10 January 2018

ECHO ENERGY

OIL & GAS

ECHO.L

14.75p

Market Cap: £53.7m

SHARE PRICE (p)

12m high/low	21.75p/1.56p

Source: LSE Data

KEY INFORMATION

Enterprise value	£33.0 million
Index/market	AIM
Next news	Fracción D workover – Q1 2018
Gearing	n/a
Interest cover	n/a

ECHO ENERGY IS A RESEARCH CLIENT OF PROGRESSIVE

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An Austral Adventure

Echo Energy will be transformed by the deal, announced in November, to farm into four licences in the Austral basin in southern Argentina. These assets offer an exciting mix of current production, discoveries, as well as very significant exploration upside in an overlooked but proven hydrocarbon basin. The combination could provide investors with an exciting risk/reward profile.

- Echo Energy has announced its intention to acquire a 50% working interest in four licences in the Austral basin - Tapi Aike, Fracción C, Fracción D and Laguna de los Capones. These assets offer an exciting mix of current production, discoveries, as well as significant potential exploration upside to provide investors with an exciting risk/reward profile. Echo Energy will carry CGC for much of its work programme - assuming that all work programmes move ahead as expected, Echo Energy could carry CGC for a maximum of US$54 million.
- Gaffney Cline and Associates (GCA) have written a Competent Person's Report (CPR) which evaluates the asset base. The CPR states that the Fracción C & D licences contain gross 2P reserves of 3.7 mmboe in the existing fields with a further upside of 9.5 mmboe of gross 2C resources. However, for shareholders the main upside may come from the exciting exploration potential. In Fracción C & D there is a portfolio of at least 13 prospects where P50 gross prospective resources in these prospects could be standing at a very substantial 52.6 mmboe. On top of this, there may be significant upside in the Tapi Aike permit. GCA believes that these leads could contain P50 gross prospective resources in excess of 4 TCF of gas (c700 mmboe).
- With this report, we have looked at the potential valuation for the company. We have used the industry standard valuation method, which uses a discounted cash flow analysis of the asset base and the risked exploration upside, using GCA valuations where available. We have included some potential value for Tapi Aike which we have derived from volumes provided by GCA. However, GCA has not given any potential value for the exploration in the Tapi Aike licence given the lack of interpreted 3D seismic data. Investors should be aware that, given the lack of certainty, these numbers are provisional and are likely to be change dramatically. There is also some uncertainty over the large level of warrants and options that are outstanding. Assuming no exercise, we derive a value of the asset base of the company at 35.6 pence per share which includes the exploration in Tapi Aike which represents around half of that valuation. If the warrants and options are exercised this would slip to 23.6 p/share. Investors should view any valuation in the context of their own assessments of relevant risks and the standard valuation criteria used.
- The company has a strong balance sheet with gross cash of £25.5 million at the end of June 2017 which is sufficient to complete the farm in deal. Management expects that the work programme will cost Echo Energy US$90 million, which will cover the carry, deferred cash payments as well as its own share of the programme over the next five years. However for the first phase on the Fracción licences, the likely spend (including Tapi Aike) is a more modest US$49 million over the next two years.

Investors should note that this is not an admission document and that investors should not subscribe for any transferable securities referred to in this publication except on the basis of information in the admission document published separately by Echo Energy on 15 December 2017.

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Summary & Conclusion

Echo Energy was formed to become a major player in the Latin American gas markets. The initial entry point for Echo Energy was a low cost option via a technical evaluation agreement on exploration acreage in Bolivia in a very prospective part of the Tarija basin. The group has now been transformed by a deal which will see the company farm into four licences in the Austral basin in southern Argentina. This provides a significant opportunity given the quality of the asset base and the significant improvement in the business landscape in Argentina.

Echo Energy announced in November its intention to acquire a 50% working interest in four licences in the Austral basin from Compañia General de Combustibles (CGC) which is a privately owned Argentine company with significant upstream assets and a subsidiary of the Corporación América conglomerate. The four licences that Echo Energy is farming into are Tapi Aike, Fracción C, Fracción D and Laguna de los Capones. These assets offer an exciting mix of current production, discoveries as well as significant potential exploration upside to provide investors with an exciting risk/reward profile. As part of the deal Echo Energy will carry CGC for much of its work programme - assuming that all the work programmes move ahead as expected, Echo Energy could carry CGC for a maximum of US$54 million (for Tapi Aike, Fraccion C & D work programmes and the milestone bonuses) – some of this would be funded from cash balances and the cash flows of the existing operations. However, if the partners do not decide to commit to a second phase on the Fracción licences, the carry by Echo Energy is likely to be more modest US$20 million. Although the reserves in these licences are relatively modest, there is very significant potential exploration upside which has the ability to transform the outlook for the group. *(A full description of the assets can be found on page 10).*

Gaffney Cline and Associates (GCA) has written a Competent Person's Report (CPR) which evaluates the asset base. The CPR data shows that the Fracción C & D licences contain gross 2P reserves of 3.7 mmboe (1.2 mmbbl of oil and 14.9 BCF of gas) in the existing fields with a further upside of 9.5 mmboe of gross 2C resources. However, for shareholders, the main potential upside is in the exciting exploration opportunity in these two blocks. In Fracción C & D there is a portfolio of at least 13 prospects that are mapped on the existing seismic. On the basis of the CPR data, GCA believes that the combined P50 gross prospective resources in these prospects could be standing at a very substantial 52.6 mmboe (30.1 mmbbl of oil and 134.8 BCF of gas).

