

## Business review

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**San Leon Energy** is a young, dynamic company with ambitious growth plans and a strong sense of responsibility to our stakeholders.

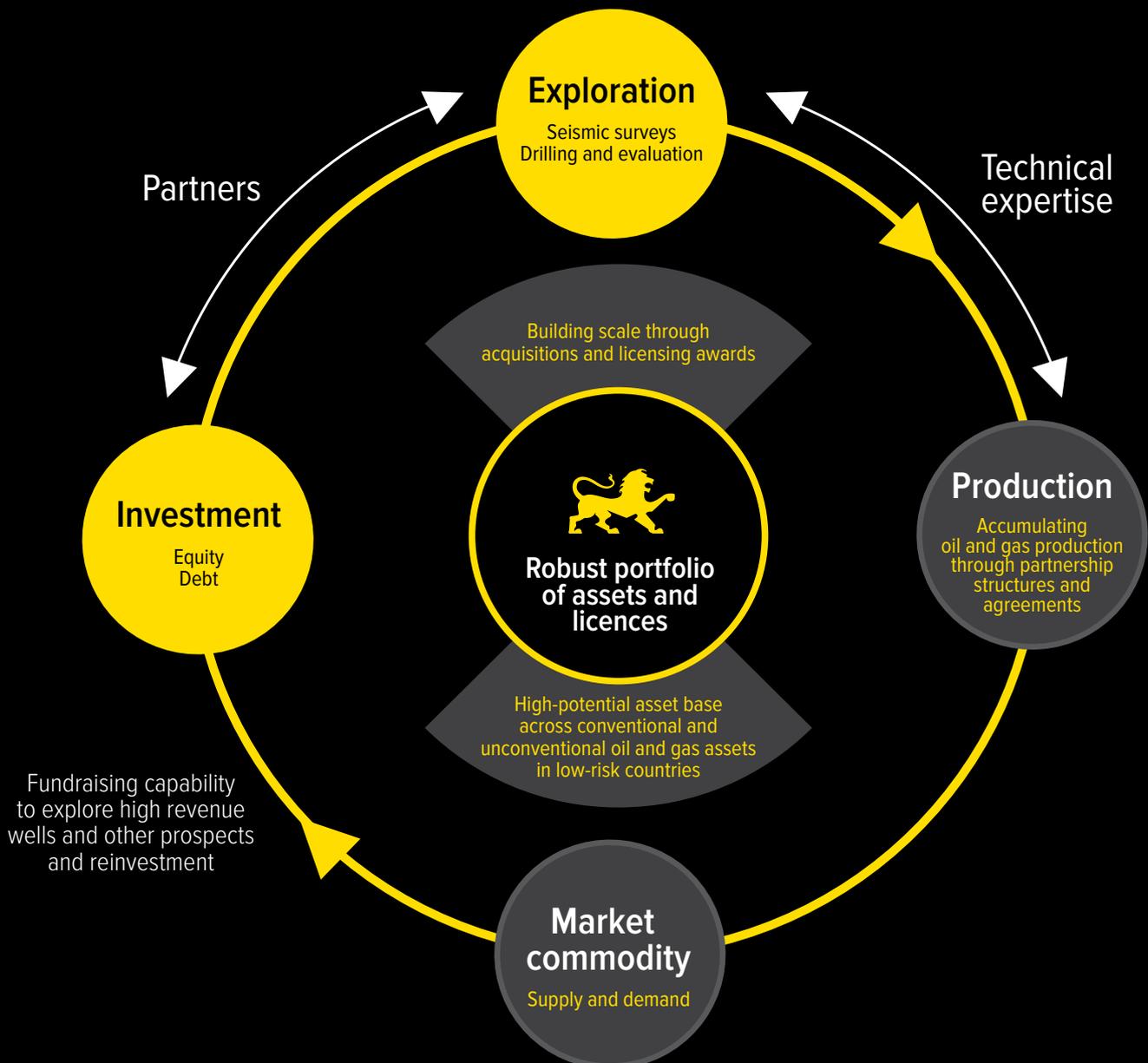
We aim to combine entrepreneurial flair with the discipline and governance of a public listed company.

We have made three acquisitions and built a balanced portfolio of assets across Europe and North Africa. We are now focusing on developing these assets using our considerable technical expertise across conventional and shale activities.

# Our business model

This diagram shows how our business model works and indicates in yellow our current focus.

We have been investing in, and exploring, our balanced portfolio of assets, located in nine countries across Europe and North Africa. We're now Europe's leading shale gas company by acreage and have significant conventional assets as well. Our planned next phase is to work with partners to produce oil and gas and provide revenues to enable further growth and development.



