

A global set of partners and players join forces, skills and resources to bring Mozambique's gas to the world



# THE ENERGY OF CORAL



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# THE ENERGY OF CORAL

Coral South Project: transforming Mozambique  
into a top-tier gas producer

## MOZAMBIQUE'S NEW ERA AS AN LNG EXPORTER

### **Filipe Jacinto Nyusi**

President of the Republic of Mozambique

The start of production and liquefaction of natural gas at the Coral Sul FLNG plant reaffirms our commitment to explore and develop the resources available to Mozambique in a sustainable way and consolidates the country as an exporter of liquefied natural gas.

The availability of Mozambique's natural gas on the world market is the culmination of intense exploration activity, many years of negotiations and the implementation of a legal and contractual framework that is transparent, predictable and adjusted to, on the one hand, safeguarding the interests of the concessionaires in terms of economic returns and, on the other, the public interest in maximising the economic and social use of the hydrocarbon resources available to the country.

The realisation of this project demonstrates the country's socio-economic development, which undoubtedly involves finding ways to make the most of its resources and generate income to satisfy present and immediate collective needs, develop infrastructures and save for future generations, among others.

It is within this context that, due to it being impossible to implement the project on land, the concessionaires' need to honour their commitments became more pressing. Thus, with the help of geological and engineering studies, they presented an innovative proposal for the production and processing of natural gas using a floating production unit, the Coral Sul FLNG.

This project is recognition of the stable, transparent and predictable environment for investment in the country. What was originally envisaged as a project of the Area 4 Rovuma Basin concessionaires has become a Mozambican brand,

piquing the interest of global financial institutions and credit export agencies. Mozambique has become a preferred destination for suppliers of goods and services and the venue for international oil and gas conferences. The training of Mozambicans at home and abroad and cultural exchange are also some of the benefits that have been witnessed along the way and that have not gone unnoticed.

With the experience of the Coral Sul FLNG installation, the country aims to eliminate gas flaring, preserve the environment, acknowledge the value of natural gas through the generation of revenue, create jobs, have local businessmen and those from the Empresa Nacional de Hidrocarbonetos (ENH, National Hydrocarbons Company) participate in the LNG business.

The export of LNG comes at a time when the world's energy paradigm is shifting towards a more sustainable, low carbon future. The extensive gas reserves we have, and due to it being a relatively clean fossil source, should help in ensuring secure energy generation in the world during the energy transition.

We thus wish to salute the Ministry for Mineral Resources and Energy and congratulate the National Petroleum Institute which coordinated the Government's negotiating team, the concessionaires of Area 4 of the Rovuma Basin led by Eni, the National Hydrocarbons Company which represents the state's interests in the project and all public and private entities, national and foreign, which directly or indirectly contributed to the success of the Coral Sul FLNG.

Congratulations!

## OUR COMMITMENT TO PRODUCE CLEAN ENERGY

### **Carlos Zacarias**

Mozambique's Minister of Mineral Resources and Energy

The Coral South Project starts LNG production and export, a milestone in the accomplishments of the Government of Mozambique. The Development Plan was approved in 2016 and today we proudly witness the export of the first shipment of Liquefied Natural Gas (LNG) from the Rovuma Basin. The project was carried out within its planned timeline and according to the highest international safety parameters and standards. This demonstrates the multifaceted viability and attractiveness of Mozambique as a major investment destination and the capacity to implement large-scale projects. Mozambique begins a new era as an LNG supplier in the global market. We reaffirm the Government's commitment to the development of natural gas projects in this time of rising demand for green energy. This project will contribute significantly towards achieving the growth, transformation and development objectives established by the Government of Mozambique.

Reaching this stage would not have been possible without the engagement and commitment of the project Delegated Operator, Eni, and its partners ExxonMobil, CNPC, Galp, Kogas and ENH, as well as all other stakeholders in the project to whom I wish to express my sincere thanks. Profound gratitude to His Excellency the President of the Republic for his leadership, an essential factor in the success achieved by this economic project. Thanks to everyone.



## THE DEVELOPMENT OF MOZAMBIQUE AT THE HEART OF ENI'S STRATEGY

### Claudio Descalzi

CEO, Eni

The relevance of Mozambique joining the group of LNG-exporting countries cannot be understated, both for the country itself and for the global gas market. All scenarios of current and future global energy mix entrust a central position to natural gas, in that it can guarantee energy security while supporting the deployment of renewables and new energy solutions. Gas demand is increasing along with prices. In this context, LNG ensures an effective response to rapidly changing energy demand in a challenging scenario, providing growth opportunities for those countries endowed with natural resources.

Gas also plays a pivotal role in Eni's strategy to achieve zero net GHG emissions (Scope 1,2,3) by 2050, as it contributes to the reduction of GHG emissions while ensuring energy security. Gas is a sustainable energy source that can complement the intermittency of renewables and as such it is a fundamental lever in the energy transition. For these reasons, the gas component will become increasingly dominant in Eni's production mix, accounting for 60% of hydrocarbon production in 2030 and over 90% in 2050. Eni's focus on gas is sustained by a continued effort to reduce the impact of its production: all our new projects are designed to have as low methane emissions as possible, being based on a zero venting and zero routine flaring approach.

Africa is central in this path, just as it has been central to Eni's history – we moved

our first steps abroad precisely in the continent, 70 years ago, establishing long-term, mutually beneficial relationships in countries where we operate.

Mozambique is a great example of this partnership in action.

Eni-operated Coral South project is a technologically advanced, low carbon facility, leveraging gas as a source that can contribute in a significant way to Europe's energy security, as well as to Mozambique's development, providing revenues to the country, qualified jobs for Mozambicans and local content opportunities. Also, this first gas development acts as an enabler for future projects to valorize the vast gas resources that Eni discovered in Mozambique's offshore.

While helping the country develop its gas resources – resulting in Mozambique's first export cargo in November 2022 – Eni is working to develop agri-feedstock for biorefining, ensuring that the country can also play an active role in the biofuel value chain, and a series of natural climate solutions to compensate residual emissions.

The energy crisis is opening up new opportunities for mutually enriching relations between Europe and the African continent. The solution to the needs of both continents lies in closer alignment for energy security and the transition, and there has never been a more appropriate time to do so.

## A MODEL OF COLLABORATION BETWEEN PARTNERS AND INSTITUTIONS

### Guido Brusco

Chief Operating Officer Natural Resources, Eni

With the inauguration of the Coral South Project, we welcome Mozambique to the world's leading group of global LNG exporters.

The Coral South project is the first step in the development of the 85 trillion cubic feet of gas that Eni discovered in Area 4 in the Rovuma Basin. It is also the result of the excellent collaboration between Eni, its partners, contractors, investors and the Government of Mozambique.

We are very proud of the partnership we have built with this great country, and we are proud to be able to contribute to the transformation of the energy sector, and its economy in general. It is truly an important result and I am very grateful to everyone for the effort, passion and dedication to our shared vision. Coral South is not only the first LNG project in Mozambique, but a benchmark project for the global gas industry, which has already set many records. It is the first large-scale FLNG located in ultra-deep waters. It reached all the milestones of its construction on time, achieving one of the shortest timespan between the cutting of the first steel and the first LNG shipment, despite the pandemic. This is particularly important in the current context of the global LNG market, in which large gas consumers seek new supplies to support their energy security.

The project is already generating a positive impact for the country, including new jobs and opportunities for local businesses.

Hundreds of Mozambican nationals are involved in activities, both offshore and onshore, and are an integral part of a global team, with more than 30 nationalities represented, united by passion, collaboration and excellence. A team determined to achieve extraordinary results for Eni, for our partners and, last but certainly not least, for Mozambique.

Passion and commitment are fundamental values for Eni as an Operator, and also extend to our sustainability activities. Eni is working with communities in Cabo Delgado Province, investing in initiatives to support education, agriculture and access to water and energy.

These initiatives are key to Eni's approach to working alongside host communities to support efficient and sustainable development in accordance with the Sustainable Development Goals of the United Nations 2030 Agenda.

We trust that the solid foundations we have built with Mozambique and our partners will be the foundation for future initiatives to promote the resources and talents of this country.



# THE PROJECT EXPLAINED

From exploration, discovery and development of offshore resources to the construction of Coral Sul FLNG



## CORAL SOUTH: INNOVATION AND SUSTAINABILITY

This story begins with an exploration project that led to many discoveries. In 2012, with the drilling of Mamba South 1, Eni announced that it had opened up the potential natural gas giant of the Rovuma Basin. “During the exploratory campaign, which lasted more than two years, we discovered several giants,” said Luca Bertelli, who headed Eni’s exploration until May 2022. The location was offshore Mozambique, in the province of Cabo Delgado: Eni had obtained an exploration licence for Area 4, in the Rovuma Basin. A seismic survey suggested that significant natural gas reserves could be found inside sediments deposited 30 million years ago. But there was much more:

“All the giants put together make up one of the largest reserves in the world,” Bertelli said. In 2013 Eni discovered Coral. It amounted to about 500 billion cubic metres of gas (18 Tscf, Trillion Standard Cubic Feet) for the Coral field alone. Added to the natural gas resources of the other two discoveries, Mamba Complex and Agulha, according to estimates, there were 2.4 trillion cubic metres of gas in place (over 85 Trillion Cubic Feet, Tcf). These discoveries were the result of a perfect exploration and drilling campaign – all 15 exploration and appraisal wells were drilled seamlessly in Area 4 and opened up access to new resources. Four of these wells lay in the Coral field.

Among Eni’s major discoveries in the Rovuma Basin, the Coral field was the first to be put on stream, positioning Mozambique among the world’s LNG (Liquefied Natural Gas) producers. This was done with an innovative technical solution: an FLNG ship, i.e. a floating gas processing and liquefaction plant. Just 36 months after the end of the exploratory campaign, in the summer of 2017, the investment for the project was approved. In spring 2018, construction of the vessel began. A contract that had been signed with BP secured the sale of liquefied gas from the Coral Sul FLNG facility for twenty years. The gas started to be produced from subsea wells and piped to the FLNG ship in mid-June 2022. The end of the start-up phase for the facilities producing liquefied gas – with the first LNG cargo – was in October 2022. The first LNG cargo was delivered in November 2022. Measuring 432 metres in length and 66 metres in width, the Coral Sul is the first floating LNG facility in ultra-deep waters, anchored at around 2,000 metres of water depth.

Exploratory talent, technology, engineering knowledge, technological innovation, project management skills for large plants, negotiating skills: without satisfying these requirements, the project would not have taken shape. “Coral Sul FLNG is an offshore plant with a reduced carbon footprint thanks to the effort that was made in the design phase to use advanced technologies,” says Stefano Maione, Development, Operations & Energy Efficiency Director at Eni Natural Resources. The engineering took shape between Maputo, San Donato Milanese, Paris, Bristol, Yokohama, Geoje and Houston. Construction was carried out in the Geoje shipyards in South Korea – the only ones in the world with sufficient depth and space to accommodate a vessel this size. Some components, including the turret, were developed in Singapore, the submarine crosses in the UK, the flexible submarine lines in France. It was a global project, to put gas resources of global significance on stream. These operations required specific skills, cutting-edge technology and a pool of talent. Many

of those involved are very young and their individual stories are intertwined with the project: they are Mozambican engineers who found top-level training in the Coral South project before embarking on the professional adventure that changed their lives and that of their country. This is also the story of great teamwork. To build Coral Sul FLNG, Eni and its partners worked with the Mozambican authorities and formed an international consortium. Mozambique Rovuma Venture S.p.A. (MRV) is the joint venture that manages Area 4, in which Eni (the operator for the Coral South project), ExxonMobil and CNPC are partners. The concession contract for the exploration and production of Area 4 gives this jv a 70% interest. The remaining 30% is divided between Galp, KOGAS and Empresa Nacional de Hidrocarbonetos E.P., with a 10% share each. MRV delegated Eni Rovuma Basin to lead the construction and operation of the Coral South project. Coral FLNG SA is the joint venture owned by Area 4’s partners that operates the Coral Sul FLNG plant.



The team worked with an international network of contractors, including the international TJS consortium formed by TechnipFMC (now T.EN), JGC and Samsung Heavy Industries. The consortium performed the engineering, procurement, construction, installation (with mooring) and start of production of the FLNG ship, as well as the installation of the submarine equipment and lines. The drilling of the 6 development wells was handled by SAIPEM by the delegated operator Eni Rovuma Basin, which will also lead production through the plant owned by Coral FLNG SA.

Between the Geoje shipyard in South Korea and the offices in Pemba and Maputo, Mozambique, the drawings on paper of an alternative plant

to the customary onshore model became reality on schedule: five years, not a day more, “overcoming the challenge we had set ourselves at the beginning of this wonderful journey, that the first drop of liquefied gas would be produced by an offshore technological solution,” Stefano Maione recalls. There were no delays, despite the problems associated with the control and prevention of a global pandemic that threatened to slow down the work. Coral South also meant creating 800 new jobs and a vast programme of activities for the population: access to energy, access to water, public health, education and training. From the exploration, discovery and development of offshore resources to the construction of the Coral Sul FLNG ship, let this story begin.









# A CANYON AT THE BOTTOM OF THE SEA

Luca Bertelli, Head of Exploration at Eni from 2011 to 2022, retraces the steps that led to the discovery of large gas fields in the deep and ultra-deep waters of northern Mozambique

This is the story of the exploration in the East African Offshore. “Explorers were looking for new resources and had always considered the deep waters of East Africa to be of lesser interest than those of West Africa,” says Luca Bertelli, who led Eni’s Exploration Department at the time of the discoveries in the offshore of Mozambique. This distrust of the area’s mining potential stemmed from a long series of disappointing exploration campaigns which had mostly concentrated on conventional seas, with few tests in the deep waters of the Zambezi submarine delta. Even when successful, exploration surveys always led to the discovery of insignificant amounts of gas. At that time, the industry was looking for oil.

“In 2006, Mozambique put out to tender a series of exploration blocks in the deep and ultra-deep conventional waters of the Rovuma Basin, on the border between Tanzania and Mozambique, as part of the country’s second international round,” Bertelli says. Eni was interested in this frontier initiative and sought

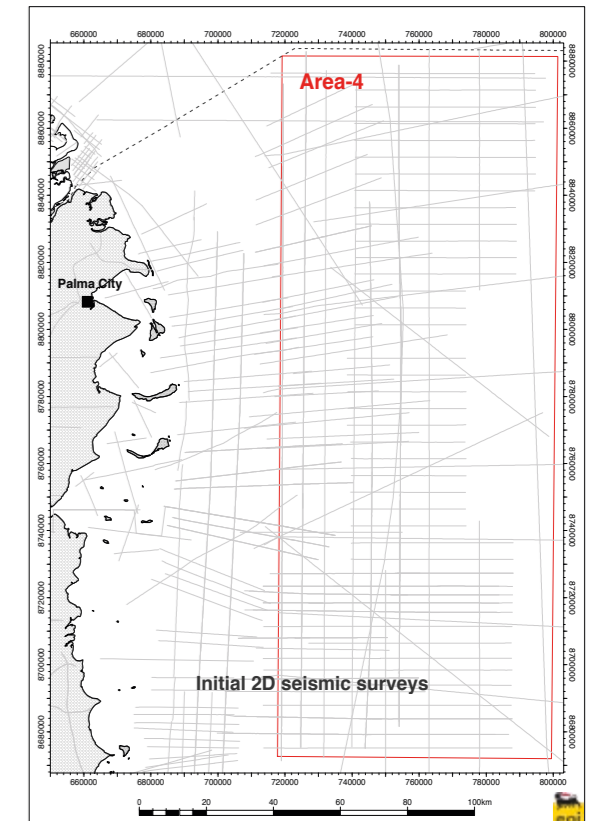
to apply innovative geological concepts for the exploration of this little-known basin. “This interest was bolstered by the long-standing presence of Agip Mineraria in East Africa. In Tanzania, many years earlier, it had discovered, on land and in conventional waters, the only gas fields still in operation in the country today. Agip had also started downstream operations with a large refinery near the capital”. It was the 1970s. Africa lacked the infrastructure to transport and market gas. Above all, the technology to liquefy, transport and regasify natural gas, LNG technology, was not yet available. “Finding gas, not oil, in those years was considered bad luck,” Bertelli recalls. After Agip Mineraria left the country, gas discoveries were developed by other companies. But that is another story.

