

Madagascar's extractive industries poised for big leap forward

Report produced by The Energy Exchange



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3 Foreword

The last frontier of the last frontier

Following presidential and parliamentary elections held in late 2013, the situation in Madagascar is returning to normal after five years of internal socio-political crisis following the coup. The government is now keen to exploit the abundant and diversified natural resources and use them to carry out major structural changes in the economy.

We have created a report to enable you to understand the potential of the extractive industries in the last frontier of Africa. This report includes:

- An analysis of the current economic and political environment in the country
- An overview of the mineral and hydrocarbon potential
- A SWOT analysis of Madagascar as an investment destination

The Energy Exchange is committed to creating high quality, strategic and technical conferences across the globe. We also recognise your need for pioneering industry content throughout the year.

Enjoy the report, and please do get in touch with any feedback or questions.

Best regards,



Hannah Wharrier
Managing Director, The Energy Exchange

Telephone: +44 (0)20 7384 8030

Email: h.wharrier@theenergyexchange.co.uk



4 Executive summary

The inauguration of Madagascar's President Hery Rajaonarimampianina on 25 January 2014, and his pledge to open up his country to foreign investors, threw the spotlight last year firmly onto the Indian Ocean island nation. Nestled off the coast of Southeast Africa the resource rich country has for decades been plagued by social and political unrest.

And on May 26 2015, when Parliament voted to impeach Rajaonarimampianina for "incompetence" and violating the country's constitution, it looked as though history was about to repeat itself. Speaker, Jean Max Rakotomamonjy, said that 121 members of parliament voted in favour of withdrawing confidence from Rajaonarimampianina, while four MPs only voted against the motion.

"To entice investors, the country has put in place one of the lightest tax regimes in the world"

The President was also criticised for sacking his Prime Ministerial appointee, Roger Kolo, just eight months later and replacing him in January with Jean Ravelonarivo, a businessman whose appointment had not been based on consensus. Parliament accused the president of violating the constitution by disrespecting the country's principles of secularism and separation of powers.

Yet rather than cast the country in a poor light, the response so far by business leaders to the impeachment has instead been positive. They say it 'proves' that Madagascar's Parliament as a democratic institution has gained in stature.

International support for the country is growing and foreign direct investment (FDI) inflow this year is put at \$837.5 million. To entice investors, the country has one of the lightest tax regimes in the world with individual and corporate income tax rates at 20%. **Economic growth in 2015 is estimated by the African Development Bank (AfDB) at 5.4%, up from 3.7% in 2014.**

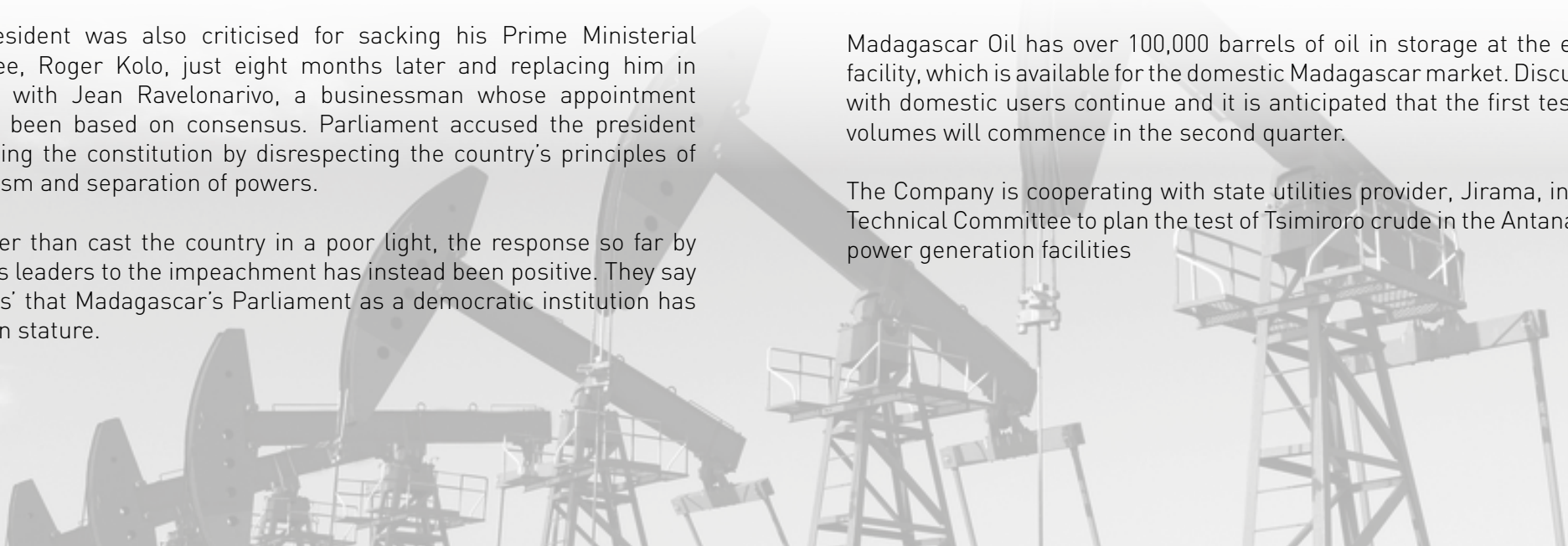
The country has a vast hydrocarbon potential that is exciting considerable investor interest. No doubt this interest will be boosted still further when the long awaited review of the petroleum code is implemented later this year.

