THE ARCTIC:
THE NEW EL DORADO OIL FIELD ?

Written 08/11/2012

The Arctic has been known for decades for its oil production. The extraction of reserves is not a new concept for this region; in fact, onshore production began in the 1920s in Alaska and then, in the 1970s, still on American territory, offshore saw a rapid development in terms of prospecting and drilling. However, drilling projects have not seen a huge increase because the area has since been abandoned, as it is thought to be less viable than other geographical locations.

Increased operational costs as well as the cost and difficulty of transport were the main barriers to its development. Recent trends, though, have changed this view.

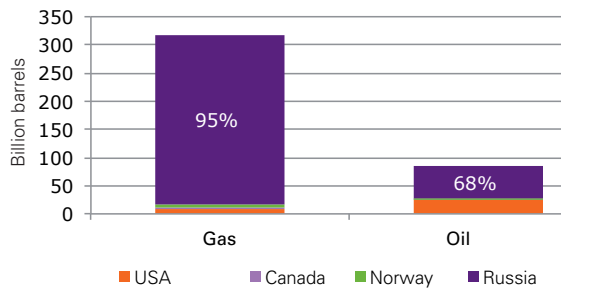
Advances made in hydraulic fracturing which enabled offshore deposits to be reached from on land, the emergence of new Asian energy-intensive markets, increased petrol prices, scarcity of oil resources and, ironically enough, ice melting, are all favourable levers surrounding the exploration of the Arctic.

Guaranteed hydrocarbon potential

If we consider its hydrocarbon potential, the Arctic is an interesting region. According to the study led by the USGS (2008):

- **oil :** the proven hydrocarbon reserves represent 13% of proven global reserves (90 billion barrels)
- **gas:** the proven reserves represent more than 30% of proven global reserves (more than 50,000 billion m^3), of which more than 80% is situated offshore.

These figures must be considered as orders of magnitude; some players[1] believe these estimates to be lower, given the lack of knowledge of the geology of numerous sedimentary basins in the region, uncertainties over the maximum exploitation costs and the likelihood of extraction success.



Source: Natixis Asset Management, IFP Energies Nouvelles, 2012

Proven hydrocarbon resources in the Arctic

Resources on the Arctic continent are mainly Russian; Russia has more than 95% of proven gas reserves and more than two-thirds of oil resources, mainly in Western Siberia (IFP, Energies Nouvelles, 2012).
While the geological potential, mainly in Russia, is there, the economic potential is yet to be proven.

Economic potential to be confirmed

There is still a question mark over the economic viability of Arctic projects. Recent events have shown that drilling development in the Arctic comes at a high price.

Total considers that the barrel price must be above $80 to justify a viable[2] investment in this region, therefore representing the least interesting oil resource along with shale oils (Total, 2011). Of course, this is an average price which, in reality, varies depending on the terrain, but it does serve to explain **the intrinsically high extraction, production and transporting costs, notably due to:**

- long distances between production and consumption sites requiring significant infrastructure investment (buildings, roads, oil pipelines, airports, industrial complexes, etc.) to evacuate hydrocarbons
- reinforced mobile offshore platforms linked to underwater drilling sites to prevent the risk of collision with floating icebergs
- materials to support extreme climatic conditions

(1) Wood MackenZie, Central Bureau of Statistics and the Centre for Research on Norwegian climate • (2) Thus a rate of return greater than 10%.

- transport in extreme weather conditions (large waves, frequent storms, oil pipeline maintenance and channels navigable only with difficulty)
- high environmental demands particularly linked to the risk of oil spills for exploration and oil production
- legal risk and the failure to respect deadlines.

Compared to exploration in Arctic waters, shale gas projects in North America, gases from Iran, Qatar and soon Mozambique and Brazil, as well as, to a lesser extent, Canadian oil sands, seem to carry less technical and organisational pitfalls.

A fragile social acceptance

Despite frequent setbacks, the major integrated oil companies as well as some local players still want to take a chance with the Arctic.

However, the industrial disappointments are numerous.

- In 2009, BP and Rosneft abandoned the Sakhaline-IV project due to a significant lack of reserves.
- This year, in light of the current gas surplus market, Total, Statoil and Gazprom decided to indefinitely postpone a huge Shtokman gas project, almost 25 years after its inception.
- ExxonMobil and Rosneft have serious doubts on the accessibility of resources in the Kara sea.

However, other players have not been disheartened by this difficult environment.