“What I want to emphasise here is that, thanks to the data acquired in the exploration campaigns in Tanzania, we had important information in our hands, which helped us to hypothesise and assess the mining potential of the deep waters of northern Mozambique, in the Rovuma basin.”

The geophysical data, which was made available for the tender in 2006, was very poor for such a large area. It consisted of a few two-dimensional seismic lines that had been acquired a few years earlier, with a grid that was too large for the area. Data from gravimetric and magnetometric surveys were also scarce. “The hypotheses concerning the expected geological model and oil system in the Rovuma, although built on the basis of this scarce information, convinced the management to submit an offer for the acquisition of two blocks in the Rovuma Basin.” Eni obtained the operating licence for Block Four, “a vast area of over 17,000 square kilometres,” says Bertelli. The other block on which Eni had submitted an offer was awarded to the American oil company Anadarko. From now on, the block will be called Area 4: this is where the story told in this book takes place.

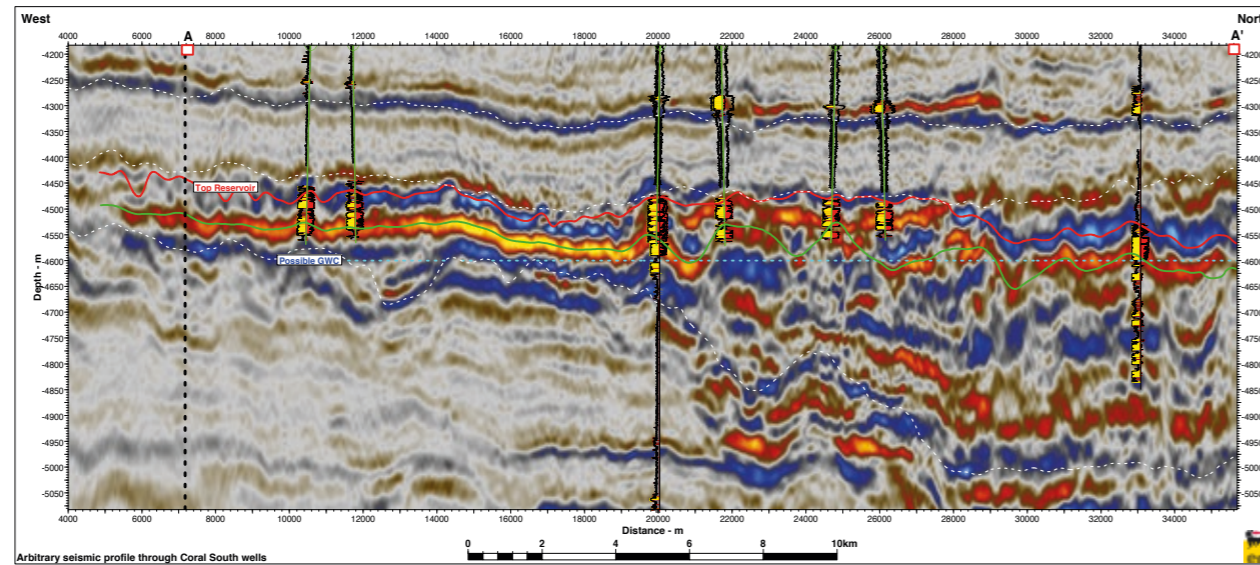
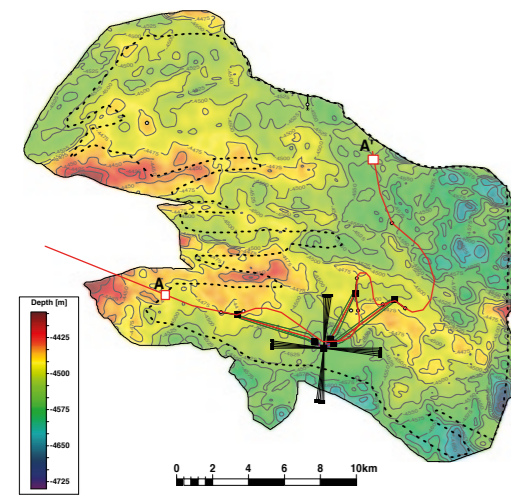
## The geophysical survey

Eni spent the following year negotiating the production sharing contract with the local



The map shows the original extent of Area 4 with the 2D seismic lines available at the beginning of the exploration campaign.





Deep seismic transect from A to A', passing through the Coral South development wells, where the good lateral continuity of the mineralised deposit is evident. The latter is enclosed between the red line, representing the upper limit of the field, and the dotted blue line, indicating possible gas-water contact (GWC).

authorities. Once it was signed, the geophysical exploration programme got under way in 2007. “The results of the first 2D survey on a tighter grid pattern led us to the conclusion that our model was valid, but that we had not given due importance to the northern area of the block” says Bertelli. “Here, the results of the geophysical survey we had just conducted showed us a new and significant potential: a mixed, stratigraphic and structural exploration play, which we immediately assessed as the one of greatest interest. We therefore decided to deepen the geophysical investigation with a first three-dimensional seismic acquisition of this new area.” The three-dimensional acquisition focused on the areas that were considered most promising, and it was not carried out over the entire exploration area because it would have been too expensive. “So we acquired the first three-dimensional seismic data over an area of more than 4,400 square kilometres.

From the processing and interpretation

of the data, a “play” emerged consisting of systems that we interpreted as gigantic submarine turbidites, estimated to be of Eocene geological age,” says Bertelli. The size was such that geologists had difficulty finding similarities in outcropping systems around the world. “Turbidites are clastic sediments (both terrigenous and carbonate) generated by the deposition of sediments removed from the continental shelf and dragged by turbidity currents towards the deep and ultra-deep waters of sedimentary basins,” Bertelli explains. Turbidity currents are huge underwater landslides that carry large amounts of suspended sediments. They are therefore much denser than the water in which they move, and when they slide over the submarine and ocean floor, they carry sediments over hundreds of kilometres from their points of origin.”

“Imagine a giant underwater landslide flowing under the seabed and carrying large amounts of sediments in suspension,” Bertelli says.

“When these flows slow down, first the coarser

sediments are deposited on the seabed, and then the finer ones. These are the deposits that we geologists call “turbidites.” Turbidity currents are always triggered by natural causes: earthquakes, heavy rainfall and subsequent river floods of an exceptional nature, sometimes combined with seabed instability. The sedimentary deposits generated by turbiditic flows have considerable dimensions: we are talking about tens, sometimes hundreds, of square kilometres in size.”

So, by interpreting the new three-dimensional seismic data they had acquired, Eni’s geologists detected the presence of these systems, which appeared to have very peculiar characteristics. “First of all, they are very large, they can be found at considerable distance from the coast, and they often show seismic amplitude anomalies: geophysicists call these typical amplitude reinforcements by the acronym DHI (Direct Hydrocarbon Indicators). These anomalies are interpreted as possible evidence of hydrocarbon saturation within poorly

consolidated porous and permeable sediments.”

“When a very porous, permeable and unconsolidated rock is saturated with hydrocarbon, especially natural gas, it gives a peculiar seismic response or, in light oils; it tends to be bright.” The team of geologists working on the area thus decided to acquire two more three-dimensional seismic surveys to confirm the model and the extent of the systems. Between the end of 2009 and the beginning of 2010, Bertelli began to receive a fairly clear indication of the prospects to be drilled, which were “so large in area and size, that we doubted our interpretation was correct.”

### The first exploration well

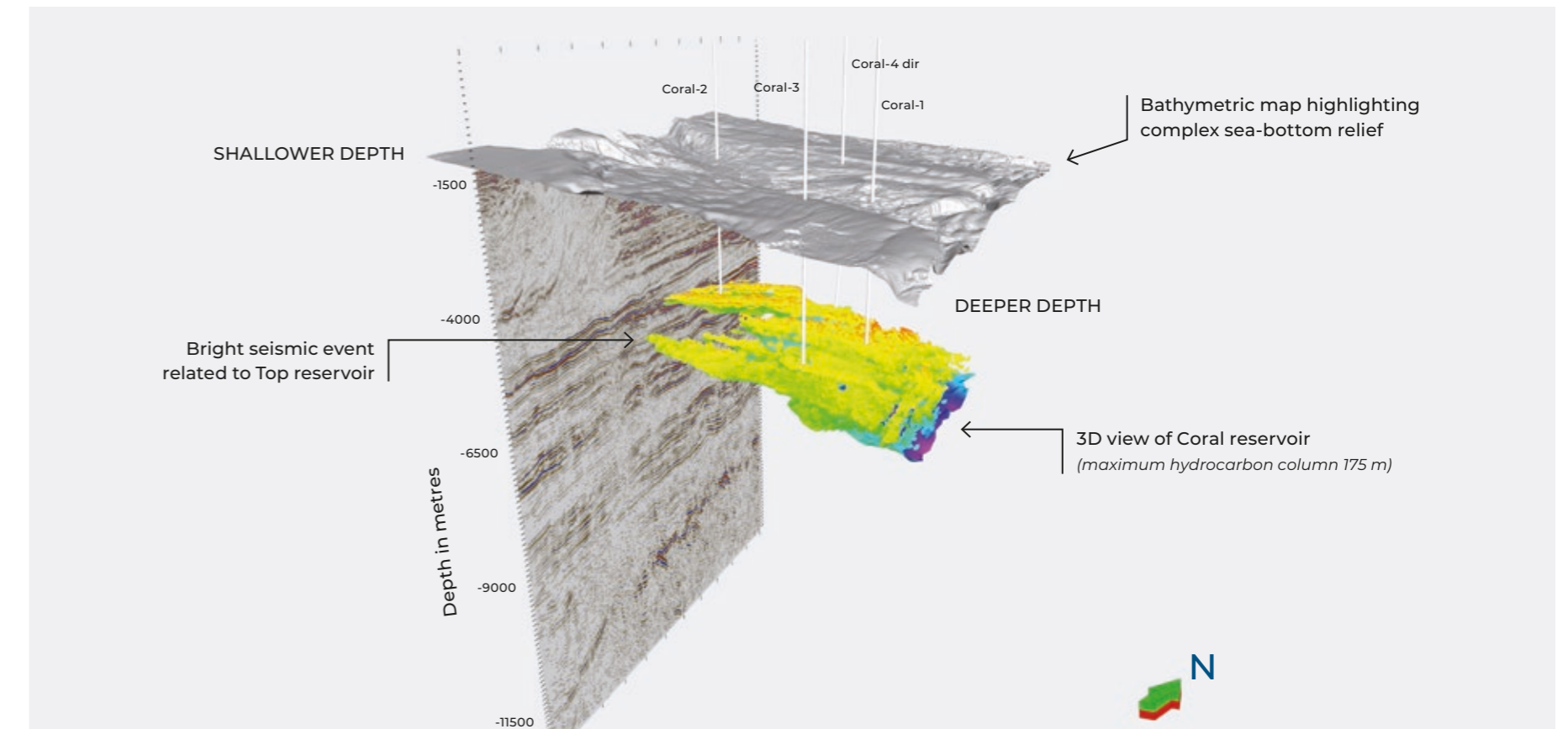
This brings us to 2010. “While we were busy preparing the drilling campaign, news came from the adjacent block that a well had been drilled and that gas, a lot of it, had been discovered. In October 2011 we started drilling our first exploration well in Area 4.” Here we need to digress. The location of an exploration

well is determined on the basis of a number of considerations based on geology. However, Bertelli is keen to point out that “geology is not an exact science. Geologists always try to locate the exploration well where studies and surveys suggest the presence of such significant hydrocarbon mineralisation that the discovery is of economic interest. But this is not the only factor that comes into play. “The location of wells is determined on the basis of where turbiditic systems are thought to have better characteristics in terms of thickness and rock quality but also depending on the condition of the seabed,” Bertelli explains. The situation in Area 4 in Mozambique was quite complex: there were several deep underwater canyons cutting through the seabed. “The submarine wellhead must be positioned in a safe place and there must be no stability issues”, Bertelli explains. “In addition, drilling conditions at a water depth of 2,000 metres in Area 4 turned out to be unusual. Here, powerful underwater currents occur seasonally, and even powerful dynamic

positioning ships, such as the SAIPEM 10000, have difficulty withstanding them.”

The first Eni well in Area 4 was named Mamba South 1. It was drilled by SAIPEM 10000, which had come from Australia across the Indian Ocean. “We didn’t discover what we expected, we discovered much more. The predictive geological model was essentially correct, but we had completely underestimated the thickness and quality of these reservoir rocks.” The model developed by Bertelli’s team, based on those derived from discoveries made in West Africa in systems believed to be similar, assumed the net useful thickness of rocks in the field to be between 30 and 40%. “In other words: out of 100 metres of drilled reservoir rock, 30-40 are good for production: this is what geologists call in jargon ‘net pay’. At Mamba we discovered systems with a 95% to 100% net pay.” It was an unexpected and astounding result.

The Mamba natural gas field was about 3,400 metres below sea level; the reservoir rock was more than 300 metres thick. The geological



Three-dimensional image of the Coral field and bathymetry of the seabed.







In total, eleven successful wells were drilled back to back: it was an exceptional result in the history of exploration campaigns.

age of sediments was estimated to be around 30 million years. The size of the field was considerable, also in terms of surface. It took Eni two months to drill the first well and acquire the data needed to assess the discovery. Another characteristic of the field was that it was made up of nearly pure methane.

Following the first major discovery, which had brought to light the unprecedented magnitude of the mining potential of Rovuma's turbiditic systems, Eni decided to continue the drilling campaign non-stop. "We already had four to five more exploration prospects ready in our pipeline in case the first well was successful. The others were to be decided on as we went along." Each well they drilled was a success and added significant new volumes of natural gas. The results obtained from each new well were above expectations.

"In total, eleven successful wells were drilled back to back: it was an exceptional result in the history of exploration campaigns," Bertelli says. In 2012, the Coral field was discovered in rocks of Eocene

age with excellent qualities. The exploration potential of Area 4 increased dramatically. The Coral field, as confirmed by appraisal wells, covers an area of 300 square kilometres at a depth of 4,500 metres. In 2013, the Agulha field was also discovered, which allowed Eni to explore the mining potential of older geological sequences. Exploration operations lasted more than two years: 725 days.

