UNIVERSITY OF STAVANGER BUSINESS SCHOOL

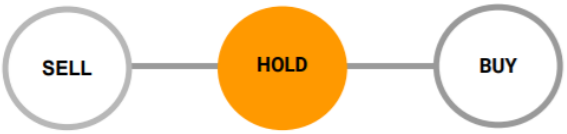
MASTER'S THESIS

STUDY PROGRAMME:	THIS THESIS HAS BEEN WRITTEN WITHIN THE FOLLOWING FIELD OF SPECIALISATION:
MASTER OF SCIENCE: BUSINESS AND ADMINISTRATION	**APPLIED FINANCE**

TITLE:

EQUITY VALUATION OF SCATEC ASA

AUTHOR(S)		SUPERVISOR:
Candidate number:	Name:	Mads Rømer Holm
2105 ……	Erik Johansen Skadberg ……	
2007 ……	Mats Kvalvågnes ……	



Executive summary

Key information per 10.05.21	
Estimated share price	*215.48*
Current market share price	*209.00*
Company name	*Scatec ASA*
Ticker	*SCATC*
Sector	*Energy*
Shares outstanding	*158335667*
Options outstanding	*1071000*

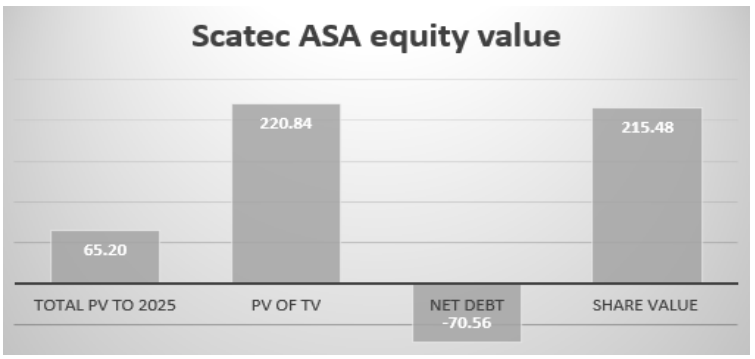
Financials in NOK millions (2020)	
Market cap	*33092.154*
Net debt	*11247*
Revenues	*2771*
EBITDA	*2070*
Cash flows from operations	*1671*

We estimate a current intrinsic equity value of NOK 215,48 per share, this implies that the market is currently pricing Scatec ASA shares highly efficiently at NOK 209 per share. The company has experienced strong growth in cash flows from operations and has recently announced the acquisition of SN Power which expands the company's diversification in the renewable energy sector to both solar PV and hydropower. We are quite certain the acquisition will bring a stable increase in EBIT of about NOK 1124 million annually and expect this to remain constant.

Scatec ASA has a highly efficient business with strong operating efficiency. From our estimations we expect the large debt positions to be manageable from our future cash flows estimations.

The COVID-19 pandemic sparked immediate uncertainty and fear in the financial markets, but Scatec seems largely unaffected in cash flows. Therefore, we do not expect any significant negative effects for the company. Overall, we expect the company to continue to increase its cash flows in the future. Current market prices reflect the fundamental value of the business.

Recommendation: Hold.



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Preface

This thesis was written by us as an ending of our Master of Science in business and administration. We both took a major in applied finance at the University in Stavanger, and had all of the same courses, which is reflected in our master thesis. We both fancied all of the courses, but investment and financial statement analysis and security valuation made us interested in writing the master thesis. One of the reasons Scatec ASA caught our interest for our master thesis was due to renewable energy getting more important for each year that goes by and we wanted to take a deeper look into the different renewable energy sources and a growth company like Scatec ASA.

Firstly, we would like to thank our supervisor, Mads Rømer Holm, for giving us important help on both how we should structure our thesis and to look at important factors in the renewable energy sector. We also want to thank our family and friends for giving us the motivation and support to be able to enjoy two good years at this master program in general and the process of writing this master thesis.

Stavanger, June 15th2021

Erik Johansen Skadberg
Mats Kvalvågnes

Chapter 1 - Introduction

The COVID-19 pandemic has disrupted markets and businesses all over the world since the beginning of the virus outbreak in Q1 2020. This has primarily caused huge uncertainties in the global economy through lockdowns, spikes in unemployment and lowering of interest rates (EURIBOR even has negative interest rates). The United States Federal Reserve ("the FED") has been busy providing liquidity through quantitative easing for long-term bond purchases and lending policies worth trillions of dollars. This has consequently caused M2 to spike from USD 16 trillion in Q1 2020 to USD 19,9 trillion in Q1 2021 (FED, 2021).

In the midst of the pandemic, market participants and governments around the world have shifted towards sustainability. The goals set in the United Nations agenda for sustainable development and the Paris Agreement should help companies through the shift with subsidies to guide market participants towards net zero carbon emission by 2050 (UN, n.d.). In effect, companies already focused on renewables have an opportunity to increase their global market impact. To get a deeper understanding of the renewable energy market, we will analyze the largest company focused on renewables in Norway, namely Scatec ASA.

This thesis is trying to estimate the intrinsic value of Scatec ASA. Intrinsic value is defined by Graham & Dodd in Security Analysis (2009 p. 64) as "that value which is justified by the facts, e.g., the assets, earnings, dividends, definite prospects…". The practical estimations of arriving at an approximate intrinsic value is much harder today, than it was when Security Analysis was written originally in 1934. Discounted cash-flow models with forecasted free-cash flows is the modern version of basing the valuation on facts such as historical earnings, future prospects and competitive advantages. This thesis will do this analysis, thereby, the research question is:

"What is the intrinsic equity value of Scatec ASA?"

1.1 Structure of thesis

The first part of this master thesis starts with giving an introduction about the COVID-19 pandemic and our research question. The second chapter gives a presentation of renewable energy in general, the acquisition of SN power, renewable energy sources utilized by Scatec ASA and about green bond financing. In the third chapter, Scatec ASA will be the focus and learn more about their background, their mission statement, the technology they are using, their value chain and their potential market risks. Next, we are heading towards the analytical part where we are presenting different strategic analyses of the macroeconomic and microeconomic environments like PESTEL, Porter and SWOT.

The financial statement analysis will be presented. This chapter will contain information about both the balance sheet (BS) and income statement (IS) with a reformulated BS and IS. The two other parts of this chapter are working capital and a profitability analysis.
The two next chapters are management efficiency and growth and analysis of liquidity/credit risk. The efficiency and growth chapter contains Return on investment, return on net operating assets and other types of growth. This part will help the thesis with finding the estimates we are going to use later in the thesis. The analysis of liquidity/credit risk where we are discussing the short- and long-term liquidity risk from the debt issuance. When we are combining both the strategic analysis and the analysis of the financial statement, we can estimate future free cash flows with help from the historical cash flow statements.
The valuation of Scatec ASA is built by those assumptions and information from these chapters and will be built on a fundamental analysis approach. When doing a valuation, it is important to look at different sensitivity analysis, so in this thesis, both a sensitivity analysis and a Monte Carlo simulation is conducted.
In chapter 10 we perform a relative valuation where we compare Scatec ASA to three other companies who focus their operations on solar PV technology and try to compare this with the results from the fundamental analysis.
Lastly, we present our conclusion of the current intrinsic value of Scatec ASA and the limitations of this master thesis.

Chapter 2 - Renewable energy sector

2.1 Renewable Energy

Renewable energy is often associated with “clean” energy, due to the fact that it is collected from natural resources or processes that can be done repeatedly without any damage to our nature.