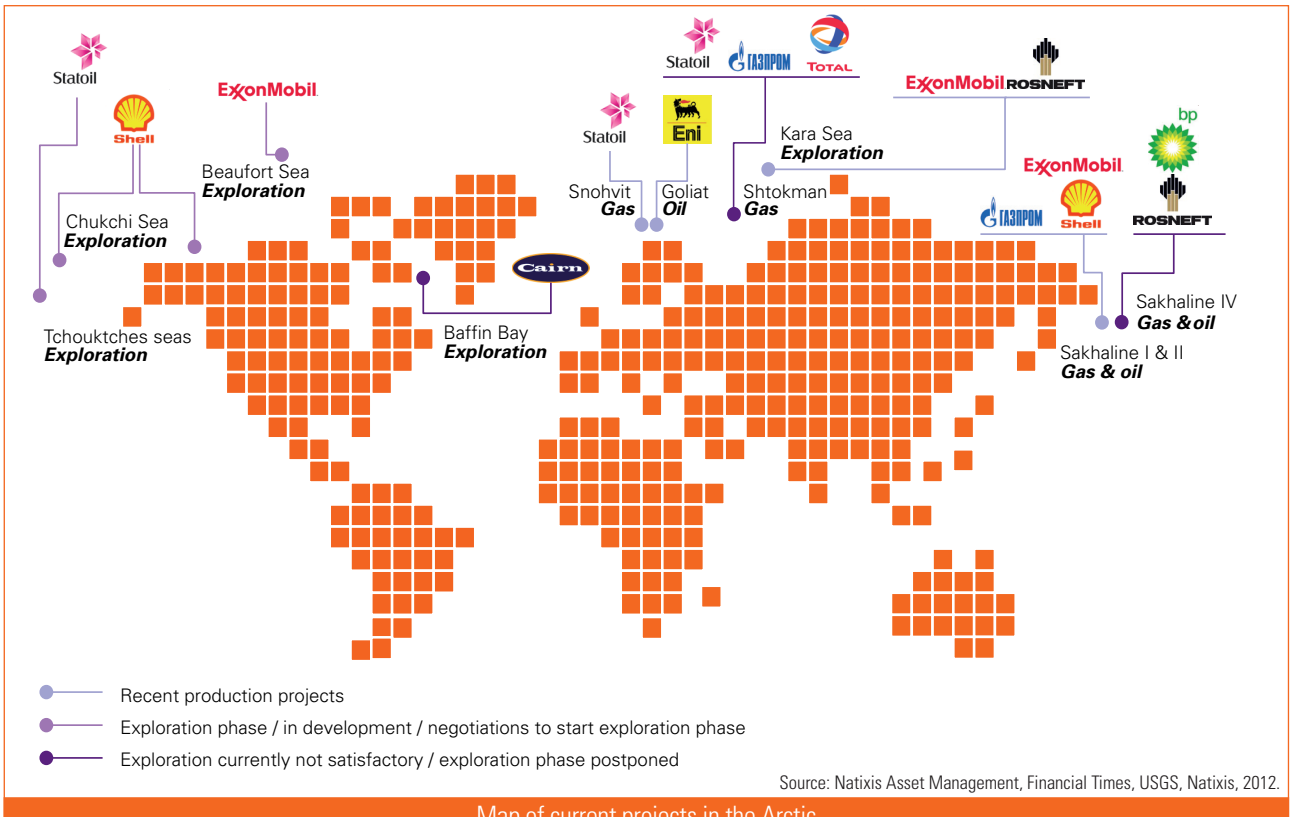
Shell and Eni are at an advanced stage in negotiations and sooner or later should start to open up drilling in Alaska and the Barents Sea, respectively.

Their success depends on social acceptance of the oil industry in the Arctic. Society in general, all the more vigilant in the current post-Macondo context, along with local populations (4 million inhabitants currently live in the Arctic) are unwilling to reduce their land and share their continent with new working populations, and would find it difficult to accept the slightest incident in the Arctic waters.

Risky Russian offshore gas exploitation

Numerous studies have analysed the social and environmental impact of oil drilling in the Arctic. Management of these risks is at the centre of oil projects in the region.

It is necessary to distinguish clearly between offshore and onshore when looking at the social and environmental challenges.
Compared to onshore, offshore drilling generally provides a considerable technological challenge. This is equally the case in the Arctic.
The technical complexity of offshore drilling inevitably means that the potential environmental risks are more significant. BP and Macondo, Chevron in Brazil and Total's Elgin platform in the North Sea all illustrate the difficulties the oil industry faces in operating offshore facilities with optimal safety conditions. 80% of proven resources in the Arctic are situated offshore.



Source: Natixis Asset Management, Financial Times, USGS, Natixis, 2012.