In addition to the eleven exploration wells, appraisals wells were drilled and production tests were carried out. The exploration campaign ended with 15 wells and a 100% success rate. "With this campaign we discovered over 85 trillion cubic feet of natural gas (Tcf), equivalent to 2,400 billion cubic metres: gigantic numbers," says Bertelli.

### A new geological model that made history

The geologists' curiosity went further. They drilled, found gas, and were fascinated by the underground world they had not seen

anywhere else. "In the turbiditic sequences of the Rovuma, deposits of fine material, which are found in other similar systems around the world, were either missing or irrelevant: this was the major anomaly that led us to underestimate the potential of the basin during exploration," Bertelli explains. "3D seismic surveys, coupled with the data acquired in the wells, suggested that there were phenomena that could not be attributed solely to the deposition of classic turbiditic currents. By refining our interpretation of three-dimensional seismic data, we discovered that the ripples that waves draw on the sand appear on the surface of these bodies. We refined our geological model from these distinctive responses from seismic surveys." Geologists tried to understand what these geometrical shapes could represent, and how to fit them into their model. This led to the development of the new mixed turbidite-conturite model. As the drilling operations progressed, the geologists delved into the history of these

rocks and seas to understand the mystery surrounding the deep waters of the Rovuma Basin. The rocks where the gas was trapped were so thick as to suggest the existence of mighty river systems, capable of carrying exceptional amounts of water and sediment. An example of this in Africa is the Congo river. "But in this part of the continent, today's river systems are modest, they are unable to transport such a large amount of sediments and redistribute them in the deep waters of the basin," Bertelli explains. However, the geological history of East Africa explains what happened: 30-40 million years ago; there were powerful river systems also on the East African coast. Bertelli continues: "When the great East African Rift system developed in East Africa (tectonic rifts stretching about 3500 km along the East African rim), the great uplift phase of the earth's crust along these rifts broke up the old river systems, giving rise to the central lakes. After an initial phase of great erosion, with the depletion of the drainage

systems, the mighty river systems that existed in the pre-rift period were reduced to their present size. Furthermore, the channel between Mozambique and Madagascar was once much narrower than today and was characterised by strong underwater currents. In the presence of turbidity events, the underwater current dragged away the fine sediment before it was deposited, resulting in useful sediments of exceptional thickness. The wave effects we saw from the three-dimensional seismic surveys were generated by the effect of the underwater currents sweeping away the fine sediments, redistributing them further south." This explains the lack of fine sediments and the exceptional thickness of the reservoir in the Rovuma turbidites-conturites. The geologists led by Bertelli thus built a model that was destined to become famous, explaining the process of deposition of the turbiditic-conturitic systems, under the pressure of strong bottom currents which, flowing parallel to the isobars, led fine particles to settle elsewhere.



### Ideas, courage and technology: the keys to success

In this story, success was a combination of three factors: a good deal of risk-taking; the building of sound predictive geological models; technology, through the acquisition of three-dimensional seismic data and its rapid processing and interpretation. To process this data, Eni used its first Petascale-class proprietary supercomputers, HPC1 and HPC. Eni was among the first companies to explore the Rovuma Basin. "What brought about this success was first of all the courage of the ideas and models developed by our geologists and then, undoubtedly, our technology," says Bertelli. "Knowledge, the geological idea and the model are the factors that guide you when choosing areas when geophysical data are scarce, as in this case. Ideas and models in Mozambique were almost right, yet only technology allowed us to get to those "supergiant" discoveries and to refine our model." The reality and availability of the data acquired, and their use

with the most sophisticated technologies, lead to the continuous updating of data and models. "Frontier exploration is like this: it's a mixture of intuition, concepts and technology," Bertelli adds. "But you need a little bit of luck as well. However, when important discoveries are repeated over the years at a constant rate, as in the case of Eni, it means that you are competent, and luck becomes just an accessory factor."

The two blocks the team had laid eyes on in 2006 turned out to be the right ones. "During the exploration campaign, I never had an inkling that anything could go wrong. After the first production tests, we had no doubts about the ability of these wells to deliver extremely large volumes of hydrocarbons."

### Why Coral

A large part of the discoveries in Area 4 also extended into Area 1: "All of them, apart from Coral and other smaller ones," Bertelli explains. Unitisation treaties, which are used

to estimate the percentage of resources in fields straddling two areas for which Eni has obtained exploration licenses, are the basis on which the company decides how it is going to subdivide the volume of gas it has discovered once production starts. "These are complex processes in which every company tries to make the most of their share, especially when a field is big. In Coral's case, however, the field was entirely within Area 4, so we had the ability to operate autonomously. We therefore decided to start production from Coral South and to do it with a floating liquefaction plant, as this was the best solution from a technical point of view. This was the way that led us to the first offshore gas in Mozambique." This is the end of the story, for now.



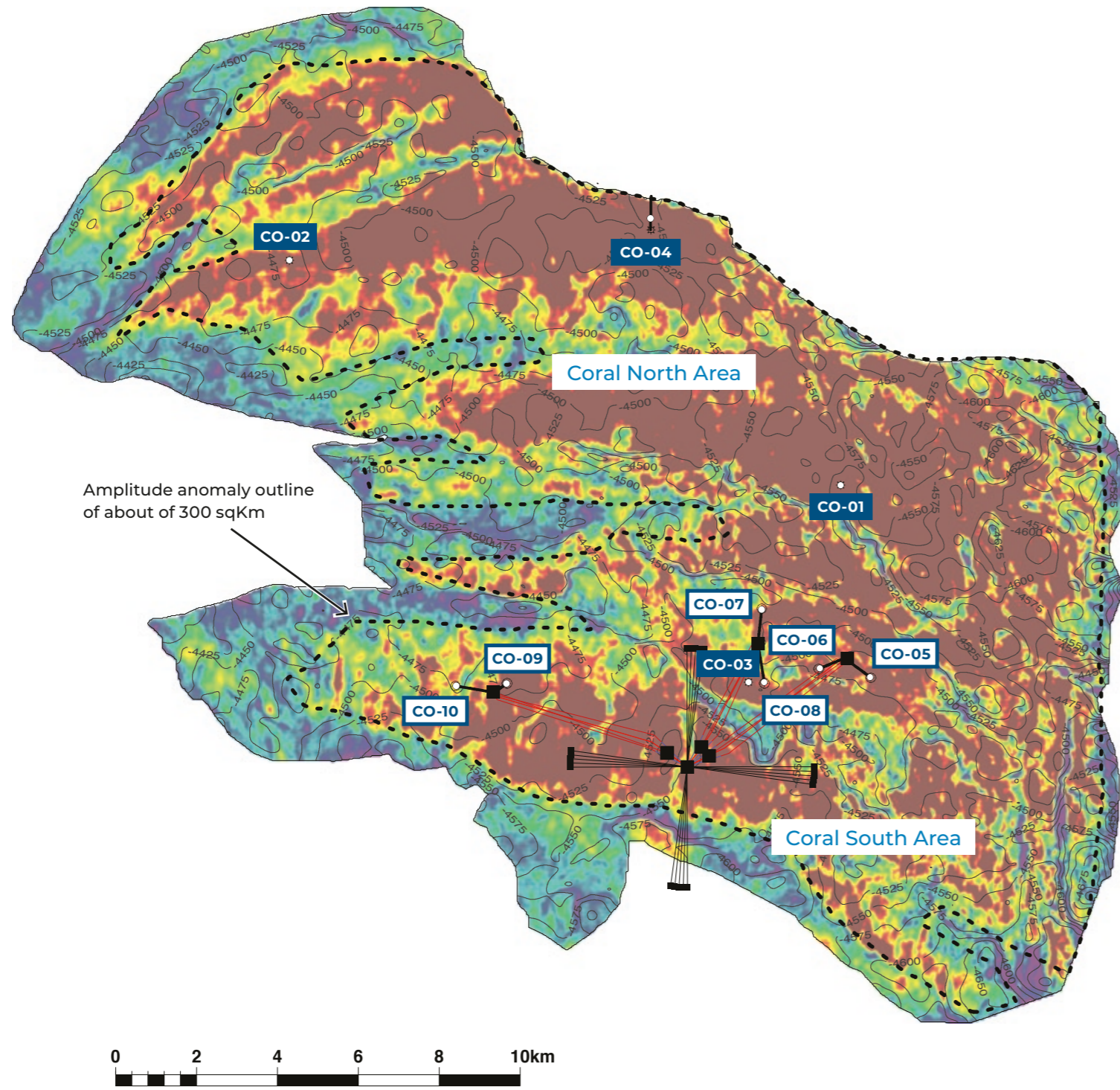
**Exploration wells (CO-01, CO-02, CO-03, CO-04)**

The exploration campaign, which began on April, 5 2012 and ended on July, 11 2014, showed the presence of mineralised sands.

**Development wells (from CO-5 to CO-10)**

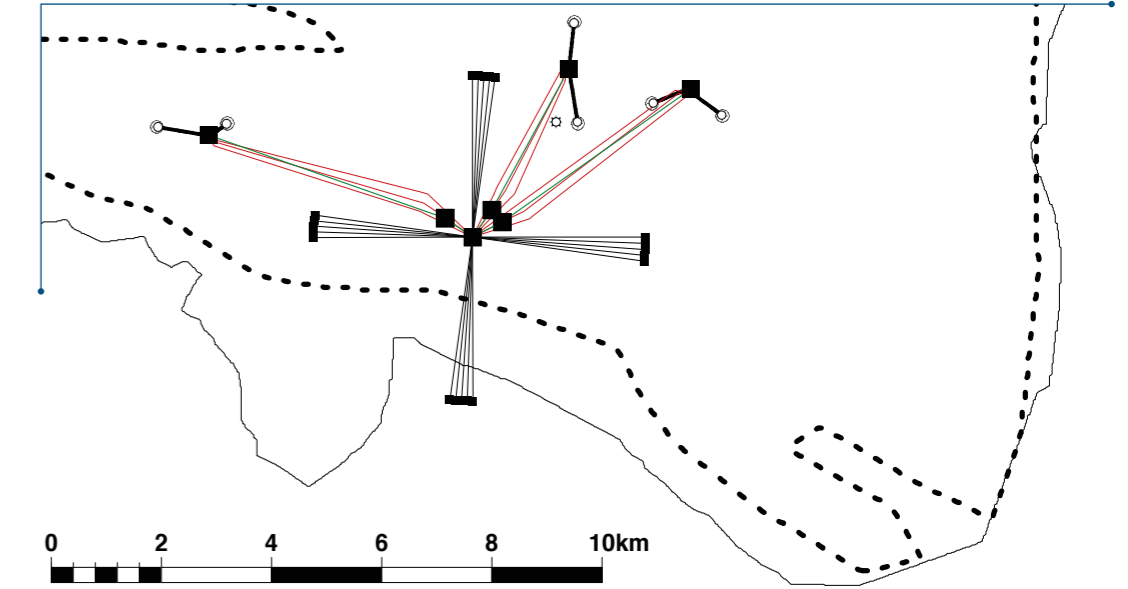
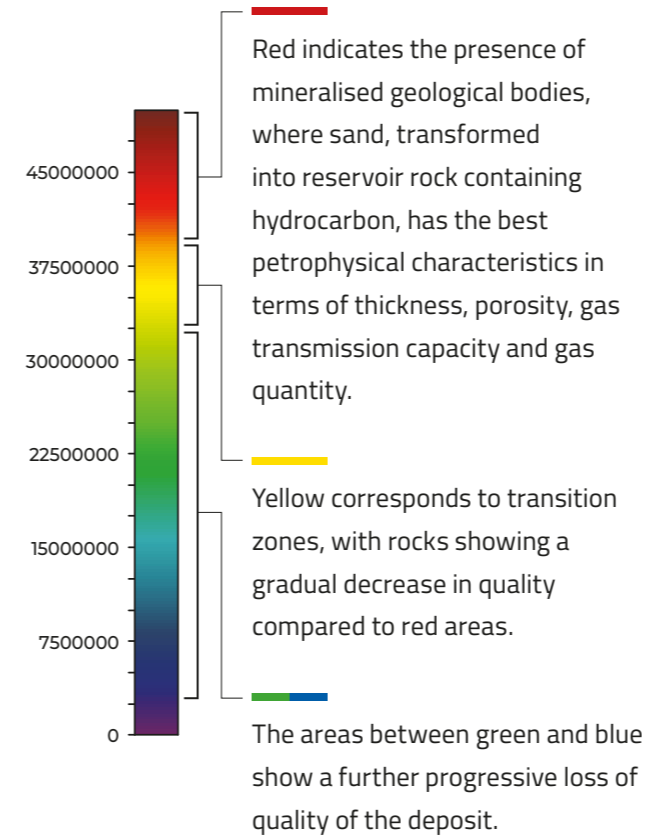
The drilling campaign and completion of wells began on October, 16 2019 and ended in October 2021.

-  Exploration wells
-  Development wells
-  Manifold
-  Mooring lines







# CORAL FIELD: PRODUCTION AREA

**Well map symbol key: chromaticity**



**How gas is extracted**

-  **Production Manifolds**  
The three stations where the 6 production wells are gathered: they are the connection point for all pipes coming to the surface and connecting to the FLNG facility.
-  **Umbilicals**  
Electro-hydraulic control lines.

-  **Flowlines and risers**  
Pipes that transport the gas produced.
-  **Mooring lines**  
They anchor the FLNG facility to the seabed.