Renewable energy has always been around, but many think of renewable energy as a new technology. The fact is that technology and governmental monetary incentives support the market in developing efficient solutions. The new technology within renewable energy helps the world to store it, make it cheaper and find more efficient ways of using it. Renewable energy is a very important energy source to focus on, due to increased awareness of climate change and sustainability.
“Dirty” energy has been the way to go up until now, examples of this type of energy are oil, gas and coal. Some of the reasons why the world has been more focused on renewable energy is due to the fact that these non-renewable energy sources are going to run out sometime in the distant future and at the same time damages our climate through CO2 emissions. This makes it important to make renewable energy as efficient and cheap as possible, so it can reduce emissions by replacing them with renewable energy where it is economically sound (e.g. the airplane industry will still probably need non-renewables for jet fuel). Companies are becoming better at considering the environment and accordingly in renewable energy sources.

Looking specifically in Norway, 98% of the electricity production comes from renewable energy. Where the three most common uses are hydropower, wind power and thermal power. Solar power is getting more and more popular in Norway, which the numbers from Asplanviak shows. From 2018 to 2019 the installation of solar panels more than doubled themselves. 60% was from commercial- and industry buildings, 35% was from normal households. From 2015 the numbers of sun power capacity have increased more than eight times themselves (Asplanviak, 2020).

There are a lot of different types of renewable energy, but the most common is solar-, wind-, hydro-, tidal-, geothermal- and biomass energy. In this specific master thesis, the focus will be on solar PV, hydropower and wind turbines.

2.2 Solar energy

Every year the earth receives 15 000 times more energy from the sun than the earth's population is able to use. Depending on where on the earth, some places get an energy quantity of 700 to over 2200 kWh/square root each year. Some of the reasons why solar energy is getting more and more popular is due to the fact that the sun is free, it is an environment and climate friendly energy source and can be used everywhere (Solenergi, 2021). Solar energy has the potential to be one of the most important renewable energy sources in the future and on a world basis, one can see the strong growth in the use of this solar energy. According to Guangul and Chala (2019) the earth receives the yearly amount of energy needed in 90 minutes, which tells us how effective the use of renewable energy can be (solenergi, 2021).

If one for instance talks about Norway and solar energy, the numbers on how much solar radiation Norway gets yearly on a horizontal ground is between 700-1000 kWh/square root. Compared to some buildings with certain standards in Norway, they only need 95-225 kWh each year. Which means that they get way more solar energy than what the buildings need each year. The rest of the energy can either be stored or sold (solenergi, 2021).

When talking about solar energy technology, we can divide it into solar cells (photovoltaics) and solar thermal collectors. Solar cells convert solar energy into electricity, while the other method converts solar energy into heat (solenergi, 2021).

The energy market is getting more and more popular in the world, due to people wanting to produce renewable energy to cover partly or their whole consumption. Looking at figure 1, a work sample from the United States, we can see how the growth has increased from 2000 to 2019, which shows how popular this type of renewable energy has become. Solar energy has a lot of benefits and some of them are for instance sustainability, easy to install, low maintenance- and operating cost. These characteristics should give renewable energy a competitive advantage in the future if governments are prioritizing subsidies to allow further

R&D and technology development to reduce costs further. This makes it possible for renewables to replace much of today's usage of unsustainable energy, fossil fuel (solenergi, 2021).

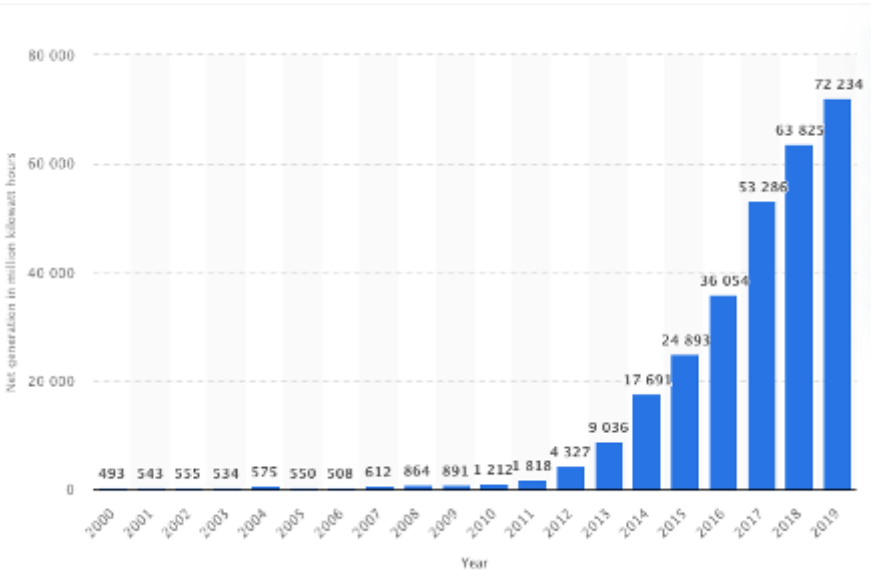


Figure 1. Net power generated from Solar PV in the US from 2000 to 2020, 2020, by Statista. Retrieved from: https://www.statista.com/statistics/183447/us-energy-generation-from-solar-sources-from-2000/

2.3. Hydropower through SN Power

On 16 October 2020, Scatec ASA signed a binding agreement to purchase 100% of the outstanding shares of SN Power from Norfund for USD 1.166 million. SN Power is a leading hydropower developer and independent power producer (IPP). Hydropower is currently providing 19% of the global electricity supply (SN Power, n.d.), and are in essence using the energy of flowing water to drive a turbine which produces mechanical energy, this is then turned into electrical energy in a generator (Statkraft, n.d.).

Norfund and Scatec are also establishing a joint venture (JV) for SN Power's Sub-Saharan Africa hydro assets, where Norfund will retain a 49% stake and Scatec a 51% stake.

Benefits of entering the hydropower segment

The entree to hydropower is clearly in-line with Scatec's mission to deliver competitive and sustainable solar energy globally. So, it is natural to expand their reach to other segments within the renewable energy sector.

Hydropower is highly attractive due to characteristics such as storage, very high asset life-time (low depreciation charges) and low operational risk and gearing (Scatec ASA, 2020). This acquisition will also diversify the technological and geographical risk and increase options for reducing opportunity costs. For example, if the company has internal documentation for assuming a higher yield on increasing their stake in hydropower, rather than increasing their stake in another solar PV, this is now a possibility.

2.4 Bonds

On 9 February, 2021 Scatec ASA completed an unsecured green bond issue worth EUR 250 million with maturity in August 2025 (Scatec ASA, 2021b). This bond has a floating coupon of 3 months EURIBOR plus 250 bps. At the time of writing the EURIBOR 3 month rate is -0,54% (EURIBOR, 2021), which means at current rates the interest payable is 1,96%. Since the last report from Q4 2020 was published on 1 February 2021, therefore this bond issue will not appear in the financial statements, but they are worth noticing because the proceedings from this issue shall be used for (Scatec, 2021):

1. Refinance outstanding bond (ticker; SSO02 ESG).
2. Partially refinance the acquisition facility for SN Power, totalling USD 400 million. This finance facility (loan) is received from financial institutions.
3. Any proceeds will be used for investments in "green eligible assets", which directly would be a net positive considering the increase in tangible book value and future earnings power.

Chapter 3 - Scatec ASA

In this section we will provide a brief introduction to Scatec's background, mission statement, technology and value chain. This will give the reader an overview of what we determine as the most important facts for understanding Scatec.

