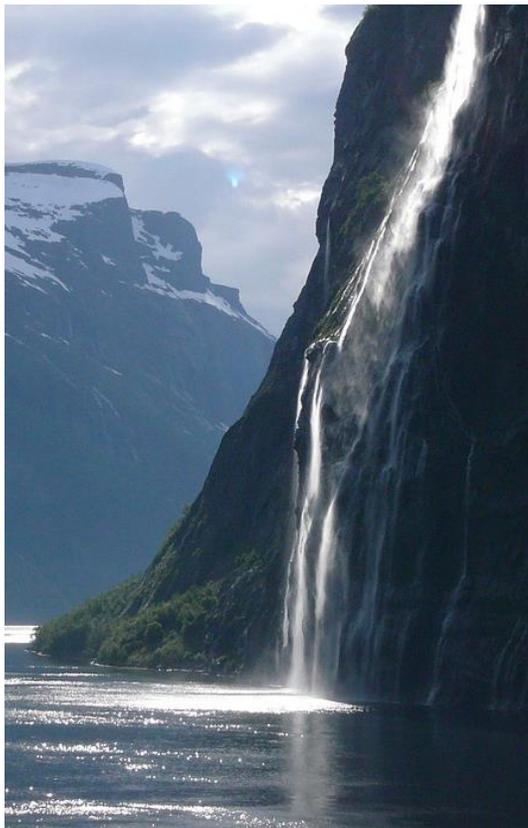


Norway: Committing to Innovation

By *Tone Nymoene* and Kirk Samson*

Norway is a country with tremendous innovation in the green industries, amazing maritime and energy resources, and a reputation for excellent intellectual property right protections and an effective, flat business structure. In essence, Norway should be the perfect



place for dynamic and agile companies to take a leading role in developing the next wave of innovative technologies. Yet despite the abundant natural energy and opportunities in the country, Norway fails to compete with leading nations (including neighboring Sweden and Denmark) when it comes to attracting high-tech foreign direct investment and consistently fostering innovation. In the article below, we will discuss the reasons why Norway is underperforming in innovation, and how this may change in the next few years.

Norway is a small nation of only five million inhabitants, but is a giant in the financial markets, with the world's largest sovereign wealth fund. Norway is a unique location: not a member of the EU, but part of the EU common market. Part of Schengen but with an independent (and relatively insulated) national currency.

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Labor (and living) costs are high in Norway – Norway is not a cheap offshoring location. However, it is a haven of intellectual property protection, political stability, innovation, and a highly educated work-force that is politically and socially inclined towards world leadership in environmental matters. The country is consistently mentioned by Transparency International as the one of the most transparent economies in the world. So, as international businesses look abroad for partnerships and inspiration, Norway represents a unique and attractive profile. Rated as one of the absolute top countries in the world for quality of life, ease of doing business and prosperity – Norway can be nirvana for companies that match up well with the industries that are leading innovation in their sectors. Below, we delve into some of the top areas in which Norwegian firms are truly on the cutting edge of development.

Clean tech / Green tech

Since the 1970s, Norwegian economy has largely been driven by high oil prices and a growing worldwide demand for oil and gas. However, the recent fall in oil prices has spurred a demand for cost reductions and improved efficiency in the petroleum sector. This has in recent years led to increased innovation and somewhat of a digital revolution. Norway has some of the world's highest skilled engineers and a long tradition in managing large operations at sea. The task became finding out how to keep up efficient and profitable operations with less cost, less manpower and less impact on the environment. Supplier companies needed to seek out alternative uses and new markets for their technologies, initiating some really interesting new business areas. "*The Green Shift*" became the new [buzz word](#).

Norway has become a beacon for green technology – ranging from renewable energy to industry production and food production. Norway has the largest per capita usage of electric vehicles in the world, with over 39% of new car sales in Norway last year being electrical. Driven by consumer sentiment (not to mention dramatic tax incentives), these sales figures illustrate how Norway provides a unique and fertile market for companies that provide energy-efficient and clean products. It also ensures that the logistics tail and support industries for clean



tech are vibrant in Norway, ensuring a dynamic and welcome market for collaboration in related sectors.

You may remember some of the fascinating new products that were introduced to the world at the Lillehammer Olympics in 1994, such as the use of biodegradable plates and eating utensils made of potato starch. This innovation and ‘green thinking’ have only accelerated in the last 20 years, ensuring that Norway has enormous consumer demand (and national expertise) for cutting edge clean tech in everything from waste handling to batteries and nanotechnology. Norway ranks among the very top nations in clean tech research and development expenditures, but the domestic market is still lagging slightly behind neighboring Sweden and Denmark, suggesting that there will be great growth in this area in the next few years as the clean tech industry pushes ahead with VC (a choke point in Norway, although there are grants that support domestic companies) and government support. Norway continues to receive international acclaim for some of its recycling and reuse programs since Lillehammer, most recently for their highly-efficient plastic [bottle recycling program](#) as well as ocean clean-up projects discussed below. The government is currently working on a ban of single use plastics, similar to the one proposed by the EU earlier this year.