"Madagascar Oil has over 100,000 barrels of oil in storage at the existing facility"

Madagascar is host to the two giant oil fields of Bemolanga and Tsimiroro. On 15 April 2015, the Council Of Ministers approved the Tsimiroro Development Plan (TDP). The 25 year development mining title comes with a possible extension of up to 50 years.

Madagascar Oil has over 100,000 barrels of oil in storage at the existing facility, which is available for the domestic Madagascar market. Discussions with domestic users continue and it is anticipated that the first test sales volumes will commence in the second quarter.

The Company is cooperating with state utilities provider, Jirama, in a joint Technical Committee to plan the test of Tsimiroro crude in the Antananarivo power generation facilities



5 Madagascar Country profile

Madagascar, officially known as the Republic of Madagascar, is a large ethnically diverse island country in the Indian Ocean. The nation, located some 250 miles off the coast of Southeast Africa, comprises the island of Madagascar (the fourth-largest island in the world), as well as a number of smaller peripheral islands.

The country is situated well within the tropics and as a result of its long isolation from neighbouring continents it is home to an abundance of plants and animals found nowhere else on Earth. For at least two millennia, Madagascar has also been an important transoceanic trading hub.

First settled between 350 BC and AD 550 by Austronesian peoples, who arrived from Borneo on outrigger canoes, these pioneers were joined by African farmers around AD 1000 who crossed the Mozambique Channel from East Africa. At around the same time, Arab navigators had established trading posts along the northwest coast.

“Predicted growth for 2015 is over 5% and inflation is estimated at 5.8%”

European contact began in 1500 with the Portuguese and later the French, who arrived in the 17th century. In 1896, **Madagascar became a formal French colony before gaining full independence on 26 June 1960.** The country then went through a turbulent period of social and political upheaval that resulted in the country going through no less than four republics, with corresponding revisions to its constitution.

The fourth republic, which was established in 2010 in the aftermath of the 2009 coup, put in place the necessary democratic and multi-party framework that allowed for elections to take place in 2013. The winner of this election was the current president, Hery Rajaonarimampianina.

The contest was deemed to be fair and transparent by the international community and today, the country's estimated 23 million peoples live in a stable democracy with a GDP put at \$22.3 billion. Predicted growth for 2015 is over 5% and inflation is estimated at 5.8%.



6 The political and economic environment

Since the inauguration of President Hery Rajaonarimampianina on 25 January 2014 and the appointment in April 2014 of Roger Kolo as prime minister, the government has taken steps to undo much of the political and economic damage done by its predecessors.

After the new government took office, Madagascar was allowed back into the various bodies of the African Union from which it had been excluded in 2009. Madagascar now belongs to several regional groupings, including the Common Market for Eastern and Southern Africa (COMESA), the Southern African Development Community (SADC) and the Indian Ocean Commission (IOC).