# At-a-glance

## An extensive and balanced portfolio of conventional and shale assets across Europe and North Africa

Germany  
Total net area  
**15,588 acres**

The Netherlands  
**2.5% net royalty**  
on Amstel Field

Ireland  
Total net area  
**630,238 acres**  
4.5% NPI on Barryroe Field

France  
Total net area  
**2,357,128 acres**

Italy  
Total net area  
**231,982 acres**

Spain  
Total net area  
**2,228,098 acres**

Current main focus  
of activity

Morocco



Total net area  
**7,001,616 acres**

Poland



Total net area  
**2,956,251 acres**

Albania



Total net area  
**1,037,843 acres**

# Our Assets

Location	Area acres	Area km <sup>2</sup>	San Leon Energy interest	Area net acres
<b>Poland</b>	<b>3,820,126</b>	<b>15,459</b>		<b>2,956,251</b>
Gdansk W	220,937	894	40.00%	88,375
Braniewo S	257,731	1,043	40.00%	103,092
Szczawno	149,103	603	20.00%	29,821
Gniew	294,303	1,191	100.00%	294,303
Czersk	173,715	703	100.00%	173,715
Ilawa	184,341	746	50.00%	92,170
Wengrow	175,939	712	50.00%	87,970
Praburty Poludniowe	118,611	480	75.00%	88,958
Wieluń	219,430	888	75.00%	164,573
Oleśnica	286,642	1,160	75.00%	214,982
Nowa Sol	288,372	1,167	100.00%	288,372
Wschowa	266,380	1,078	100.00%	266,380
Gora	174,456	706	100.00%	174,456
Rawicz	183,352	742	100.00%	183,352
Praszka	296,032	1,198	100.00%	296,032
Szczecinek	242,163	980	50.00%	121,082
Nida	288,619	1,168	100.00%	288,619
<b>Ireland</b>	<b>981,009</b>	<b>3,970</b>		<b>630,238</b>
Slyne	183,105	741	50.00%	91,553
North Porcupine Connemara	153,700	622	74.00%*	113,738
South Porcupine	198,179	802	50.00%	99,089
Old Head of Kinsale	63,753	258	65.00%	41,440
Schull	164,078	664	62.50%	102,549
Seven Heads Gas Field	41,514	168	12.50%	5,189
Rockall	176,680	715	100.00%	176,680
Barryroe			net profit interest of 4.5%	
<b>Morocco</b>	<b>13,299,434</b>	<b>53,821</b>		<b>7,001,616</b>
Tarfaya Basin	3,319,614	13,434	52.50%	1,742,797
Zag Basin	5,355,392	21,673	52.50%	2,811,581
Tarfaya Oil Shale	1,482,632	6,000	75.00%	1,111,974
Foum Draa	1,257,766	5,090	42.50%	534,551
Sidi Moussa	1,884,030	7,624	42.50%	800,713
<b>Albania</b>	<b>1,037,843</b>	<b>4,200</b>		<b>1,037,843</b>
Durrresi	1,037,843	4,200	100.00%	1,037,843
<b>Spain</b>	<b>2,228,098</b>	<b>9,017</b>		<b>2,228,098</b>
Geminis	118,463	479	100.00%	118,463
Libra	93,365	378	100.00%	93,365
Quimera*	249,655	1,010	100.00%	249,655
Pegaso*	254,232	1,029	100.00%	254,232
Cronos*	239,596	970	100.00%	239,596
Aquiles*	252,927	1,024	100.00%	252,927
Perseo*	253,913	1,028	100.00%	253,913
Prometeo*	254,566	1,030	100.00%	254,566
Atlas*	255,349	1,033	100.00%	255,349
Helios*	256,032	1,036	100.00%	256,032
<b>Italy</b>	<b>231,982</b>	<b>939</b>		<b>231,982</b>
Po Valley Sospiro	104,081	421	100.00%	104,081
Po Valley Sorbolo	73,390	297	100.00%	73,390
Sicily	54,511	221	100.00%	54,511
<b>Germany</b>	<b>15,588</b>	<b>63</b>		<b>15,588</b>
Aschen	15,588	63.08	100.00%	15,588
<b>France</b>	<b>2,357,128</b>	<b>9,539</b>		<b>2,357,128</b>
Champecest**	12,849	52	100.00%	12,849
Courpalay**	324,064	1,311	100.00%	324,064
Dicy**	157,158	636	100.00%	157,158
Meaux**	203,953	825	100.00%	203,953
Montmort-Lucy**	81,016	328	100.00%	81,016
Pithiviers**	347,529	1,406	100.00%	347,529
Samois-sur-Seine**	13,343	54	100.00%	13,343
Sens**	191,425	775	100.00%	191,425
Sezanne**	214,890	870	100.00%	214,890
Blyes**	810,901	3,282	100.00%	810,901
<b>The Netherlands</b>				
Amstel			2.5% royalty	
<b>Total Gross/Net</b>	<b>23,971,208</b>	<b>97,008</b>		<b>16,458,744</b>

\*Subject to Government approval

\*\*Pending Applications

## Investment case

# Balanced portfolio of assets for development

**€26m**

Cash position

**24m**

Gross acres in the global portfolio (97,000km<sup>2</sup>)

**3**

Key acquisitions

- Attractive acreage position built through the acquisitions of Gold Point Energy (Poland); Island Oil and Gas (Albania, Morocco, Ireland); and Realm Energy (Poland, Spain, France)
- Exceptional in-house technical team with local and regional experience, applying proven technology to underexplored acreage
- Diverse portfolio of prospects from low-risk, short term, low-cost exploration to basin-scale unconventional opportunities and large offshore prospects in proven petroleum systems
- Operating in highly import-dependent countries with attractive fiscal regimes and oil-linked gas prices
- Long-standing partnerships with Talisman Energy & PGS, providing expertise and the ability to move assets forward along the value curve

# Highlights

## A year of continued asset growth and development

# 10.94m

unconventional gas acreage held by San Leon Energy – now Europe's leading shale player by acreage



Establishment of NovaSeis, a cableless land-based seismic company to reduce the Company's seismic costs.



Creation of Advisory Committee made up of experienced industry professionals to work alongside management team when considering macro issues associated with the industry.

# C\$100m

acquisition of Realm Energy, significantly increasing the Company's acreage positions in Poland and across Europe

# 1,200km<sup>2</sup>

of 2D seismic carried out



Durressi Block has unrisks prospective recoverable resources of more than one billion barrels of oil equivalent across the proven petroleum systems.