# LIKE A MILLION-PIECE LEGO TOY

The design and construction of Coral Sul FLNG as told by Stefano Maione, Development, Operations and Energy Efficiency Director at Eni Natural Resources



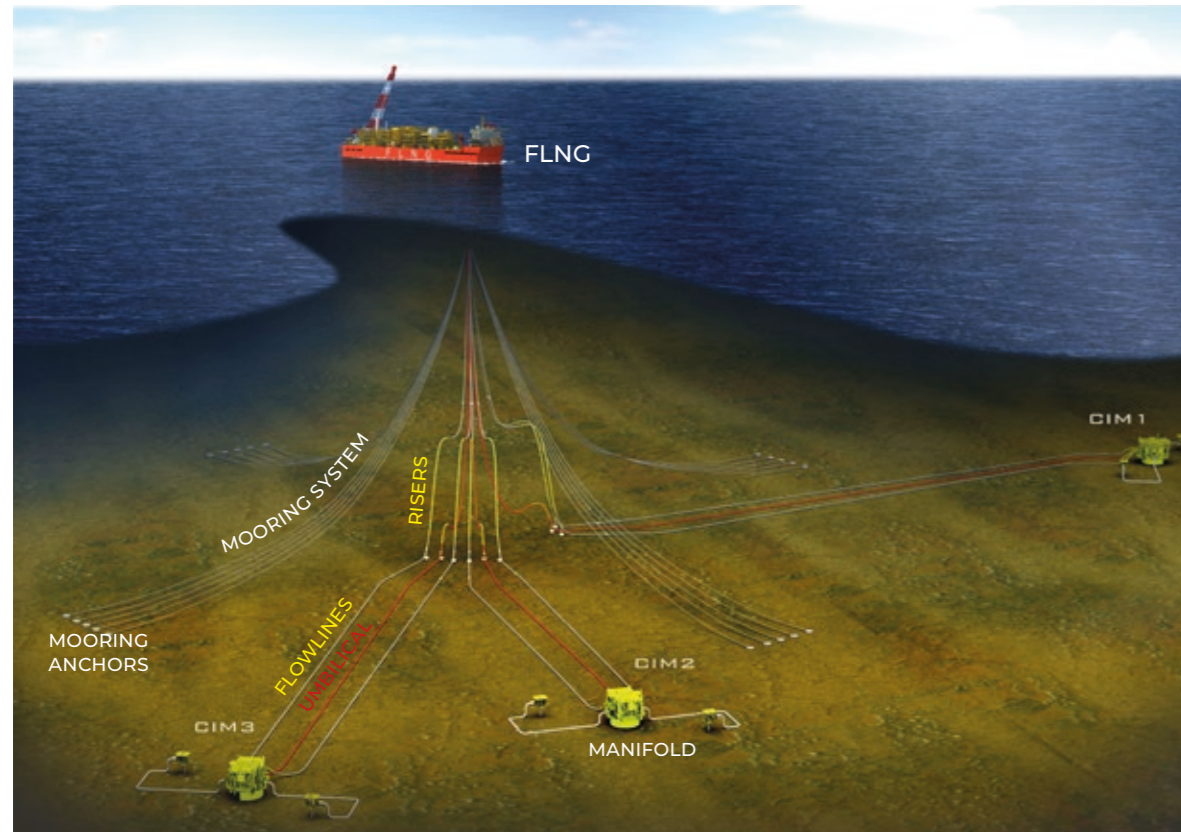
“In 2012, the first question we asked ourselves at Eni was: how do we develop and manage all these reserves in the shortest possible time? Because it was clear: all the gas discovered in the Rovuma Basin could not be produced within a single project.” This is how Stefano Maione, Development, Operations & Energy Efficiency Director at Eni Natural Resources begins to recount the initial phase of the Coral South project. “We therefore imagined a phased approach with two different technology hubs, one onshore and the other offshore. The team immediately went to work, in parallel with the exploration activity which proceeded with its plan in order to start producing the first 140 billion cubic metres of gas (5 TFC) in the Coral field, with a flourish of studies and analyses. The development project, which was approved by all joint venture partners in 2017, involved the drilling and completion of six subsea wells and the construction and installation of an FLNG ship: a floating, technologically advanced gas processing and liquefaction facility, including

facilities for storing liquid gas and its offloading onto transport vessels, up to end users around the world. Coral Sul FLNG would be the world’s first in ultra-deep waters, and the second largest in terms of size and LNG production capacity. “The industry was giving clear signs that these floating liquefaction systems, based on the design combination of available technologies, were a technical solution worth adopting,” Maione says.

## A unique engineering model

At this point, an inquisitive reader might like to know whether Eni’s engineers were inspired by models that were already available in the market, or whether they came up with an original prototype. “The basic idea was ours,” Maione emphasises. “We used previous models that we had developed for other situations as an outline, but then we invented something new,” that could be suitable for a field located in the deep seabed of a sea that was susceptible to periodic tropical cyclones. “We transferred the





A web of connections to the three production manifolds starts from the FLNG facility's turret. It consists of risers and flowlines that transport the gas produced. They are flanked by electro-hydraulic control lines called "umbilicals" and by mooring lines anchored on the seabed.

most advanced technologies of an LNG plant to floating structures located in very challenging deep waters." The first and most complex challenge was to replicate an onshore plant, which extends without any particular space constraints, on an offshore unit, where the use of every square metre has to be carefully considered. "By analogy, it would be like building ten football fields in a space where you can fit four at the most." Second challenge: an offshore facility must have an accommodation module inside it, ensuring maximum safety for the operators. Third challenge: an offshore facility must be anchored to the seabed by means of a mooring turret, one of the largest ever built. Fourth challenge: planning. How do you build an FLNG vessel, an extremely complex project in itself, in the midst of a global pandemic?

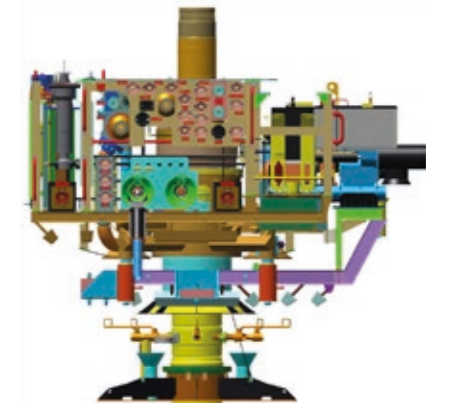
"The skills and expertise of Eni's women and men, who were able to forge the right kinds of relationships between the company and its contractors, played a key role," Maione says. "Great challenges are won all together, valuing

everyone's contribution and with everyone's passion, and we are satisfied with the results we achieved."

### Gas' routes

This is how engineers envisioned Coral Sul FLNG. A web of connections to the six production wells starts from the turret. These connections, which carry the gas produced, are called "risers" and "flowlines." They are flanked by electro-hydraulic control lines called "umbilicals" and by mooring lines anchored on the seabed. The six production wells are grouped into three stations known as manifolds, with two wells each. The stations have code names, CIM 1, CIM 2, CIM 3, and correspond to the position of the production crosses, which, through the wells, connect the deepest part of the field to the subsea pipelines. Two lines depart from each CIM which, through the turret, are interfaced with the plant. "Gas flows into the turret via the six subsea lines. There is only one gas collection system at the entrance to the plant," says Maione. Inside

the gas processing plants, something simple but crucial takes place: "After an initial separation from liquid hydrocarbons, gas undergoes a first processing phase, called softening, which involves the removal of components that could be corrosive, such as CO<sub>2</sub>, followed by a gas dehydration process to remove water." In the liquefaction process, methane gas reaches temperatures of -160°C. "Water would cause ice to form, which would damage the entire plant," Maione explains. Another element to which LNG plants are particularly sensitive is mercury, which must be completely removed, as the exchangers used to cool the gas at those temperatures are made of aluminium, a metal that is very sensitive to mercury. "When gas reaches suitable conditions, it is fed into the cooling section; here a system of cryogenic exchangers lowers the temperature to a level that allows gas to liquefy: -160°C. Liquid gas is now ready for storage," Maione adds. Once liquefied, LNG is collected in special tanks inside the ship's hull that can withstand



Above, a technical drawing of Christmas Trees, the production crosses. Below, a rendering of the Manifold, the point of connection of the production wells.

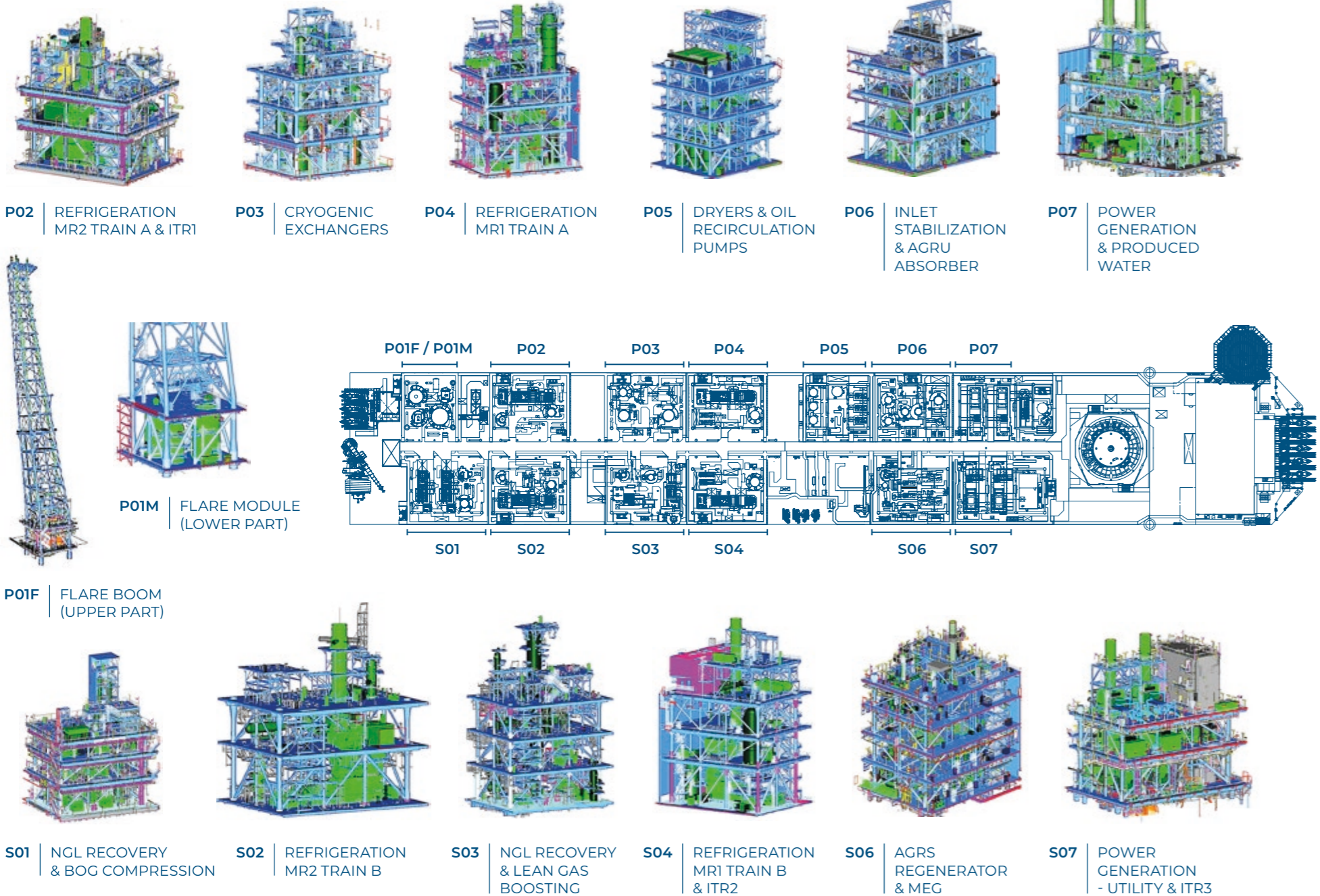








# TECHNICAL DRAWINGS OF CORAL SUL FLNG



cryogenic temperatures. “Our plan is to have a weekly offloading of the product, weather permitting, to LNG carriers for subsequent marketing of the liquefied gas.” Before being put on the market, it will be regasified. On the FLNG ship there are a number of services, including power generation, to support the gas processing and liquefaction part. “The whole operation of the plant is based on the continuous operation of electrical generation, which is provided with back-up in case of problems.” The complexity and size of the plants justified the number of modules – as many as 12 – that were assembled and installed at the Geoje shipyard. “Assembling the components and getting them up and running was another major challenge,” says Maione.

**A symbolic beginning at Geoje**  
2018. On the island of Geoje, in the southeastern province of Gyeongsang, in South Korea, there is the headquarters of Samsung Heavy Industries, one of the

largest shipyards in the world, with three dry docks and five floating docks. This was the moment in which the modules that make up the whole gas processing and liquefaction plant began to be built. The planning involved an extremely tight schedule. The planned activities included, in order, the construction of the modules containing the liquefied natural gas storage tanks and part of the processing plants, their integration and commissioning; the launching of the hull; the installation of the topsides – 12 modules for gas processing and LNG production - and the accommodation module; and the installation of the turret for anchoring the unit. All of this got underway on a late summer Thursday, with the cutting of the first plate on September, 6. Right after that, as many as 4,000 operators poured into the Geoje shipyard, and construction began. “Until that moment, the project was only on paper, we were all in the office preparing for it, checking and verifying the different technical drawings in detail,” Maione recalls.

“Now what we had imagined began to take shape.” It was a very common piece of sheet metal, which would then be inserted into the modules of the plant. After the ceremony, the organisational approach to the project changed substantially. “Someone stayed in the office to follow the design, someone else followed the manufacturing process. The approach to safety also changed, because people working in the shipyard, with the metals, the sheet metal, the equipment, were exposed to different risks than those working in the office, and in view of that “An HSE sponsor meeting was immediately set up to run in conjunction with the project sponsor meeting,” Maione explains. “To make sure that the outcomes of the HSE sponsor meeting reached all the workers, extensive HSE campaigns were conducted that would continue throughout the execution phase.” In Mozambique, work with the authorities continued, in particular to obtain permits to import the various materials needed for development, the importation of the FLNG





vessel once construction was completed, and the licence to operate. Logistics plays a key role, not only because when someone arrives they have to know where to go. “Without a well thought-out logistical organisation, especially in a country that was opening up for the first time to the construction of large plants,” says the top manager, “it would not have been possible to finalise the preparation for the well drilling campaign, which took place before the start of construction of the Coral Sul FLNG, and to obtain the licence to operate for SAIPEM 12000.”

#### Hull laying

On June 4, 2019, people at the Geoje shipyard were working with emotion etched in their eyes. The prolonged whistle of a Mozambican engineer initiated the Hull Keel Laying Ceremony, the installation on the dry dock of the first steel megablock weighing 4,000 tonnes. To understand the meaning of the hull keel laying, one needs to know how a hull is built. “In the shipyard, steel blocks are built and assembled

into mega blocks,” Maione explains. “Coral Sul FLNG was built out of the water: the process is called keel laying and it is the laying of a first mega block in a dry dock, a floodable basin that allows the safe construction of a hull that is 432 metres long and 66 metres wide. When the hull has been completed and is ready to float, the dock is filled with water and the float-out takes place: the section begins to float, the bulkheads are opened and the hull goes out to sea for the first time in the waters off the Geoje shipyard.”

#### The six production wells in Mozambique

Meanwhile, in September, offshore Mozambique, the SAIPEM 12000 plant began drilling and completing the six subsea wells that would feed the gas processing and liquefaction unit: they had an average depth of about 3,000 metres and were drilled in about 2,000 metres of water depth (unlike the exploration wells). “The timing of drilling activities is a delicate matter,” Maione explains. “In offshore





operations it is never good to have too many pieces of equipment running at the same time; to minimise simultaneity, the ideal thing is to install the lines after the drilling operations have been completed.” And this is how the timeline was laid out, which, like an invisible silk thread, joined Geojie and offshore Pemba. “Due to the pandemic, the execution of operations was slowed down somewhat to ensure the safety of the operators at all times. In the end, we worked side by side, with the last wells nearing completion and the first stages of installation of the subsea production systems, but it was a success thanks to the excellent skills of Eni’s women and men and their skilful coordination,” Maione says.

