Namibia's offshore waters near to the border with South Africa. The Company holds an 80% working interest in the Licence along with the Namibian State Oil Company, Namcor (10%), and local Namibian Independent Oil Company, Custos Energy (10%).

The Licence was first awarded in September 2017, for an initial exploration period of 4 years. During this period, Galp acquired 3,000 km^2 of high-quality 3D seismic data which was used to identify and map a number of interesting leads and prospects. In September 2021 the PEL83 Joint Venture Partners agreed to enter the next 2-year exploration period and are currently planning for the next phase of exploration activity.

Recent nearby oil discoveries made by both the Graf-1 well drilled by Shell and Venus-1 well drilled by TotalEnergies have proven the presence of a working petroleum system in the Orange Basin and PEL83 is well situated immediately to the north of these discoveries.



3.2 Upstream

Current Upstream project portfolio

Block(s)	Basin	Type	# Projects	Main Projects	Oil Properties API (º)	Oil Properties Sulphur (%wt)	Phase	Partners
Brazil (via Petrogal Brazil, except Barreirinhas)								
BM-S-11	Santos	Ultra-deepwater	1	Tupi	27-34	<0.5	Development & Production	Galp 9.2% | Petrobras 67.2% (op.) Shell 23.0% | PPSA 0.6%
BM-S-11	Santos	Ultra-deepwater	1	Iracema	28-32	<0.5	Development & Production	Galp 10% | Petrobras 65% (op.) Shell 25%
BM-S-11A	Santos	Ultra-deepwater	1	Berbigão	25-28	<0.5	Development & Production	Galp 10% | Petrobras 42.5% (op.) Shell 25% | TotalEnergies 22.5%
BM-S-11A	Santos	Ultra-deepwater	1	Sururu	24-29	<0.5	Development & Production	Galp 10% | Petrobras 42.5% (op.) Shell 25% | TotalEnergies 22.5%
BM-S-11A	Santos	Ultra-deepwater	1	Atapu	27-29	<0.5	Development & Production	Galp 1.7% | Petrobras 65.7% (op.) Shell 16.7% | TotalEnergies 15.0% | PPSA 1.0%
BM-S-8	Santos	Ultra-deepwater	2	Bacalhau	30-32	<0.5	Development	Galp 20% | Equinor 40% (op.) ExxonMobil 40%
Bacalhau North	Santos	Ultra-deepwater	1	Bacalhau North	30-32	<0.5	Development	Galp 20% | Equinor 40% (op.) ExxonMobil 40%
Uirapuru	Santos	Ultra-deepwater	1				Exploration	Galp 14% | Petrobras 30% (op.) Equinor 28% | ExxonMobil 28%
Sépia	Santos	Ultra-deepwater	1	Sépia	26-30	<0.5	Development & Production	Galp 2.4% | Petrobras 55.3% (op.) TotalEnergies 16.9% | Petronas 12.7% QP 12.7%
BM-S-24	Santos	Ultra-deepwater	1	Júpiter			Appraisal	Galp 20% Petrobras 80% (op.)
C-M-791	Campos	Ultra-deepwater	1				Exploration	Galp 20% | Shell 40% (op.) Chevron 40%
BM-PEPB-783/839	Pernambuco-Paraíba	From deep to Ultra-deepwater	2				Exploration	Galp 20% Petrobras 80% (op.)
BAR-M-300/ 342/344/388	Barreirinhas	From shallow to Ultra-deepwater	4				Exploration	Galp 10% | Shell 50% (op.) Petrobras 40%

3.2 Upstream

Block(s)	Basin	Type	# Projects	Main Projects	Oil Properties API (º)	Oil Properties Sulphur (%wt)	Phase	Partners
Angola								
Block 14	Lower Congo	From shallow to Ultra-deepwater	1	TL Re-Demarcated	24-36	<0.8	Development & Production	Galp 9% | Chevron 31% (op.) Sonangol 20% | Eni 20% TotalEnergies 20%
Block 14k	Lower Congo	From shallow to Ultra-deepwater	1	Lianzi	35-37	<0.5	Development & Production	Galp 4.5% | Chevron 31.25% (op.) TotalEnergies 36.75% | Sonangol 10% Eni 10% | SNPC 7,5%
Block 32	Lower Congo	Ultra-deepwater	2	Kaombo	26-32	<0.9	Development & Production	Galp 5% | TotalEnergies 30% (op.) Sonangol 30% | China Sonangol 20% ExxonMobil 15%
Mozambique								
Area 4	Rovuma	Ultra-deepwater	2	Coral Sul Rovuma LNG			Development	Galp10% | Eni 25% (op.) ExxonMobil 25% (op.) | CNPC 20% Kogas 10% | ENH 10%
Namibia								
PEL 83	Orange	From shallow to Ultra-deepwater	1				Exploration	Galp 80% (op.) | NAMCOR 10% Custos 10%
S. Tomé and Príncipe								
Block 6	Rio Muni	Ultra-deepwater	1				Exploration	Galp 45%(op.) | KE 25% | Shell 20% ANP 10%
Block 11	Rio Muni	Ultra-deepwater	1				Exploration	Galp 20% | KE 35% (op.) Shell 30% | ANP 15%
Block 12	Rio Muni	Ultra-deepwater	1				Exploration	Galp 41.2% (op.) | Equator 46.3% ANP 12.5%

3.3 Commercial

2021 Highlights

- Sales of oil products were 6.5 mton up 8% YoY, reflecting the demand recovery in Iberia from both B2C and B2B activities.
- Natural gas sales were 18.3 TWh, impacted by lower consumption levels, particularly in the B2B segment, while electricity sales were 4.2 TWh, 25% higher YoY.
- In electric mobility, Galp maintained its leadership position, more than doubling the number of Electric Vehicle charging points in operation, surpassing 1,000 points, also supported by Mobilectric acquisition.
- Launching of the first new concept hub in Lisbon, a store exclusively dedicated to non-fuel products and services, strengthening the positioning of Galp's brand.
- Integration of Galp Solar and GowithFlow (Flow) within Commercial business, with Galp Solar reaching more than 4,000 clients and Flow securing contracts of over 8,000 mobility assets during the year.

6.5 mton
Oil product sales

22.5 TWh
Gas & Power sales

1,480
Service stations

1,186
Electric mobility charging points

Main indicators

	2020	2021
Sales of oil products to direct customers (mton)	6.0	6.5
Natural gas sales to direct customers (TWh)	22.6	18.3
Electricity sales to direct customers (TWh)	3.3	4.2
Number of service stations	1,475	1,480
Number of convenience stores	856	862
Number of electric mobility charging points	544	1,186
RCA Ebitda (€m)	325	288
RCA Ebit (€m)	232	179
OCF (€m)	316	266
Investment (€m)	127	92

3.3 Commercial

Commercial

Galp's Commercial business provides a complete and integrated offer to its clients, ranging from oil products, gas, electricity to other convenience services. Maintaining a customer-centred approach at its core, our business offers solutions for companies and customers in the different geographies leveraging its strong position of Galp's brand in Iberia and in a selection of African countries.

The Company is actively adapting to new consumption patterns with a focus on offering products and services that are more sustainable and digital.