An interim economic partnership agreement with the European Union (EU) came into force in January 2013. In June 2014, the Extractive Industries Transparency Initiative reinstated Madagascar's membership, which had been suspended in the wake of the 2009 coup. Now, international support for the country is growing and **the new government is providing much needed confidence to investors. FDI inflow is put at \$837.5 million.**

“The Heritage Organisation puts Madagascar’s economic freedom score at 61.7”

As a result, growth in the economy - which in 2009 was in the doldrums - is now accelerating. According to **the African Development Bank, economic growth has risen from 1.9% in 2012 to 2.6% in 2013, thanks mostly to mining. Last year, it was estimated to have risen to 3.7% and the forecast for 2015 is 5.4%.**

The Heritage Organisation puts Madagascar's economic freedom score at 61.7, making its economy the 79th freest in the 2015 Index. The organisation notes improvements in six of its '10 economic freedoms', including property rights, the control of government spending, and monetary freedom.

Madagascar is ranked 7th out of 46 countries in the Sub-Saharan Africa region, and its overall score is above the world and regional averages. The country's individual and corporate income tax rates are 20 percent and the overall tax burden is 10.3 percent of domestic output - one of the lightest in the world. Government expenditures are equivalent to 13.3 percent of domestic production and the public debt is equal to about 39 percent of gross domestic product.

Meanwhile, the government is taking steps to improve regulatory efficiency. It is **reducing the number of days and procedures required to launch a new business,** although completing licensing requirements can still take over four months on average.

“The overall tax burden is 10.3 percent of domestic output - one of the lightest in the world”

In a 2014 IMF agreement, the government pledged to maintain fiscal and monetary discipline and to reduce costly fuel price subsidies with better-targeted anti-poverty programmes. Government can benefit from Madagascar's plethora of natural resources, which include a variety of unprocessed agricultural and mineral resources.

A mainstay of the economy is agriculture, including raffia, fishing and forestry. The country is the world's principal supplier of vanilla, cloves and ylang-ylang and a significant producer of coffee, lychees and shrimp. The country also has a burgeoning ICT sector that has expanded steadily over the past decade.

7 Madagascar's mining potential

The management, development and promotion of Madagascar's petroleum and mineral resources are under the auspices of the Office des Mines Nationales Industries Strategiques (OMNIS) - a state-owned agency that was created in 1976. The Division of Mining and Drilling (DMF) that oversees the country's mining activities, is part of OMNIS.

In 2003 the government granted prospection and production licences for major mineral deposits. Since then, **Rio Tinto has invested some \$760 million in the QMM (Qit Madagascar Minerals)** group to build an ilmenite (titanium ore) mine and a port to ship the mineral to Quebec. In 2013, it shipped 870 000 tonnes - about 12% of world output.

The Canadian mining and resource firm Sherritt has also invested about \$4.5 billion in a nickel and cobalt mine at Ambatovy and a processing plant at Toamasina. **The mine began operating at the end of 2012. At 5,600 tonnes of cobalt per year, it is responsible for 10% of world output. The mine also produces 60,000 tonnes of nickel per year, equivalent to 5% of world output.**

Madagascar also has significant reserves of chromite, coal, iron, cobalt, copper and nickel. And a number of major projects are underway to exploit and process them.

“It currently provides half of the world's supply of sapphires, which were discovered near Ilakaka in the late 1990s”

The country is a key producer of various types of precious and semi-precious stones. It currently provides half of the world's supply of sapphires, which were discovered near Ilakaka in the late 1990s. In addition, the country has mining potential in: uranium; rare metal and quartz; platinum and gold.

Madagascar's uranium occurrences are found in four main areas where exploration has been ongoing for several years. These include:

- The Neogene lacustrine basin of Antsirabe;
- The pegmatitic formations and detrital or sedimentary formations;
- The region of Fort Dauphin, in the extreme south-eastern Madagascar;
- And the sedimentary system areas Karoo West, North West (Folakara) and southwest (Makay)

The Neogene lacustrine basin of Antsirabe area is reported by OMNIS to host “several hundred tons of uranium.” In the pegmatitic and detrital or sedimentary formations, companies involved include PAMA (Pan African Mining Atomic) and PETRA Madagascar.

In the Fort Dauphin region, the companies involved include: PAMA; Uramad; Blue Sun Mining; Energy Corporation Madagascar; Minerals Development Corporation and Madagascar Minerals Fields. In Karoo West, North West and southwest a PAMA-Uramad exploration campaign carried out a survey in this region.

Madagascar's gold potential is also attracting renewed foreign interest.