A modicum of success with the drill bit could therefore have a significant impact on valuation. On top of this, there is significant additional potential upside in the Tapi Aike permit. Further technical work is required to mature identified leads into drillable prospects. However, the Cancha Carrera well (drilled in the 1970s and found approximately 120m of gas pay) could be redrilled relatively quickly. At the time of drilling, this was found to be a tight reservoir. However, no attempt was made to stimulate and test the productivity of the reservoir. GCA believes that these leads could contain P50 gross prospective resources in excess of 4 TCF of gas (c700 mmboe). Throughout this report, we are converting gas to an oil equivalent at a rate of 6mcf to a barrel of oil equivalent on a calorific basis. *(For further details please see page 9).*

With this report, we have looked at the potential valuation for the company. We have used the industry standard valuation method, which uses a discounted cash flow analysis of the asset base and the risked exploration upside and then adjusted for the balance sheet to create an estimated value of these assets. We have used the GCA valuations where available. We have also adjusted for the cost of the farm in to Echo Energy. We have included some value for Tapi Aike although GCA does not provide a valuation. There is also some uncertainty over the large level of warrants and options that are outstanding;an exercise of these would dilute the value attributable to existing shareholders. However, with most having an exercise price close to the price at suspension, it is uncertain if these would be exercised. The exercise of these warrants and options would result in £41 million in cash to Echo Energy partially offsetting the dilution. Assuming no exercise, we derive a value of the company at 35.6 pence per share which includes the risked exploration in Tapi Aike. If the warrants are exercised this would slip to 23.6 p/share. Investors should view any valuation in the context of their own assessment of relevant risks and the standard valuation criteria used. (*For full details please see page 15)*

The company has a strong balance sheet with gross cash of £25.5 million at the end of June 2017 which is sufficient to complete the farm in deal. Net cash is standing at a more modest level of £7.7 million with the company having a bond maturing in May 2022. However, management wants to progress with the work programme. Should the company commit to the entire work programme, management expects to spend up to US$90 million over the next five years which would cover the carry, deferred cash payments as well as its own share of the programme. Clearly this would utilise more than the gross cash that the company currently has, but drilling success during the work programme could make a number of other sources of capital available to the company, including cash flows from existing and future discoveries. It should be noted that the above cost of the work programme is lower than the costs stated in the admission document since management expects to be able to substantially reduce the costs. (*For full details please see page 19)*

The work programme costs may be higher than those which management is forecasting. To guard against this, the management has negotiated a cap on the carry element so that the carry for the combined work programme will be capped. The maximum spend for the combined work programme is therefore US$119 million which will cover the carry, deferred cash payments as well as its own share of the programme over the next five years.

Company Description

Although the company was initially listed in 2005, Echo Energy was relaunched in Q1 2017 with the intention of making this a vehicle to build up a significant Latin American gas business. Echo Energy is now led by a new management team. Fiona MacAuley is the Chief Executive Officer, having previously been COO of Rockhopper Exploration. Will Holland joined as CFO, having previously been at Halliburton and Macquarie Bank. At the same time, Julian Bessa was appointed VP Exploration having previously worked for BG Group in Latin America. James Parsons is non-executive chairman of Echo Energy and Continental Investment Partners SA is the main cornerstone investor

The initial Latin American entry for Echo Energy was a technical evaluation agreement on exploration acreage in the highly prospective part of the Tarija Basin in Bolivia. However, the group has been transformed by a deal which saw the company farm into four licences in the Austral basin in southern Argentina.

SWOT Analysis

Strengths

The major strength is that this deal gives the company a significant entry into Argentina at a low upfront cost and provides a very substantial increase in its asset base. These assets offer an exciting mix of current production, discoveries, as well as significant exploration potential upside in an overlooked but proven hydrocarbon basin to provide investors with an exciting risk/reward profile. Having achieved a critical mass with this asset base, management now has the ability to start to build up this business both organically and through acquisition, with its ambition to becoming a Latin American gas champion. The other advantage with this deal is that CGC, Echo Energy's partner, is very strong operationally and politically in Argentina. This will enable Echo Energy to accelerate its new country learning curve and hence punch above its weight.

Weaknesses

The major weakness with this deal is that the company has committed to a significant level of expenditure in order to acquire a 50% working interest in these licences. Not only is the company having to spend its share of expenditure, it is also carrying CGC for a large proportion of its spend. As with any E & P company, lack of success with the drill-bit will therefore erode shareholder value.

Opportunities

The main opportunity for the company is in the exploration upside that is available in the licences that it is farming into. Success with the drill-bit should allow a significant increase in the group's reserve base and hence potential valuation. Investors should be aware that exploration is a high-risk activity. However, this portfolio provides a blend of lower risk from Fracción C & D to higher risk in the Tapi Aike licence. The company has established a significant portfolio of acreage in a prolific oil and gas basin. Having established this initial position in the country, it provides a springboard for adding to this asset base.

Threats

Perhaps the main threat to the business comes from the operating environment – this comes from the political regime as well as the macro commodity environment. Weakness in the oil and gas prices could lead to lower cash flow from its current production as well as putting pressure on the economics of any discovery that might be made. The assets that the group has are predominantly based in Argentina (and to a lesser extent Bolivia). Argentina has proved to be very volatile both economically and politically. This has led to large swings in economic activity, inflation and currencies. These could create significant headwinds for the company's operations. The outlook has improved significantly with the new Macri government, where there have been a series of reforms designed to promote economic growth and stability.

There are also some other risks that are highlighted in the admission document. There is the risk that the consents required to transfer the licences will not be obtained at the time of the completion of the acquisition. However, the company will still retain an economic interest in these until the consent of obtained. GCA also notes that its resource estimates might change materially on the result of drilling and testing after the preparation of the CPR.