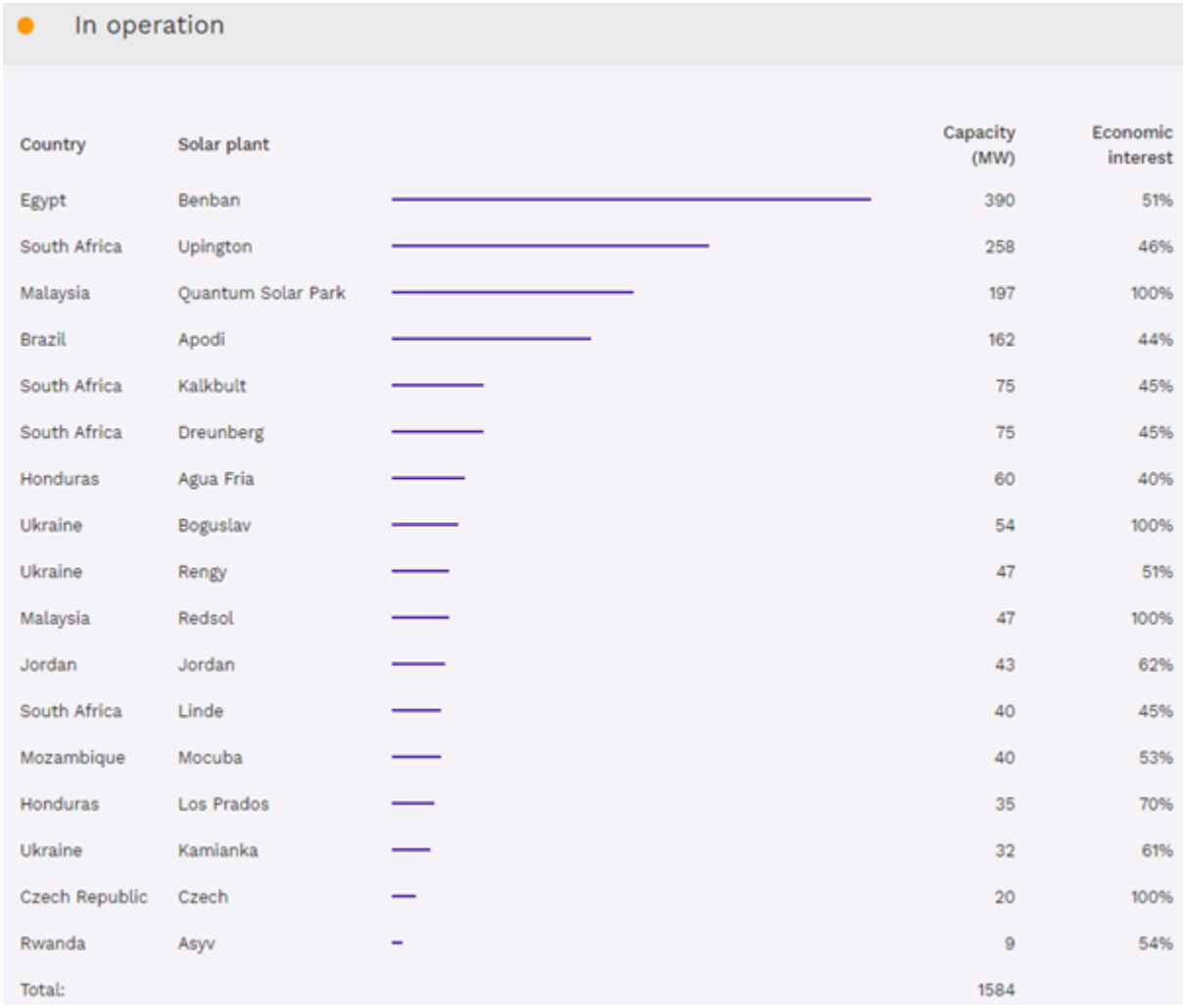
3.1 Background of Scatec

On 12 November, 2020 an Extraordinary General Meeting of Scatec Solar ASA announced they are changing the name of the company to Scatec ASA. Scatec ("the company"; ticker "SCATC") describes itself as a "independent solar power producer, delivering affordable, rapidly deployable and sustainable clean energy worldwide" (Scatec ASA, 2019a). It is headquartered in Oslo, Norway and manages a large portfolio of "solar parks". The company currently has 1.584 GW in operation (see Figure 2), with further growth expected.

Scatec was founded in 2007 by Alf Bjørseth and was listed on Oslo Stock Exchange in 2014. In 2017, Scatec established a partnership with Equinor ASA, which is a large energy company in Norway, mainly focused on oil and gas production. Since Scatec's inception, the company has successfully built and operated solar plants in four continents. As shown below, Scatec's portfolio of solar plants have different economic interests for the company and its shareholders. The company also has three projects under construction at the time of writing: two in Ukraine and one in Argentina.

The number of operational capacities is only meant to visualize the capacity as of January 2021. Obviously, the capacity is constantly moving, meaning the numbers we use in this visualization is not necessarily the same capacity used later in the thesis.

The solar plant portfolio is mostly weighted towards South Africa, Egypt and Malaysia with a capacity of 448 MW, 390 MW and 244 MW, respectively.



In operation

Country	Solar plant	Capacity (MW)	Economic interest
Egypt	Benban	390	51%
South Africa	Upington	258	46%
Malaysia	Quantum Solar Park	197	100%
Brazil	Apodi	162	44%
South Africa	Kalkbult	75	45%
South Africa	Dreunberg	75	45%
Honduras	Agua Fria	60	40%
Ukraine	Boguslav	54	100%
Ukraine	Rengy	47	51%
Malaysia	Redsol	47	100%
Jordan	Jordan	43	62%
South Africa	Linde	40	45%
Mozambique	Mocuba	40	53%
Honduras	Los Prados	35	70%
Ukraine	Kamianka	32	61%
Czech Republic	Czech	20	100%
Rwanda	Asyv	9	54%
Total:		1584	

Figure 2. Scatec's current operational capacity and economic interest in each plant, 2020, by Scatec ASA. Retrieved from: https://scatec.com/asset-portfolio-overview/

3.2 Mission statement

Scatec has made it their mission to deliver competitive and sustainable energy globally. This is done to protect the environment and improve quality of life through their technology (Scatec ASA, 2019a, p. 2). Their values are explained to be "predictable, working together, driving results and changemakers" (Scatec ASA, 2019a, p. 2).

3.3 Technology

In this section we will provide a quick overview of the photovoltaic technology Scatec is using. Because of trade secrets, we cannot know everything in exact detail, but we can provide some information on the science behind solar panels to understand how their product is working. The company is using solar photovoltaics (PV) technology to achieve their missions. PV cells are made of semiconductor materials, Scatec uses polysilicon (Scatec Prospectus, 2014), this material has special characteristics for converting solar energy into electrical current (Gharehpetian, & Agah, 2017). This conversion is also called the photoelectric effect. To achieve the photoelectric effect, the conversion from solar to electricity, the polysilicon is added "doped atoms", which means to add small impurities (extrinsic semiconductors) to manipulate the photons and electrons (Gharehpetian, & Agah, 2017). The sunlight provides streams of photons, which are capable of moving electrons from the valence band to the conduction band in the polysilicon. When the electron is finally in the conduction band, it can move freely and this movement of electrons creates electric current (Gharehpetian, & Agah, 2017). Finally, the solar PV systems can transmit these alternating currents (ACs) through connections with the grid to the electricity buyer.

3.4 Value chain

For understanding Scatec as a business, we need to examine how the company creates value. The value chain for Scatec is divided into five segments (Scatec ASA, n.d.), these include development, financing, construction, operations and asset ownership.

3.4.1 Development

The company first decides where a project should be, securing lease agreements for land planned to be used for solar plants, obtaining licenses, plant design, connection to the grid and negotiation of Power Purchase Agreement (PPA) with the electricity buyer.