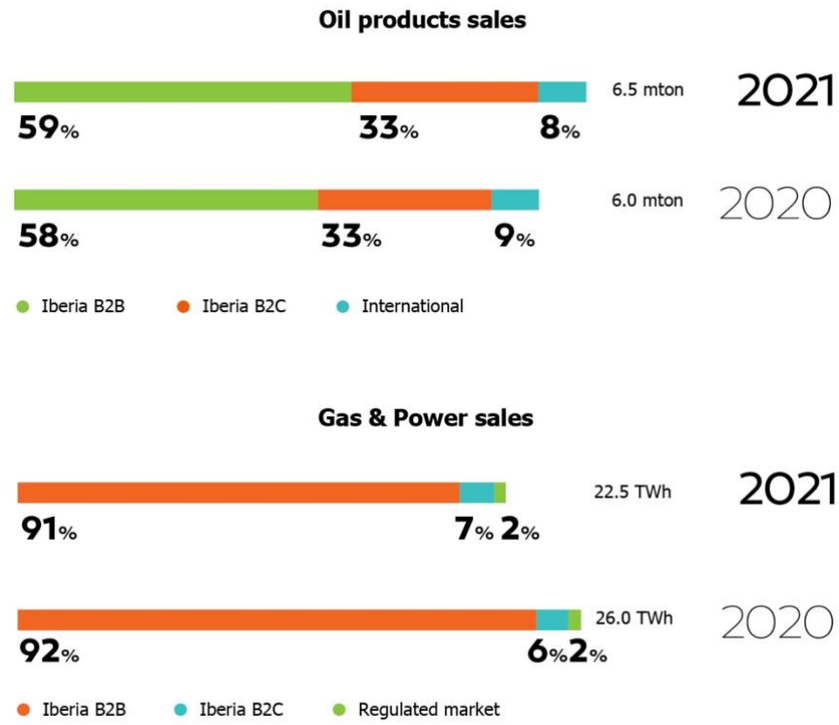
Safety

During 2021, Galp promoted several initiatives to improve the safety culture within the Commercial business. In Spain, the programme "Safety and Environment Olympics" was launched, which consisted of a quiz related to safety and environmental themes. This initiative had a strong adherence of c.80% of service stations and identified several improvements to be implemented. The Olympics are expected to be implemented in Portugal during 2022. "AQS Academy" was another programme launched in Portugal, which provides video training to all employees working at service stations, promoting the best standards on safety, environment and quality during a period of physical contact restrictions.

2021 Performance

Oil product volumes sold to direct customers increased by 8% YoY to a total of 6.5 mton, following the higher demand during the period, given the slight recovery in Iberia as lockdown measures gradually eased during the year.

Sales of natural gas to direct customers amounted to 18.3 TWh, a decrease of 19% YoY, impacted by the lower contribution from the B2B segment, while electricity sales amounted to 4.2 TWh, 25% higher YoY.



3.3 Commercial

Business-to-consumer

On the road

Using the distribution network under Galp's brand, we offer oil products, electric mobility, new energies, non-fuel and convenience products, as well as diverse services to B2C clients.

By the end of 2021, Galp's retail network consisted of a total of 1,281 service stations in Iberia, 702 of which in Portugal. The Company also has 343 convenience stores in Portugal and 385 in Spain.

Regarding oil products, in 2021, Galp maintained its leadership in the Portuguese market and maintained a relevant position in Iberia, reaching a market share of c.28% in Portugal and c.4% in Spain.

Galp has been renovating and enhancing its network of stores and service stations, offering differentiated products and services, as well as prioritising and optimising customer experience. The Company aspires to convert more than 60% of its current retail network by 2026, with digitalisation playing a key role in the transition to expand the non-fuel offer.

New store concept hub in Lisbon

In 2021, Galp inaugurated a new store concept in Lisbon exclusively dedicated to non-fuel products, namely meals, basic grocery items and wellbeing products.

This project showcased very positive results with the average ticket value per client in this store increasing 15% in 2021, when compared to 2019.

Galp is closely monitoring and analysing the consumer behaviour and demand patterns in this store, collecting key data points to be deployed in the remaining network.

3.3 Commercial

Galp's non-fuel products and services contribution margin in 2021, already surpassed 2019 levels by c.5%. The Company will continue its efforts to enhance the non-fuel offering and expects to double this contribution by 2025.

We continue to invest in strong partnerships in the various market segments where we operate, improving cross-sales and differentiating Galp's brand as a service provider. During 2021, we continued to develop partnerships with online home delivery platforms, doubling the number of deliveries YoY, which amounted to over 125 thousand.

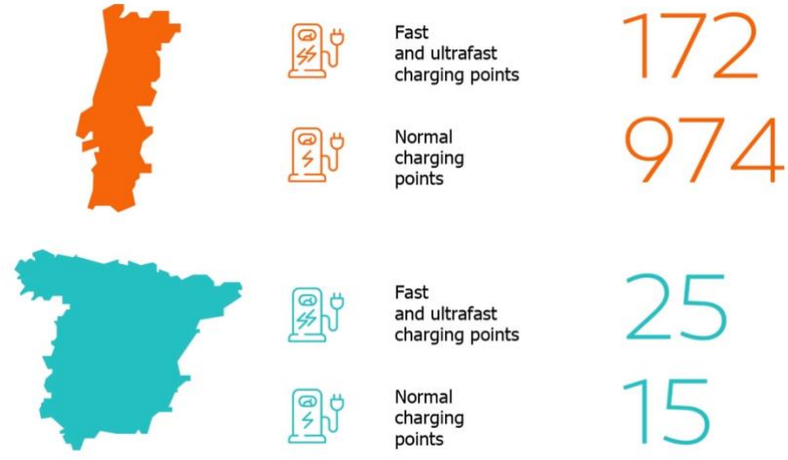
The customer base associated with loyalty programmes reached a total of around 2 million customers in 2021, mainly as a result of the partnership with the largest food retail group in Portugal, Sonae, and a new partnership developed in 2021 with the Portuguese airline TAP. In the Iberian retail segment, more than 40% of the oil product volumes sold are connected to loyalty programmes.

In order to capture new market opportunities, Galp has been exploring new value creation sources in the field of new energies, which includes the electric mobility market and Natural Gas for Vehicles (NGV).

In electric mobility, the Company has a leading position in Portugal, with an electricity volume market share of around 22%. Through the Galp Electric card commercial offer, the Company provides energy, mobility solutions and services on the road and at home. During 2021, more than 12 thousand cards were issued.

During 2021, Galp supplied 3.4 GWh of electricity through its charging infrastructure, up 109% YoY. All the electricity supplied by Galp is green electricity, 100% produced from renewable sources.

In 2021, Galp more than doubled the number of operating charging points, surpassing 1,000 points in Iberia. Currently, the Company owns the largest network in Portugal with 1,146 points, of which 172 are Fast and Ultra-Fast Charging Points. The Company is also developing its network structure in Spain, with 40 charging points already installed.



During 2022, the Company will continue to focus on expanding its charging station network in Iberia, favouring new partnerships and installations in its service station network, but also identifying other locations, both on public and private locations.