Map of current projects in the Arctic

There is no common legal system in the five Alaskan States, **making it difficult to establish a binding legal framework**. Numerous NGOs continue to underline the insufficient responses from the industry in light of the environmental risks related to Arctic drilling (Pew Group, 2010, Greenpeace, 2011).

Given the inexorable exploitation of Arctic resources, these NGOs are campaigning for the creation of an offshore oil exploration institution in the Arctic in charge of spreading good social and environmental practices to minimise operational risks.

Key players, such as Shell and Cairn, openly welcome the principle of a coherent approach but clearly specify that this decision remains that of the Arctic Council and its eight members (UK Parliament, 2012).

Another important differentiation: oil or gas? In the event of a hydrocarbon spill, oil is more harmful than gas to the local ecosystem.

Oil exploitation in the Arctic is thus extremely risky given the fragility of the surrounding biosphere and the difficulty in anticipating, detecting and rectifying any eventual oil spill in frozen waters. Oil recovery is an extremely complicated process on ice (UK Parliament, 2012).Total publicly voiced their opposition to offshore oil exploration in Arctic waters. According to its chief executive, the risk of an oil spill in such an ecologically sensitive area is quite simply too high. He told the Financial Times, 'A leak would do too much damage to the image of the company,' (Financial Times, 2012).

Still, with its 95% of proven gas resources, the majority of drilling will take place on Russian territory.
However, the laxity of Russian authorities regarding social and environmental issues means that this Russian predominance is not without its consequences. The legal framework in Russia, considered as being particularly permissive, does not lend itself to optimism (Chatham House, 2012). Note that Russia is the main global contributor of greenhouse gas emissions from burning gas associated with the oil fields, whilst the weak level of maintenance and replacement of Russian gas pipelines highlights once again the environmental advantage of gas compared to coal.

Additionally, they have a lack of experience in offshore operations, since less than 2% of Russian gas production comes from offshore mature fields (Associated Press, 2011). To further highlight this, Gazprom has just postponed the start of exploitation on the Prirazlomnoye field by one year due to safety concerns (Reuters, 2012).

Conclusion

Although gas is considered an interesting source of energy transfer, Arctic gas projects are unsatisfactory for the following reasons: the associated social and environmental risks, the passivity of Russian authorities on the topic, and the increasing risks in terms of the safety of offshore production.

Beyond our investigation on its adequacy with a limited long-term scenario of +2°C increase in 2035, the industrial development of the Arctic is questionable.
Oil producers repeatedly postpone dates and incur setbacks, increasing exploitation costs and therefore decreasing investment returns on projects.
Oil producers are going to have to revise downwards their Arctic ambitions for quite some time; perhaps for long enough to develop more viable renewable and decarbonised fields to attract massive investments from energy providers, oil producers included?

Bibliography

Associated Press (2011) – *Russian oil rig sinking casts doubt on Arctic Plan*.

Chatham House (2012) – *Arctic Opening: Opportunity and Risk in the High North*.

Financial Times (2012) – *Total warns against oil drilling in Arctic*.

Greenpeace (2011) – *Risks of oil exploration in the Arctic*.

IFP Energies Nouvelles (2012).

UK Parliament (2012) – *Environmental Audit Committee – Protecting the Arctic*.

Pew Group (2010) – *Oil Spill Prevention and Response in the U.S. Arctic Ocean: Unexamined Risks, Unacceptable Consequences*.

Reuters (2012) – From http://www.reuters.com/article/2012/09/21gazprom-prirazlomnoye-idUSL5E8KL1LJ20120921

Total (2011) – Pierre Mauriaud – *Break-even oil price range in 2010 required to produce a certain type of oil. Includes all sources of oil.*

USGS (2008) – *Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle*.

DISCLAIMER

This document is destined for professional clients. It may not be used for any purpose other than that for which it was conceived and may not be copied, diffused or communicated to third parties in part or in whole without the prior written authorization of Natixis Asset Management. None of the information contained in this document should be interpreted as having any contractual value. This document is produced purely for the purposes of providing indicative information.

It constitutes a presentation conceived and created by Natixis Asset Management from sources that it regards as reliable. Natixis Asset Management and Mirova Environment and Infrastructure reserve the right to modify the information presented in this document at any time without notice and particularly the information concerning the description of the management processes which does not in any way constitute a commitment on behalf of Natixis Asset Management or Mirova Environment and Infrastructure. Natixis Asset Management and Mirova Environment and Infrastructure will not be held responsible for any decision taken or not taken on the basis of information contained in this document, nor in the use that a third party may make of it. Figures mentioned refer to previous years. Past performance does not guarantee future results. Reference to a ranking and/or a price does not indicate the future performance of the UCITS or the fund manager.

