Hydrocarbons in Greenland

– Prospects for the Greenlandic Economy

Mini Report

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Introduction

Greenland is a country between the traditional and the modern, a society bordering on the possible. It is an old colony, which mixes aspirations for independence with economic dependence on the old metropolis, Denmark. It is a country resembling a Nordic welfare state, but with inequality on par with Mexico and the United States. For the wider world it might be most known for being one of the places on earth where the effects of climate change are most dramatically evident. Soon, however, Greenland might be standing at the centre of the world's attention for another reason, namely for it's natural resources in general, and oil in particular.

In Greenland, the possibility of finding oil permeates society on all levels. Large oil findings could make it possible for the country to finally reach complete independence from Denmark. It could also provide employment and bring economic development to an economy that is today reliant on fisheries and a large yearly subsidy, the block grant, from Denmark. Finding oil is something that many states would desire, but the combination of a vast pristine area and a lilliputian population makes the situation in Greenland unique. Will Greenland become an Inuit version of the Middle East where the traditional Greenlandic hunting grounds make way for oil refineries, financial centres and glacier casinos? The perspectives are mind-boggling and the future for the population looks exciting.

There are high hopes in Greenland that the country will go from being a nation of fishermen to a nation of oil producers. But what do we really know about the prospects? Most of the information comes from three sources, which all frame their message in different ways.

The geologists at the US Geological Survey, USGS, perform assessments of the potential oil resources in the world. They show that it is likely that there are vast oil resources to be found in the waters offshore Greenland. This data, however, only shows the likely existence of oil and not how much of it will actually be produced.

The authority handling the oil in Greenland is the Bureau of Minerals and Petroleum (BMP). The BMP prefers to keep a low profile and tries not to raise expectations. Therefore it has officially avoided to release estimations of how much the oil could be worth to Greenland.

The politicians in Greenland communicate clearly that the mineral resource sector is the future for the Greenlandic economy and that it will make further independence possible. The political discussion is, however, kept on a visionary level. This makes it hard to assess how realistic these visions are.

The geologists, the authorities and the politicians all provide information of different nature and answer different questions. It is therefore difficult for the public and other interested parties to understand what is realistic to expect and if the visions that the politicians deliver are credible. Our thesis makes a first attempt at combining these pieces of information.

We analyse what Greenland can realistically expect from oil in the future, given the information available today. In order to do this, we choose three conditions that need to be fulfilled in order to achieve a self-sustaining oil economy in Greenland. First, there has to be oil present. Secondly, producing this oil will have to render sufficient profit to make Greenland self-sustaining. Finally, the institutions in Greenland will have to be strong enough to manage the resources efficiently.

Results

In this mini report, we present how favourable the geological, economic and institutional conditions are for building a self-sustaining economy in Greenland based on its hydrocarbon resources. We show that the geological conditions are favourable, but that the economic and institutional conditions can be improved.

Greenland has been interesting for hydrocarbon exploration before, but the current programme is the biggest yet. The reason for this is that encouraging geological results show a possibility for a working active petroleum system. While the USGS makes hydrocarbon assessment data available, it is not aggregated, making it unsuitable for our analysis. We aggregate this data through a Monte Carlo-simulation.

The results are encouraging. Table 1 shows that Greenland has a 50% probability of finding at least 29% of Norway's ultimately recoverable resources and a 95% probability of finding at least 8%. This is a significant number considering the size of the Greenlandic population that is only 1% of the Norwegian. **We therefore conclude that there are favourable geological conditions to make Greenland self-sustaining**. While this aggregated data is still subject to uncertainty, it is more suitable for making predictions about future oil findings in Greenland.

Table 1. Greenlandic resources compared to Norway and the world.

	5th percentile	**50th percentile**	**95th percentile**
Greenland's total technically recoverable resources in million barrels of oil	34,695	13,189	3,699
% of Norway's resources	77%	29%	8%
% of world resources	1.2%	0.4%	0.1%
Months of world consumption	13.1 months	5.0 months	1.4 months

We also make a prediction for the total direct government oil income that can be expected. The direct government oil income is determined by the contracts that the Government of Greenland has signed with the oil companies. As defined there, the Government of Greenland receives a certain percentage of the profits that the oil companies make from production in Greenland. The income is therefore dependent on the economic viability and the time frame of production in Greenland.

In order to determine what the direct government oil income could mean for Greenland, we create four scenarios to model different self-sustaining outcomes. The economy today is heavily reliant on a yearly subsidy from Denmark, the block grant. Achieving a self-sustaining economy would require replacement of the block grant, which is scenario 1. Greenland will also experience rising government expenditure in the future due to demographic changes. Financing this is included in scenario 2. As the economy grows, government expenditure grows. A permanent income increases government income accordingly. This is done in scenario 3. Finally, scenario 4 models a case where the direct government oil income is enough to make Greenland one of the richest countries on Earth.

Table 2. Probabilities for the scenarios

	<$50	$75	$100	$150	$200
1. Replacing the Block Grant	-	21%	61%	88%	96%
2. Overcoming the Demographic Challenges	-	1%	25%	63%	79%
3. A Permanent Income	-	-	9%	42%	63%
4. The Oil Bonanza	-	-	1%	19%	38%

Table 2 shows the probabilities of the four different scenarios based on the predictions for direct government oil income in our model at different oil prices. At an oil price below $50, production is not economically viable.