Move into Argentina

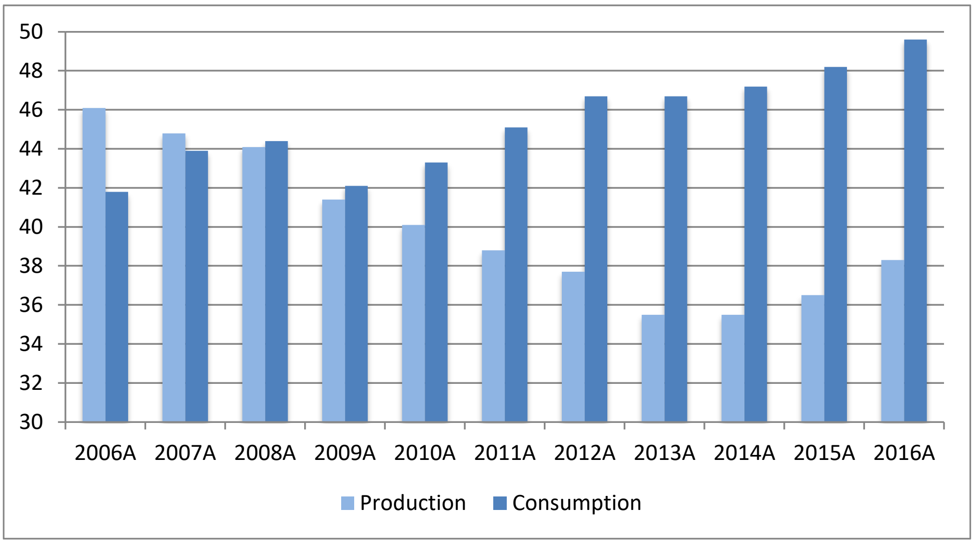
As part of its move to becoming a Latin American gas champion, Echo Energy announced on 1 November that it had agreed to farm into a portfolio of assets in Argentina. This first move is into to acquire a 50% working interest in four assets in the prolific Austral Basin in southern Argentina. These assets have a compelling blend of production, appraisal and exploration. This latter part, management feels has multi-TCF potential which is supported by the CPR from GCA. This area was one of the high graded basins that the company identified where it felt that it was possible to add substantial value given the competitive landscape and value drivers. The supply and demand dynamics of Argentina's gas market appear strong. The politics of the region are looking brighter under the guidance of the president, Mauricio Macri. Since coming to power in December 2015, Macri has introduced a series of free market reforms to try to boost economic growth and provide some relative stability to the country.

Additionally, most of the integrated oil and gas majors are concentrating their investment in the country on the unconventional plays of the Vaca Muerta region giving the smaller players the ability to access some exciting conventional basins in the country.

Argentina gas market

The gas market in Argentina has improved considerably for producers over the recent years. The country was a major producer of gas and, at the start of the current century, was a net exporter of gas. However, the growth of demand within the country has led it to be the largest consumer of gas within Latin America. On top of this the country has seen a decline in gas production from its large mature fields. This decline has to some extent been reversed by the unconventional production in the Vaca Muerta which now accounts for 20% of Argentina's gas production compared to a mere 8% three years earlier.

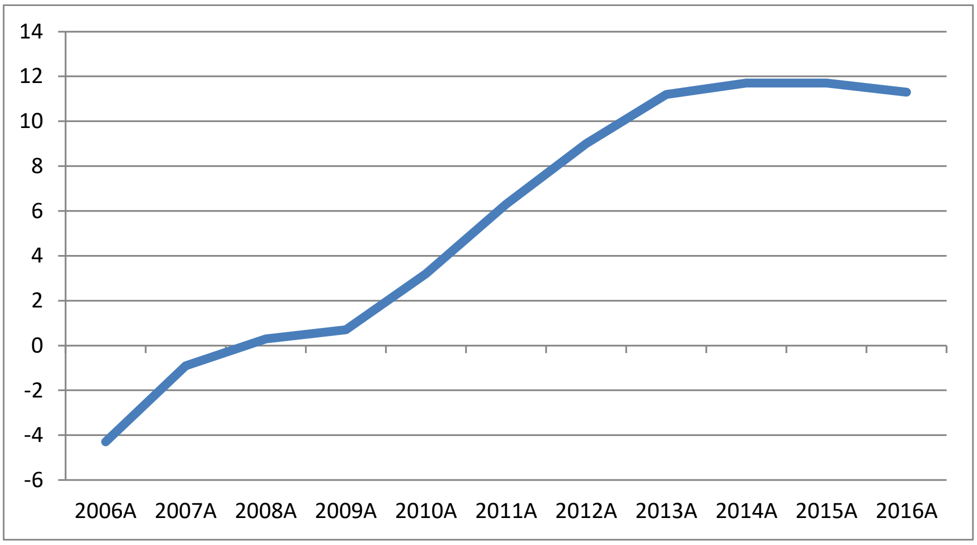
Chart of Argentina's gas production and demand (BCM)



Source: BP

This has led to the country moving from a net exporter to an importer of gas, with most of this coming from Bolivia and some limited LNG imports coming from Trinidad and Tobago. According to the BP statistical review, demand outstripped production by approximately 11 BCM (400 BCF) in 2016. Although the production from Vaca Muerta is expected to continue to increase this is unlikely to reduce the level of imports substantially.

Argentina's net imports of gas (BCM)



Source: BP

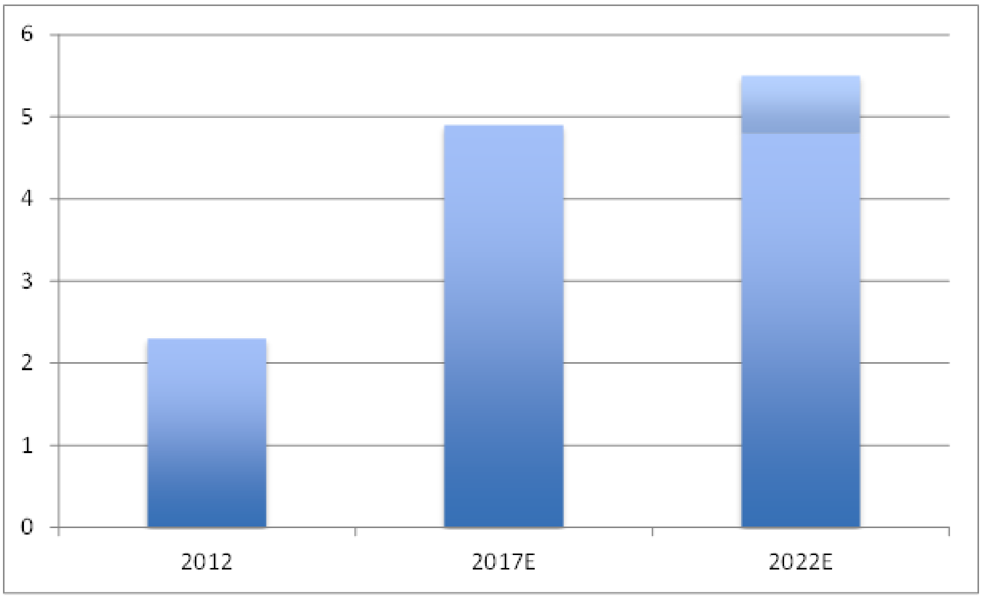
Gas pricing

As the market improves, there has been an increase in the price of gas over the last few years. According to YPF, the Argentine state oil company, the wellhead gas price has increased from approximately US$2.30/mmBtu in 2012 to an expected US$4.90/mmBtu in 2017.