The analyses and opinions referenced herein represent the subjective views of the author(s) as referenced, are as of the date shown and are subject to change. There can be no assurance that developments will transpire as may be forecasted in this material.

The funds managed by Natixis Asset Management and mentioned in this document have received the approval of the French Financial Market Authority (AMF) or have received authorization to be marketed in France.

Under Natixis Asset Management's social responsibility policy, and in accordance with the treaties signed by the French government, the funds directly managed by Natixis Asset Management do not invest in any company that manufactures sells or stocks anti-personnel mines and cluster bombs.

The funds managed by Mirova Environment and Infrastructure are not subject to the French Financial Market Authority agreement and can adopt exceptional rules of investment described in the legal prospectus.
Before making any subscription, investors must verify if they are legally authorized to subscribe to an UCITS; in particular, subscription to the funds managed by Mirova Environment and Infrastructure is strictly reserved for well-informed investors answering the criteria defined in their regulation.

Characteristics, risk and return profile and costs related to investment in a fund are described in the Key Investor Information Document, available on request from Natixis Asset Management.

In the case of funds that qualify for a special tax status, we remind potential investors that the special tax conditions depend on the individual situation of each investor and that such conditions may be subject to future modification.

This material is provided only to investment service providers or other Professional Clients or Qualified Investors and, when required by local regulation, only at their written request.
• **In France**, the prospectus and the periodical reports are available on request from Natixis Asset Management or Mirova Environment and Infrastructure. Potential subscribers must be in possession of a copy of the Key Investor Information Document before making any subscription. • **In the EU (ex UK)** Distributed by NGAM S.A., a Luxembourg management company authorized by the CSSF, or one of its branch offices. NGAM S.A., 51, avenue J.F. Kennedy, L-1855 Luxembourg, Grand Duchy of Luxembourg. • **In the UK** Provided and approved for use by NGAM UK Limited, which is authorized and regulated by the Financial Conduct Authority. • **In Switzerland** Provided by NGAM, Switzerland Sàrl. • **In and from the DIFC** Distributed in and from the DIFC financial district to Professional Clients only by NGAM Middle East, a branch of NGAM UK Limited, which is regulated by the DFSA. Office 603 – Level 6, Currency House Tower 2, P.O. Box 118257, DIFC, Dubai, United Arab Emirates. • **In Singapore** Provided by NGAM Singapore (name registration no. 5310272FD), a division of Absolute Asia Asset Management Limited, to Institutional Investors and Accredited Investors for information only. Absolute Asia Asset Management Limited is authorized by the Monetary Authority of Singapore (Company registration No.199801044D) and holds a Capital Markets Services License to provide investment management services in Singapore. Registered office: 10 Collyer Quay, #14-07/08 Ocean Financial Centre. Singapore 049315. • **In Hong Kong** This document is issued by NGAM Hong Kong Limited and is provided solely for general information only and does not constitute a solicitation to buy or an offer to sell any financial products or services. Certain information included in this material is based on information obtained from other sources considered reliable. However, NGAM Hong Kong Limited does not guarantee the accuracy of such information. • **In Japan** Provided by Natixis Asset Management Japan Co., Registration No.: Director-General of the Kanto Local Financial Bureau (kinsho) No. 425. Content of Business: The Company conducts discretionary asset management business and investment advisory and agency business as a Financial Instruments Business Operator. Registered address: 2-2-3 Uchisaiwaicho, Chiyoda-ku, Tokyo.

The above referenced entities are business development units of Natixis Global Asset Management, the holding company of a diverse line-up of specialised investment management and distribution entities worldwide. Although Natixis Global Asset Management believes the information provided in this material to be reliable, it does not guarantee the accuracy, adequacy or completeness of such information.

Mirova.
Responsible investing

Mirova is a brand of Natixis Asset Management.

Visit us: www.mirova.com
Follow us: @Mirova_RI

NATIXIS ASSET MANAGEMENT
Limited Company - Share Capital: €50 434 604.76
RCS Paris 329 450 738 - Regulated by AMF: GP 90-009
Registered Office: 21 quai d'Austerlitz - 75634 Paris Cedex 13

MIROVA ENVIRONMENT AND INFRASTRUCTURE
A French simplified joint-stock company - Share Capital: €550 000
RCS Paris 394 648 216 - Regulated by AMF: GP 02 014
Registered Office: 21, quai d'Austerlitz - 75013 Paris

The Infrastructure financing activity is managed by Mirova Environment and Infrastructure, a subsidiary of Natixis Asset Management.

AN EXPERTISE OF NATIXIS GLOBAL ASSET MANAGEMENT