Prior to independence in 1960, Madagascar enjoyed a vibrant, colonial gold-mining industry, before it went into decline. At Maevatanana, northwest of the capital Antananarivo, locals found gold deposits that foreign firms are now eyeing.

The Canadian company Pan-African Mining said in 2006 that it had found high grade gold deposits after the first phase of drilling at its western Dabolava concession. Yields were 32 grams per ton of rock in some places. British explorer firm Jubilee Platinum also found gold near its nickel and copper concessions on the island.

Most gold exploration concessions are on sites that were discovered by French colonists in the early 20th century.

8 Madagascar's hydrocarbon potential

However, it is Madagascar's hydrocarbon potential that is exciting most investor interest – an interest that will increase when the review of the petroleum code is implemented. It was the discovery of the two giant oil fields of Bemolanga and Tsimiroro at the beginning of the twentieth century that first brought petroleum exploration activities in Madagascar into prominence.

Madagascar Oil Ltd is at the forefront of the country's oil sector and on **15 April 2015, the Council Of Ministers approved its Block 3104 Tsimiroro Development Plan** (TDP). This followed a joint proposal by the Minister at the Presidency in charge of Mines and Petroleum and the General Manager of OMNIS and it represents the first Production Sharing Contract (PSC) to enter into the development phase.

The award is for a 25 year development mining title with possible additional extensions to enable a potential development period of up to 50 years. It covers the entire 6,670 sq km of the block, including the **Tsimiroro Main Field with its 1.7 billion barrels of oil contingent resource base**. It also includes appraisal activities of conventional light oil potential in the Tsimiroro South and Tsimiroro Deep South areas.

The approval represents a significant and major step forward for the Group, following 11 years of exploration activity in Madagascar and the drilling of 138 wells on Block 3104. **The Group will now begin with development drilling and facilities upgrades to build on existing production.**

Further active discussions will take place with potential strategic partners to assist in funding development and the domestic sale of production from the Steam Flood Project (SFP), including the 100,000 barrels of oil currently in storage, which is expected to commence before the end of first half 2015.

First phase of the work programme under the TDP is heavy oil (14-15 API), with target markets both in Madagascar and internationally for power generation. Phase 1 of the TDP is intended to first fully develop the geological compartment containing the existing SFP area. It is planned that long-lead orders will be placed for drilling under Phase 1 of the TDP and SFP facilities to upgrade equipment/materials for the planned work programme to commence in late 2015.

Robert Estill, Chief Executive Officer of Madagascar Oil, commented: "We are delighted to have reached this significant milestone in the growth of Madagascar Oil. Being the first company to reach the development phase within Madagascar is a truly exciting opportunity, both for us as a company, but more importantly for the people of Madagascar."

"We are grateful to the Government of Madagascar for their extensive and constructive contribution to this process and the strong working relationship we have built as a result. As a Company, we believe we have a dual responsibility, not simply to generate value for our shareholders but also to lead the way in developing Madagascar's significant natural resources that will benefit the whole country."



9 Exploration is everywhere

The Block 3104 PSC Amendment Agreement sets out certain obligations in relation to annual submission of work programmes and budgets for the PSC. This includes commitments to appraise structures in the Tsimiroro Southern Area, including Tsimiroro Deep and Deep South, through seismic acquisition in 2016 with drilling on the deeper horizon potential following in 2017 and 2018.

The Development Evaluation Wells that were drilled and cored successfully in February 2015, using the Madagascar Oil drilling rig, will be followed up with a continuous drilling programme. This is scheduled to commence in the second quarter to provide updated information on the thermally effective oil-in-place available from the Amboloando reservoir and from the underlying Isalo-1 horizon. The rig will then transfer to development drilling on arrival of long lead items which can now be ordered for an expected late 2015 delivery.