In 2004, as a response to a domestic gas deficit, the Government introduced an increase in regulated gas prices designed to ensure that there were sufficient supplies of natural gas to the domestic market. Over the intervening eight years, domestic gas supply declined whilst domestic demand grew and Argentina began importing gas from Bolivia, Chile and LNG. In 2012, the Government introduced a price of US$7.50/mmBtu for incremental gas production, which would gradually taper off in future years. In 2015 the new Macri Government cut domestic subsidies in a further effort to further stem the decade-long decline in gas production. This allowed consumer prices to rise to US$5.20/mmBtu from a modest level of US$ 1.29/mmBtu. Macri also extended a US$7.50/mmBtu incentive for new gas production to shale and tight gas producers, with the tapering off of the gas price to US$6.00/mmBtu by 2021, after which it will revert to market prices. At this time YPF is forecasting that in 2022, the price of gas will be in the range of US$4.80 – US$5.50/mmBtu.

Recently, in November 2017 there was an announcement that this price incentive would be applied to the Austral basin for tight and unconventional gas. This is very encouraging for the company, particularly given CGC's pivotal role in these discussions.

YPF expectation on Argentine wellhead gas prices (US$/mmBtu)



Source: YPF

In the chart above, the shaded area for 2022E represents the range in YPF's expectations for the gas price.

As we mentioned earlier, the marginal supply to Argentina is LNG which is currently being imported from Trinidad and Tobago. This is being priced at a substantial premium to the wellhead price that YPF is assuming.

Argentina fiscal terms

The fiscal regime for oil and gas companies operating in Argentina is relatively benign compared to many regimes around the world. There are two important parts to the fiscal regime – royalties and corporation taxes. Corporation tax is currently charged at a rate of 35%. However, it has recently been announced that the government is looking to reduce this rate to 25% for businesses that reinvest profits which should be applicable to Echo Resources. However, details of how this proposed tax rate would be implemented have not been published.

Royalties come in two forms with the main take coming from a federal rate which is charged at 15% of the wellhead value of the oil and gas produced. On top of this the provincial governments impose a turnover tax (IIBB) which is similar to a royalty and is 3% of the turnover, which for upstream companies is the value of the production (similar to the royalty). Both of these are deductible against federal tax.

Argentina Assets

Echo Energy is acquiring a 50% working interest in four licences in the Austral basin from Compañia General de Combustibles (CGC). CGC is a privately owned Argentine company, and subsidiary of the Corporación América conglomerate, with significant upstream assets that are currently producing approximately 26,000 boe/day. The four licences that Echo Energy is farming into are Tapi Aike, Fracción C, Fracción D and Laguna de los Capones licences. These assets offer an exciting mix of existing production, low risk exploration and appraisal opportunities and significant potential exploration upside. The commitment by Echo Energy is relatively significant, where the maximum total consideration could be up to US$54 million consisting of capital expenditure carry and milestone payments – some of this would be funded from the cash flows of the existing operations and developments. Although the reserves in these licences are relatively modest, there is very significant exploration upside potential, providing shareholders with a significant risk/reward balance. Given that much of the infrastructure is already in place, these can be monetised quickly and cost effectively.

Tapi Aike Licence

This is a significant new award in the Austral basin and was one of the most hotly contested blocks in the recent licencing round. The licence was awarded in August 2017, and the partners have agreed an exploration work programme to assess the multi-TCF potential of the numerous leads on the block. This will initially involve reprocessing the significant coverage of existing 2D seismic data. The partners will then acquire a further 1,200 sq. km of 3D seismic ahead of drilling four exploration wells in the licence. As part of the deal, Echo Energy will carry CGC for 15% of this work programme in return for a 50% equity position. Overall the gross work programme, including the drilling of the four exploration wells, is expected to cost up to US$40 million. This will mean that Echo Energy will have to spend approximately US$26 million – which is US$20 million for its share of the programme as well as US$6 million of carry for CGC's costs. It should be noted that the above cost of the work programme is lower than the costs stated in the admission document since management expects to be able to substantially reduce the costs.

With the existing seismic data, the partners have identified a significant portfolio of play types that could be drilled and a significant number of leads have been identified. Given the depth of the source rocks, these leads are likely to be vertically above source rock that is currently in gas window for hydrocarbon generation. The licence is exciting since there have been numerous wells that are interpreted to have encountered gas, thereby significantly de-risking future exploration. YPF initially drilled the block in the early seventies with the Cancha Carrera exploration well and logged two intervals where gas has been interpreted. This provides strong evidence for a gas mature source rock within and so removes one of the main risks of exploration. YPF was unable to achieve commercial flow rates through stimulation techniques although it has to be recognised that this was over 40 years ago and since then there have been significant advances in mechanical stimulation techniques. A further well drilled by YPF detected high pressure gas and was abandoned. A twin well also abandoned due to a high-pressure blow out. Both these wells indicate that the reservoir has been charged from the source rock, which removes source exploration risk. There is significant scope for AVO (Amplitude Variation with Offset) analysis to further de-risk these plays.

With the advances in fracture stimulation in recent decades, these plays are excellent candidate for the application of modern fraccing techniques. ENAP, the Chilean national oil company, has managed, using modern fracture stimulation techniques, to achieve commercial flow rates in similar reservoirs in Chile to the south of this licence. Additionally, Geopark, another independent E&P company, has had particular success some 60 km to the South in Chile.

In the CPR, Gaffney, Cline & Associates (GCA) has identified over 40 leads with potential recoverable gas in an expectation case of over 4 TCF gross. In the block there are up to four play types. By reprocessing the existing seismic data and acquiring new 3D seismic the leads within Tapi Aike should be de-risked.