3.4.2 Financing

The financing activities are the structuring of debt and equity for funding the investments in the future solar parks (Scatec ASA, n.d.). The company gets most of its financing through non-recourse project finance which is a loan from a multilateral development bank where the lender (Scatec) is subjected to pay the loans from profits from the project the loan finances. This means that the loan is not increasing the overall risk of the company, but rather it risks the project it finances through collateral (the power plant).

3.4.3 Construction

This segment concerns construction of solar power plants, supplier management and quality assurance for the different portfolio installations.

3.4.4 Operations

Day-to-day maintenance and repair of the solar power plants to maximize performance and uptime. This includes an operating center which monitors the portfolio 24/7 which increases efficiency operationally and should also avoid financial fluctuations.

3.4.5 Asset ownership

This includes the financial and management reporting from the daily operations and statutory reports to government agencies. Under this segment also comes relations with creditors and shareholders.

3.5 *Market risks*

In this section we will first explain the market risks Scatec ASA is exposed to in their daily operations. This information was found in the Scatec ASA annual report for 2019 page 55-56 (simply because the annual report for 2020 was published in late march 2021). In this section, we will **not** focus on liquidity or credit risk, as this belongs in the section for financial statement examination. Next, we focus on the future of sustainability and the ongoing coronavirus which hit the world in early 2020, which has caused high market volatility due to

uncertainty in the market. Another side effect, as we describe in detail below, is the lowering of the federal funds rate in the US and the policy rate in Norway.

3.5.1 Commodity price risk – electricity market development

The main source of revenue for Scatec is electricity produced by their solar power plants. Therefore, the electricity prices are of huge importance for future revenue. The company enters long-term fixed price contracts with the government to eliminate volatility concerns in the operations and cash flows (Scatec, 2019a), this means no meaningful electricity price risk is currently taken by the company. However, the future development of electricity prices over the long term is uncertain. This is dependent on the future costs for energy sources like oil, coal, natural gas and uranium (nuclear power). Naturally, a decrease in cost from technological development in the non-renewable areas could decrease electricity prices. Contrarily, technological development in the solar PV technology and political pressure for sustainability would benefit Scatec.

3.5.2 Currency risk

Scatec is exposed to currency risk in the countries they are operating in. Some of the company's contracts are not protected against inflation in the destinating country's currency, further increasing possible inflation exposure. Since the country operates in under-developed countries, the currency risk is greater than developed countries like the US or Norway. The financial statement reports all figures in NOK, this makes the reported financial subject to foreign exchange market rates (Scatec, 2019a). The group is exposed to the following currency fluctuations, all against NOK, for their reported financials:

- *USD (US dollar), ZAR (South African Rand), EUR (Euro), MYR (Malaysia Ringgit), BRL (Brazilian Real), EGP (Egypt Pound) and CZK (Czech Republic Koruna).*

To mitigate these currency exposures, Scatec is utilizing forward currency contracts for removing volatility risk for the foreign currencies listed above. A currency forward is essentially a binding contract used by two parties to exchange currencies at a specified foreign exchange (FX) rate at a future date. These derivative contracts contribute to making future cash-flows more predictable, but losses from depreciation in the foreign currency is

always a risk. However, diversification between a wide array of currencies from foreign operations is also working to reduce currency risk (Hill & Schneeweis, 1982).

3.5.3 Interest rate risk

Like every business, there are certain risks for cash management and funding activities if interest rates rapidly increase. To decrease these risks fixed long-term rates or interest rate swaps are used. The benefit of fixed rates is obviously no fluctuations in interest payments. Interest rate swaps are used for "swapping" between floating rates to a fixed rate or vice versa. In practice, this means Scatec receives a coupon based at a fixed interest rate, while the counterparty receives the coupon based on a fixed rate, the net difference between the floating and fixed rate is the hedged gain/loss (Smith et al., 1988). For example, let's assume Scatec has borrowed NOK 100 with a current LIBOR (London Interbank Offered Rate) rate of 1% at a floating rate of LIBOR+5 (6%) this year, then immediately enters an interest rate swap to receive a fixed 7% coupon. Scatec will receive a 6% coupon on the original loan but will pay 7% as a fixed coupon. The net difference from the swap: (6%-7%)*100 = -1, will be paid by Scatec to the counterparty of the swap agreement. This concept is shown visually below as interest rates increases:

Cashflows

Loan principal		100.0		(100.0)
Interest on loan	L+5%	(6.0)	(8.0)	(10.0)
Receivable leg on swap	L+5%	6.0	*8.0*	*10.0*
Payable leg on swap	7%	(7.0)	(7.0)	(7.0)
Net (payment) / receipt under swap		(1.0)	1.0	3.0
Net cash payable		**(7.0)**	**(7.0)**	**(7.0)**

Figure 3. Interest rate swaps from floating to fixed interest rate, n.d., UK Government. Retrieved from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/445701/Example1-cashflow__1_.pdf , p. 2.

As seen by the figure above, when the floating interest on the loan exceeds the fixed rate of 7%, Scatec earns a net hedging gain (receipt) from the counterparty. The net difference for a floating rate of 8% and 10% then equals a hedging gain of NOK 1 and 3, respectively. For security analysis, these interest rate swaps should provide us with a consistent stream of "fixed" interest charges for observation and estimations of interest charges.

Lastly, Scatec issued an unsecured bond in 2017 with maturity in November 2021 with a principal of NOK 750 million and a coupon of NIBOR (Norwegian Interbank Offered Rate) 3 month + 4,75%. This interest rate is not hedged, providing some additional interest rate risk. As described in the introduction to this chapter, the liquidity risk of this bond issue will not be discussed in this section.

Chapter 4 - Strategic analysis

This strategic analysis of Scatec ASA will start with a discussion of the interconnectivity of modern economies and market behavior. Then we discuss the unique macroeconomic impact of the coronavirus, central bank monetary policies during the crisis and a general overview of the balance sheet's from the FED and Norges Bank as of March 2021.

After discussing the unique challenges of 2020-2021, we can start to shape our strategic analysis accordingly. To perform a strategic analysis for Scatec, we use three academic frameworks to determine whether the future of Scatec appears prosperous or not. Firstly, we begin our macro analysis by performing a PESTEL analysis of the macro-environmental factors that might have an impact on Scatec's business performance. Secondly, we are analyzing the competition of the renewable energy industry through a Porter's Five Forces analysis. Lastly, we are using a SWOT analysis for discussing the internal and external factors that might have an adverse effect on Scatec's business.

4.1 Interconnectivity between the US and Norwegian markets

One highly important concept to understand about modern economies is the interconnectivity of the world financial system. Academic papers like Stockhammar & Österholm (2016) have shown the effects of policy uncertainty shocks in the United States significantly lowering GDP growth in Norway. The paper also argues that US uncertainty will reduce US demand, which slows the US economy down. These results should be evident that adjustments for Norwegian company forecasts should take US fiscal policies into account.

In addition, we have data from the last 8 years to calculate the correlation between the S&P 500 and OBX (Appendix H). Market movements in the S&P 500 are largely correlated to movements in the Norwegian indices, like the OBX. From the period between 2013-2021, the correlation coefficient has been calculated to over 0,72 (Appendix H), which suggests a strong correlation between the two economies. Therefore, we need to understand the impacts of the ongoing fiscal policies in the US and especially the actions of the central bank (the FED). Contrarily to the FED, Norges Bank, on the other hand, does not have nearly the amount of assets on its balance sheet (NOK ~770 billion, with NOK 443 billion is foreign

exchange reserves for stabilizing fluctuations in NOK. Central Banks are using these financial assets to increase monetary supply and move interest rates in any given direction by security purchases (mainly Treasury bonds). NOK at current FX-rates (1 USD = 8,54 NOK at the time of writing). Of course, there is a difference in the size of each economy, but we can calculate the size difference and the asset balance difference between each economy. We must exclude the Government Pension Fund Global in this assessment because these are investments from already acquired currencies, consequently it is not the same as increasing monetary supply by issuing government debt. Remember, a larger asset side is equal to a larger monetary supply.