The Company expects to have more than 10,000 operating charging points installed in Iberia by the end of 2025, with this business playing a relevant role in Galp's transition to a lower-carbon portfolio.

3.3 Commercial

Galp reinforced electric mobility leadership with Mobilectric acquisition

In 2021, Galp acquired the entire share capital of Mobiletric, one of the key operators in the electric mobility sector in Portugal, particularly in fast and ultra-fast electric charging.

With this acquisition, Galp added 280 charging points to its network in the short term, most of them already in operation, as well as a solid portfolio of planned charging points which will enable rapid growth prospects.

At home

Galp is close to its residential customers through the integrated offer of natural gas, electricity and LPG in Iberia, as well as various services aimed at ensuring safety, efficiency and comfort.

Galp supplies natural gas and electricity to more than 560 thousand B2C customers in Iberia. The Company is one of the key players in the region, with a market share of c.23% in natural gas and c.6% in the electricity market in Portugal.

Galp's B2C customer base, excluding regulated market, increased 5% during 2021, mostly through the 3-minute app. This tool speeds up the acquisition of new customers in record time and in a completely digital way, which is available in Galp's service stations and resellers' spaces.

Galp's B2C customer base in Iberia

The environmental concern and the need for a sustainable energy transition is becoming increasingly relevant and is a core focus of Galp. As such, our offer only includes green electricity, 100% produced from renewable sources.

3.3 Commercial

Galp also provides energy efficiency solutions, as well as technical services aimed at optimising and reducing energy consumption by installing more efficient equipment.

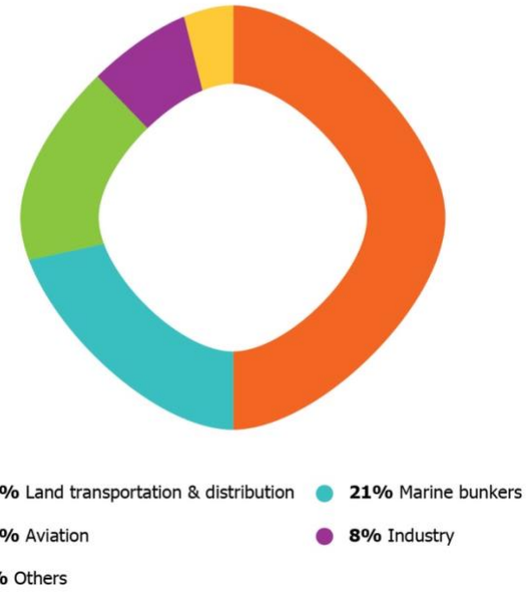
In Spain, Galp is present in the gas and electricity market through a 25% stake in a digital supplier, PODO, which currently has 92 thousand customers on a digital platform that allows the combined supply of gas, electricity and services in a more agile manner.

Business-to-business

Galp's offer in the B2B segment in Iberia covers the entire portfolio, including oil products such as fuels, chemicals and lubricants, as well as natural gas, electricity, new energies and services. Through the integrated offer of products and services, Galp is able to provide a truly integrated offer across multiple needs of companies and maximising the creation of high added-value solutions.

In this segment, the Company has about 21 thousand customers of oil products and almost 10 thousand customers of natural gas and electricity in Iberia, which are scattered through a variety of sectors such as distribution, transportation, marine bunkers, aviation, industry, services, public sector and others.

2021 Iberian oil products sales in B2B segment

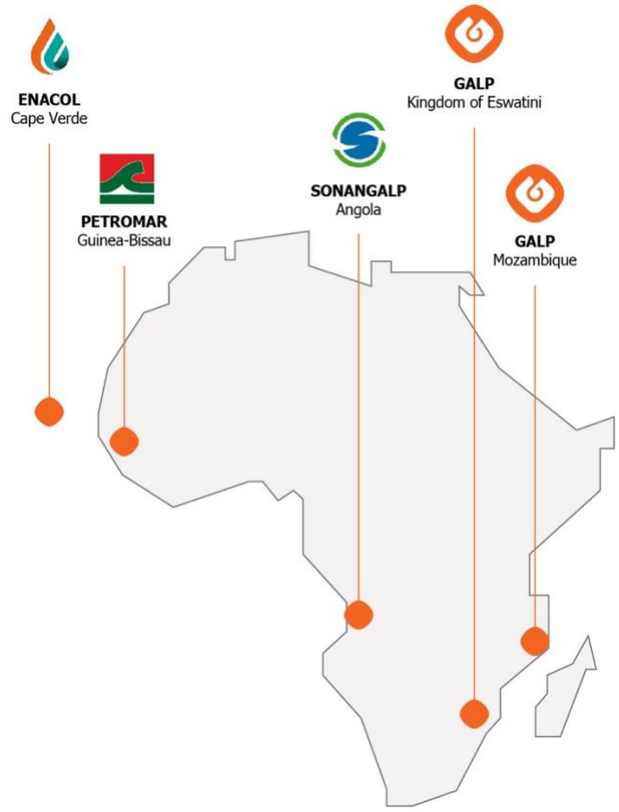


The Company has been promoting the creation of value for its customers by offering energy efficiency solutions, as well as technical services aimed at optimising and reducing energy consumption by installing more efficient equipment. In the B2B segment, Galp's offer includes auditing, training and energy efficiency certification, efficient lighting, installation of charging stations and solar panels, among others.

3.3 Commercial

International

Galp is currently operating in Africa through stakes in several companies. Each company is focused on a specific market, allowing brands to adjust their marketing and operations to different cultures, maximising value for customers in each region.



The Company has been strengthening its position in a selected group of countries in Africa, where market growth is expected. The quality of the products, as well as the geographical location and synergies with the existing logistical and business capacities are true competitive advantages contributing to the development of Galp's market in these countries.

During the year, the Company maintained its network, with a total of 199 service stations and 134 convenience stores spread through five African countries. Galp maintains a relevant position in most of the African markets in which it operates.

During 2021, the Company extended its digital transformation programme to African countries, namely Mozambique, with new platforms that will be fundamental in managing data, improving customer relationships and optimising operational performance.

Galp completed the investments in the Mozambican logistics facilities, which consisted of the construction of two new logistical bases for the reception, storage and shipment of liquid fuels and LPG in Beira and Matola. The last milestone of the project was achieved with the inauguration of a filling line for LPG bottles in Matola. These assets are fundamental in supporting the regional activities of oil products in Mozambique. In addition, Galp will be able to extend its area of influence in this region of Africa, expanding its activities to neighbouring countries.

3.3 Commercial

Galp Solar decentralised solutions

Galp developed a decentralised renewable energy production solution, Galp Solar, based on smaller scale solar power generation systems and services aiming at maximising energy consumption and efficiency both to B2B and B2C segments.

This brand uses advanced technologies, such as satellite image analysis, artificial intelligence algorithms and big data, to optimise the acquisition and installation cost of decentralised solar panels, offering the solution that best suited to each customer's needs.

At the end of 2021, Galp Solar already has an installed capacity of c.13 MW, covering more than 4,000 clients in Iberia.

During the year, the brand also developed relevant projects on Galp's assets, making our service stations and refining activities more sustainable. At Galp's Sines refinery, Galp Solar is installing solar panels with a capacity of 21 MW, corresponding to 10% of our refinery electrical needs.