Estimate of gross recoverable prospective resources in by play type (BCF)

	Low	Best	High
Basin Floor Fan	107	396	1,448
Lower Magallanes	185	525	1,474
Rio Turbio	168	517	1,564
Growth Fault	959	2,748	7,951
TOTAL	**1,420**	**4,186**	**12,437**

Source: Gaffney Cline & Associates

Fracción C & D and Laguna de los Capones

These three licences are located approximately 10 – 100 km to the east of Tapi Aike. The Fracción C licence surrounds the Laguna de los Capones licence, whilst the Fracción D licence is a smaller licence with existing oil production facilities. Fracción C brings existing production and both Fracción C and LLC contain significant low risk exploration upside. The main plays in the region include the proven producing reservoirs of the Springhill formation and the Tobifera formation. The Tobifera formation had previously been regarded as economic basement, however, the play has now been commercially proven elsewhere in the basin, and will be a major focus going forward. Recent Tobifera discoveries include that by Roch S.A. in Tierra del Fuego, whilst the Estancia de Dos Lagunas field produces from the Tobifera immediately west of Fracción C. The Tobifera play has also been proven on block in Fracción C by a Tobifera well drilled in 2015 and brought into production by CGC. The use of 3D seismic has also led to increased exploration success, as the Springhill sands can be better imaged on the flanks of Tobifera highs and the geometries of the Tobifera basins clearly identified. There is significant scope for AVO analysis to further de-risk these plays further.

The initial work programme on the licences is to acquire 500 sq. km of 3D seismic at Fracción C and 230 sq. km at Fracción D, reprocessing some of the existing 3D data and subsequently drilling four exploration wells on Fracción C and undertaking three workovers on Fracción D. If the partners wish to move to a second exploration term there is commitment to take the 3D seismic data acquired up to 2,000 sq. km and drill nine further exploration and appraisal wells.

As part of the farm in agreement, Echo Energy will pay an upfront cash payment of US$2.5 million and then carry CGC for its share of the initial work programme. This work programme is expected to cost US$18 million. After this initial work programme is completed, there is a deferred cash payment of US$2.5 million. If the partners decide to enter the second term, Echo Energy will carry CGC for a further nine exploration and appraisal wells and additional 3D seismic that is expected to cost an additional US$36 million, i.e. a total gross cost of US$54 million equating to a carry value to CGC of US$27 million. The carry is based on drilling 13 wells and acquiring 2,000 sq. km of 3D seismic but the carry value to CGC is capped at US$35 million (this includes the spend on the initial work programme). On top of this, the company will make a second deferred cash payment to CGC of US$5 million that can be deferred to development costs. All in, if the company proceeds to the second term, Echo Energy will be paying a total of US$37 million (US$27 million in carry and US$10 million in cash payments). If the partners do not decide to move to the second exploration phase, the cost of the carry for Echo Energy will be more modest at approximately US$14 million (US$9 million in carry and US$5 million in cash payments). It should be noted that the above cost of the work programme is lower than the costs stated in the admission document since management expects to be able to substantially reduce the costs.

Fracción C

Fracción C is a 5,288 sq. km licence with gross existing production of approximately 1,900 boe/d, where approximately two thirds is gas (7.5 mmcf/day) and the remainder is oil (580 bbl/day). GCA estimates that the gross recoverable 2P reserves and 2C resources on this permit are 2.3 mmbbl of oil and 34.6 BCF of gas. The low risk exploration upside is the particularly exciting element of this licence. Management believes that there is in excess of 1 TCFe of gross unrisked oil and gas in place. If one were to assume a 60% recovery this would equate to over 600 BCF of gross exploration potential. The two main play types, as previously mentioned, are the Springhill formation and the Tobifera formations, which the future exploration wells will be targeting.

Gross reserves and resources in Fracción C

	Oil mmbbl	Gas BCF	Total mmboe	Net to Echo mmboe
2P reserves	1.19	14.30	3.57	1.79
2C resources	1.14	20.30	4.52	2.26
Prospects (Best estimate)	29.16	72.50	41.24	20.62
TOTAL	**31.49**	**107.10**	**49.34**	**24.67**

Source: Gaffney Cline & Associates CPR data

Fracción D

Fracción D is a 280 sq. km licence with existing oil production facilities and is currently producing a small volume of oil 25, bbl/day with some gas although this is currently either flared or used as fuel. Although originally an oil development under waterflood, there is significant remaining gas potential on the licence and the oil field is back close to initial pressure. A undeveloped gas cap to the oil field and further near field gas prospects, have been identified and could be rapidly monetised. GCA estimates that Fracción D could contain, on a mid case, 91 BCF of gross recoverable gas of which approximately 30 BCF is classified as lower risk 2C resources and the remainder as prospective resources on a best estimate basis. There is also the potential to produce more oil from the reservoir although the focus will be on the potential of the gas. GCA, in its CPR, estimates the 2P & 2C reserves and resources at 29 BCF of gas and 0.2 mmbbl of oil. There is infrastructure already in place to handle the liquids produced. However, the company will have to build a short 28 km gas pipeline to access the San Martin gas pipeline for export towards Buenos Aires. The initial work programme will be to workover three existing wells to evaluate the potential to produce the gas.

Gross reserves and resources in Fracción D

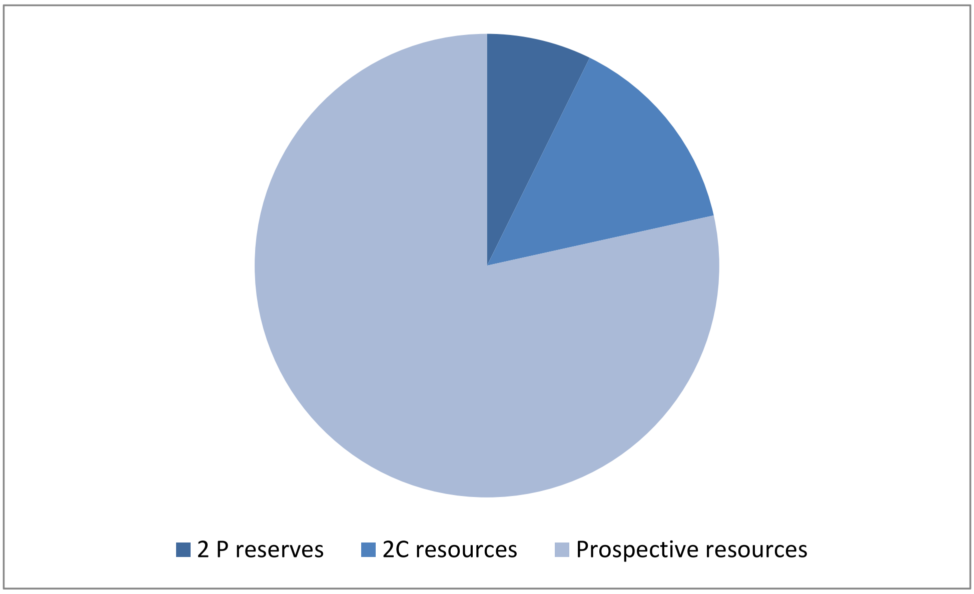
	Oil mmbbl	Gas BCF	Total mmboe	Net to Echo mmboe
2P reserves	0.02	0.60	0.12	0.06
2C resources	0.21	28.80	5.01	2.51
Prospects (Best estimate)	0.93	62.30	11.31	5.66
TOTAL	**1.16**	**91.70**	**16.44**	**8.22**