### The 12 modules in the Samsung shipyard

The modules of the FLNG plant were manufactured in the Geojie shipyard. They are the twelve metal structures that make up the plant, inside of which the equipment

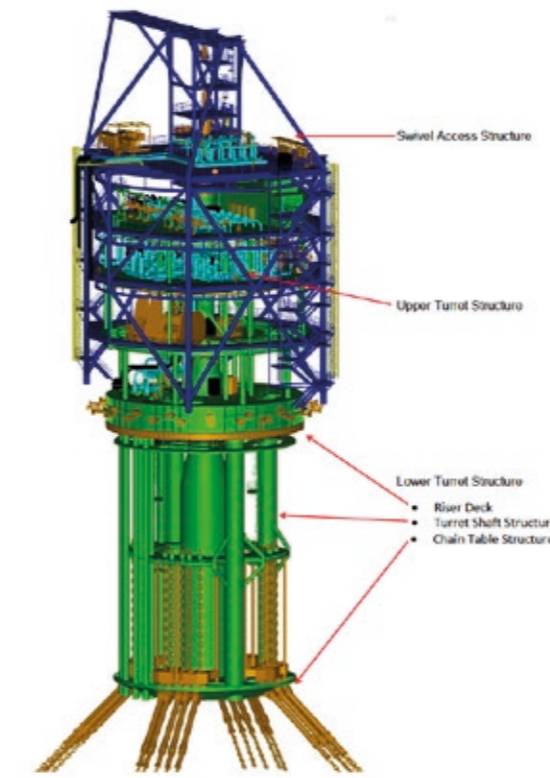


Figure 2-1: Turret Mooring System

Three original technical drawings depicting the mooring turret from different angles.

and facilities for production, gas processing and liquefaction, and services, starting with electrical generation, are installed. They weigh between 4,000 and 5,000 tonnes, 70,000 tonnes in total, and are on average 30-35 metres high. These modules were built in parallel according to a schedule that took into account the different timeframes for the arrival of the various components from all over the world, Italy, Japan, the USA, the UK, France and other countries. “The modules were lifted one at

a time using high-capacity floating cranes, and transported to the final site,” explains Maione. “The installation began with the pipe-rack, the central axle that allows the circulation of pipes and cables connecting the 12 modules to each other, also connecting the turret to the production system on the ship. Installing the 12 modules means placing them on the ship and making them a single body with the hull, connecting them, via the pipe-rack, to the adjacent modules, through a web of cables and

pipes: it is the nervous system of the plant. The end result was one single piece.” Placing all the modules took five months, between May and October 2020.

### The turret from Singapore

On January 4, 2021, the spotlight was on the installation of the turret, which was coming from Singapore. “We were holding our breath,” Maione recalls. “We had made sophisticated calculations in the design phase and accurate







measurements during construction with our specialists on site in Geoje and Singapore. We had checked in a obsessive manner that the tolerances between the outer perimeter of the turret and the inner perimeter of the so-called “moon pool”, the hole in the hull that houses the turret, were within the set limits.” The criticality also lay in the fact that the turret and the “moon pool”, which were soon to be joined, had been built in yards exposed to different climatic conditions, which would stress the materials differently. “If calculations and measurements had not been carried out in the best possible way, we would have had major problems and this would have nullified the efforts that had been made on the two building sites. It was only at the time of installation that we were able to confirm that the fit between the turret and the hull was perfect; the margin of error was minimal, we are talking millimetres.” The turret is the connecting element between the ship and the seabed. It is the key to the whole project. “The turret has two functions,” Maione

explains. “It holds the plant in place and allows it to rotate 360 degrees, thus adapting to currents, waves and wind.” It is in fact one of the largest turrets in the world, comparable to a 30-storey skyscraper: 91 metres high, 25 metres in diameter. And it weighs 8,000 tonnes. With the turret in place, the crucial onshore commissioning phase began. “Before the plant left the safe harbour of Geoje, we needed to be sure that every cable had been properly connected and was in working order, that all the equipment and machines were in working order, with the exception of those pieces of equipment that needed gas from the wells to operate,” Maione explains.

### **Coral Sul FLNG ready to sail away to Mozambique**

On the morning of November 15, 2021 the sun shone on Geoje Island, there was an air of celebration on the pier and proud and happy looks on people’s faces. Delegations from all over the world celebrated with amazement



the result of five years of execution. Not all of them had followed the project from start to finish. Some had heard about it, others had only seen the technical drawings. In five years, in the companies and institutions involved, many people had changed. Now the completion of this mammoth project stood before everyone’s eyes: “A floating cathedral, a concentrate of high engineering and technological innovation,” says Maione. The Mozambicans’ gaze was full of pride and it looked to the future: the development of the gas reserves was a concrete project, that ship was about to head for their country.

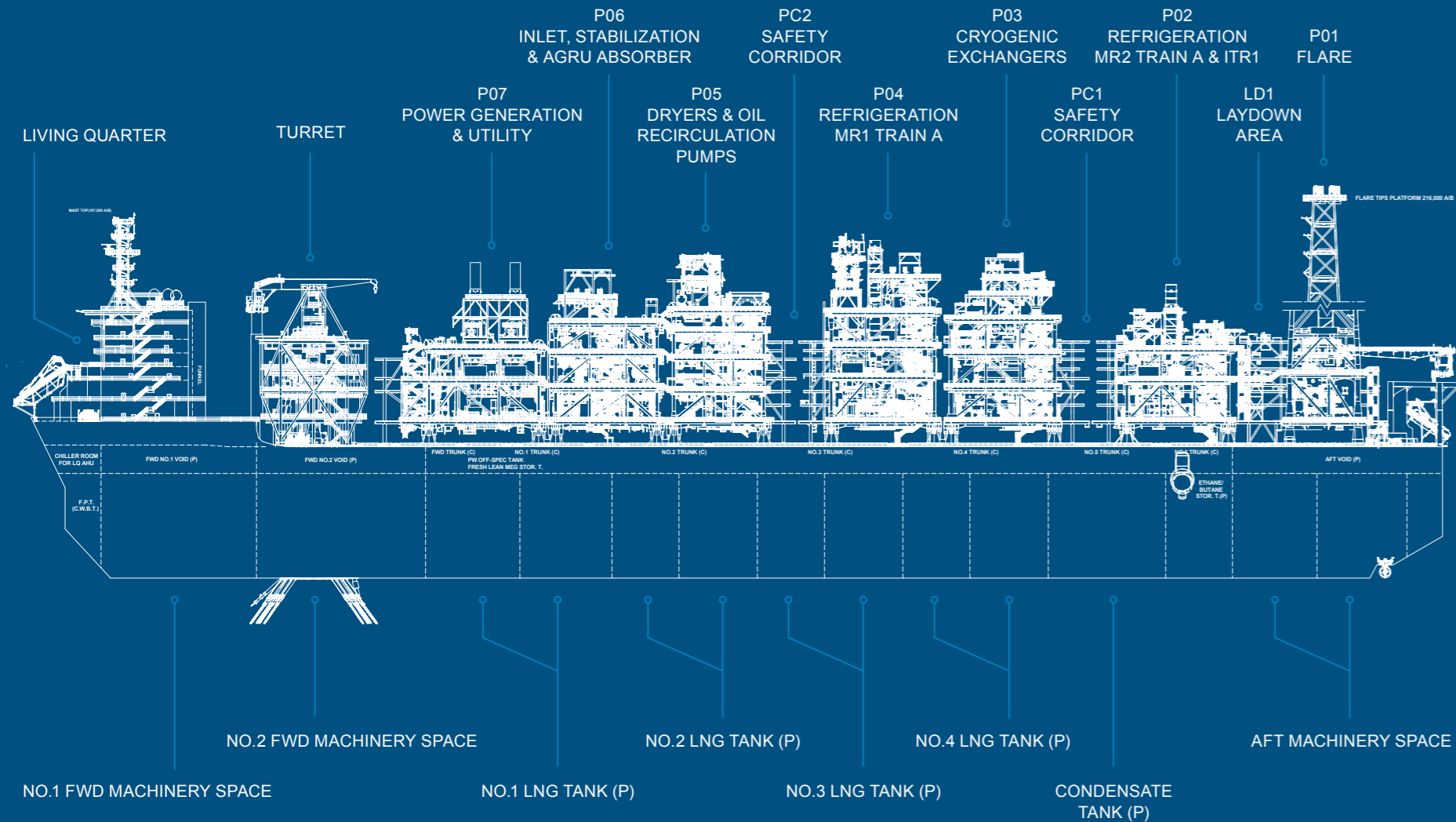
### **Destination Coral**

It was a gentle cruise, planned down to the smallest detail, in the period that ensured the best weather conditions, with a map of safe harbours where they could find shelter in case of trouble. The FLNG ship was not born to sail, it is a giant without muscles, built to be fixed to a point on the seabed. It has no engines



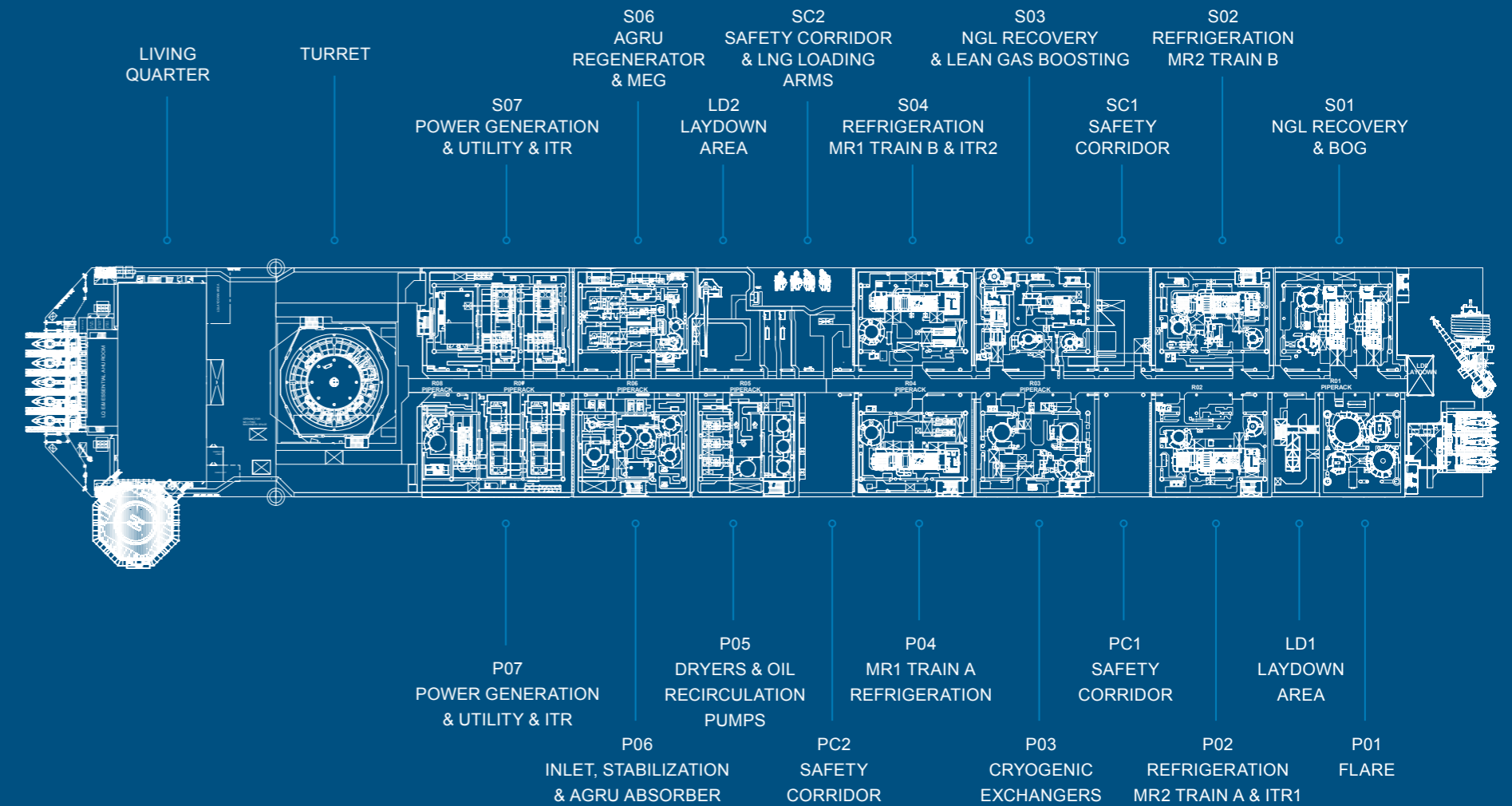
# SIDE VIEW OF THE CORAL SUL FLNG FACILITY

Original technical drawing showing the side view of the vessel



# THE FLNG FACILITY SEEN FROM ABOVE

Another original technical drawing of the vessel seen from above





for navigation, only small motors that make it rotate around the turret. The three tugs that transported it had the delicate task of protecting its navigation. The route: from Geoje to Singapore, towards the Strait of Malacca and the Indian Ocean, over Madagascar, to offshore Mozambique.

On board were 50 engineers and technicians tasked with carrying out minor maintenance work, not so much on the equipment as on the control systems. Among them, many were young Mozambican engineers. After start-up, during normal operations, there are about 150 people on board the plant (up to 350 for extraordinary maintenance). The personnel on board work on a 28-day roster. The offices in Pemba provide logistics, spare parts, supplies and support in case of emergencies.

### The mooring offshore Mozambique

The arrival of Coral Sul FLNG in Mozambique was like a perfect game of lego. For two years

the hull lay idle in the Geoje shipyard, it took shape module by module, resembling more and more the final prototype: a giant lego toy. “When Coral Sul entered Mozambican waters, heliport certification was the first thing we obtained: the area equipped for helicopter take-off and landing is the first means of evacuating personnel in case of an emergency,” Maione explains.

“After the drilling of the wells and before the arrival of the plant, SAIPEM installed the Christmas Trees, i.e. the production crosses, on the seabed,” the chief engineer explains. This enabled them to enter the first phase of the installation: mooring. Mooring and hook-up operations were carried out at a water depth of about 2,000 metres by means of 20 mooring lines for a total weight of 9,000 tonnes.” Once the mooring was completed, the final hook-up took place: the six pipelines, which had been installed prior to the arrival of the Coral Sul FLNG ship and which had filled up with water in the meantime, were recovered. “They were

emptied and connected to the turret. The same happened to the three control cables (the umbilicals). In the meantime, the equipment, including the electrical generation unit, was put back into operation.”

### Towards start-up

Coral Sul FLNG teemed with operators for the final commissioning phase, a dress rehearsal before starting the injection of gas into the plant. When the first gas molecule flowed into the plant, on June, 18 2022, Coral Sul FLNG officially got ready to produce its first LNG cargo in the second half of 2022. The gas came directly from the field and it started to flow through the facility. “It is pre-treated to remove various impurities, and begins to enter the cold cycle. It takes time to cool the system: the gas is recirculated to cool the system down to the mythical temperature of -160°C with the first production,” Maione says. It was the first molecule of liquefied gas produced by the FLNG ship.