In USD: US GDP: 21.433 billion/ Norway GDP: 403,3 billion = **~53x larger GDP.**

In NOK: FED Assets: (USD 7.724.663 billion*8.54) / Norges Bank Assets: NOK 770.758 billion = **~85,59x more assets.**

The large difference that has occurred in asset balances are largely due to the coronavirus, which increased the FED's U.S. Treasury securities holdings by about USD 2,3 trillion from March 2020 to March 2021. On the contrary, Norges Bank decreased their asset holdings by 23,9% in the same period, from NOK 1.013.261 billion to NOK 770.758 billion. This difference is mainly from decreased lending to banks, this was a direct response from the coronavirus outbreak in March 2020 (Norges Bank, 2020 & 2021).

4.2 The COVID-19 virus

Since the world is fighting the coronavirus, an overview of the current market conditions is necessary to analyze equity markets, interest rates and the general economy.

The coronavirus sparked a financial crisis in March 2020 but underlying economic problems have been visible for years. Central banks, most notably the FED, have been active in the financial market by purchasing mortgage-backed securities (MBSs) and treasury securities (FED, 2020a) since 2008 (Figure 4). The practice of purchasing securities from the market obviously needs someone to sell their securities to the FED, this causes more money to move from the FED to the seller of the MBS or treasury security. In the world of central banking, this is called quantitative easing (Ricketts, 2011) or in simpler terms, expansion of the

monetary supply. The FED has increased their balance sheet systematically since the financial crisis of 2008 (see below) until today. The necessity of these security purchases are done to maintain the targeted federal funds rate given by the Federal Open Market Committee (FOMC) at a given point in time, consequently this rate has an inverse relationship to the FEDs balance sheet. Since the funds rate has been readjusted from 1-1,25% on March 3, 2020 (FED, 2020b) before the lockdown from the coronavirus) to 0-0,25% on March 15, 2020 (FED, 2020c). Even today, the funds rate remains at 0-0,25% on January 27, 2021 (FED, 2021).

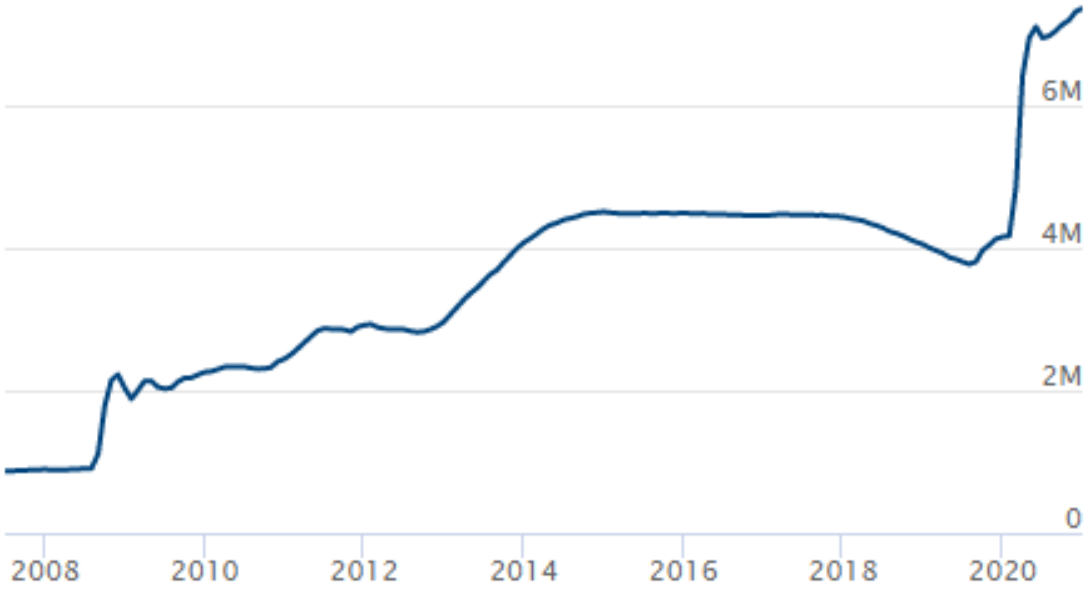


Figure 4. "Total Assets of the Federal Reserve", 2021, by the Federal Reserve. Numbers in millions of dollars. *Retrieved from: https://www.federalreserve.gov/monetarypolicy/bst_recenttrends.htm*

Since the outbreak of the coronavirus, we can see a sharp increase in the balance sheet and consequently the money supply from about $4 trillion to $7,3 trillion. The concerning effects of this interest rate environment is possible inflation of the USD from open market operations. How this will affect other countries is, however, currently unknown. The corona virus is a global situation, not a local threat. This has not been seen in history due to its global effects and how integrated global financial markets have been since the internet. Thus, Norway has also lowered their policy rate from 0,75% before the coronavirus to 0,25% on March 23, 2020 until today (Norges Bank, 2020). This low interest rate environment is supposed to keep businesses from bankruptcy and individuals/families afford their mortgages

by making borrowing cheaper (Norges Bank, 2020). However, such low interest environments also pose some potential future problems, especially when it comes to inflated asset prices. Regulators and accounting standards value fixed assets (PP&E) at their fair value (IFRS 13) less accumulated depreciation and impairments (fair value valuation), or cost of the asset less accumulated depreciation and impairments (IAS 16), also called historical cost method.

With the fair value alternative, when financial assets and liabilities lose value, companies immediately must report losses that decrease equity. Many companies can then become insolvent. When one company becomes insolvent, it creates credit losses for other companies. This can cause a snowball effect that quickly can destroy the entire financial system. The historical cost method postpones the problem until the asset is sold, but cannot solve the fundamental problem of overvalued financial instruments. For example, if a company buys a new machine in a low interest environment where asset prices have skyrocketed, then the asset is still recorded at inflated price levels, meaning large losses occur once market euphoria disappears or interest rates increase.

4.3 PESTEL

Since we now have established a better understanding of the current crisis the world is facing, we can proceed with a more general PESTEL analysis, to observe the general market conditions and future macro-economic outlooks after the virus. To analyze macro-economic factors impacted by Scatec ASA, we must be aware of the current macroeconomic landscape. To achieve this, we constructed a full PESTEL analysis to establish the macro economical factor and risks that may impact Scatec ASA. A PESTEL separates the macro-economic environment into six different factors: Political, Economic, Social, Technological, Environmental and Legal. Making such an analysis is especially important for Scatec, as their operations are solely in foreign countries (outside of Norway, except their HQ).

For understanding company specific factors which might impact Scatec's performance in the future, we are using a SWOT-analysis. This analysis will look at the internal factors; strengths & weaknesses and external factors; opportunity & threats. The internal factors are

describing the current position for the company, such as competitive advantages/disadvantages, or early mover advantages/disadvantages.

PESTEL analysis of Scatec ASA

Since Scatec's largest operations in terms of plant capacity and economic interest is mainly in Latin America, Africa and South-east Asia, these will be the focus for our PESTEL analysis. We will follow a chronological order when discussing this PESTEL analysis.

4.3.1 Political factors

The political environment in emerging markets where Scatec operates

To assess the different operating countries' contributions for achieving the goals within the Paris Agreement, we must look at the individual countries' NDCs (nationally determined contributions). These NDCs embody the efforts by each country to reduce the national emissions and adapt to the impact of climate change. We will, as described above, focus on the three main sources of capacity applicable to Scatec ASA's operating portfolio. These include the largest operating countries within the regions: Latin America, Africa and South-East Asia. This is done for simplicity and will separate and give a clear and readable overview of the most dominant positions the company is exposed to. If we were to analyze every country, this would be rather confusing and would probably give limited insight as the economic interest is very small in some countries, e.g. Rwanda, Czech Republic and Mozambique to name a few. We argue that the "smaller" operating countries and most associated risks will be mitigated through diversification effects.