This brand aims to position Galp in the area of the energy transition, with an innovative digital approach. Going forward, the Company will seek the development of new products and services (e.g. batteries, EV chargers, home solutions) to capture the high potential of the Iberian market.

GowithFlow

Through GoWithFlow, Galp is promoting solutions for its customers' fleets transitioning to EVs, including charging, fleet management and vehicle sharing systems. Through an integrated view of vehicle and energy data, fleet and facilities managers can plan and operate a heterogeneous network of combustion and electric vehicles along with managing fuel and electricity consumption.

During 2021, GoWithFlow already established business development teams in the U.K. and Spain and has secured contracts with more than 8,000 mobility assets (vehicles and charging stations) to Flow Mobility Change Platform.

Galp is currently analysing the potential for expanding this business model to new geographies, developing technological partnerships and new sales channels.

3.4 Industrial & Energy Management

2021 Highlights

77 mboe
Raw materials processed

15 mton
Oil products supply

67 TWh
NG/LNG Supply & Trading

-30 %
Refining emissions reduction (Scope 1 & 2) vs 2017

- Galp reorganised its Industrial & Energy Management unit following a transformational path, enlarging the scope beyond traditional refining and increasing integration with Energy Management.
- Galp's refining performance reflected the improvement of the international environment and planned and unplanned interventions executed throughout year, with Galp's refining margin increasing to $3.3/boe.
- The Company announced its goal to transform the Sines industrial site into a green energy hub by 2030, improving its energy efficiency and expanding its operations towards lower-carbon products.
- Galp has committed to reduce its refining operational emissions (scope 1 & 2) by 50% by 2030 (vs. 2017), with relevant steps already taken and identified on the roadmap and with a c.30% reduction already achieved in 2021.
- Galp announced a new plan to transform Matosinhos site into a Sustainable Energies and Advanced Technologies hub.
- Advancing with the development of two 100 MW green hydrogen projects to accelerate the decarbonisation of the Sines energy hub;

Main indicators

	2020	2021
Raw materials processed (mboe)	87.1	76.6
Galp refining margin ($/boe)	1.1	3.3
Refining cost[1] ($/boe)	2.6	2.0
Oil products supply (mton)	13.9	14.8
NG/LNG supply & trading volumes (TWh)	60.0	67.2
of which Trading (TWh)	14.6	31.6
Direct GHG emissions (tonCO_2e)	3,073,958	2,682,605
Total water consumption per treated feedstock (m^3/ton)	0.68	0.71
Percentage of water reused	16%	15%
RCA Ebitda (€m)	113	64
RCA Ebit (€m)	(210)	(173)
OCF (€m)	(204)	98
Investment (€m)	76	67

Note: Following the decision to discontinue refining activities in Matosinhos, 2021 Industrial & Energy Management indicators exclude Matosinhos refining contribution. The 2020 figures were kept as reported, including Matosinhos' contribution.
[1] Excluding refining margin hedging Impact

3.4 Industrial & Energy Management

Galp's Industrial & Energy Management unit incorporates the refining, biofuels, logistics and cogeneration businesses under the Industrial segment, while Energy Management comprises the supply & trading activities of oil, gas and electricity.

Galp continues to focus on maximising value creation in this segment, increasing the efficiency of its operations, and adapting its portfolio to the vision of the carbon neutrality commitment in Europe by 2050.

Industrial

Galp owns the only operating refinery in Portugal, located in Sines, and also operates multiple maritime terminals and storage parks in Iberia.

The Sines refinery has a distillation capacity of approximately 226 kbpd and is a key asset for the Portuguese economy and one of the largest in Iberia. The conversion complexity and capacity, as well as the strategic advantage due to its coastal location and the deep-water port infrastructure in Sines, both for the supply of crude oil and the export of products, make this refinery highly competitive and well positioned to thrive through the challenges the sector faces ahead.

By the end of 2020 and after a rigorous assessment of alternatives, Galp decided to discontinue from 2021 onwards refining operations in Matosinhos, a 110 kbpd capacity refinery with lower complexity, following the structural changes to the consumption patterns of oil products, driven by the European regulatory context and the effects of the pandemic. Galp continued to supply the regional market, maintaining the access of the maritime terminal, storage and distribution facilities in Matosinhos and is currently assessing usage alternatives for the complex.

Already in 2022, Galp signed a cooperation protocol for the reconversion of the site occupied by Galp's refinery in Matosinhos. The development of an Innovation District and the allocation of part of the site for the construction of a university campus are two of the projects being evaluated under this protocol, which aims to promote the economic, social and environmental context of the entire Portugal northern region, positioning this initiative at the top of the world technology projects associated with sustainable energies.

Safety

Galp is developing a complete, integrated safety programme focused on our industrial facilities and based on two different dimensions:

- Safety culture, which aims to develop a culture of care and discipline in our industrial assets;
- Process safety management with the purpose of defining clear rules and guidelines on how to handle safety processes at Galp's assets.

These programmes will be launched during 2022 and will encompass all employees within our Industrial business segment.

3.4 Industrial & Energy Management

Operational performance in 2021

Raw materials processed totalled 76.6 mboe, down 12% YoY, considering only the processing capacity of the Sines refinery in 2021, which operated under more favourable macro conditions. During the year, the efficiency of the system and the throughput volumes were impacted by operational restrictions on the fluid catalytic cracking (FCC) in the first half of the year, an unplanned event in one of the furnaces of the atmospheric distillation unit (ADU) in October, and planned maintenances in the hydrocracker, alkylation and visbreaker units in the fourth quarter of the year.

Crude oil accounted for 85% of raw materials processed, 87% of which corresponded to medium and heavy crudes. All crudes processed were sweet grades.

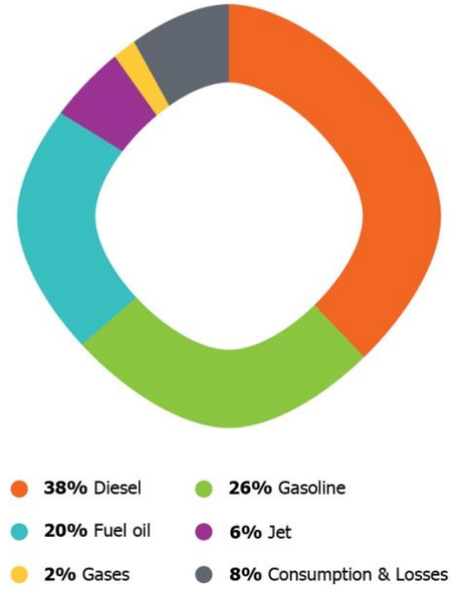
Galp's refining margin was up YoY, from $1.1/boe to $3.3/boe, following the improvement of the international refining environment.

Diesel and gasoline were the most relevant products in Galp's production mix, representing 38% and 26%, respectively. Fuel oil yields were 20%, with the entire production allocated to Very Low Sulphur Fuel Oil (VLSFO).

Galp continues to focus on improving the competitiveness of its Sines refinery, in an increasingly demanding regulatory environment and a challenging oil product market.