## Coral Sul FLNG Key Facts



The plant is anchored at a water depth of around **2,000** metres and is held in place by **20** mooring lines that weigh a combined **9,000** tonnes

Coral Sul FLNG weighs approximately **220,000** tonnes

It is **432** metres long, **66** metres wide

The **8**-storey accommodation module can house up to **350** people

It's like a giant Lego toy with **100,000** pipes and over **1,000** kilometres of cables

The internal mooring turret is **one-of-a-kind** in ultra-deep waters and in a cyclonic environment: It is **91** metres high, with a diameter of **25** metres. It weighs **8,000** tonnes. The **360**-degree rotational movement makes the facility more resilient to weather and sea conditions

The **12** topside modules each weigh between 4,000 and 5,000 tonnes, **70,000** tonnes in total, and are on average **30-35** metres high

The storage capacity of Coral Sul is **230,000** cubic metres of LNG (the capacity of cargo ships transporting LNG to end markets is 140,000-170,000 cubic metres)

The plant's annual guaranteed gas liquefaction capacity is **3.4** million tonnes

**520** million standard cubic feet: the daily gas production capacity from the infrastructure



Watch a video  
of the Coral South Project





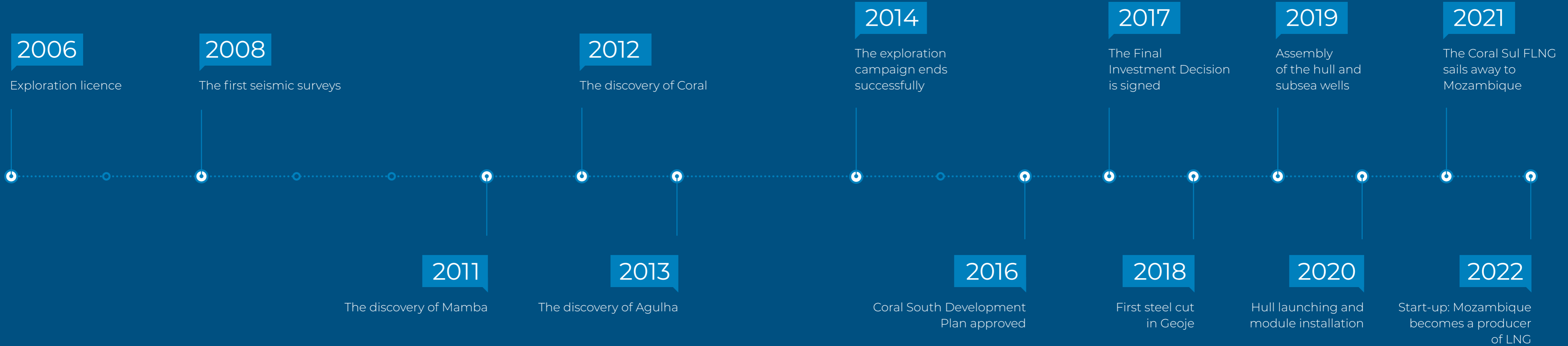




## TIMELINE

The exploration and development phases:  
of the Coral South project described  
in pictures and in the words of the protagonists







# 2006

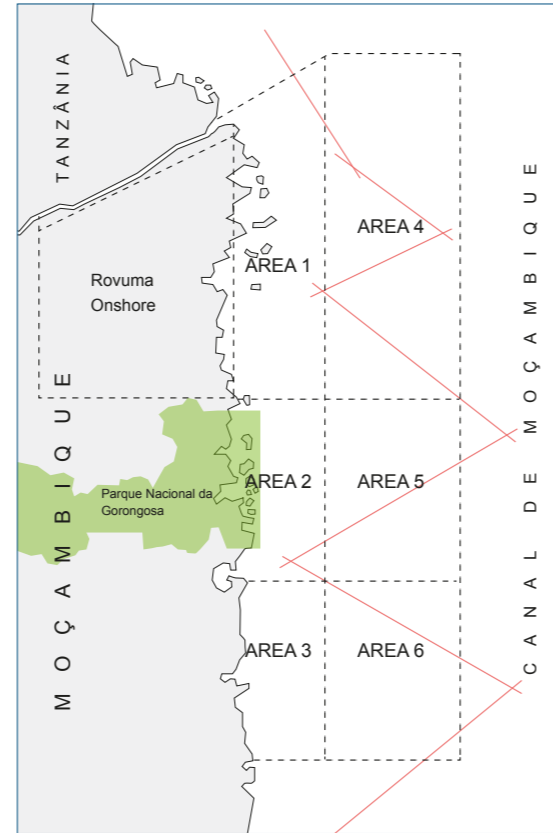
Eni takes part in Mozambique's 2<sup>nd</sup> licensing round and obtains an exploration licence for Area 4 in the Rovuma Basin

*"The first oil exploration and data acquisition in Rovuma basin, began around the 1980s. However, the launch of the Second bidding Round as part of the Government's energy strategy and policy, enabled a great and realistic opportunity for the potential of the hydrocarbon sector in Mozambique to be realized."*

Nazário Bangalane,  
Chairman at INP

*"At the end of a long but amicable contract negotiation in Maputo, a simple but meaningful signing ceremony took place in Pemba on December, 20 2006, in the presence of the Energy Minister. The anticipation and hope for an initiative that could mean so much for the country's development was evident in everyone's words and optimism."*

Aldo Napolitano,  
Exploration Director at Eni



*"One of the main reasons for Eni's success in the Rovuma Basin in Mozambique was that we were among the first to explore it. Eni had been monitoring the area for some time, also because it is similar to some areas, such as the Nile and Niger deltas, with which Eni is familiar."*

Luca Bertelli,  
Head of Exploration at Eni  
from 2011 to 2022

# 2008

Eni carries out the main seismic surveys, which will lead to subsequent discoveries



*"Since the beginning of the second bidding round, back in 2005, Eni was an enthusiastic participant in the process. The fact that it was awarded the concession, demonstrates the level of preparation and dedication Eni demonstrated. The interpretation of existing data gave clues regarding the petroleum potential, allowing more 2D and 3D seismic data to be acquired, thus allowing a greater definition of structures."*

José Branquinho,  
Vice President Projects & Development at INP

*"Following careful planning, a two- and three-dimensional seismic acquisition campaign was conducted. The processing of the data made it possible to begin to accurately outline the structural model of Area 4, which had hitherto been unexplored."*

Aldo Napolitano,  
Exploration Director at Eni



# 2011

## October

Eni drills the first exploration well and discovers the Mamba field

*“One of the main reasons for Eni’s success in the Rovuma Basin in Mozambique was that we were among the first to explore it. Eni had been monitoring the area for some time, also because it is similar to some areas, such as the Nile and Niger deltas, with which Eni was familiar.”*

Luca Bertelli,  
Head of Exploration  
at Eni from 2011 to 2022

*“The Mamba wells proved the extension of the gas deposits further east, north and south of Area 4. The drilling campaign was amazingly successful and was very encouraging for what was a frontier area at that time.”*

Milton Zibane,  
Vice President Exploration at INP

*“The first exploration well drilled by Eni, had a positive impact on the overall petroleum sector in Mozambique. Firstly, because it proved that the petroleum system is functional in the Rovuma basin - deep water. Secondly, the gas accumulations found were competitive in terms of the oil and gas business. It also revived hope for the development of the country.”*

Célia Tembe,  
Geologist at INP

# 2012

## May

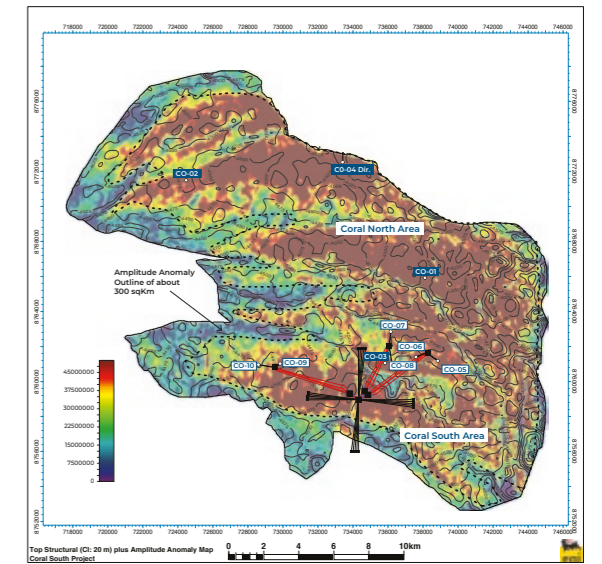
With the drilling of the first well in the Coral 1 exploration prospect, the overall potential of Area 4 increases further

*“Coral 1 encountered a 75 m-layer of gas-bearing sands in a single high-quality Eocene-age reservoir. The discovery is of particular importance in that it proved a new exploration target independent of those we had so far reached by drilling the Mamba wells.”*

Luca Bertelli,  
Head of Exploration at Eni  
from 2011 to 2022

*“The Coral 1 well increased the overall potential in the Rovuma Basin, especially within Area 4. According to several studies, this discovery, compared to the Mamba one, was at a different stratigraphic level (the Eocene channel complex) and lay entirely within the Eni concession area. The quality of the reservoir was world-class, with high porosity and permeability, which imply high gas recovery during production.”*

Frederico Pagocho,  
Geoscientist at INP



*“At the very beginning of its exploratory activities, we can highlight that Eni has undertaken a splendid exploration programme which culminated with the discovery of world class natural gas trans-zonal resources as well as non-trans-zonal resources.”*

José Branquinho,  
Vice President Projects & Development at INP



# 2013

## September

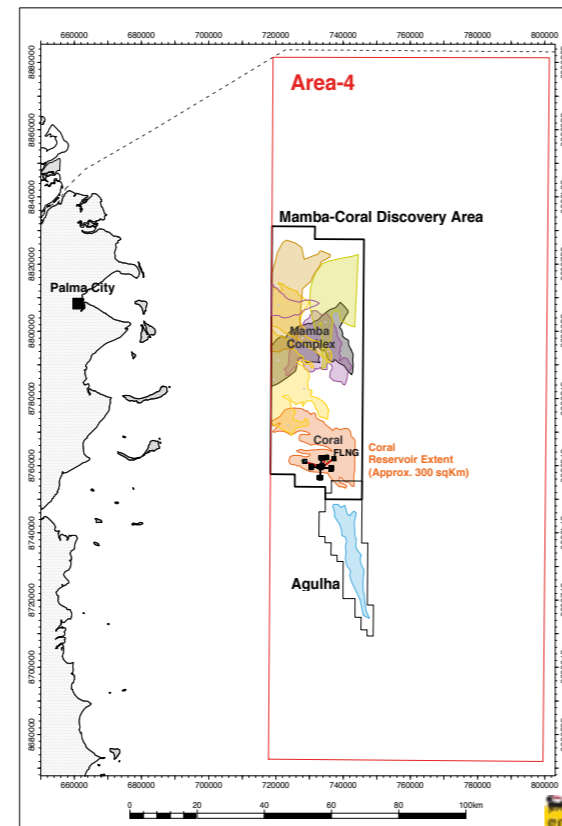
A new, important discovery in the Agulha prospect

*"The discovery of Agulha opened a new exploration front in the southern part of Area 4 and allows us to test the mining potential of older geological sequences."*

Luca Bertelli,  
Head of Exploration at Eni  
from 2011 to 2022

*"This was an extremely promising discovery, which confirmed the high level of prospectivity that characterizes the Rovuma Sedimentary Basin and helped in the further evaluation and exploration aimed at the development of the existing potential. This great discovery motivated Eni and the partners of Area 4 to invest more, for further evaluation and delineation of the spatial gas distribution, in order to quantify and qualify the exploitable resources and reserves."*

Nazário Bangalane,  
Chairman at INP



# 2014

The campaign in Mozambique comes to an end with the discovery of 2,400 billion cubic metres of gas (estimated)

*"The discoveries in Mozambique are the largest gas discoveries ever made by Eni in its more than 60 years of global exploration history; they will play a key role in both Eni's and Mozambique's future."*

Claudio Descalzi,  
CEO of Eni

*"It is the biggest commercial discovery in this century and I am overwhelmingly grateful for being a part of Area 4. The giant-scale resources will change the LNG market dramatically and be the keystone for the future of Mozambique."*

KOGAS

*"These discoveries made Mozambique more visible in the oil and gas industry; it became a hot spot due to the largest gas fields in Africa at that time. Additionally, they brought a new vision of the needs in terms of getting people more dedicated to this sector, opening a new era in the education systems, (oil and gas courses and correlated subjects). The gas discoveries brought a new horizon to the country in terms of development and increased job opportunities. Apart from this, Mozambique registered a boom and willingness of international companies in doing business in the diversified sectors of the country."*

Frederico Pagocho,  
Geoscientist at INP



# 2016

## February, 24

The Council of Ministers of the Government of Mozambique approves the Plan of Development for the Coral discovery

*"The approval of the Coral Development Plan is an historic step in the development of the approximately 2.4 trillion cubic metres of gas we have discovered in the Rovuma Basin, and represents a key milestone towards the project's Final Investment Decision to install the first Floating LNG facility on the African continent and one of the largest in the world. We are proud of our partnership with Mozambique, a key country in our strategies."*

Claudio Descalzi,  
CEO of Eni

## October

Eni and Area 4 partners sign an agreement with BP for the sale of the LNG produced by Coral South

*"The approval of the Coral Development represented the realization that Mozambique was entering a new era (Mozambique as a potential gas provider). Before that, all contractors, all job opportunities and so on were still pending and were not yet tangible. The approval gave a green signal showing that Mozambique was ready to go."*

Frederico Pagocho,  
Geoscientist at INP





2017  
June, 1<sup>st</sup>

Area 4 partners sign the Final Investment Decision and all contracts for the drilling, construction and installation of production facilities







*"Our ambition is to become an integrated global gas and LNG player, and we will do this together with key partners such as Mozambique. The Coral South project will provide a reliable source of energy while contributing to the development of Mozambique. This partnership approach with our host countries is the foundation on which our sustainable growth strategy is based."*

Claudio Descalzi,  
CEO of Eni

*"It is a remarkable moment in Area 4 history to start the very first project which will make Mozambique one an LNG exporter. Thank you very much to everyone for their hard work for a successful FID."*

KOGAS



# 2018

## March

At the Keppel shipyard in Singapore, Eni and Area 4 partners celebrate the start of construction of the turret

*"It is a memorable milestone which puts Mozambique on the map of LNG producers. This is the first floating platform anchored in ultra-deep waters in the world."*

ENH



## September

At the SHI shipyard in Geoje, South Korea, Eni and Area 4 partners celebrate the first steel cut, which marks the beginning of the construction works of the Coral Sul FLNG



# 2019

## June

Keel-laying for the Coral Sul hull

*"This is a moment of celebration for the Coral South Project, led by Eni, and for all stakeholders: the laying of the keel is a milestone, we can now appreciate our ship and, let me say, our dream, which is taking shape and becoming reality."*

Maurizio Lanzo,  
General Manager of Coral FLNG



## July

Eni starts assembling the hull of the Coral Sul FLNG



# 2019

## September

SAIPEM 12000 begins drilling and completing the six subsea wells



*"Submarine canyons played important role in the definition and location of the production facility. They offered several challenges for the scenarios simulating the positioning of the pipes crossing them: the slope stability and other deep-water factors conditioning the bringing of the gas to an onshore facility. These limitations, led the company to dream and successfully build the FLNG technology that will be dedicated to start gas production from six wells in the southern region of the Coral channel in the presence complex and massive sand deposits; hence the name Coral Sul FLNG."*

Milton Zibane,  
Vice President Exploration at INP



# 2019

## October

Hull float-out: the hull floats out to the sea for the first time, in the waters off the Geogje shipyards



*"To manage the size of the plant, we divided the hull into two sections: one of about 300 meters and the other of about 130 meters. A couple of weeks to compose the two sections and a day to put the hull in the water."*

Stefano Rovelli,  
Head of Regional Development Projects Management,  
East Africa and Far East, at Eni Natural Resources



# 2020

## January

With the launch of the hull,  
progress exceeds 60%



*“At this rate of progress, we are confident of starting production, liquefaction and export of the first cargo of LNG gas from the Coral FLNG project and Mozambique by 2022. This will initiate the desired transformations in terms of job creation, development of local businesses, and revenue from the sale of LNG, from the first gas liquefaction project in the country, which will benefit the state and the citizens of Mozambique for the duration of the project.”*