Successful three-well Baltic Basin drilling programme

# We are focused on strong management, financial discipline and technical expertise



We are now developing our assets using our considerable technical expertise across conventional and shale activities.

**Oisín Fanning**  
Executive Chairman

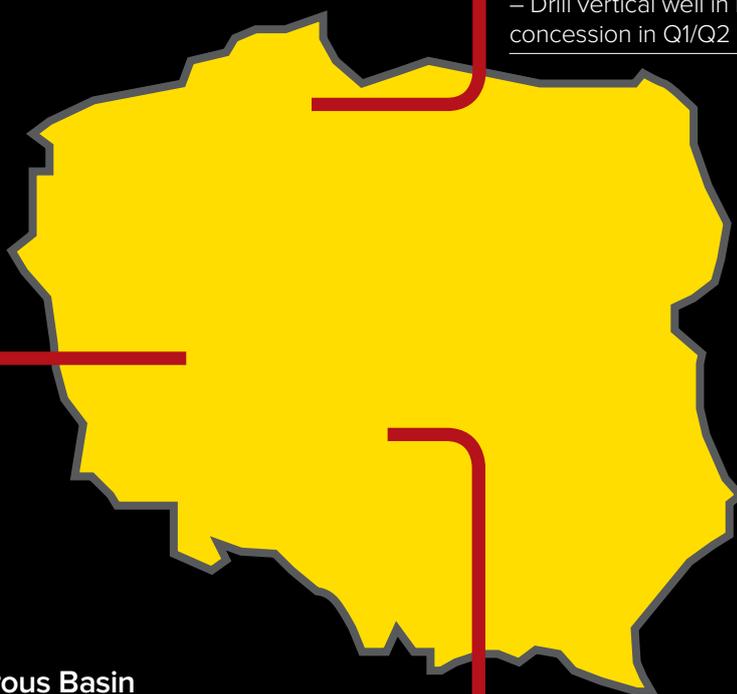
2011 was another significant year for San Leon Energy. We have continued to add value to our existing diversified and high impact portfolio of assets. We have advanced our scientific knowledge by shooting and interpreting seismic and in the case of Poland, drilling vertical wells. We have also completed our largest acquisition to date, Realm Energy.

The acquisition of Realm Energy provided San Leon Energy with a unique opportunity to increase the Company's exposure to the prospective upside that the Baltic Basin offers. The acquisition provided the Company with a further 500,000 acres in Poland (in the Baltic and Podlase basins), as well as applications in Spain of over two million acres, which have now been awarded to the Company, and in the case of France it has provided 2.35 million acres over which we remain cautiously optimistic. We also expect this deal to bring significant cost and operational synergies across the upcoming drilling programme whilst further enhancing the technical expertise in the Company.

The acquisition also:

- strengthens San Leon Energy's focus and position as one of the leading shale players in Poland;
- materially increases San Leon Energy's acreage in Poland's Baltic Basin;
- leverages San Leon Energy's in-country technical team to add material value to Realm's assets;
- has the potential to add further shale acreage to the portfolio through any successful licence applications that Realm has made in Spain and France; and
- provides cost and operational synergies for upcoming seismic and drilling programmes.

# Poland



## Baltic Basin

**Km<sup>2</sup>** – 6,373

**Acres** – 1,574,680

**Net Acres** – 958,404

**Partners** – Talisman energy, LNG, Hutton Energy

**Plan 2012/13** – Vertically fracc and test existing three wells drilled with Talisman in 2013

– Drill 1,000m+ horizontal well with Talisman with multi-staged fracc and testing programme in 2013

– Acquire additional 150km 2D seismic in pending Czersk Concession in Q4 2012/2013

– Drill vertical well in Prabuty Południowe concession in Q1/Q2 2013

## SW Carboniferous Basin

**Km<sup>2</sup>** – 6,939

**Acres** – 1,714,665

**Net Acres** – 1,588,147

**Partners** – Hutton Energy

**Plan 2012/13** – Acquire up to 1,000km<sup>2</sup> 3D seismic and up to 500km 2D seismic across the basin\*\*

– Test Siciny-2 well including vertical fracc of multiple zones for shale gas and tight gas potential

– Continue drilling Carboniferous play to test the extent of potential resources found in Siciny-2 well

## Permian Basin

**Km<sup>2</sup>** – 7,920

**Acres** – 7,957,075

**Net Acres** – 1,709,475

**Partners** – Gas Plus International, Hutton Energy

**Plan 2012/13** – Drill conventional main Dolomite play in Nova Sol for near term oil production

– Acquire up to 1,000km<sup>2</sup> 3D seismic and up to 500km 2D seismic across the basin

# Chairman's review continued

In June 2012, San Leon Energy also strengthened its overall position further in the Baltic and Carboniferous basins in Poland through our partnership with Hutton Energy. San Leon Energy has acquired a 75% working interest in certain Polish assets for US\$15 million, providing 468,512 net acres to the Company in two prospective basins.

## **Poland**

We have now drilled three wells with our partners Talisman energy.

In the northern Baltic Basin the Lewino-1G-2 well was drilled to 3,600 metres into the Upper Cambrian including 310 metres of core. The well encountered continuous gas shows through the Silurian-Ordovician shales and into the Upper Cambrian. The Rogity-1 well was drilled to 2,788 metres including 340 metres of core. The well encountered continuous, liquid rich gas shows throughout the Silurian-Ordovician shales and into the Upper Cambrian. We are currently drilling and nearing total depth in the Szymkowo-1 well in the southern Baltic Basin. So far the well has encountered continuous gas shows in the Silurian shales. An estimated 300 metres of core is planned in the well. Ongoing detailed analysis of the core and well data is being performed in preparation for a future testing programme in Q1/Q2 2013 including potential vertical fracking, horizontal drilling followed by multistage fracking and flow-testing.