Note: Following the decision to discontinue refining activities in Matosinhos, 2021 Industrial & Energy Management indicators exclude Matosinhos refining contribution. The 2020 figures were kept as reported, including Matosinhos' contribution.

Sines refinery yields in 2021



3.4 Industrial & Energy Management

Digital transformation on our industrial operations

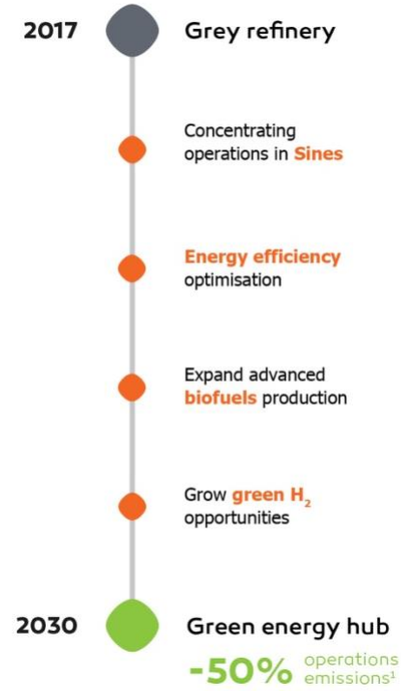
Galp is constantly improving and optimising its refining and logistic operations, reducing costs, capitalising availability and enhancing safety control procedures. During 2021, several digital initiatives were implemented in our industrial assets:

- Deployment of a digital tool to optimise the scheduling of the refining operations, from the unloading of crude to the shipping of products;
- Implementation of a predictive maintenance programme, which enables the use of machine learning to detect anomalies in equipment operations;
- Deployment of a mobile operator project in the Sines refinery, maritime terminals and storage parks, which will ensure a faster and more effective communication between operators to manage operational tasks.

From a grey refinery to a green energy hub

Galp aims to transform its Sines industrial site to a green energy hub by 2030, improving its energy efficiency and greatly reducing its carbon footprint. The expansion of advanced biofuel production through the installation of a Hydrotreated Vegetable Oil (HVO) unit, and the incorporation of opportunities related with green hydrogen will be major steps in this transition.

In this path, the Company expects to reduce operational emissions by 50%, including scope 1 and 2, by 2030, compared to 2017 levels. The concentration of the refining activities in Sines, discontinuing Matosinhos, and the implementation of other initiatives, already enabled a reduction of 30%.



[1] Operations emissions' reduction from industrial activities (scopes 1 & 2) vs 2017.

3.4 Industrial & Energy Management

Biofuels

During 2021, Galp announced it was analysing the development of a HVO plant in the Sines refinery with the capacity to produce 270 ktpa of advanced renewable products. This unit is being designed to have the flexibility to produce both renewable diesel and Sustainable Aviation Fuel (SAF) and is projected to go online before 2025.

During the year, the project evolved according to the plan, with the BEDP (Basic Engineering Design Package) phase being concluded in December 2021, followed by the start of FEED (Front-End Engineering Design) in January 2022. A Final Investment Decision is expected to occur in 2022 year end.

Galp also operates Enerfuel, an industrial unit in Sines producing *Fatty Acid Methyl Ester* (FAME) biodiesel. This product is made 100% from the processing of animal fats and used cooking oils. Enerfuel produced approximately 24 kton of second-generation biodiesel in 2021.

The Company also produces HVO in a hydrogenation unit at its Sines refinery. This biofuel results from the co-processing of vegetable oil with diesel, resulting in a biofuel with characteristics similar to fossil fuels. In 2021, production reached approximately 7.4 kton, equivalent to a reduction of 24 kton of CO_2 emissions.

Galp's sourcing strategy is based on diversified feedstocks, geographies and suppliers and seeks to secure long-term contracts, leveraging in the existing supplier base and developing new partnerships. The Company will gradually expand its footprint in low-carbon residue feedstock, expanding from the current operations needs with Enerfuel and the co-processing unit to the HVO project at a later stage.

In 2021, Galp complied with the Renewable Energy Directive (RED), incorporating 10% biofuels in its energy content in Portugal, and 8.5% in Spain. The newly approved European regulation (RED II) will set the framework for the decade, promoting advanced biofuels and restricting the use of some raw materials.

Galp's strategy for biofuels is in line with the ongoing decarbonisation initiatives, seeking to encourage the use of biofuels made from waste, which represented over 60% of the raw materials for this type of fuel in 2021. In 2021, 257,587 m^3 of biofuels were incorporated into fuels sold in Portugal, including 27,000 m^3 of second-generation biodiesel produced by Enerfuel. The integration of these low-carbon fuels prevented the emission of over 678 kton CO_2e when compared to a fuel of exclusively fossil origin.

Green Hydrogen

Green hydrogen offers one of the most efficient solutions to address the challenges related to the decarbonisation of hard-to-abate sectors, such as heavy-duty transport, maritime, aviation and high-energy intense industrial processes.

Galp, is in a privileged position to develop green hydrogen solutions, capturing the full potential of its Sines energy hub, mobility customers, renewable generation and leveraging its track record of industrial skills. In addition, Galp is the single largest hydrogen producer and consumer in Portugal.

As such, the Company is developing new energy paths with a view to decarbonising the economy, such as the production of green hydrogen and e-fuels.

The Company continues to mature the 100 MW electrolyser in Sines, having completed the feasibility study and currently working on the basic engineering

3.4 Industrial & Energy Management

as well as on securing key support mechanisms for the Final Investment Decision.

In parallel, Galp is co-leading, together with EDP, a consortium comprised of 13 European entities that submitted an R&D project to the EU "Green Deal Fund" and was awarded a €30 m grant for the development of a 100 MW electrolyser. The project is under development and the grant agreement has already been signed with the EU.

Additionally, and in order to accelerate the learning curve, Galp is developing a 2 MW pilot in Sines expected to start production in 2023. The Company has also secured c.€1.8 m funding for the development of that project.

As the green hydrogen business case gets material, Galp sees the potential of increasing its installed capacity to over 1 GW in the second half of the decade. That expansion would allow Galp to replace the Sines grey hydrogen consumption and to address maritime and aviation e-fuels.

Galp is also pursuing other opportunities in the hydrogen market as part of its strong commitment to energy transition, namely nurturing hydrogen-based mobility eco-systems and developing new low-carbon service station concepts with a hydrogen offer.

Cogeneration

Galp's power activity is supported by the operation of cogeneration units in Portugal totalling 91 MW, with the main unit installed in the Sines refinery. This unit is highly efficient, as it combines heat and electricity generation, and it is a significant supplier of steam to the refinery operations.

Following the decision to discontinue the Matosinhos refining operations from 2021 onwards, Galp halted cogeneration operations in Matosinhos as of October 2021.

In 2021, cogeneration units produced approximately 980 GWh, down 28% YoY, reflecting the lower contribution from the Matosinhos cogeneration.

Energy Management

Galp intends to boost the role of Energy Management in its operations, enabling value creation through integration, encompassing crude oil, oil products, natural gas and electricity. The Company will be able to capture new trading opportunities, through the management of the integrated margin, optimisation of supply-to-sourcing and taking advantage of energy sales dynamics and risk management.