The information about each factor will be angled towards Scatec and specifically solar PV and hydropower.

The Paris Agreement

The Paris Agreement is a legally binding agreement for fighting climate change and was entered into force on November 4, 2016 (UN, 2020). The goal of the agreement is to limit global warming to achieve a climate neutral world by 2050 (UN, 2020). All the major project's Scatec ASA has a significant economic interest in (e.g., Egypt, South Africa, Malaysia, Brazil) are all participants in the Paris Agreement to push forward renewable energy (UN, 2015b). Most noteworthy for Scatec ASA is the possibility for Scatec to acquire "non-recourse" financing for their power plants.

Latin America

Brazil has already initiated a guarantee of purchase of renewable energy (feed-in-tariff) and also utilizes so-called "new energy auctions" to define prices of contracts (Wills & Westin, 2019). These auctions are issued as a call for tender by the government to buy certain amounts of generated electricity from renewable sources (IRENA, 2015). The main focus for transition in Brazil thus far has been to increase the use of energy from wind turbines, but we can also see an increase in the capacity from solar PV generation in the country, from 59 GWh in 2015 to 6.655 GWh in 2019. However, both are still way below hydropower, which generated close to 400.000 GWh in 2019 (IEA, 2021).

Africa

Egypt's NDC emphasizes the "increase of use of renewable energy as an alternative to non-renewable energy sources" (The Arab Republic of Egypt, p. 10). The country's government approved the "Egyptian Solar Plan" in 2012 to add 700 MW of solar PV energy by 2027. In 2014 the country established feed-in-tariffs for electricity produced from renewable energy projects. Egypt also use auction

South Africa's NDC aims to develop 8,4 GW of solar PV and 8,4 GW of wind by 2030. The country has no specified plan on hydropower (Cabrè & Sokona, 2016).

South-east Asia

The NDC from the Government of Malaysia (2015) has targets to reduce the GHG emissions intensity of GDP by 35% by 2030 relative to emission intensity of GDP in 2005 and up to

45% conditionally to international support. Malaysia has also set a 20% renewable energy goal by 2025 (IEEFA, 2019). Solar PV generated 573 GWh in Malaysia in 2018, while hydropower accounted for a massive 26.325 GWh in the same year. However, Malaysia has a feed-in-tariffs system which buys renewable resources from approved Feed-in holders. This guarantees access to the grid and ensures a favorable price per unit for renewable energy.

Political uncertainty in operating countries

Policy risk/uncertainty is an economic risk for the future path of a government's policy is uncertain, thus increasing the risk and the policy rate in the country. This can have large effects on borrowers, growth of the economy in which a company operates and "flight-to-safety capital flows (Choi & Shim, 2018, p. 310) in the country. Scatec is exposed to political risk because their operations are in emerging economies (EMEs). This adds additional risk to the future operations, for example, risks of countries straying further away from the agreements set in their NDC's for achieving the goals set in the Paris Agreement. Interest rate (policy rates) risks, which is the safest bond (carries minimum risk in that particular country) can also increase sharply and thus increase the non-recourse financing (secured loan) repayments.

In a worst-case scenario, if the company defaults on a non-recourse loan, the lender can sell all assets associated with the project. The most concerning part is the response to monetary policies in EMEs compared to Norway or the US, which decreases the policy rates when policy uncertainty increases. In EMEs on the contrary, Choi & Shim (2018) shows that EMEs increase their policy rates sharply in such scenarios. To mitigate this, Scatec uses interest rate swaps and long-term fixed rate financing to keep most of the future cash outflows somewhat stable. Anyhow, the risks of EMEs government uncertainty for future engagement in the Paris Agreement and their completely opposite approach to policy rate reactions compared to advanced economies are a real concern. Therefore, we must add a significant premium when determining the present value of the company. To further emphasize this point, we have included a "country risk map" in appendix L, showing the fact that Scatec's operations are exposed to countries with a risk rating of "Moderate" to "High risk".

4.3.2 Economic factors

Economic trends for the energy sector

The coronavirus has decreased energy demand by 5% in 2020 (IEA, 2020). The duration of the pandemic makes the future of energy impossible to precisely predict, however, trends can be used to determine whether renewable energy is a prosperous industry compared to less environmentally friendly options in the market (e.g., oil & coal). The IEA has estimated in their "World Energy Outlook 2020" that renewables will meet 80% of the demand in global electricity by 2030. Solar PV is expected to drive the growth because of a sharp reduction in costs over the past decade, consistently cheaper than new coal -or gas-fired power plants (IEA, 2020). Solar is also expected to set new records for deployments each year after 2022 (IEA, 2020). The effects from multilateralism have also caused advantages for renewables through cheap "non-recourse" financing in leading markets (IEA, 2020).

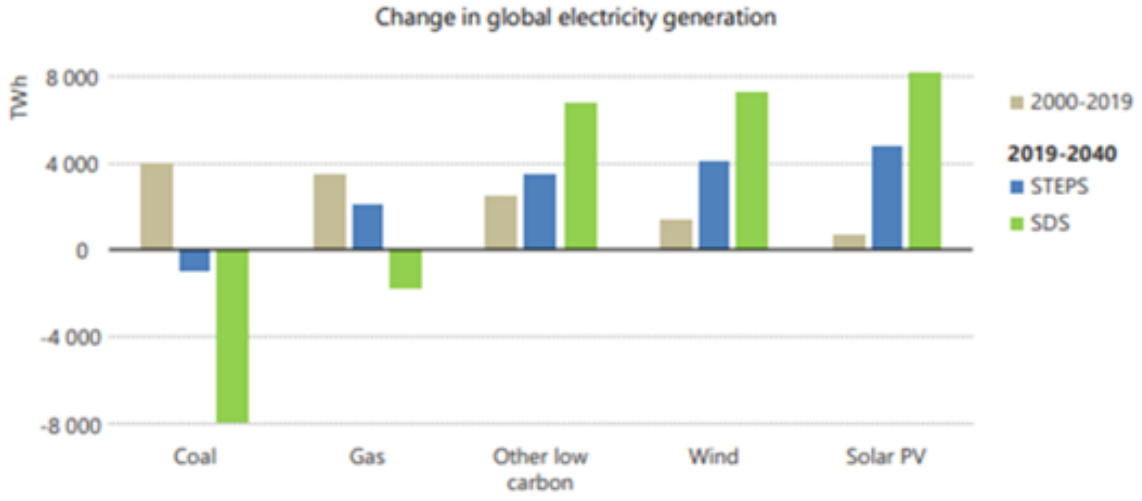


Figure 5. "Change in global electricity generation", 2020, by IEA.

The blue and green blocks in figure 5 show the expected growth in electricity generation from different energy sources. These numbers are just expectations, but we can see a clear trend. We need to utilize these data for estimation purposes when evaluating the future of solar PV and Scatec. Overall, it seems realistic to us that large growth can be expected due to the favorable policies and multilateralism for decreasing emission levels.