As mentioned, San Leon Energy has also recently announced that it has purchased a 75% working interest in certain Polish assets held by Hutton Energy for US\$15 million with a view to jointly developing these assets. Hutton Energy will be carried through all the seismic work and associated G&A which will be performed by NovaSeis. The Company sees this partnership with Hutton Energy as very positive with it bringing significant North American unconventional gas expertise to the venture.

The acquisition further expands San Leon Energy's unconventional gas acreage by an additional 468,512 net acres in two highly prospective basins – the Baltic Basin and the Carboniferous Basin – whilst also giving the Company an unprecedented acreage position in Poland. We look forward to working with the Hutton Energy team developing these assets.

## **Morocco**

The Company acquired a total of 608km of 2D seismic on our Tarfaya licence and 1,674km of 2D seismic on the Zag licence. Processing and interpretation of this seismic is nearing completion. This work was carried out by NovaSeis, our wireless seismic company.

On the Tarfaya Oil Shale project, good progress has been made advancing the project. Two wells were drilled 10 metres apart confirming the presence of 30 metres or prospective oil at a depth of 195 metres. A third well was drilled which failed to establish connectivity between the wells, however a comprehensive hydro-geological and geochemical review is being planned to identify alternative locations in deeper zones.

On the Sidi Moussa and the Fom Draa licences San Leon Energy and its partners have completed the work programme for both licences. A data room has been opened on both licences to attract industry partners, with a view to receiving final bids by 15 June 2012.

## **Ireland**

Barryroe proved to be a highly successful well for our previous partners, Providence and Lansdowne. We were very pleased to see the result not least because we had opted for a 4.5% net profit interest which will give us very good cash flow, but without the inherent costs of this well or development costs in the future.

As at the time of our fundraising, none of the partners had anticipated drilling this well, we therefore had not allocated any of that funding towards this well and so this deal was mutually beneficial.

## Ireland



### Atlantic Margin

**Km<sup>2</sup>** – 2,880

**Acres** – 711,664

**Net Acres** – 481,060

**Partners** – Lundin, Supernova, Valhalla Oil & Gas

**Plan 2012/13** – Continue to look for farm-in partners to fund drilling programmes following 2010/2011 3D seismic acquisition and interpretation programmes

### Celtic Sea

**Km<sup>2</sup>** – 1,090

**Acres** – 269,345

**Net Acres** – 149,178

**Partners** – Petronas, Sunningdale, Valhalla Oil & Gas, Premier Oil

**Plan 2012/13** – To continue to look for partners to develop the assets in the Celtic Sea

# Chairman's review continued

During the year the Company completed a 250km<sup>2</sup> 3D seismic survey on the North Porcupine Licence (FEL 1/04). We also opened a data room with a view to gaining farm-in partners for the Slyne licence towards the end of last year. Several companies have reviewed the data in the data rooms. We also opened a data room on the North Porcupine licence in Q2 2012 and again several companies have shown interest. We will update the market on both these data rooms as appropriate.

## Albania

Last year we completed 840km<sup>2</sup> of 3D seismic over the Durrresi block offshore Albania, less than a year after we were awarded the block in February 2011. The new 3D seismic has identified numerous prospects and leads across the licence with unrisksed prospective recoverable resources of more than one billion barrels of oil equivalent across the proven petroleum systems.

The Company has also recently signed confidentiality agreements with several large exploration and production companies regarding farm-in into the licence; and continues to receive unsolicited interest from other large exploration and production companies. As a result of which, San Leon Energy opened a data room early to select companies. There has been huge interest in our data room, which is now closed; and we will see letters of intent during June with an announcement expected to the market late July/early August.

We are very excited about the potential of the Durrresi Block and believe that it does have huge upside potential.

## NovaSeis

NovaSeis, our wireless seismic company, has also been upgraded to allow us to shoot 3D. The team spent eight months in Morocco shooting seismic – across both the Tarfaya and Zag basins – which we are now in the process of interpreting. The equipment has now moved back to Poland where we have completed three new surveys covering the terrain twice as fast and more cost effectively than any campaign in Poland to date.

## Advisory Committee

The Company has created an Advisory Committee which will work alongside the management team when considering macro-issues associated with the industry. This Committee will be made up of a number of experienced industry professionals who have a wealth of experience in the energy industry. It is expected that the Advisory Committee will help San Leon Energy build on the success that the Company has already achieved; and provide senior guidance and invaluable strategic and industry insight, as the Company looks to continue to develop its portfolio of assets. The Advisory Committee is initially made up of Gerard Medaisko, Robert Price and Nick Butler, who also serves as the Advisory Committee's Chairman.

## New website

Over the last months we have also developed our new website. This is aimed at providing our investors and those interested in the Company with much more in-depth information and regular updates. We will also be engaging with our stakeholders via social media in conversations around oil and gas, the unconventional gas industry, as well as San Leon Energy and its strategy, developments and its operations.

## Financial

2011 was another pivotal year for San Leon Energy with a profit of €15.6 million against a loss of €3.97 million in 2010.

## Outlook

The focus of the Company is to continue to prove-up our extensive shale gas acreage in Poland. Our strategy of adding as much prospective acreage as we can across different basins, but with different parameters such as depth and maturity, is we believe, the right one as it will give us exposure to at least one if not multiple sweet spots, any one of which could add significant value to your Company.