Source: Gaffney Cline & Associates CPR data

Overall

As we mentioned earlier, the upside potential for shareholders comes through the exploration that is available. In the following chart we have broken down the reserves and resources by category. This clearly demonstrates the potential value that can be added through relatively low risk exploration. Overall the prize on offer is significant with GCA estimating 57.7 mmboe of gross unrisked reserves and resources (28.8 mmboe net to Echo Energy). However, the partners believe that the potential is significantly higher as we mentioned earlier.

Fracción C & D – breakdown of reserves and resources (mmboe)



Source: Gaffney Cline and Associates CPR data

Bolivia

Prior to the acquisition of the Argentinian assets, Echo Energy's initial entry into Latin America was in Bolivia, via the low cost option of a study agreement. In June 2017, the company announced that it had signed a Joint Evaluation Agreement with Pluspetrol for the Huayco block in the prolific Tarija basin. The company is also participating in a Technical Evaluation Agreement on the Rio Salado block which surrounds the Huayco block, signed between Pluspetrol and YPFB, the Bolivian state oil company. These blocks are located in southern Bolivia, in the Tarija fold and thrust belt where there have been several giant discoveries made. The Tarija basin is believed to contain 85% of Bolivia's vast gas reserves and approximately 70% of the production.

The financial commitments associated with the above agreements are modest. In the Huayco block, the company is committed to evaluating the existing 2D and 3D seismic data that had been historically acquired on the licence. The company awarded a seismic reprocessing contract in September and this is expected to be completed in early 2018. Once the seismic is reprocessed and interpreted, Echo and Pluspetrol jointly have the option to move to drilling a well, if both parties support it and commercial terms for the Huayco licence can be agreed with YPFB. In this circumstance, Echo will be 80% licence holder and operator, and will carry Pluspetrol's 20% interest on the first exploration well only.

Regarding Rio Salado, the company will reprocess the seismic data in conjunction with the reprocessing over in Huayco meaning it will involve minimal additional costs, as participation in the study agreement. The company have an option to move forward onto the licence provided that commercial terms and any future exploration commitments can be agreed with the Government of Bolivia.

The company has performed some initial volumetrics on these two blocks and believes that the potential volumes of the Huamapampa formation that it is targeting could be in the range of 1 – 2 TCF of recoverable gas. These are early estimates and likely to change once the seismic reprocessing is complete.

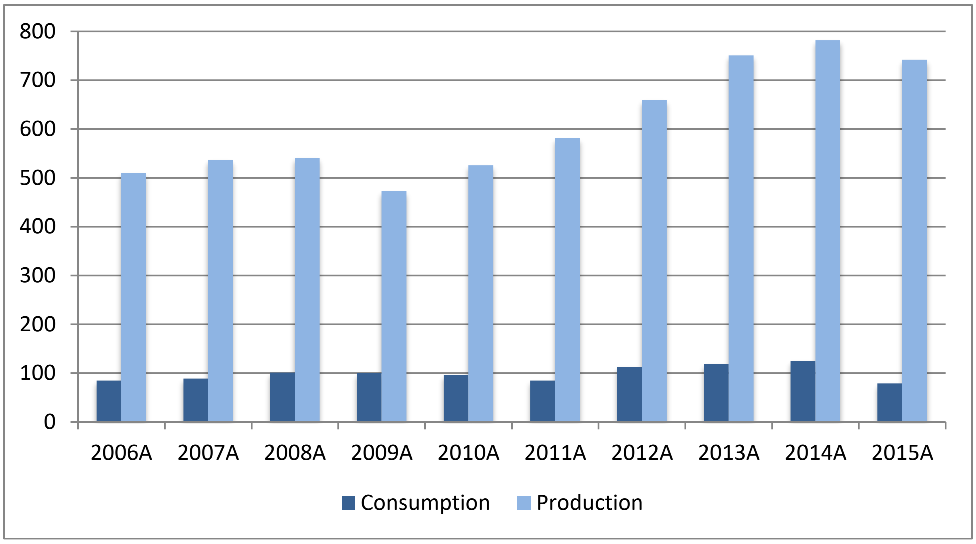
There are two important wells that could provide further encouragement for Echo Energy. Repsol is drilling ahead on the Boyuy-x2 well in the adjacent block to the east, while Royal Dutch Shell expects to drill a well in 2018 in the adjacent Huacareta block to the west. These wells are thought to be targeting the Devonian reservoirs in deeper structures, which have become the emerging exploration play in this part of Bolivia. Success at these wells could de-risk any prospects that the 3D seismic interpretation might identify.

Operating Environment

Bolivia is very much reliant on natural gas production for its national income. It has very significant reserves and, given the relatively low level of domestic demand, benefits from exports to the major gas markets of Brazil and Argentina. Gas exports account for approximately 40% of the country's exports by value. The government is eager to diversify exports and is considering plans to export to Uruguay and recently sanctioned a direct export pipeline to Paraguay.

Despite the wealth of gas in the country, there have been significant problems in Bolivia. In 2006, the government decided to take more control of the gas industry with an effective nationalisation of the industry. The concession-based contracts were turned into service contracts and the effective rate of taxation for the companies increased from 18% up to 82%. Although most of the oil companies accepted these new terms there was, as might be expected, a sharp drop off in investment. In turn, this lead to a decline in production and a sharp fall in reserves which led to concerns about the ability to fulfil export contracts. For example, Bolivia failed to meet its contracted volumes of gas exports to Argentina in July 2016. The Government is now looking at ways of boosting investment and supporting the industry. This provides a window of opportunity for Echo Energy as the government and the hydrocarbon industry's interests become increasingly closely aligned.