Energy

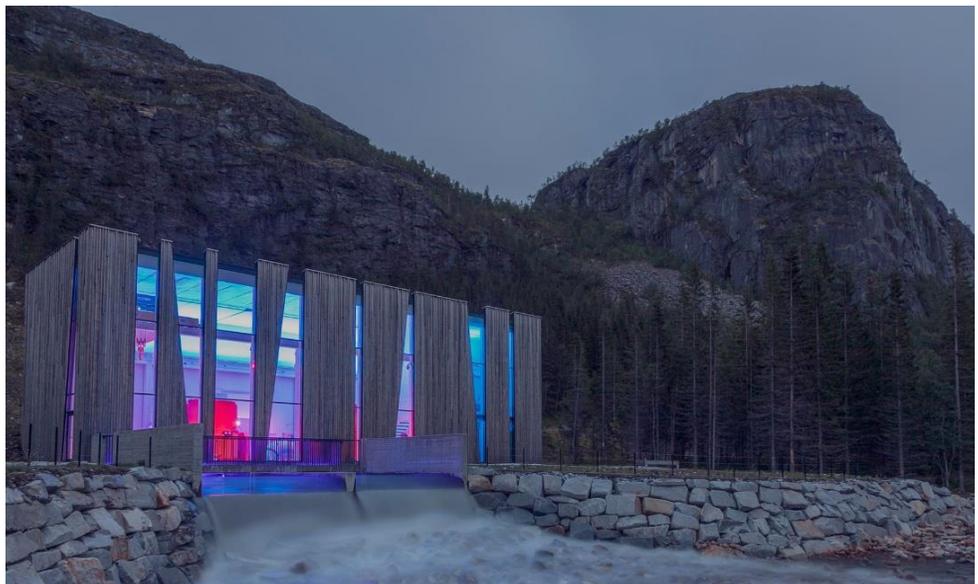
Despite the abundant fossil fuels discovered off the coast of Norway (and which spurred its rise to one of the wealthiest nations in the world), the environmentally-focused politics of the country (including major environmental and climate-oriented NGOs) have continued to spur the development and refinement of renewable energy resources through the country. Electric driven vehicles are also making strides in Norway faster than in almost any other country. For example, Tesla sells more vehicles per capita in Norway than in any other non-US country, in large part due to the generous tax advantages that the Norwegian government provides to encourage their use. With no domestic auto industry to defend, expect this push to continue.



Norway's first autonomous electric-powered ship, Yara Birkeland, that is being built for the Norwegian fertilizer producer Yara and which will transport fertilizer along the southern coast of Norway, will gradually move from manned operation to fully autonomous operation by 2022. Later this year, [self-driven electric buses](#) will enter the streets of the capital city of Oslo. Passengers will be able to order buses via a smartphone app. The electric vehicle will stop to pick up other passengers and optimize the route based on the wishes of everyone on board..

Perhaps most impressive is the political commitment by the Norwegian government to have all short-haul domestic flights run by electric aircraft by the year 2040. This commitment will spark a boom in electric aircraft development, and considering the power and sway of Norway's sovereign wealth fund, it means that corporate boards across the world will be redoubling their efforts to provide aircraft that will meet these goals.

Hydropower has been a staple of the Norwegian energy industry for decades, and for obvious reasons. The country is blessed with existing waterfalls and forced by logistics chokepoints to produce electricity locally when possible. Applying this technology to new industries has led to unique combinations. Among other things; the relatively cold



Photograph: Pedro Alvarez for the Observer in the Guardian article: [Beauty and Power](#)

Norwegian climate, along with the lowest-prices green hydroelectric power in Europe, makes the country ideal for [hyper scale data centers](#).



Equinor, formerly Statoil, has also committed to the renewables movement by investing heavily in [sea-based wind power](#) in Norway and Scotland; using it to supplement, and even assist in the offshore oil and gas industries as legal changes and innovation improve the profitability of renewable energy use. Wave and tidal energy developers are also finding success in Norway, with foreign and home-grown companies such as Waves4Power and Tidal Sails competing to provide energy to the national grid and export their technology abroad.

Maritime industries and research

No nation is more closely tied to the sea than Norway. The dramatic coastline (the world's 2nd largest), with deep fjords that penetrate deep into the interior and numerous islands, measures longer than the globe's equator. Harvesting from the oceans has been, and continues to be, the livelihood of many Norwegians. Over 200 000 jobs are connected to this sector, creating NOK 500 (USD 60) billion in annual revenue. Hence it is only natural that Norway is aiming to take the lead in the global development at sea. Blue tech is the new buzz word and a healthy and sustainable ocean is the goal.