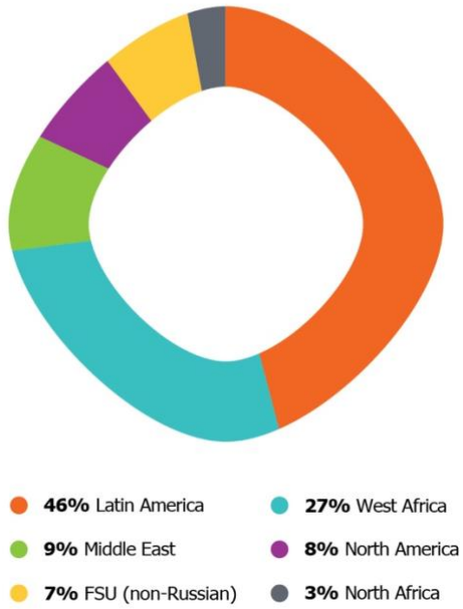
3.4 Industrial & Energy Management

Raw materials and oil products

Galp manages the procurement of crude oil and other raw materials, maximising its refining margin captured, taking into account the strategy of supply diversification and extracting value from the existing asset base.

Galp imported crude from 11 different countries, with medium and heavy crude oils accounting for 87% of the total. Galp's entire crude sourcing was of lower sulphur content.

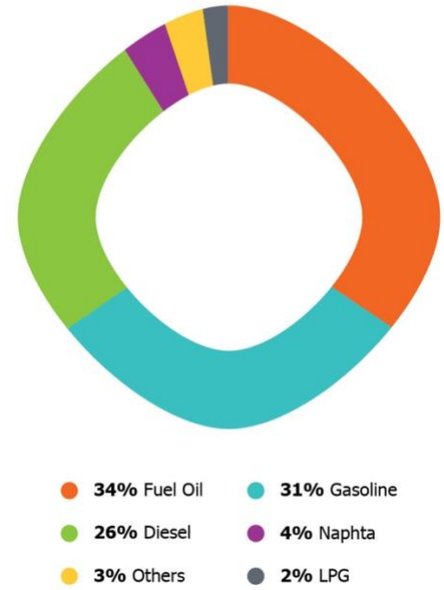
Crude source in 2021



The oil products resulting from our refining and trading activities are channelled to our Commercial business unit, and externally to other operators and exports. In 2021, volumes sold totalled 14.8 mton, of which 7.0 mton were sold to Commercial, 2.8 mton to other operators and 5.0 mton were exported.

The U.S.A., particularly the East Coast, remains a relevant destination for the export of heavy gasoline components. Fuel oil, gasoline and diesel were the main products exported, accounting for 34%, 31% and 26% of total exports, respectively, mostly to the U.S.A., Spain and Gibraltar.

Exports per product in 2021



3.4 Industrial & Energy Management

Natural gas

Galp has an active NG/LNG supply and trading business.

Currently, Galp's NG and LNG supplies are sourced mainly through long-term contracts established with Sonatrach in Algeria and LNG in Nigeria. These represented about 88% of the Company's supply sources in 2021.

NG/LNG sourcing in 2021

48% Nigeria (LNG) **40%** Algeria (NG)
11% Spot (NG) **2%** Spot (LNG)

In parallel, Galp also explores other sources of supply, namely the Spanish and French wholesale markets. The remaining needs are covered through spot market operations.

Galp and Sonatrach signed a new agreement in 2019 under which Galp will continue to source natural gas from Algeria, through the Medgas pipeline to Iberia. Galp has secured 1 bcm (c.12 TWh) per year for a 5-year period.

In 2020, Galp signed a Sales and Purchase Agreement (SPA) with Nigeria LNG Limited for the supply of 1 mtpa (c.16 TWh) of LNG over a period of 10 years.

Aiming at diversifying and increasing the competitiveness of its long-term sourcing basket, Galp signed an agreement with Venture Global LNG for the acquisition of 1 mtpa (c.16 TWh) from the LNG export terminal in Calcasieu Pass, U.S.A., over a period of 20 years, starting in 2023. At the end of 2020, Galp agreed to hire an LNG transport vessel from Pan Ocean Co., Ltd for an initial period of 5 years, to support the transportation of LNG from Venture Global LNG.

Galp develops its NG/LNG trading activity in the international market and has also been consolidating its position in natural gas markets in European hubs, namely Spain, France and the Netherlands, through the NG network trading activity.

The natural gas resulting from our sourcing activities is also channelled internally to our Commercial business and auto consumptions in our refinery, and externally to trading activities and electro producers. The volumes of NG/LNG sold via trading were entirely via network trading.

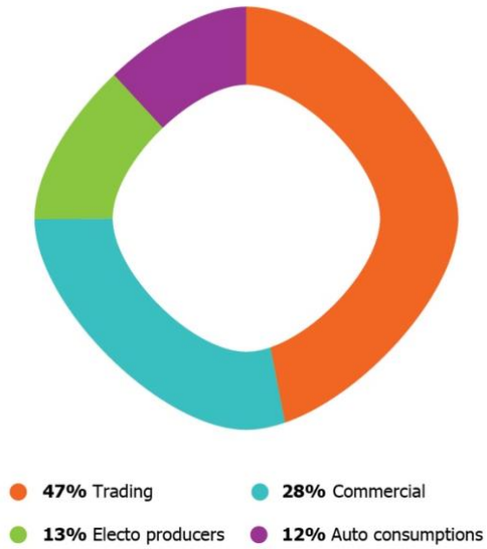
Additionally, Galp is actively working to explore all options for the sale of its associated gas produced in its Brazilian operations. Following the new framework for the natural gas market liberalisation in Brazil, Galp has established a series of gas commercialisation contracts with a start date of January 1, 2022. This has opened marketing opportunities for Galp, allowing the Company to expand its presence along the gas value chain, targeting new clients and creating new business opportunities.

3.4 Industrial & Energy Management

In 2021 year end, Galp has entered into an agreement with Companhia de Gás da Bahia (Bahiagás) to sell a part of its Brazilian natural gas production. We also secured the offtake of Repsol Sinopec's natural gas production from Sapinhoá Norte, broadening the Company's sourcing alternatives in Brazil.

In addition, Galp signed agreements with Petrobras and Transportadora Associada de Gás to ensure access to the processing and transportation infrastructures, respectively.

Natural gas sales per segment in 2021



Power

Galp is present in the electricity market through the Iberian Electricity Market (MIBEL), both on the spot market (OMEL) and the forward market (OMIP). This activity is mainly aimed at optimising Galp's sourcing and renewables production, guaranteeing the needs of the Commercial business and enabling value creation.

Galp currently holds two long-term contracts for the purchase of renewable energy from solar power plants, for a total of approximately 650 GWh per year, as part of the strategy to ensure a supply of efficient and environmentally sustainable energy solutions.