Chart of Bolivia gas production and demand (BCF)



Source: EIA

Valuation

For valuing E & P companies we take the traditional approach of asset valuation that is used by the industry. Investors should therefore view any valuation in the context of their own assessments of the relevant risks. This valuation is derived through using a DCF (discounted cash flow) methodology to the known fields and discoveries of the company. The field production profiles, capital expenditure and operating costs are modeled under the appropriate fiscal regime to give a cash flow profile which is discounted to provide a net present value for each asset.

Given that the purchase of these assets is deemed to be a reverse takeover, Echo Energy has commissioned Gaffney Cline and Associates (GCA), the independent reserve auditors, to produce a CPR (Competent Person's Report) as part of the requirements on the transaction. We are therefore using the published valuations in this report. GCA has modeled the fields and prospects. These valuations are then carried out on the standard metrics using a discount factor of 10%. The pricing used is as shown below.

However, GCA has not given any potential value for the exploration in the Tapi Aike licence given the lack of interpreted 3D seismic data over the licence. To give a flavour of the potential value, we have taken similar numbers to those prescribed by GCA on the Fracción C & D licences and created a provisional model for the potential value of a discovery. Investors should be aware that given the lack of certainty, that these numbers are very provisional and are likely to change dramatically.

Pricing

The following table gives the pricing used by GCA in its modeling. The pricing of the products is very much linked to the Brent crude price marker. The Medanito crude is expected to trade at parity to the Brent marker although there is a floor of US$55.00/bbl so this will be higher than Brent through to the end of 2018. Condensate is expected to trade at a US$8.00/bbl discount to the Medanito crude. The gas prices are also listed. Beyond 2020, GCA has escalated these markers by 2% per annum. Investors should use their own assumptions.

Gaffney Cline & Associates pricing scenario

	Brent US$/bbl	Medanito US$/bbl	Condensate US$/bbl	Gas US$/mmBtu
2017	48.93	55.00	47.00	2.68
2018	50.82	55.00	47.00	4.20
2019	57.91	57.91	49.91	4.80
2020	65.00	65.00	57.00	4.90

Source: Gaffney Cline & Associates

Valuation of assets

As we mentioned earlier, the value of the assets could be estimated using the discounted cash flow of the assets. We have assumed the post tax valuation assumed by Gaffney Cline & Associates. As we alluded to earlier in the research note, there is the potential of the taxation regime being changed favourably, but for the sake of conservatism we are assuming that the federal corporation taxation rate will remain unchanged at a rate of 35%.

Valuation of net 2P and 2C reserves (US$ million)

Reserves	Fracción C	13.3
	Fracción D	0.7
	Total	**14.0**
Resources	Estancia La Maggie	16.9
	Lagune de Maria Tobifera Wedge	0.9
	CS Tobifera	16.5
	CS gas Cap	1.0
	Total	**35.3**
Total		**49.3**

Source: Gaffney Cline & Associates

Risked Exploration

We usually add an element of value for the risked exploration upside to give an indication of how this asset value may change over the next year. The value of the exploration assets is risked to reflect GCA's estimates of the chance of success. This is an inexact science but with a large number of wells being drilled the range of expected outcomes is slightly reduced.

Valuation of net exploration assets (US$ million)

		NPV US$ million	**CoS %**	**EMV US$ million**
Fracción C	Los Alamos	10.5	50%	4.8
	Los Joaquines	15.0	36%	4.7
	Los Luises	26.4	48%	12.2
	El Boliche	5.9	50%	2.4
	Near El Boliche	18.1	24%	3.4
	Near El Molino Sur	69.8	36%	24.3
	Sofia	9.0	50%	3.9
	Laguna de Maria	6.1	63%	2.7
Fracción D	CS Tobifera	16.5	36%	5.2
	CS East	8.0	50%	3.4
	CS West	1.7	36%	-0.1
	CS North B	2.3	36%	0.1
	CS North A	10.1	36%	2.2
TOTAL				**69.2**

Source: Gaffney Cline & Associates

Tapi Aike

GCA has not determined any potential value for the exploration in the Tapi Aike licence given the lack of interpreted 3D seismic data over the licence. Given the magnitude of the prospects, we have looked at the potential value of the prospects. We have taken similar numbers to those prescribed by GCA on the Fracción C & D licences and created a provisional model for the potential value of a discovery. Investors should be very aware that, given the lack of certainty, these numbers are very provisional and are likely to be change dramatically. The purpose of this exercise is to give a flavour of the potential value.

We have considered the potential development of a 1 TCF gas field. We have looked at a dry gas field only, but realise that if there is liquid present this will enhance the value given the higher price of oil and condensate relative to natural gas on a calorific basis. The gas price assumed is in line with the GCA estimates. The field is assumed to have peak production of approximately 300 mmcf/day with development costs (of processing units and development wells) of approximately US$1 billion over the life of the field. The performance of the wells is in line with the assumptions that GCA has assumed in the other licences. Factoring in the current fiscal regime we derive a gross value for a 1 TCF field on a NPV basis of approximately US$510 million (equivalent to approximately 50p/share on an unrisked basis). Investors should be aware that this is still high risk and the play types have not been found to be commercial in this licence to date. GCA has risked these prospects at a 14% - 34% chance of success but recognising that the acquisition of 3D seismic should substantially de-risk these and increase the pre-drill chance of success. Therefore if one wanted to use the risked exploration upside we would be looking at a risked value net to Echo Energy of approximately US$87 million. **We have separated this from the other risked exploration to allow investors to take a view of whether to include this in their own valuations of the company, given that GCA has given no view on the potential value.**

Valuation

From these values it is possible to derive a value per share. There are several complications in deriving this value that investors should be aware of. The first is that this has to be translated into sterling. For simplicity we have used the current exchange rate that is standing at a rate of GBP/USD 1.33 – investors should use their own assumptions.