Norwegian companies are on the cutting edge of the maritime sector; developing new technology in the area of remotely piloted submarines and underwater drones as well as off-shore and subsea drilling and exploration and shipbuilding and hydrodynamics. An importance center for this technology development is a cluster in the city of Trondheim, less-known than the capital markets in Oslo, but a beautiful and highly-livable city which is well regarded in the maritime technology arena and home to the Maritime Technology Centre at the Norwegian University of Science and Technology (NTNU). Other maritime centers are Bergen, with the Institute of Marine Research, and Tromsø, with institutions like the Norwegian Polar Institute, focusing on the environmental monitoring of the Arctic and Antarctic regions.



The work force, quality of life, and real estate in Norway

Three key site selection criteria that inbound employers will be sure to consider are the labor market, quality of life concerns, and real estate costs in prime locations. Regarding potential staff members, the Employers looking for a new home in Europe will appreciate the strong educational system which ensures a highly-skilled and competitive labor market. High-level English language skills and cross-cultural competence are the norm for workers in this country, where many have studied abroad as part of their education. The only drawback is that unemployment is currently at a low 4.0% and wages are very high compared to the U.S., which means that the best employees can demand a premium for their services.

For expatriates, Norway is a natural paradise with good support networks for families, such as international schools which one can find throughout the country. Cities such as Stavanger, Oslo, Bergen and Trondheim have active expatriate communities and crime rates throughout the country are remarkably low, despite the current world-wide popularity of criminal fiction authors such as Jo Nesbø.

Why Apple moved to Denmark

The list of positives above suggest that almost any high-end, tech-focused company would be itching to get into Norway, and yet Norway consistently loses out on top innovation rankings in the EU and (more importantly) has had difficulty in landing a large foreign investment project over the last decade while companies chose to go to Denmark, Sweden or Ireland over Norway. What is driving those decisions? How did Norway fail to compete with such a strong suite of advantages to promote and offer to foreign investors?

Norwegian politics and business environments welcome technology advances and the companies that can bring them into the country to strengthen the sector. Unlike neighboring Denmark, however, there is little official effort made to attract these companies into Norway. There is almost an assumption that foreign direct investment groups will see the benefits of



moving into Norway and they have lost significant potential investors with this hands-off approach. It is unlikely to change, as Norway enjoys continued low unemployment and the assurance of a gargantuan sovereign wealth fund, but companies that are willing put in the time to find partners and clusters that support their industry can reap tremendous benefits from participating in this market. Not only is the innovative spirit thriving in the above-mentioned industries, Norway's customer base – industrial as well as consumer – is one of the world's wealthiest, and they do not balk at purchasing high-end items in order to ensure that they have the best equipment.

When does Norway make sense?

Noting the apparent lack in of any serious commitment by the government to compete for foreign direct investment (most apparent in their lackadaisical efforts with companies like Facebook and Apple), what companies should still look to Norway as a potential haven for international expansion beyond the traditional maritime, oil and fishing industries? Tesla and Nissan's success in Norway are educational: the meeting of friendly government reception towards electrical vehicles and a wealthy consumer market created a unique synergy that supported electrical car sales. High-end 'green-oriented' products will do well here, and find dynamic start-ups working to provide new product for the environmentally conscience consumers in Norway. For example, companies that can tie in to the world-class carbon capture and storage (CCS) efforts supporting by the Norwegian government and energy sector are likely to find Norway to be one of the world's best for new research and development in this sector

Research in dramatic undersea environments has also spun off into equipment and research for space exploration (including the Norwegian Space Center), supported in part by the robust defense manufacturing and specific radar expertise that Norway has developed to maintain security over its coastal waters (in part bordering Russia) and to help with search and rescue activities in the North Sea.



Samson Atlantic

In these sectors, Norway is a world leader in innovation and will only continue to develop in exciting new directions. Although Norway does not score as high in EU assessments on general innovation as neighboring Sweden or Denmark, that trend has shifted in recent years as more government and private sector funds are directed towards research and development projects. The business climate in Norway is welcoming, ranking eighth in the world according to the World Bank's Ease of Doing Business rankings; ahead of Sweden, Germany and the Netherlands. With a robust and dynamic internal market and the stability of a steady oil industry and massive sovereign wealth fund, the Norwegian government has not made as strong of a commitment to enticing FDI as other European countries, but excellent opportunities abound for forward-thinking companies. Norway may not represent the perfect location for every company, but for many, it offers a dynamic and growing market on the cutting edge of high-end technologies.