Carlos Zacarias,  
Mozambique’s Minister of Mineral Resources and Energy

*“Eni and the Area 4 partners, in the Rovuma Basin, proposed to the Government of Mozambique the Development of Coral Field through the Floating Liquefied Natural Gas (FLNG), due to the technical constraints of the area. This milestone demonstrated the commitment of the Area 4 partners to ensure full compliance with the agreed schedule with the Government of Mozambique, so that the first production and exports of natural gas in Area 4 takes place in 2022, despite some challenges related to the impact of the COVID-19 pandemic.”*

Nazário Bangalane,  
Chairman of INP



# 2020

## October

The installation of the 12 modules that make up the Coral Sul FLNG topside is completed



*"This milestone marks a historical record for us as well as for the Samsung Heavy Industries yard: it was the first time the lifting of two modules took place in just one day. In fact, this achievement was replicated three times on the Coral South project, demonstrating the value of the seamless integration of Contractor and Company efforts to deliver a unique project."*

Juan Carlos Coral,  
Coral South Project Director at Eni

*"There was a moment when all 12 modules were lined up on the Geoje shipyard: captured by a drone, they seemed to make up a garish red carpet."*

Stefano Rovelli,  
Head of Regional Development Projects Management,  
East Africa and Far East, at Eni Natural Resources









# 2021

## January

The installation of the mooring turret starts, allowing the rotation of the facility by 360 degrees

*"The relationships between Eni as an operator, its partners and contractors played a fundamental role: the relationship of trust that was built between us and those who carried out the work made us united and strong in facing difficult moments. Positive results are achieved together and in the end, we are all winners."*

Stefano Rovelli,  
Head of Regional Development Projects Management,  
East Africa and Far East, at Eni Natural Resources

*"The project is an example of the quality of the integrated multi-functional and multi-national team overseeing the overall execution and development of Coral Sul FLNG."*

ExxonMobil



*"This is the world's deepest and largest internal turret built for ultra-deep water (2,000 m WD). Lifting of the turret inside the FLNG moonpool with nominal tolerance only comparable to those of Swiss Watches manufacturing, with only a 13 mm gap at the lower bearing in a 25 diameter structure. A genuine engineering beauty."*

Juan Carlos Coral,  
Coral South Project Director at Eni

*"Mozambican technicians actively took part in the construction of the floating facility and we hope that more Mozambicans will be involved in the operation and maintenance of the infrastructure."*

ENH





# 2021

## November

All 6 wells of the Coral South project have been drilled and completed



*“This result has been accompanied by the fast and successful drilling campaign for the installation of the six producer wells within the Development Plan. With the wells ready, the project required the vessel, and the mobilization of the FLNG in the second half of November, showed the effective synchronization of the FLNG project activities. This synchronization of activities is a typical characteristic of the project timeline.”*

Milton Zibane,  
Vice President Exploration at INP



# 2021

## November, 15

With the naming ceremony, the Coral Sul FLNG vessel is ready to set sail for Mozambique



*"Today we have the opportunity to observe that despite setbacks due to the COVID-19 pandemic and other challenges, it was possible to complete the project on schedule, ensuring that the start of LNG production remains scheduled for 2022, which highlights our determination and resilience."*

Filipe Nyusi,  
President of the Republic of Mozambique

*"The pride belongs to all the workers who contributed to the project: the partners who achieved the final goal in line with expectations at the FID in June 2017 were delighted. It is a great achievement for the Oil & Gas industry: Coral Sul FLNG was about to set sail and we communicated to the world our ability to execute complex projects – technically, logistically and managerially – on time and on budget."*

Stefano Maione,  
Development, Operations & Energy Efficiency Director  
at Eni Natural Resources

*"We appreciate the efforts of the project's partners and all the teams working on the delivery of the Coral Sul FLNG, especially during the COVID-19 pandemic and amidst global market challenges, which highlight the resilience, determination and cooperation of everyone involved."*

ExxonMobil

*"Coral Sul is a paramount example of how groundbreaking engineering projects can be completed on time and on budget when a group of partners with the right mindset, skills and will, supported by a Government with a clear vision, come together to build something unique. Galp is enormously honored to be a part of this historical milestone that makes Mozambique a key player in the global LNG market. This is an achievement that Mozambique, its Government and its people, can be very proud of."*

Galp

*"I would like to extend my gratitude to the Operator and TJS for reaching the milestone of Ready for Sail Away under the difficult situation imposed by the global pandemic."*

KOGAS

*"Coral South has set a new benchmark for the O&G industry and this has only been achieved through the commitment and efficient work done by all parties involved. Today's milestone is a tremendous accomplishment that reflects our strengths and resilience as a company to deliver major projects on time and with the best standards of quality and safety. On this occasion, I would also like to value the support received by all the families of each team member, which despite the difficult circumstances of the pandemic, have allowed us to continue delivering long hours of work and effort to achieve this fantastic goal."*

Juan Carlos Coral,  
Coral South Project Director at Eni



# 2022

## January

Coral Sul FLNG arrives in Mozambican waters and mooring and hook-up activities begin, followed by the connection of flowlines to the six wells



*“Coral Sul FLNG is an engineering feat of the highest calibre in terms of the know-how and construction technologies used. It is in line with the start of the development of Mozambique’s gas resources, which are also of the highest quality. The project is also fully in line with Eni’s energy transition strategy and with the path towards a decarbonized energy future, in which gas plays an essential transitional role.”*

Stefano Maione,  
Development, Operations & Energy Efficiency Director  
at Eni Natural Resources

*“A real challenge for the project team, after years of planning, started the mooring and hook up operations, working against the clock to ensure the activity was completed as fast as possible to reach the FLNG safe mooring to withstand cyclone conditions which are very common in this part of the year in Mozambique. Long days were employed monitoring every weather alert, all the while sure that all preparation and emergency response plans were adequate to protect the safety of all personnel and the integrity of the asset.”*

Juan Carlos Coral,  
Coral South Project Director at Eni

*“Construction of the platform got underway in 2018 and was completed on time and without any incidents, which shows that all the health and safety elements were safeguarded during this critical phase and that they were in accordance with international industry standards. So we are proud as Mozambicans to have reached this level and to be pioneers in Africa in the use of this FLNG technology, which is third in the world.”*

Celia Correia,  
Engineer at INP



# 2022

## June, 18

Start of the safe  
introduction of gas into  
Coral Sul



*“Not only were we among the few in the world to carry out a project of such complexity, but we did it on time and on budget. This is an achievement that makes the company and its partners proud and lets us see the future of the industry with different eyes.”*

Stefano Maione,  
Development, Operations & Energy Efficiency Director  
at Eni Natural Resources

*“The announcement of the introduction of hydrocarbons to the Coral Sul FLNG platform was the culmination of a process that began with the large gas discoveries that were made in 2010 and the subsequent approval of the Development Plan in 2016 for the exploration of gas from the Coral Sul field, a field in which gas was located in deep waters and difficult to connect with pipelines to processing plants on shore. It means transposing the project from paper to reality, seeing the dream of all Mozambicans come true with the first gas exploration and production activities in the Rovuma basin.”*

Celia Correia,  
Engineer at INP





*"CNPC devotes itself to developing clean energy. We six partners as one solid team, realizing one great dream, the start-up of the Coral Sul FLNG Project. The blue ocean brings green energy, which will benefit Mozambique's people and society, strengthening the role of Mozambique in the international energy sector."*

CNPC

*"Beginning world-class resource production in the Rovuma basin highlights Mozambique's promising energy industry that is a catalyst for Mozambique's socio-economic development. The Area 4 partners applied industry leadership and technical expertise to deliver a world-class project."*

ExxonMobil



# 2022

## October, 2<sup>nd</sup>

With the introduction of gas in the plant, Coral Sul FLNG is preparing to produce the first load of LNG in the second half of 2022



*"It is an important milestone as it is confirmation that the designed infrastructure is ready to process the gas and generate the eagerly awaited profits and benefits, bringing gains for the state and putting Mozambique in the spotlight as a world-class LNG producer, at a time when natural gas is in high demand and is the key fuel for the energy transition."*

Celia Correia,  
Engineer at INP

*"For Mozambique, starting LNG production in the Rovuma basin marks a new era in the country's transformation, with huge expectations of tangible socio-economic benefits in the medium and long-term. ENH will also be part of the production, marketing and sales processes of Coral Sul oil products, with a positive impact on local development."*

ENH

*"The Coral Sul FLNG Development has been a brilliant concept for the development of non-transzonal natural gas resources discovered in Area 4 and with the start of LNG production, a great milestone has been achieved."*

José Branquinho,  
Vice President Projects & Development at INP

*"The first drop of LNG marks the beginning of a new era for Mozambique, which will contribute to the socio-economic development of the country. We are really proud of having achieved this great milestone within promised time and budget and for being the first company producing gas from the Rovuma Basin. This shows that Eni is fully committed to support the development of Mozambique, not only through gas production, but also through other several initiatives that include the maximization of local content and the participation of Mozambicans in the project. Around 1,500 Mozambicans have already been trained, including more than 200 young engineers who have obtained highly qualified training abroad and are currently contributing to the success of the project."*

Giorgio Vicini,  
Managing Director of Eni Rovuma Basin (ERB)



# 2022

## November, 13

With the first cargo from Coral Sul, Mozambique becomes an LNG producer



*"The first shipment of LNG from Coral South project, and from Mozambique, is a new and significant step forward in Eni's strategy to leverage gas as a source that can contribute in a significant way to Europe's energy security, including through the increasing diversification of supplies, while also supporting a just and sustainable transition. We will continue to work with our partners to ensure timely valorization of Mozambique's vast gas resources."*

Claudio Descalzi,  
CEO of Eni

*"Today, Mozambique enters in world history as one of the exporting countries of liquefied natural gas, that represents an alternative source of supply and contributes to a large extent to energy security in the countries with higher consumption."*

Filipe Nyusi,  
President of the Republic of Mozambique

*"The Coral Sul FLNG is the starting point of a shared journey between Area 4 partners and the people of Mozambique to derive greater value from the Rovuma basin's resources for the benefit of everyone involved."*

Exxon Mobil



# 2022

## November, 23

The President of Mozambique  
Filipe Nyusi visits and  
inaugurates Coral Sul FLNG



*"Today we can say that no dream is impossible. This project raised our levels of confidence and expectation for the future. Mozambique starts to take a significant position as an exporter of LNG in the energy transition process. As of today, there are no more doubts and uncertainties about the potential of our resources."*

Filipe Nyusi,  
President of the Republic of Mozambique

*"Coral South is a landmark project for the gas industry: it projects Mozambique onto the global LNG stage, paving the way to a transformational change of the Country. It contributes to the security and diversification of supplies to Europe, while at the same time ensuring a just energy transition. This is the result of an outstanding collaboration among Eni, partners, and the people and Government of Mozambique."*

Claudio Descalzi,  
CEO of Eni









# SHOTS OF LIFE

Seven stories of young Mozambican engineers who bring added value to the Coral South project with their professionalism and contribute to the growth of their country



Watch more stories of young Mozambicans who contributed to the Coral South Project



They became part of the team during the early stages of engineering. Some went to Paris, others to South Korea. They had never worked on an offshore platform before. These are the stories of seven young Mozambican engineers who have brought and will bring added value to the Coral South project with their professionalism. The investment in Mozambican staff was a key element in the development of the project from its earliest stages. "The selection and training programme mainly focused on the development of over 200 highly qualified staff members, who had the opportunity to train in Italy and abroad in operating plants and were involved in the

development and start-up phases of the FLNG facility. More than 600 Mozambicans are involved in the project, with over 70 young engineers hired for FLNG operations and around 140 professionals engaged offshore in the start-up phase. A result achieved also thanks to the local content program adopted by the contractors. A path that is still long, but with solid foundations which allow for a glimpse of the sustainable development of the project and the achievement of challenging nationalization objectives, in line with Eni's dual flag strategy, based on a system of intense, long-term, collaboration with host countries.





## CLEIDE

### NAME

**Cleide de Jesus  
Severino Gonzaga**

### COMPANY

Eni Rovuma Basin

### POSITION

Customs Coordinator and  
Deputy Base Manager

### LOCATION

Pemba



Cleide was born in Pemba. When she started working at Eni in 2011, the company was acquiring the first seismic models that kick-started the exploration campaign. She is a busy and kind woman. She works tirelessly from the moment she goes to the office or to the port, right through to the evening. Her role as logistics manager requires her to have exceptional organisational skills and an obsessive attention to detail. She meets people of different nationalities every day. This is the extrovert side of her professionalism. Her other side is more introspective, however. When she gets back to the office, she locks herself into sensitive administrative tasks. "Coral South is a project in line with international standards like no project so far in Africa," says Cleide. "From a logistical point of view, each passage required a large number of permits, not to mention handling the passports and visas of the staff who came and

went. Just to get SAIPEM 10000 permission to operate offshore Mozambique, we produced tonnes of permits. In the end, and thanks to the cooperation and support of the authorities, we got there." The ability to coordinate such complex logistics meant that Cleide was soon identified as the most suitable person to also take on the role of Deputy Base Manager. "I am proud to have been involved from the very beginning in this project, which is crucial for Mozambique's future. The energy sector revolving around Coral Sul FLNG will undoubtedly benefit the country." Cleide adds: "This project has been an opportunity for training and professional growth for my colleagues from the new generation." She is inseparable from her family, and as soon as she has any spare time, she devotes it to her daughter, her nieces and nephews and her friends. She especially loves to cook delicious fish coconut milk curry for them.



## EDSON

### NAME

**Edson Nhatsumbo**

### COMPANY

Coral FLNG SA

### POSITION

Process Safety Engineer

### LOCATION

On board the FLNG



Ten years ago Edson, with a degree in chemical engineering under his belt, arrived in Italy to specialise in production engineering at Eni Corporate University. His vocation, however, was a different one. Today he works as a Process Safety Engineer and is an expert on safety procedures on LNG plants. The knowledge acquired by Edson from Indonesia to the UK has now led him to make a significant contribution to “a very important project” for his country. “I am proud to have been among the first Mozambican engineers to receive training in the LNG sector,” says Edson. He works on board the Coral Sul FLNG plant for 28-day shifts. He goes around the plant simulating security procedures. The plant has to work perfectly, so Edson spends his

days checking that every gear turns without imperfections. For Edson, the plant is “an island of steel,” it is stable and safe. For his daughter, the youngest of his three children, it is “daddy’s house.” Edson is “the engineer dad who always fixes everything” and who cooks for himself when he travels. “My mum always tells me, if you want to survive, you have to know how to cook” Edson says, laughing.