We estimate that there is a 61% probability of replacing the block grant with current oil prices. This indicates that it is possible that Greenland can become self-sustaining. However, replacing the block grant will not be enough to keep the government budget balanced assuming current policies. Additionally, the possibility for the oil bonanza is negligible at current oil prices. **We therefore conclude that the current optimism surrounding the oil industry is exaggerated.**

Large direct government oil income affects an economy through the Dutch disease, which decreases the competitiveness of the exporting industry. We find that Greenland already suffers from Dutch disease and that it is caused by the block grant. An oil economy would probably retain, or aggravate, these effects.

Intuitively, an oil industry should contribute to economic development through job creation, industry formation etc. However, this is not always the case. This is explained by the resource curse. It is therefore important to investigate if and how Greenland can avoid this.

Collier & Hoeffler (2005) find that scrutiny, and especially press freedom, can prevent the curse. There are no prior investigations or indices on the institutional quality in Greenland from this perspective. Therefore, we make a qualitative analysis of this matter through interviews with key officials and a compilation of related publications.

We conclude that scrutiny in Greenland is functioning but that there are some problems left. **Our institutional analysis shows that it is impossible to guarantee that the institutional situation is sufficient to avoid the resource curse**. The institutional capabilities are especially important as the Greenlandic Mineral Resource Fund will be central to control the spending effect. To manage the fund strictly will therefore be an important task.

Recommendations

As we point out in this thesis there are a number of areas regarding hydrocarbons in Greenland that can be improved. We present our recommendations for policymakers in Greenland here. The geological conditions are given by nature and many of the economic conditions are already decided. There are, however, some economic conditions that can still be influenced. The most obvious area of improvement is the institutions.

Lower the Expectations

There are high expectations on the oil resources in Greenland today. However, as our results show, it is unlikely that Greenland will end up as an Arctic version of the Middle East. It can be expected that some oil is found, but this will probably not be enough to drastically increase the living standard in a

sustainable way. On top of this, there is the risk of increasing resource curse effects including aggravation of the Dutch disease that Greenland already has. It is therefore important to try to lower the expectations.

A lot of work is required in order to achieve a self-sustaining economy and it is unlikely that oil will change that. A critical discussion on the prospects for hydrocarbons would perhaps also bring an understanding of how hydrocarbons *can* contribute to economic growth and what this would require from the Greenlandic society. This discussion could therefore benefit society more than either presenting seducing utopian oil visions or saying that the uncertainties are so great that it is better to say nothing at all.

Lower the Risks

As we have shown, oil in Greenland carries a high geological risk that is leveraged through the progressive government take system. For a larger country, this would not be an issue, since the geological risk is not correlated with the overall economy. This is called a diversifiable risk, and is considered unproblematic. In Greenland, however, the income from potential oil findings would constitute such a large part of the economy that the overall economy would become very dependant upon the outcome size of the findings and market factors. This would make the risk of the overall economy correlated with the risk of the direct government oil income, which is the definition of a non-diversifiable risk.

One way to lower this risk is to accept a lower government take in favour of lower risk in the oil project. Most of these instruments are already decided upon. However, Nunaoil participation in oil production is yet to be decided. Because of the way the Nunaoil participation option is designed, Nunaoil will not be exposed to the geological risk in its decision. However, it will still be exposed to market risks and production cost risks. The Government of Greenland could therefore refrain from investing directly in oil projects through Nunaoil, at least initially.

Another way to lower the non-diversifiable risk is to grow the other parts of the economy, thereby growing the overall economy, and thus lowering the oil share. This could be done by investing in types education that are not only targeted at the oil sector, by growing other industries, such as mining and tourism and furthering entrepreneurship.

Improve the Institutions

The analysis of institutional quality in Greenland shows a few areas where there are problems. Specifically these were found in the media and in the administration. Some of the problems are due to the smallness of the nation, which limits the market for the media and means that personal relationships will have a larger influence on decision making. There are, however, areas that can be improved. Specifically, the transparency in the administration can be enhanced and steps can be taken to make the public service media less vulnerable to political interference.

The challenges related to the population size can perhaps be tackled through smarter policies. It is important that Greenland does not try to copy the Danish administrative system, but rather that it finds solutions that meet the specific Greenlandic needs. To find out how this can be done, it is important that these issues are discussed.

Focusing on improving institutions is a strategy that carries several benefits. In case oil is found, it will serve to improve the management of the resources. In case less oil is found, it will be a boost to other types of growth and lead to better economic and political decisions. It is therefore a strategy that will bring benefits regardless of the future outcome of the oil sector.

Be Restrictive with the Fund

The Act on the Greenlandic Mineral Resource Fund is decided in the Greenlandic parliament and this is a good first step to ensure that the direct government oil income will be managed in a responsible way. It is, however, not enough to merely create a fund. The manage-

ment of it will be the most challenging part, and this can be addressed more clearly already today. Primarily, it should be made clear that the fund is separated from the government budget. The fund should also be used very restrictively in the first years of oil production, before it is clear how much oil there is.

When it is possible to make more reliable estimations, a permanent income or similar can be constructed. In this way it is possible to avoid a situation where the block grant is abolished, the Dutch disease increases further and the fund is empty, which can be considered a worst case scenario.

If investment on top of the permanent income should be made, deciding how is a difficult decision. Each investment will have to be weighed against the future decreases in permanent income and the Dutch disease effects. A rule of thumb could therefore be to be restrictive with the use of oil money and to do this only in very clear cases.

For more information and the full report, visit hydrocarbonsingreenland.com