We are also working diligently towards being cash generative through the drilling of a number of oil wells in July, having already spoken to refineries in both Poland and Germany and are confident that we would be able to monetise any success within 90 days. We will be looking to test flow our carboniferous well Siciny-2 later this year and we are confident that we can monetise any success there in the first half of next year given the pipeline is just 500 metres away from the well.

Our strategy of diversified plays across not only the portfolio, but also within Poland, will allow San Leon Energy to recover much of the ground lost to the market due to its perceived disappointment in the very initial horizontal fracs in Poland. This speaks more to the market's lack of understanding as to how these shale plays are developed than the reality on the ground. Every well drilled in Poland so far has encountered gas and every player in Poland believes that the 3Legs fracs were a technical success.

PGNIG, who have also drilled a well just north of our Lewino-1G/2 well, are now organising themselves for pad-drilling with a view to being the first in Poland to produce commercial shale gas by late this year or early next year.

The Baltic Basin is still at the early stages of its development; but we are, with our partners and other operators in the region, confident that it will become a significant resource for Poland and the rest of Europe.

## Morocco

### Tarfaya Oil Shale

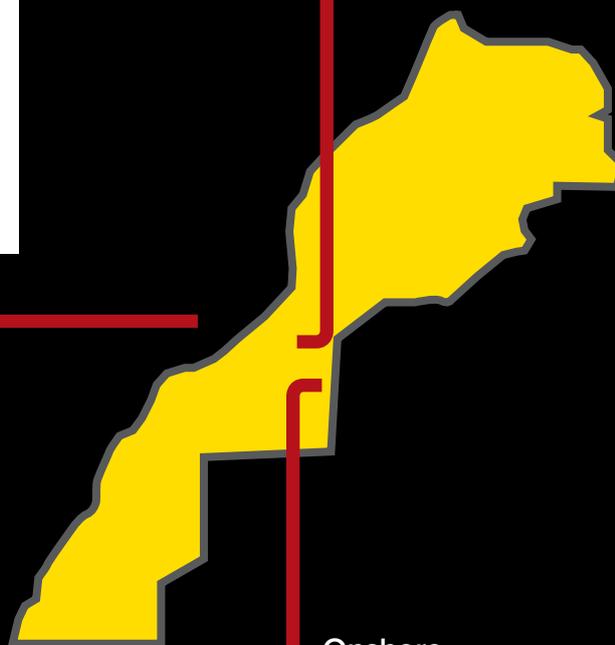
**Km<sup>2</sup>** – 6,000

**Acres** – 1,482,632

**Net Acres** – 1,111,974

**Partners** – ONHYM

**Plan 2012/13** – Continue to evaluate results towards selecting an alternative site for the future



### Offshore

**Km<sup>2</sup>** – 12,714

**Acres** – 3,141,797

**Net Acres** – 1,335,264

**Partners** – ONHYM, Serica, Longreach

**Plan 2012/13** – Finalise offers from farm-out process

– Plan to drill 1-2 wells in 2013 with new farm-in partners

### Onshore

**Km<sup>2</sup>** – 35,107

**Acres** – 8,675,006

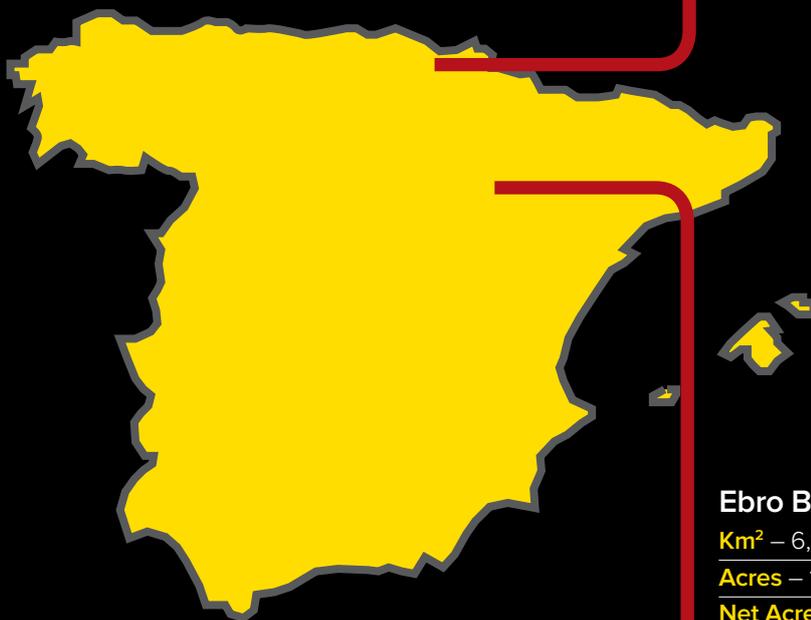
**Net Acres** – 4,554,378

**Partners** – ONHYM, Longreach

**Plan 2012/13** – Finalise processing from 2011/2012 2,200km 2D seismic acquisition

– Build prospect inventory in preparation for 3D seismic acquisition and potential future drilling programmes