# GISELA

## NAME

**Gisela Nhambi**

## COMPANY

Eni Rovuma Basin

## POSITION

Completion Engineer

## LOCATION

Maputo



Gisela's has big eyes brimming with life. In her work she is determined, transparent, direct. On board the Saipem 12000 vessel, she supervised one of the teams of engineers for the completion activities of the wells that were subsequently connected to the FLNG plant. On the vessel, together with over 100 colleagues from all over the world, she has learnt to be assertive without being too overbearing, to command respect without creating conflict, to coordinate her team with a smile that looks open to the world. "The first shift on the Saipem 12000 was tough, there were many problems to solve," Gisela says. "We overcame them by building a strong team spirit." The second shift went better: "challenges make you grow" is her motto. Gisela studied mechanical engineering at the Eduardo Mondlane University in Maputo. Ten years ago, she was selected by Eni Corporate University for a year's training in Italy. She was

based in Milan, and there she learnt to do an important job, which she now performs with competence and ease. Her training continued in Basingstoke, UK, where Gisela began to sense that something important was about to happen in Area 4. Gisela feels like part of the Eni family. She is not afraid of rough seas, change, or making difficult choices. She has two children. When her daughter was 11 months old, the company asked her to go to Italy for a fortnight. Her husband said, "Go, I'll take care of the kids." Having a husband who supports her in her role as mother, wife and professional is everything for Gisela.



# CLEYDE

## NAME

**Cleyde Virginia Firmino  
Muchate**

## COMPANY

Coral FLNG SA

## POSITION

HSE Engineer

## LOCATION

On board the FLNG



Cleyde is the guardian of a precious treasure chest. She works in the team that monitors the safety of the FLNG vessel, coordinates activities in the event of an emergency and manages waste disposal. There is no one on board who knows the plant better than her. Cleyde is 25 years old and knows all the production processes by heart. During her four months in South Korea, before the vessel set sail for Mozambique, she studied every inch of this floating giant. Today, when she walks around the observation tower, she still is still astonished. "I have never seen such a large, safe, stable floating facility, and here I am, it's all real." Cleyde studied chemical engineering at university. She was doing a master's degree in Hydrocarbon Processing Engineering when one day she read on LinkedIn that Coral SA was looking for young engineers. She didn't think twice. She applied for admission to the

exam and after a long selection process was chosen. There were 11 positions available and 500 applicants. She says Eni is "a great school" where she is learning a lot. She describes herself as a "blank slate" on which her experience on board the Coral Sul is writing a story. It is a story that makes her proud of her country. Cleyde looks to the future with confidence and when she returns to her cabin after a long day at work, she talks to her dad, who has always believed in her, on Whatsapp, watches documentaries on Netflix and listens to a lot of music. Her favourite musicians are Lira, the famous South African singer, and Bryan Adams. "At the bottom of my heart I am a daddy's girl," she says.



# FRANCISCO

## NAME

Francisco Esperança

## COMPANY

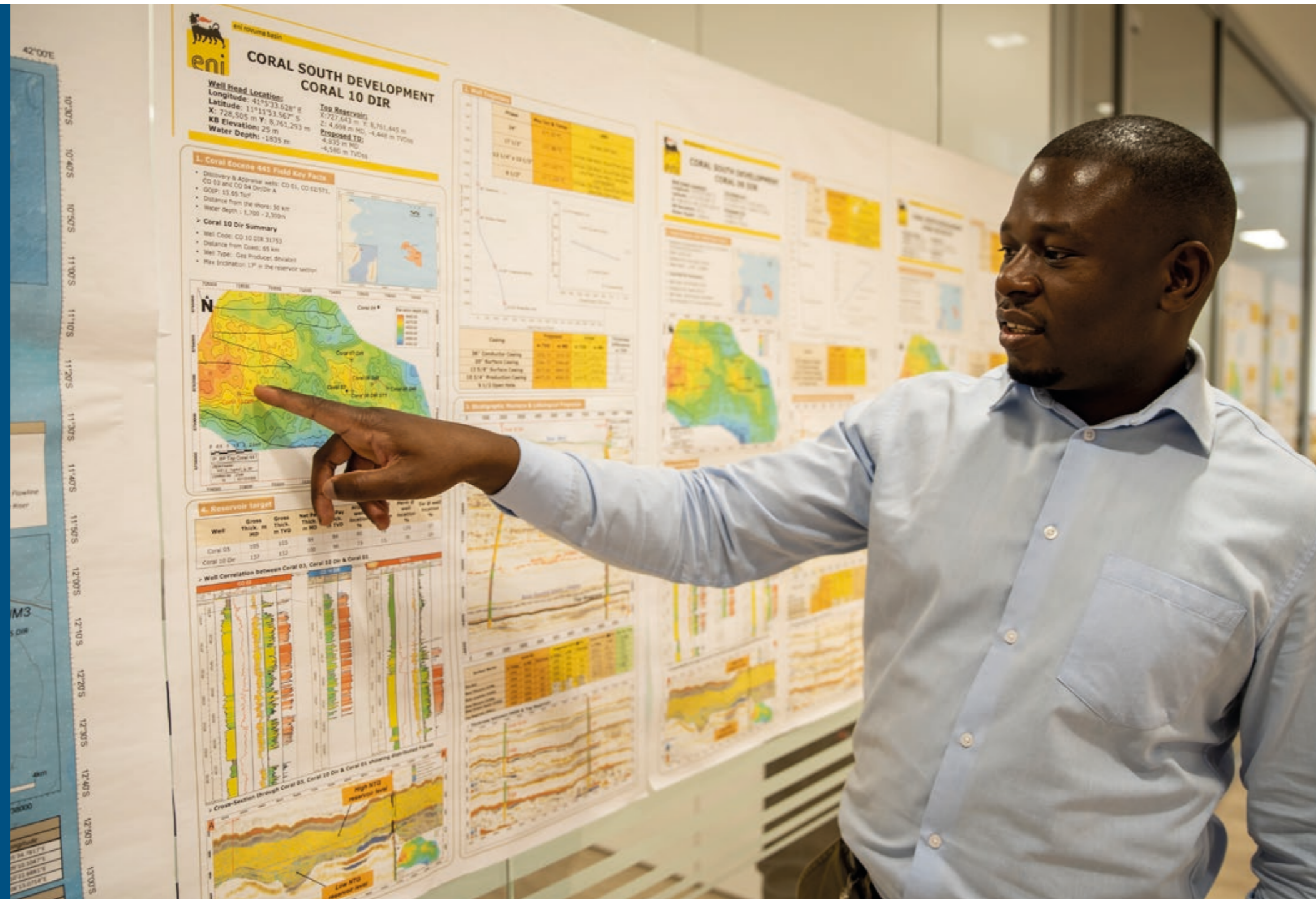
Eni Rovuma Basin

## POSITION

Reservoir Engineer

## LOCATION

Maputo



Francisco smiles before entering the office, as he gets off the shuttle bus that takes him to work every day. Maputo is the city that made him an engineer. Born in the rural district of Zavala, the third of six siblings, as a child he loved drawing and mathematics. He used to walk six kilometres to school every day. As he walked he fantasised about his future. In 2011, Francisco was 23 years old and he was about to graduate in chemical engineering at the University of Maputo. While attending the fourth year, he learned that Eni was looking for candidates for a study and training programme in Italy - Programme 200. "Out of a thousand candidates, at the end of a long selection process, they chose 10. I was one of them," says Francisco. He was out walking with his girlfriend when he received the phone call that changed his life. The voice on the other end of the phone was offering him the opportunity to receive top-level training in Italy and specialise as a Reservoir Engineer at Eni Corporate University in Milan. "I didn't think that the world of hydrocarbon exploration

and production could fascinate me to the point of becoming central to my career," says Francisco. In 2016, he returned to Maputo to take up the position of petroleum engineer for the Coral South project. The only gap in between was the prestigious MEDEA Master's degree, during which he confirmed his passion for the world of energy. He made 3D models of wells, spending hours at the computer with sophisticated modelling programmes to measure the presence of gas in the reservoir and observed follow-up activities for the development of production wells. During the well drilling campaign, he participated twice in operations on board the Saipem 12000. The first time the weather was ominous, but the second time the sea was calm and the sun bright. Francisco will never forget the sunset from his cabin that day. He loves sport and geopolitics, and through his work wants to contribute to the growth of Mozambique and the development of a cleaner planet. He has a wife and two small children waiting for him at home in the evenings.



# NOMA



NAME

**Noma Karma Malendza**

COMPANY

Coral FLNG SA

POSITION

HSE Engineer

LOCATION

On board the FLNG



Noma's story is very similar to Cleyde Muchate's. She is a stubborn guardian too. After her graduation, she got a job in a chemical laboratory in South Africa, where her husband lives and works. When she read the advertisement for Coral SA, she was fascinated by the still blurred contours of a world yet to be discovered. "I immediately liked the idea of working on a floating platform in a new sector like LNG" she says. Noma has the spirit of an adventurer, and she ventured out. When she got the news by phone that she had been chosen, she had just turned 24. "It was my birthday present." Today on board she is perfectly comfortable in her role as safety controller. She was with Cleide in South Korea. When she first set foot in the Geoje shipyard,

she thought, "This plant is really huge." Noma's favourite place is inside the turret, "when you go down the stairs and get to a level where you can see the bottom of the sea." Her second favourite spot is the loading arms that unload liquefied gas into the carrier ship. Noma crosses the main deck, walks towards the helicopter landing pad, and as she looks out to sea, thinks that the future has never seemed clearer to her.



# EDYMERSON

## NAME

**Edymerson**  
**Guesela Steytler**

## COMPANY

Coral FLNG SA

## POSITION

ICT System Engineer

## LOCATION

On board the FLNG



Edymerson, known as Edy to his friends, has just returned from the gym. Since last February, i.e. since he was hired to work on the FLNG ship, he has been working out every day while talking to his wife and children by video call. He has spent the day checking the quality of the connection in the control room and the functioning of the operating system. He has carried out a series of inspections around the plant, simulating control tests. In the last 12 hours alone, he has heard English, Italian, Arabic and Portuguese spoken in a 432-metre space. Born in Maputo, Edy studied in South Africa, where he graduated in computer science from the Tshwane University of Technology. Information Technology is the field in which he has been working for 12 years, before coupling this specialisation with the world of hydrocarbons. "This is the first time in my life that I have worked offshore. Do deep, cyclonic waters scare me? I practise extreme sports, I am a kickboxing champion, certainly my trained physique has made me an interesting candidate," he jokes. Before coming

on board, Edy went back to South Africa for a few days to obtain the Bosiet, a certification that is needed to get access to the plant. "This project is not only incredible because of the size of the plant and the huge gas resources in the field," he says. "It is also because of the environment it has built up around it, like fostering the development of new skills and having a network of international suppliers. Mozambique's economy can only benefit enormously from all of this." Edymerson looks up at the sky, it looks like he is searching for the satellite, invisible to the eyes, that makes it possible for him and the rest of the crew to connect to the internet. His eyes glide over the sea, which is bursting with life, and his heart fills with gratitude. The dinner prepared by the Portuguese cook awaits him in the canteen.





## THE SUSTAINABILITY FACTOR

Eni has several projects in place for the sustainable development of the area in which it operates, from education to access to energy, from health to food security and economic diversification



## CORAL SOUTH: THE INITIATIVES IN SUPPORT OF LOCAL COMMUNITIES

As part of the Coral South project, and in agreement with local partners and institutions, Eni is committed to promoting the sustainable development of the area by contributing to improving education and technical training, food security and nutrition, health, access to energy and economic diversification. The company's commitment is in line with the United Nations Sustainable Development Goals (SDGs)





## ACCESS TO EDUCATION AND TRAINING



These initiatives aim to promote access to inclusive, quality education by investing in adequate infrastructure, training teachers and school staff, creating positive learning environments and improving student nutrition. In addition, the vocational training programme aims to support the empowerment of young people in Pemba and Cabo Delgado and facilitate their integration into the world of work by strengthening the Industrial and Commercial Institute of Pemba (IICP). The projects' implementing partners are Aid for the Development of People for People Mozambique (ADPP), Instituto Superior Dom Bosco (ISDB), the Industrial and Commercial Institute of Pemba (IICP) and the Colleges and Institutes Canada (CICAN).

- 1 new primary school in Paquitequete, built in 2020
- 1 multi-purpose sports field and canteen in Paquitequete, built in 2021
- 1 block of automation, gas processing, instrumentation and computer labs at IICP, built in 2021
- 3,800 children reached since 2013
- More than 150 teachers, teaching assistants and administrative staff trained
- Around 700 scholarships for IICP students and teachers



Watch a video of our projects about access to education and training





## PROMOTING ENERGY EFFICIENCY - IMPROVED STOVES



The Promoting Energy Efficiency and Clean Cooking project aims to locally produce and distribute better stoves amongst vulnerable families in the city of Pemba, in order to contribute to the reduction of greenhouse gas emissions, deforestation caused by tree cutting for wood and indoor air pollution caused by smoke during cooking, whilst creating employment and opportunities for small local entrepreneurs. Through the use of more efficient stoves, families are more capable of saving, freeing up financial resources for food, education and health. The project's implementing partner is AVSI Foundation Mozambique.

- **10,000** improved stoves produced and sold in the first phase of the project
- Around **55,000** vulnerable people have so far benefited from the project
- Reduction of **20,015 tCO<sub>2</sub>** in total by 2022
- Around **50** people, including producers, logisticians and sales promoters
- **10,000** more stoves will be produced in the second phase of the project



Watch a video of our projects about energy efficiency





## TRAINING FOR SMALL AND MEDIUM-SIZED ENTERPRISES



In order to promote the development of local entrepreneurship, Eni has implemented projects that help improve the competitiveness of small and medium-sized enterprises and raise the quality of their products and services. In particular, a cooperation agreement was signed with the Standard Bank's business incubator, which implemented business immersion programmes dedicated to local small and medium-sized enterprises (SMEs). By organising a series of events and training sessions in Maputo, the project aims to help companies validate their business models, thus contributing to their sustainability and growth.

- 121 the SMEs trained in business development





## LOCAL CONTENT



As part of the Coral South project, Eni developed a local content strategy to improve the inclusion of the local workforce and small and medium-sized enterprises by involving its suppliers, with a view to maximizing local content. It organized workshops on Local Content and Sustainable Development for the Coral South Project, with stakeholders including the Government of Mozambique, NGOs, suppliers and partners for the implementation of social projects.

- **977** Mozambicans trained, with **204** taking part in the “Programme 200”, which provided specialised training to graduates





## HUMANITARIAN EMERGENCIES



In response to the severe humanitarian emergency caused by the ongoing conflict in the Cabo Delgado province and exacerbated by the COVID-19 pandemic, Eni offered direct support to the population by distributing food parcels, hygiene and energy kits (flashlights, better stoves), school materials and contributed to the strengthening of district healthcare centres for disease prevention and awareness raising. The project's implementing partners were AVSI Foundation Mozambique and Doctors with Africa CUAMM.

- **55,000** direct beneficiaries and **400,000** indirect beneficiaries
- Installation of **30** water tanks in public spaces for the prevention of COVID-19 and the provision of masks and soap





## ACCESS TO HEALTHCARE



Eni developed initiatives to support the country in reducing the impact of the COVID-19 pandemic and to strengthen the capabilities of Mozambique's Ministry of Health. Other initiatives include a national cervical cancer screening programme, the improvement of the Emergency Department of the Pemba Provincial Hospital, in particular to improve access and quality of care in the Intensive Care, Radiology and Surgery wards.

- Supply of reagents and laboratory materials for PCR tests for the National Health Institute
- **3** pulmonary ventilators for the Pemba Provincial Hospital
- Medical equipment and supplies for **21** healthcare centres
- Training on screening methods and treatment for precancerous lesions
- Training for **90** healthcare staff (doctors, midwives and nurses)







CORAL FLNG

ExxonMobil

galp



KOGAS



CNPC



ENH

Eni e natura



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