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- In August 2014, shallow drilling commenced at the EAX/Oyster Block 1101. Drilling and coring of 12 shallow wells is expected by the end of 2015.
- Exxon Mobil is preparing drilling at the Ampasindava and Majunga blocks.
- Environmental specifications for the 2D seismic acquisition and drilling campaign at Block 1101 north of Ambilobe, has been readjusted by EAX-Afren. But according to OMNIS, the completion of the works “will begin very soon.”
- The Yangchang Petroleum Corp. (Yapec) Block 2104 has acquired 197.4km of 2D seismic lines.
- At MPIL Block 2014, the environmental impact assessment for the 2D seismic acquisition has been acquired. Work preparations for the seismic acquisition programme are now on going.
- At the Sterling Block (offshore Ambilobe), Sterling held a public consultation from 27th September to 5th October 2014 in order to get the environmental permit for the 3D seismic acquisition in its offshore block.
- At the Yapec Block 3113, the assessment on the ground for the complementary impact studies about the 2D seismic acquisition of Yapec has been completed.
- Sapetro’s 3D seismic campaign acquisition in the Belo Profond Block has been completed. The 1,168km of new seismic data are expected to result in better imagery of the prospective areas than the previous 2D seismic campaign.
- Tullow is conducting an environmental impact assessment for the future 2D seismic acquisition in the Block 3109.
- Petromad is preparing for a three wells drilling exploration campaign.
- Meanwhile, the Enermad/NIKO Resources/OMV consortium is considering exploring the south part of the Grand Prix Block following the acquisition of 3D seismic data. The environmental permit for the aforesaid acquisition was delivered on March 2014.

10 Strengths, weaknesses, opportunities and threats

Strengths

- A vastly improved, democratically elected government
- Much improved regional and global economic ranking – 7th in Africa and above the world average
- One of the lightest overall tax burdens in the world
- Vast, untapped oil potential – including the world class Tsimiroro heavy oil reservoir
- 10% of the world's cobalt output, 12% of world's ilmenite
- Long established trading hub with links to the world's major markets
- A multi-lingual population
- Tourism potential, free zone for textile manufacturing
- ICT-related services
- Agriculture resources

Opportunities

- Under-explored mineral ores provide a wealth of opportunities for those companies willing to take the risk
- Half of the 600,000 sq miles that make up Madagascar is covered by heavy oil-rich sedimentary basins
- Madagascar has 249 exploration blocks, of which just 24 have so far been licensed to exploration companies
- A licensing round is planned for this year once new petroleum law is passed
- Draft should be sent to government in May to be passed by parliament in July
- Madagascar's legal and regulatory environment is now more investor friendly than at any time in its history
- Public and private partnership are jumpstarting new exploration and value added

Weaknesses

- Economic recovery remains fragile and growth rates low, compared with rest of Sub-Saharan Africa
- Questions remain about pace of reforms
- Privatisation of state-owned firms was suspended at the start of the political crisis - government still has shares in several of them
- Corruption is pervasive and poverty endemic - World Bank estimates that 92 percent of the population live on less than \$2 a day
- Physical distance from developed-country markets and lack of trans-national infrastructure
- Small size of local markets, difficult credit access and costly and unreliable energy, which could discourage large scale investment

Threats

- Possibility of slipping back into its pre-democratic past
- Unemployment high as is the risk of renewed social unrest
- Efforts to reach Millennium Development Goals (MDGs) by 2015 have been damaged and are unlikely to be achieved
- Threat to agriculture from climate change
- Country is very susceptible to any further global economic downturn, which could undo progress
- Country's oil and gas sector faces competition from 'rising stars' in Africa, such as Mozambique

11 Conclusion

Madagascar may be making some progress with regards to governance and its economic potential, but it still has some way to go before it achieves its full potential. The AfDB reported at the end of 2014 that the country's political crisis is still hampering economic and social progress. And economic growth, until 2013, was unimpressive - even by African standards.

The International Monetary Fund's estimate of sub-Saharan average growth in 2013 was 5.1%, compared to 2.6% in Madagascar. The business climate remains difficult and the country lost ground last year, despite the installation of the new government. In the World Bank report 'Doing Business 2014', Madagascar dropped another four places in the overall ranking for ease of doing business, to 148 out of 189 countries.

But that said there are now definite signs of an upturn in the political and economic climate. 'Business friendly' measures, including the introduction of an online declaration of value-added tax (VAT); a reduction in company tax; ease of trading across borders; the creation of MIDAC - a one-stop shop for exports and imports, which unifies customs procedures and made them more secure - and others have all helped to foster a more investor friendly atmosphere.



Written by Nnamdi Anyadike, Raw materials Writer/Analyst

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Spiros Paleoyannis, Vice Chairman & Deputy CEO,
PUBLIC GAS CORPORATION OF GREECE S.A.

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For more information please contact;

Giulia Chiatante, General Manager on;
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