## Spain



### Cantabrian/Pyrenees Basin

**Km<sup>2</sup>** – 2,896

**Acres** – 715,715

**Net Acres** – 715,715

**Plan 2012/13** – Build geologic database

– Outcrop analysis of potential unconventional reservoir intervals

– Seismic reprocessing of existing 2D seismic data

– Preparation for extensive 2D seismic campaign in 2013/2014

### Ebro Basin

**Km<sup>2</sup>** – 6,120

**Acres** – 1,512,383

**Net Acres** – 1,512,383

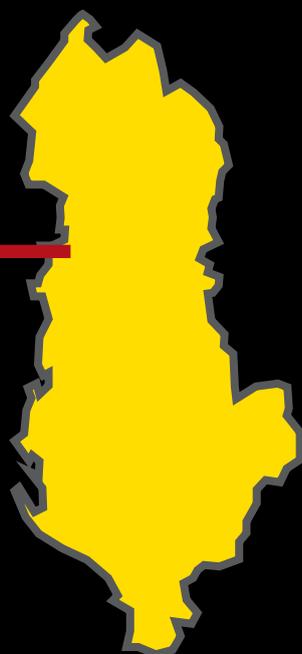
**Plan 2012/13** – Build geological database

– Outcrop analysis of potential unconventional reservoir intervals

– Seismic reprocessing of existing 2D seismic data

– Preparation for extensive 2D seismic campaign in 2013/2014

## Albania



### Duressi

**Km<sup>2</sup>** – 4,200

**Acres** – 1,037,843

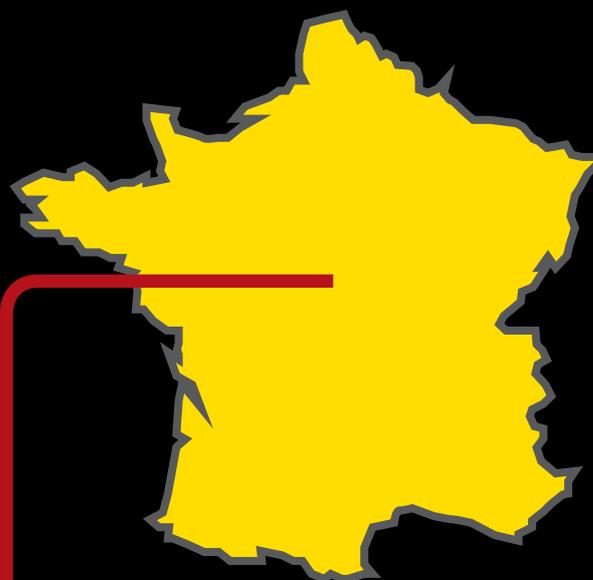
**Net Acres** – 1,037,843

**Plan 2012/13** – Continue to build significant prospect inventory

– Finalise Pre Stack Depth Migration of 2011 Duressi 3D survey

– Continue to engage potential farm-in partners during technical evaluation of data room