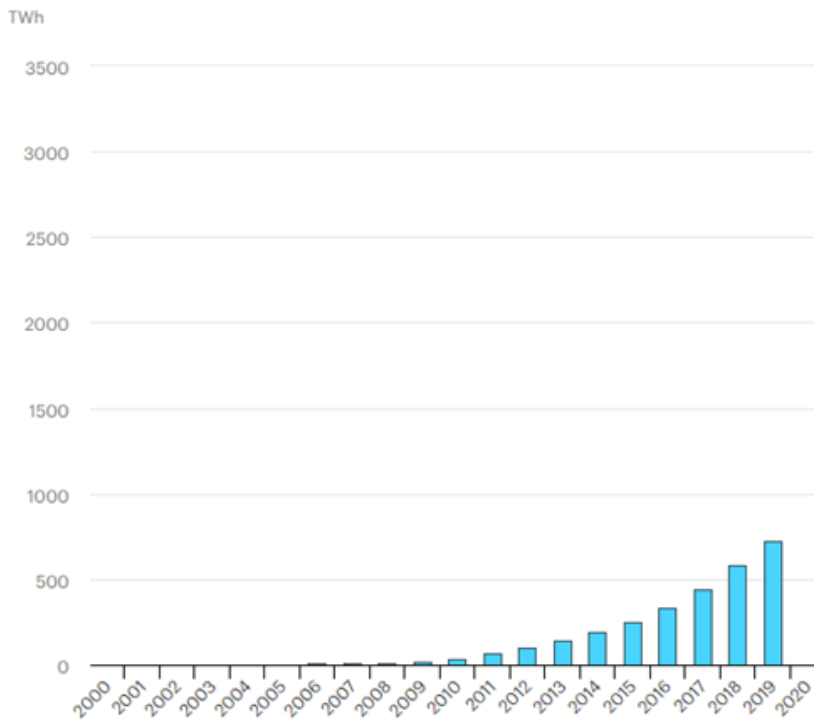


Figure 6. Solar PV power generation in the Sustainable Development Scenario, 2020, by IEA. Retrieved from: https://www.iea.org/reports/solar-pv

Since both the historical and future expectations for solar PV generation are trending upwards, it is straightforward for estimation purposes to see a macroeconomic trend to be used for our equity valuation. The solar PV segment has plenty of room to grow, as solar PV energy generation only accounted for about 3% of global electricity generation in 2019 (IEA, 2020).

4.3.3 Social factors

The world population grew to over 7,67 billion in 2019, a growth of 1,07% from 2018. This increase in population also increases the demand for electricity (World Bank, 2021). Due to the coronavirus, energy demand dropped by 5% in 2019, but is expected to reach pre-crisis levels by early 2023. However, this estimate is highly uncertain. If the recovery from the pandemic is delayed, Delayed Recovery Scenario (DRS), IEA estimates that energy demand will reach pre-crisis levels in 2025 (IEA, 2020). In the figure below, the Stated Policies Scenario (STEPS) is an estimate of the energy demand if the pandemic is brought under control in the course of 2021 (IEA, 2020).

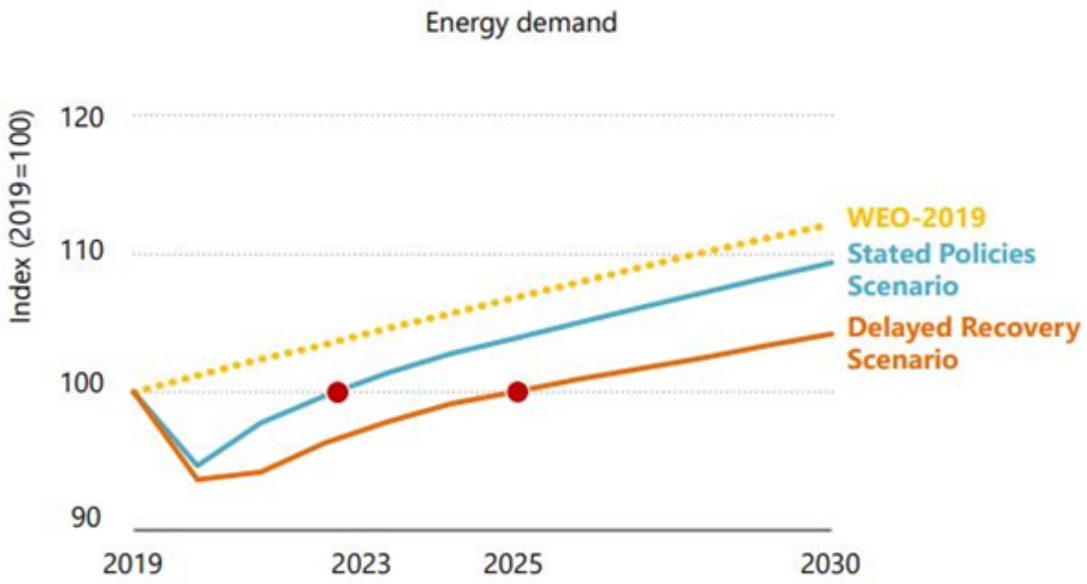


Figure 7. Energy demand, 2020. by IEA. Retrieved from: https://iea.blob.core.windows.net/assets/fd69e584-f43f-400b-9702-f5a6dc9c3156/WEO2020-Launch-Presentation.pdf

The general increase in the awareness of renewables and climate change by individuals is also an important factor for determining the future of renewables. All available documentation from IEA and IRENA is evident of this. Non-environmentally friendly energy sources were impacted harder by the pandemic, while demand for modern renewables increased slightly (IEA, 2020). Under both STEPS and DRS, the energy demand for renewable energy will be significantly larger than before the pandemic.

4.3.4 Technological factors

General technological evolution: Renewables

The figure below explains the different reductions in renewable prices and Levelised cost of electricity, LCoE, which measures the lifetime cost of the systems divided by energy production over the assets lifetime. The blue dots below are the individual projects LCoE, while the orange dots are the auction prices where there was a uniform price at auction, typically government contracts. From the four renewables below, we can spot a clear trend in favor of renewables in terms of LCoE (costs), but also uniform auction prices. From the grey

band in the figure, we can also see that solar PV and onshore wind LCoE are beginning to dip below the costs of fossil fuels.

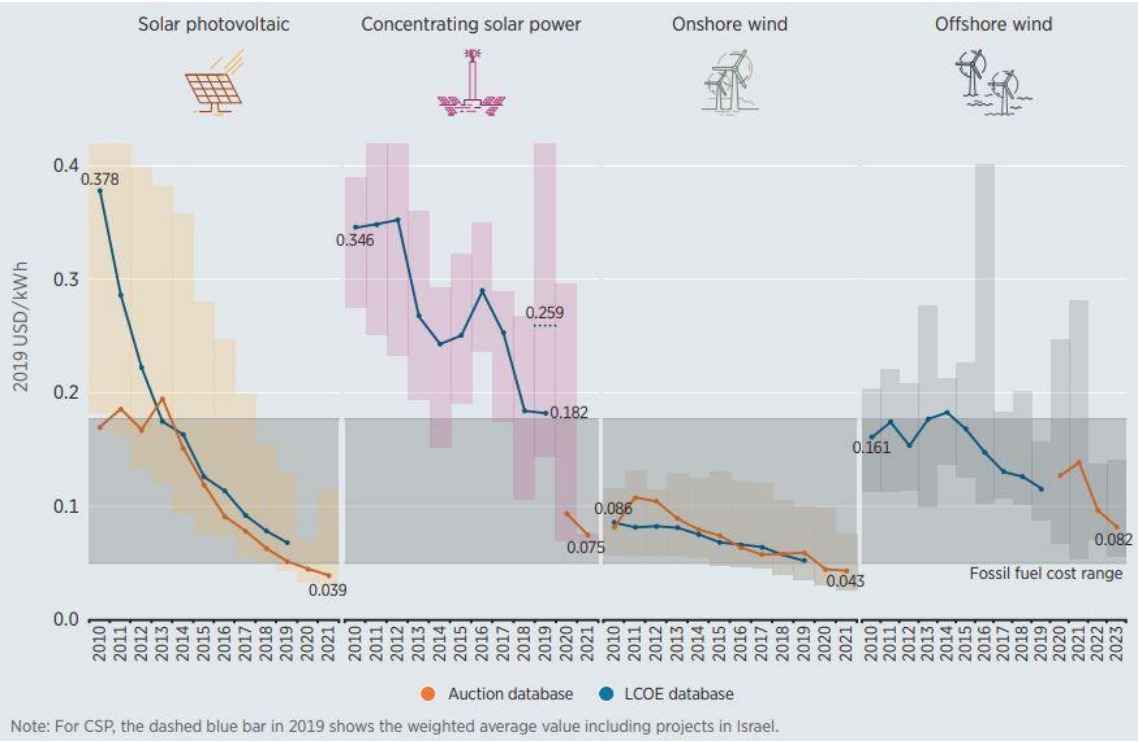


Figure 8. Recent cost evolutions, 2020, by IRENA. *Retrieved from: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Jun/IRENA_Power_Generation_Costs_2019.pdf*