3.5 Renewables & New Businesses

2021 Highlights

- Start-up of 36 MWp of renewable generation capacity during the year, raising gross operating capacity at year end to c.1 GWp.
- Expansion of the renewable portfolio, now totalling c.4.7 GWp on a 100% basis, considering projects under operation, construction and/or development.
- Enlarged Iberian position with the acquisition of nearly 400 MWp of new solar PV installed capacity in Spain.
- Entrance into the renewable energy sector in Brazil, with acquisition of 594 MWp in solar projects, at early stages of development.
- Securing of competitive financing for the development of renewables' projects in Iberia.
- Creation of JV with Northvolt for the development of a lithium conversion facility in Portugal, a step forward in the plan to foster a local battery value chain.

c.4.7 GW
Gross renewable capacity in operation and construction & development

963 MW
Gross renewable generation installed capacity

1,288 GWh
Gross renewable power generation

Main indicators

	2020	2021
Renewable gross generation capacity[1] (MW)	926	963
Renewable power generation (GWh)	327	1,288
Avoided CO_2e emissions (tonCO_2e)	98,910	352,382
Pro-forma RCA Ebitda[2] (€m)	(2)	76
Pro-forma RCA Ebit[1] (€m)	(12)	52
Pro-forma CFFO[2] (€m)	(2)	76
Investment (€m)	350	142

[1] Corresponds to, on a 100% basis, the installed capacity of renewable electricity generation projects where Galp has an equity Renewable gross generation capacity.
[2] Pro-forma considers all Renewables projects as if they were consolidated according to Galp's equity stakes.

3.5 Renewables & New Businesses

Renewables & New Businesses

The Renewables & New Businesses unit is focused on developing a sustainable and diversified portfolio of renewable energy generation, which can be leveraged by synergies with the Company's remaining energy businesses, namely Commercial, whilst supporting its energy transition trajectory and carbon intensity reduction ambitions.

In addition, this unit identifies, assesses, and develops new businesses opportunities in the energy space, seeking to add new value pools and maximise the value creation of current businesses, by taking advantage of the disruptive changes that the industry is going through.

Renewables

In 2021, Galp's renewable energy generation portfolio increased c.1 GWp to c.4.7 GWp (at 100%), including mostly solar photovoltaic (PV) projects under operation, construction and/or development, spread between Portugal, Spain and, more recently, Brazil.

Of these, 963 MWp of capacity were already under operation at the end of 2021, including 36 MWp of new operating capacity that came online during the year.

3.5 Renewables & New Businesses

Renewables Portfolio

Galp Renewable capacity (MW)	In operation	Under Construction	Under Development	Total
Gross	**963**	**393**	**3,390**	**4,746**
Spain	950	249	2,445	3,645
Portugal	12	144	351	507
Brazil	-	-	594	594
Equity to Galp (pro-forma)	**719**	**331**	**2,968**	**4,018**
Spain	713	187	2,023	2,923
Portugal	6	144	351	501
Brazil	-	-	594	594

Project	Country	Segment	% owned	Capacity (100% basis) MWp	Project Status
Titan	Spain	Solar	75.01	950	Operating
Titan	Spain	Solar	75.01	c.1.9 GW	Construction/Development
Magallon	Spain	Solar	100	359	Development
Jerjes & Bujeo	Spain	Solar	100	74	Development
Enerland	Spain	Solar	100	223	Development
Omaei	Spain	Solar	100	100	Development
Vale Grande	Portugal	Wind	51.50	12	Operational
Alcoutim	Portugal	Solar	100	144	Construction
Ourique	Portugal	Solar	100	343	Development
Odemira	Portugal	Solar	100	8	Development
Cascudo	Brazil	Solar	100	282	Development
Murion	Brazil	Solar	100	312	Development

Split per Geography (GW)

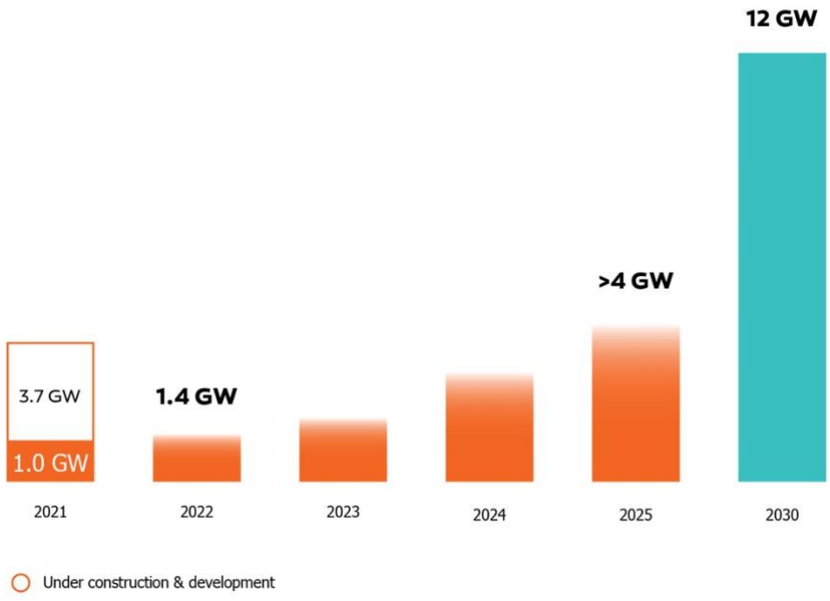
3.6 Spain
0.5 Portugal
0.6 Brazil

Split per development stage (GW)

1.0 Operating
0.4 Under construction
3.4 Under development

With a competitive renewable platform in place and the competences to make it prosper, Galp's goal is to gradually expand its renewable generation portfolio to over 4 GWp gross operating capacity by 2025, and 12 GWp by 2030.

Operating capacity at YE (GW)



This expansion is expected to be selective, mostly leveraged on the execution of the existing assets, whilst expanding our presence in markets where there is a strategic advantage, mostly through early stage moves, and also looking at the diversification of technologies.

Galp's renewable strategy relies on balancing its presence in mature and non-mature markets to secure a long-term sustainable portfolio adjusted to the risks and opportunities of each market, but also to pursue active approaches on energy management, capital structure optimisation and asset rotation.

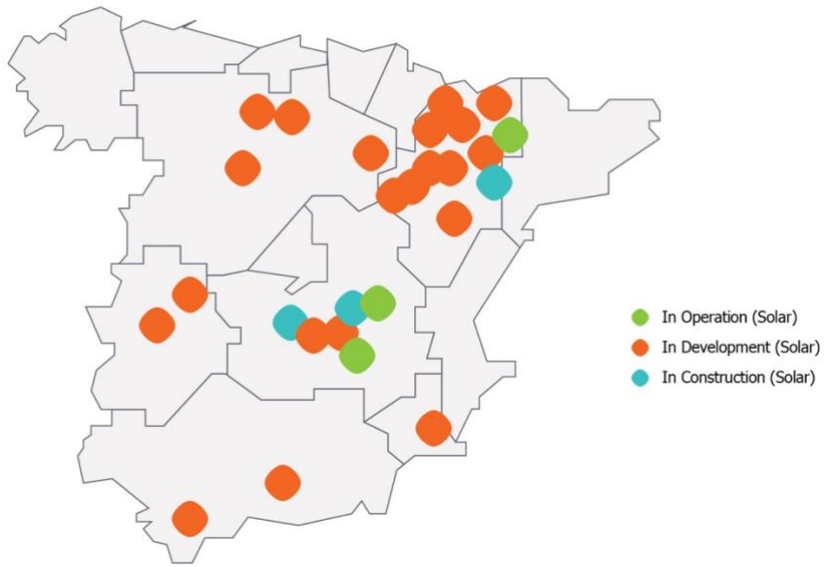
Altogether, along with exploring different value pools and upsides in the value chain, this should allow the enhancement of the value of its projects and the delivery of a value-driven growth.