## France



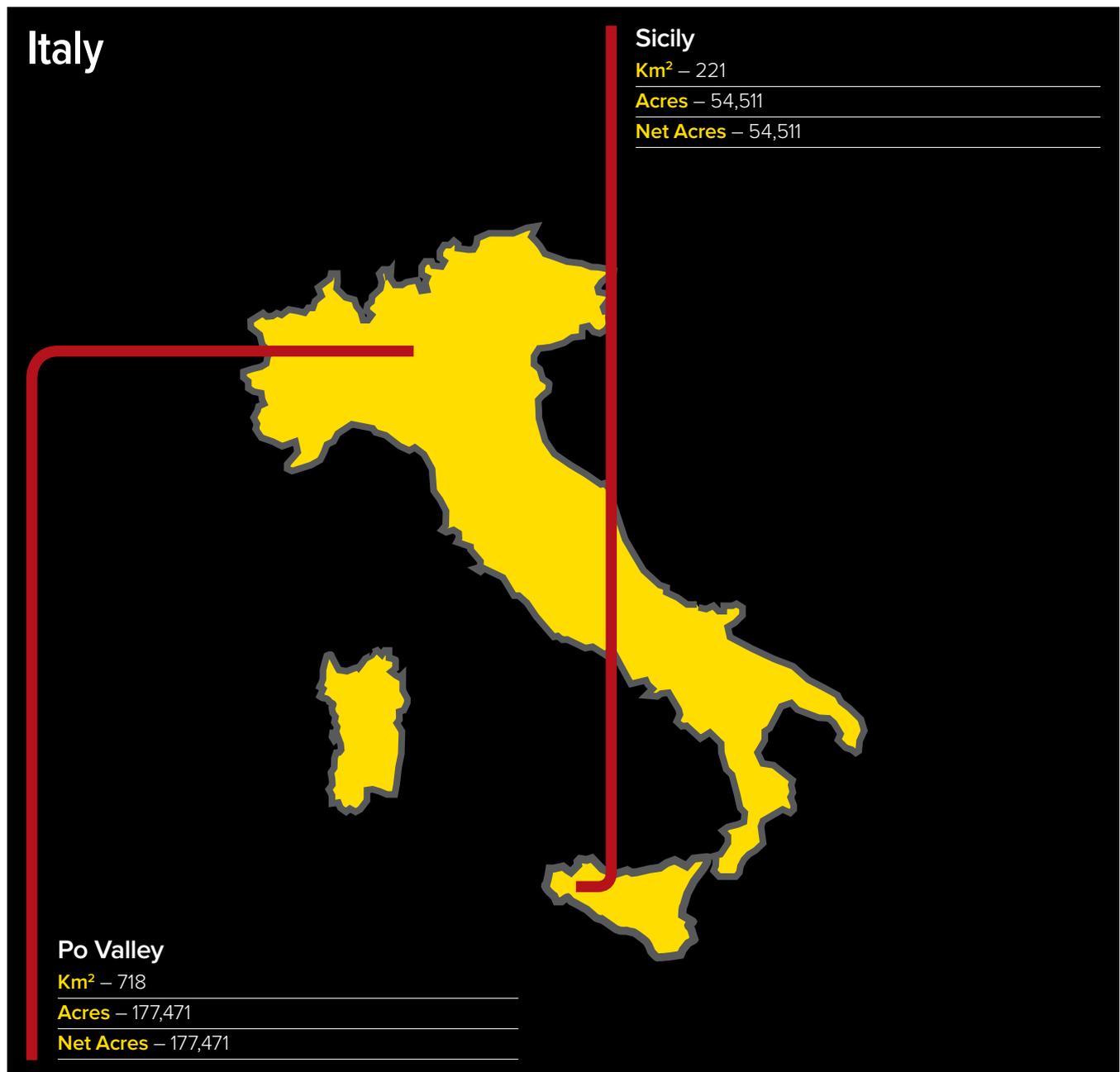
### Applications

**Km<sup>2</sup>** – 9,539

**Acres** – 2,357,128

**Net Acres** – 2,357,128

**Plan 2012/13** – All applications are pending lifting of licence award moratorium in France



## Germany



### Aschen

**Km<sup>2</sup>** – 63

**Acres** – 15,588

**Net Acres** – 15,588

## The Netherlands



### Amstel

**Km<sup>2</sup>**

**Acres**

**Net Acres**

(2.5% royalty)

**Partners** – GDF Suez, EBN, Taqa

**Plan 2012/13** – Looking to divest of royalty interest for cash

# Shale gas Q&A

## Shale gas is transformative and can play a major role in achieving energy security

### What is shale gas?

Shales are fine-grained sedimentary rocks. They are compressed tightly and small cracks have to be made in the rocks to release the oil and gas. Before recent advances in releasing energy from shales, oil and gas was found in 'conventional' reservoirs, which are easy to produce from, but hard to find. Shale reservoirs are hard to produce from, but after an initial exploration phase, far more common than 'conventional' reservoirs. Shale gas is identical to natural gas produced today in the North Sea, Russia or imported as LNG.



### What are the benefits of shale gas?

Natural gas has one half the carbon content of coal and a quarter that of oil. Shale gas in Europe can cut carbon and increase supply, thus lowering prices. Additionally, shale gas requires local operations, which pay local taxes as employ local workers.

### What are the opportunities in Europe?

Shale gas exploration is taking place in almost every country in Europe; the most advanced and prospective shale 'plays' are in Poland. Other countries for prospective large scale shale are Germany, France, Spain, Ukraine and the UK.

The potential volumes are very attractive. This could mean that several billion euros otherwise spent on energy exports may stay at home, creating tax revenues and jobs. We are still probably several years away from any actual production, but this is getting closer and we are more confident with each passing quarter.

## What is fracking?

Hydraulic fracturing has been used in over a million oil and gas wells world-wide since 1949. The modern fracking stems from Texas in the late 1990s. This is when new technology combining horizontal drilling and breakthroughs in seismic surveys and fracturing fluid allowed shale rocks to release massive volumes of gas.

A mixture of water, sand and less than one half of 1% additives are pumped down to fracture the rock up to 2.5km below ground. Fractures of less than 1mm wide are propped open, allowing gas to flow to the surface. The additives are common household chemicals such as bleach, or polyacrylamide for instance, a chemical already used in higher concentrations in disposable infant nappies (diapers). Another common additive is guar gum, a natural product widely used in toothpaste and ice cream production.

## What are the environmental impacts?

Much of the fear over any of shale's alleged environmental impact stems from a lack of familiarity with shale gas as it moves into areas new to the energy industry. In the USA, tens of thousands of wells have been drilled but the US Environmental Protection Agency notes that there have been no proven cases of water contamination. San Leon Energy starts a full public consultation and education programme before and during drilling. This answers any questions the public may have. In May 2012, The International Energy Agency proposed 'Golden Rules for the Golden Age of Gas' that would allay public fears and allow operators to have the 'social licence' to operate. The Golden Rules appear to have only a minor impact on extraction costs while mitigating any possible harm to the environment.

## How do we achieve energy security?

Shale gas promises to be the most secure and sustainable form of energy – local energy produced by local people paying local taxes. A key way to ensure energy security is conservation and Western Europe already uses energy very efficiently and projections for gas and electric use are flat for the future. Shale gas promises to replace gas that is either presently imported or comes from declining production areas in the North Sea. Energy efficiency means that shale won't mean an increase in energy use. It will simply change where it comes from.

Despite some fears, shale gas can provide back-up for renewable energy sources such as wind and solar power during downtimes. Neither coal nor nuclear can provide the flexibility required to instantly back up wind or solar generation.

Also, local shale gas can replace any need to consider new nuclear generation in states currently without any.

## What are the disadvantages?

As technology advances in North America, Europe can learn valuable lessons in making shale extraction cleaner, quicker and cheaper. Local communities will see various effects depending on local geological and infrastructure issues – it is too early in most cases to give firm indications of actual local disturbance. Suffice to say, the industry has both a financial and logistical interest in making shale gas extraction as unobtrusive as possible.

Compared to even four years ago in the US, European shale would have far lower surface operations and have most of the activity taking place out of sight, thousands of metres underground. Surface disturbance will be short-lived and widely dispersed. Any enduring effect of shale above ground after the construction phase is likely to be minimal and easy to conceal.

## What does the future hold?

Shale gas promises good news for both the European economy and the environment. If indications of substantial reserves are borne out, shale can have all manner of unforeseen positive consequences. Shale will need huge volumes of steel for example, leading to a revival of what has been seen as a declining sector. The same applies to the chemical industry where chemicals could be produced locally, further cutting down on the balance of payments deficits. Natural gas makes up 80% or more of the cost of fertiliser. Cheaper energy can mean cheaper food.