The second is the number of shares. This is slightly complicated by the significant number of warrants and options that are outstanding at present – for full details about the warrants please see the financial section. Based on our valuation of Echo Energy, this could imply that going forward the warrants and options will be in the money and so will be exercised. This will increase the number of shares in issue by 286.2 million while the options will add a further 73.1 million shares. This will take the total number of shares 723.8 million. Although this is a significant increase in the shares in issue, the plus side comes from the cash that is raised with the exercise. The exercise of these would add £41 million to the group's cash balances - £35.5 million from the warrants and £5.5 million from the options. We have also looked at the valuation if the share price dips and hence does not allow the options to be exercised – for example, if the shares dip below 15.2 pence, then a majority of the Warrants are out of the money.

On the balance sheet element of the valuation we have added the net cash. As at the end of June the company had cash balances of £25.5 million. Against this the company had bonds of EUR 20 million that at current exchange rates will equate to £17.7 million on the current exchange rate of GBP/EUR of 1.13. This will give the company net cash of £7.8 million. Under the scenario of the exercise of the options and warrants, we adjust the balance sheet by a further £41 million (as discussed earlier)

We also have to adjust the valuation for the cost of the farm in since the valuations given by Gaffney Cline and Associates reflect the post tax value of the assets attributable to Echo Energy. As we mentioned earlier in the section describing the assets, the company has agreed to fund much of the work. Management believes that its cost of the carry and the milestone payments will amount to US$43 million which at current exchange rates equates to £32.3 million. Investors should be aware that the tender for the work programme has not yet been completed so costs could be higher than management expects.

As can be seen in the following table, if the warrants and options are not exercised, we can derive a potential industry valuation of 35.6 p/share. For those, that wish to exclude the Tapi Aike assets, which are not modelled by GCA, one could derive a value of 17.7 p/share.

Valuation (excluding warrants and options)

	US$ million	GBP Million	p/share
Reserves	14.0	10.5	2.9
Resources	35.3	26.5	7.3
Risked exploration	69.2	52.0	14.3
Farm in costs	(43.0)	(32.3)	(8.9)
Risked Tapi Aike	86.7	65.2	17.9
Balance sheet	10.2	7.7	2.1
Total	**172.4**	**129.6**	**35.6**

Source: GCA & Progressive Research estimates

Assuming that the warrants are exercised we derive the following valuations. Clearly the exercise will reduce the per share valuation. We achieve a potential industry valuation of 23.6 p/share. For those investors that wish to exclude the Tapi Aike assets, which is not modelled by GCA, you could derive a value of 14.6 p/share.

Valuation (including warrants and options)			
	US$ million	**GBP Million**	**p/share**
Reserves	14.0	10.5	1.5
Resources	35.3	26.5	3.7
Risked exploration	69.2	52.0	7.2
Farm in costs	(43.0)	(32.3)	(4.5)
Risked Tapi Aike	86.7	65.2	9.0
Balance sheet	65.1	49.0	6.8
Total	**227.3**	**170.9**	**23.6**

Source: GCA & Progressive Research estimates

Financials

The company has a strong balance sheet. At the end of June 2017 the company had gross cash of £25.5 million. The company has issued bonds of EUR 20 million. Given the IFRS rules on reporting the value of the bonds that were issued with warrants, the bond is in the balance sheet at a discount to the par value to account for the value of the warrants. This discount will erode as we get close to the maturity of the bond which is May 2022. In our net cash calculation we are assuming that this is a nominal value, which under the current exchange rate gives gross debt of £17.8 million. The net impact is that the company has net cash at present of £7.8 million.

The other issue is the number of options and warrants that the company has issued. These will be converted over time, depending on the level of the share price. Based on the valuation of Echo, we believe that most of these warrants could be converted and this should see the company benefit from cash of £41 million.

Work programme

As we mentioned earlier, the company will see its cash depleted and debt rise as it starts on the work programmes in Argentina. In the Tapi Aike permit, the company is committed to paying CGC for 15% of the gross work programme on top of its 50% working interest which equates to 65% of the work programme. Management expects that the work programme will cost US$40 million; this will entail a spend by Echo Energy of US$26 million - US$20 million of Echo's own costs and US$6 million for the cost of CGC's carry.

With the Fracción C & D permits, the company has two payment structures – a carry on the capital costs and milestone payments. Echo Energy will carry CGC for its share of any work programme undertaken with a cap of US$35 million in total carry. Management estimate that the first phase of the programme is expected to cost US$18 million. The second phase is then expected to cost an additional US$36 million. The total costs of these two phases is US$54 million which is below the cap and so will be covered by Echo Energy. On top of this, the company is paying in effect US$5 million to CGC on the first licence programme and a second US$5 million if the second exploration phase is entered into. This means that the expected spend for the carry and deferred payments is US$37 million. However, shareholders can take solace from the fact that Echo Energy is likely to only move to the second phase if the first phase has proved successful which should have resulted in a boost to shareholder value. If only Phase I on the Fracción licences is carried out, this will see Echo Energy's spend on this licence a more modest US$23 million and including the anticipated spend on Tapi Aike, the total group spend would be US$49 million.

Table of Echo Energy estimated spend US$ million

	Gross cost	CGC Carry	Echo share	Echo commitment
Tapi Aike	40.0	6.0	20.0	26.0
Fracción C & D				
Phase I	18.0	9.0	9.0	18.0
Phase II	36.0	18.0	18.0	36.0
Cash payments				
Phase I	5.0			5.0
Phase II	5.0			5.0
Total	**104.0**	**33.0**	**47.0**	**90.0**

Source: Company, Progressive Research

The tender for the work programme have not yet been completed, so costs could be higher than management expects. The table below details the potential maximum spend. As can be seen, the potential maximum that Echo Energy could spend is US$119 million. This breaks down as US$65 million of Echo Energy's direct share of costs, US$44 million of CGC carry and US$10 million of milestone payments. If the partners decide to only carry out the first phase of the work programme in Fracción C & D the maximum spend for Echo Energy is likely to be US$74 million. These are the numbers that are quoted in the admission document.

Table of Echo Energy maximum spend US$ million

	Gross cost	CGC Carry	Echo share	Echo commitment
Tapi Aike	60.0	9.0	30.0	39.0
Fracción C & D				
Phase I	30.0	15.0	15.0	30.0
Phase II	40.0	20.0	20.0	40.0
Cash payments				
Phase I	5.0			5.0
Phase II	5.0			5.0
Total	**140.0**	**44.0**	**65.0**	**119.0**

Source: Company, Progressive Research

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