The Company expects to allocate, on average, c.30% of the Group's annual net capex estimate between 2021 and 2025 to the development of its renewable power generation portfolio.

In 2021, Galp secured up to €732 m from the European Investment Bank (EIB) for the construction of solar power plants and the deployment of EV charging points in Iberia, a crucial step in increasing the pace of development of such projects and helping the Company accelerate the integration of low-to-no-carbon energy solutions in its businesses.

Spain

Renewables Portfolio in Spain



Galp holds a 75.01% stake in Titan, while the ACS Group holds the remaining 24.99%. A joint control governance structure has been created and the stake is accounted for in Galp's financial statements using the equity method.

The portfolio incorporates a selection of high-quality projects already in operation and at different stages of development, in privileged locations, with expected yield equivalent to 1,800 sun hours per year, positioning Galp as a leading company in solar PV in Iberia.

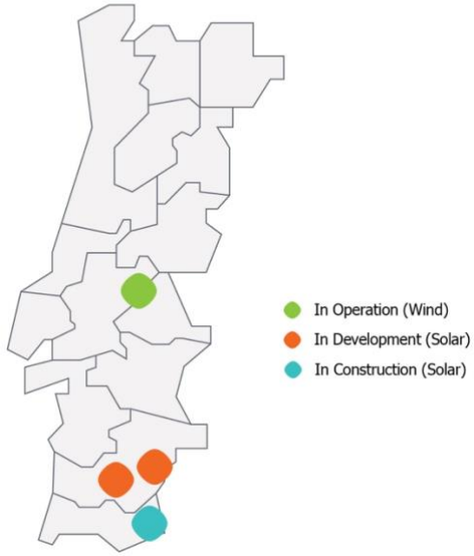
Galp's current solar production comes exclusively from the generation of these Titan assets.

In 2021, Galp further reinforced its position in the solar PV market in Spain, with acquisition of nearly 400 MWp of gross capacity, expected to be operational by 2023/24:

- 74 MWp from Jerjes & Bujeo, in Andalucía, under development;
- 100 MWp from Omaei, in Aragon, under development;
- 223 MWp from Enerland, of which 62 MWp located in Zaragoza, acquired at ready-to-build, and the remaining projects in Castilla y Léon and Aragón, under development.

Portugal

Renewables Portfolio in Portugal



In Portugal, Galp holds a portfolio of approximately 495 MWp of solar PV projects.

Of these, 144 MWp are in Alcoutim, Algarve, and are under construction and expected to start operations during 2022.

In addition, the portfolio also includes 343 MWp in Ourique and 8 MWp in Odemira, both in Alentejo, at different stages of development.

Galp's installed capacity for renewable generation in Portugal also includes 12 MWp from a wind farm, where the Company operates through its invested enterprise Ventinveste, S.A., in which Galp holds a 51.5% stake.

Brazil

Renewables Portfolio in Brazil

Galp has entered the Brazilian renewables business during 2021 with the acquisition of a couple of solar PV projects with a combined capacity of 594 MWp.

This includes two solar projects under development in the States of Bahia and Rio Grande do Norte, with capacities of 282 MWp and 312 MWp, respectively, and set to reach their Commercial Operation Date before 2025.

With these transactions, Galp gains access to high-quality assets in a country where the Company has been present for more than 20 years and which is among the top 10 countries in the world with the highest power demand and planning to double its current solar & wind installed capacity to 40 GW by 2030.

New Businesses

Galp actively seeks to identify and develop business opportunities and value pools for the future with the potential of becoming robust and autonomous businesses, in areas related to sustainability, energy transition, transportation, infrastructure and production.

The New Businesses area is designed to serve as an incubator for new value creation streams, testing, validating, and developing concepts to a mature stage, which can than flourish on their own, or be incorporated by other business units, such as the green hydrogen that has recently been included under the Industrial & Energy Management area, as well as Galp Solar and GowithFlow that have been integrated in the Commercial business.

Lithium to EVs value chain

Electrification will be key in promoting Europe's ambition of net zero emissions by 2050, and storage will play a fundamental role in paving the way for a sustainable transition, as the European Union (EU) aims to become a leading geography in lithium-ion battery production and electric mobility.

Portugal has several competitive advantages for developing an integrated value chain, namely natural resources, nearby automotive capacity, infrastructure, renewable energy, and geographic position.

Galp, on the other hand, is in a privileged position, due to its experience in operating large-scale industrial businesses and chemical processes, experience in raw material sourcing and trading, renewable know-how and a highly skilled workforce.

As such, and considering the fast-growing EV adoption outlook, Galp is moving forward with plans to participate in the development of a local and integrated value chain.

In December 2021, Galp established the joint venture "Aurora" with Northvolt to develop a lithium conversion plant with an annual production capacity of up to 35,000 tons of lithium hydroxide, with operations expected to start by 2025 and commercial operations by 2026.

The JV is currently conducting technical and economic studies and looking at possible site locations.

Galp and Northvolt will also jointly explore other opportunities in the lithium-ion battery value chain, notably with a focus in Iberia.

Galp also leads the 17-member consortium that made an application for funds from the Portuguese Recovery and Resilience Plan (PRR), which may contribute to the development of this project as well as support the entire value chain in Portugal, from mining to recycling, both in product investment and research and development components.

Galp sees this move into the battery value chain as a scalable opportunity and, as the business case evolves, there is a potential to further expand its conversion capacity throughout the decade.

Corporate Venture Capital and Other businesses

During 2021 Galp has accelerated its Corporate Venture Capital activities.

The Company increased its participation in the Energy Impact Partners (EIP) venture capital fund, an investment platform that focuses on energy transition opportunities. Through this fund, the Company has been exposed to cutting edge research and engaged with innovative ventures, looking at bringing in some as new business partners that will help Galp successfully navigate the energy transition.

Galp innovation / Innovation factory (Up)

The goal of innovation is to build a portfolio of opportunities to boost the energy transition and accelerate the path to decarbonisation. In alignment with the Company's strategy, by testing new solutions and increasing the engagement with the innovation ecosystem, Galp will be able to discover, test and validate solutions that may create new profit streams.

Innovation at Galp means teamwork and every initiative or project involves those that will make it happen in an agile way, bringing together different competencies and know-how for the squads.

The innovation centres work closely with the business units in order to ensure the full alignment and agile decisions and execution.

The Upcoming Energies is the platform of open innovation for energy transition; it is Galp's open door to collaboration with the innovation ecosystem (start-ups, universities, other). Lastly, the Innovation Studio is a pool of innovation experts that boost projects with specific tools and methodologies.

Galp intends to position itself for the next growth cycle and the future of energy, to pursue the strategic objectives for a truly sustainable path, increasing the resilience and competitiveness of its portfolio, regenerating the future.