Judging by the data available in the USA, Europe could use natural gas vehicles in the trucking and fleet industries, which could lead to natural gas replacing diesel in heavy good vehicles. This would mean 25% lower carbon, zero particulate emissions and halving the fuel cost.

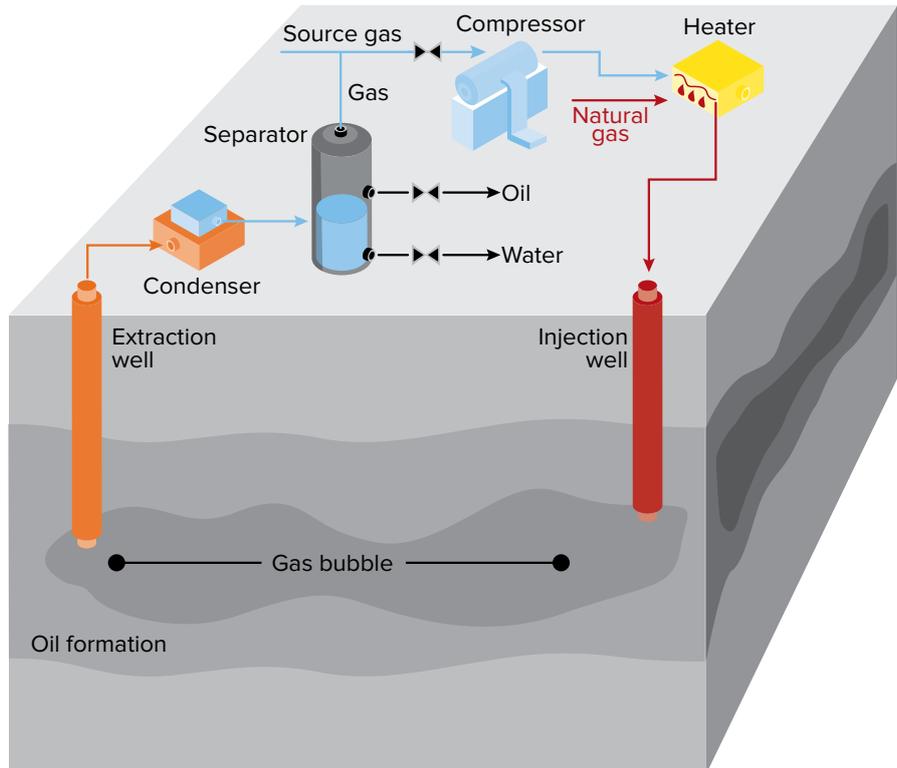
Finally, instead of constantly rising expensive and insecure oil and gas, European consumers could see price falls in the cost of their heating and electricity bills. Falling energy prices could mean higher disposable incomes which would provide stimulus to European economies.

## Shale oil is a vast source of untapped hydrocarbon liquids



**17%**

increase in proven oil reserves between 1987 and 2007



### What is shale oil?

Shale oil is the oil obtained from oil shale, which is a fine-grained sedimentary rock containing an organic material known as kerogen. When heated, kerogen decomposes to provide oil, gas and carbon<sup>1</sup>.

### How does this differ from shale gas?

Although both shale gas and shale oil are produced from shales, shale oil has the property of carrying kerogen that is a waxy organic substance requiring specific methods to flow and be produced. On the other hand, shale gas derives from low permeable rock with gas trapped in it; gas is usually produced by hydraulically fracturing the shale.

### What are the benefits of shale oil?

With modern technology, raw shale oil can be upgraded to either Synthetic Crude Oil (SCO) or to unfinished products (VGO, naphtha, and distillate) that can be easily transported and refined.

Extraction of shale oil either through mining-retorting or through in situ drilling is an industry that could eventually provide jobs and training for local communities and help improve the infrastructure of the surrounding areas. Governments benefit from this industry by the increase in tax revenues and the reduction in mineral imports<sup>1</sup>.

# 4.8 trillion

barrels estimated resources in oil shale worldwide

# 4 times

more oil shale resources than crude oil resources

## Are the extraction methods for oil shale similar to shale gas?

The extraction techniques for shale oil are different from shale gas production methods. The conventional and most used technique to extract shale oil is the truck-and-shovel open-pit mining where the mined products are transported to surface-retorting facilities to be refined into synthetic crude oil. Another technique is the in situ conversion that heats the deposits underground<sup>1</sup>.

## What is the environmental impact of shale oil extraction?

Although few concerns have been raised about the impact of shale oil extraction on water usage, greenhouse gas emissions, land use and waste management, these issues have been addressed and modern technology can enable this industry to have a footprint comparable to that of farming or forestry<sup>1</sup>.

## What are the opportunities of shale oil?

One of the opportunities of shale oil is the decrease in exploration and drilling costs and risks since most of the oil shale, especially if formed at the bottom of lakes, is continuous<sup>2</sup>.

## Where is shale oil most prevalent/prolific?

The largest and richest demonstrated resources of shale oil are in western US with 560 billion barrels of shale oil. China, Australia, Jordan, Morocco, Brazil and Estonia have also considerable demonstrated resources<sup>1</sup>.

## What are the disadvantages of shale oil?

The main disadvantage of shale oil is the high recovery cost. Kerogen should be heated to separate it from the rock and make it flow and the crude shale oil must be treated to create synthetic crude oil. All these procedures require considerable material handling and are very costly<sup>2</sup>.



### Sources

1: [www.oilshale.co.uk](http://www.oilshale.co.uk)

2: <http://emfi.mines.edu/emfi2005/OilShale.pdf>