Hydropower

For hydropower, we can identify a slight upwards change in the total installed cost of hydropower plants, however, the capacity factor for these plants are hovering between 43-48%. The measure of LCoE is slightly tilted upwards and shows a LCoE of 0,047 in 2019, which is similar to the LCoE of both Solar PV and concentrated solar power (CSP) at the same time. Hydropower has not seen the extreme downward pressure on LCoE as solar PV or other renewables, this is due to the fact that hydropower was first utilized in the early 1900s and is highly efficient as is (see capacity factor). However, the costs of hydropower plants in USD/kW is much higher than that of other renewable energy sources, thus making the solar PV and hydropower LCoE similar today.

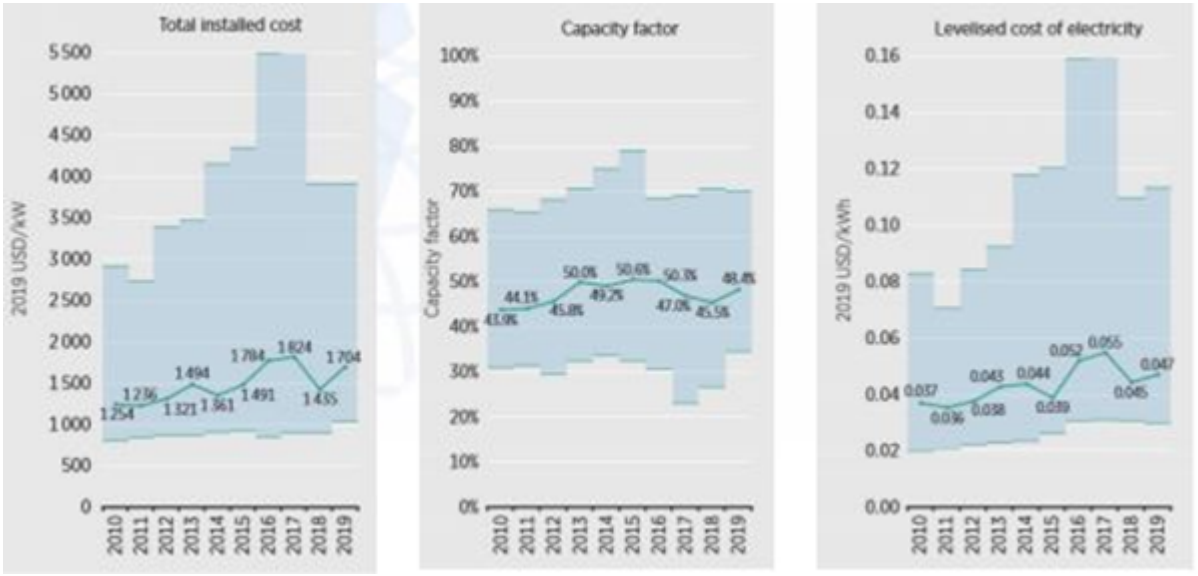


Figure 9. Hydropower cost and performance trends, 2020, IRENA. Retrieved from: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Jun/IRENA_Power_Generation_Costs_2019.pdf

Solar PV

The costs of solar PV are rapidly decreasing for new installations, from 2010-2019 the average installed cost of solar PV systems decreased from $ 4702 to $ 995 (-79%). Cost improvements were mainly driven by a 90% reduction in module prices, along with cheaper balance-of system (BoS) costs (IRENA, 2020). BoS are all other parts which contribute to the functioning system, besides from the solar panels. Typical BoS parts are wiring, switches, mounting systems, inverters, battery banks, battery charger, powering conditioners and metering systems.

Capacity factor is the actual output obtained from a solar PV system. It is the ratio of energy actually generated over a year divided by installed capacity. A higher capacity factor means the solar PV systems are generating energy closer to the installed capacity. The reason for the difference in installed capacity and capacity factor is largely dependent on weather and the time of day. As seen in the figure above, we can see the capacity factor has stabilized at around 18% on a weighted average basis. From the period 2010 to 2019 we can see a slight upward momentum in capacity factor, from 14% to 18%, a 4 % increase in capacity factor.

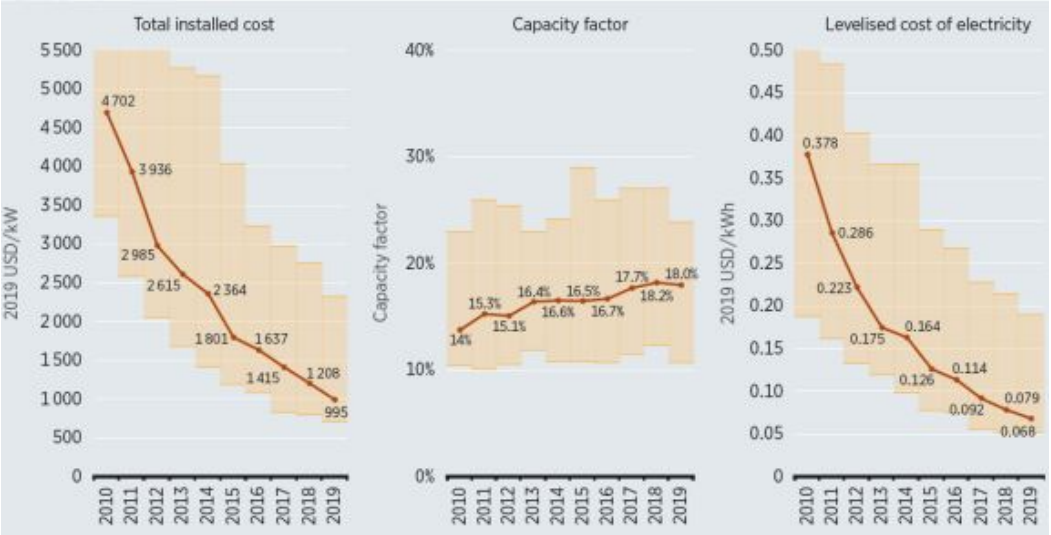


Figure 10. Solar PV cost trends, 2020, IRENA. Retrieved from: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Jun/IRENA_Power_Generation_Costs_2019.pdf

Levelised cost of electricity (LCoE) measures the lifetime cost divided by energy production for solar PVs (right side above). We can see a significant drop from 0,378 USD/kWh from 2010 to 0,068 USD/kWh in 2019, an 82% decrease. This is a direct effect from the decrease in total installed cost and a very slight upward momentum for capacity factor, causing the LCoE to be very similar to the total installed cost graph on the left (-79% and -82% decrease).

4.3.5 Environmental factors

Future sustainability awareness

This section looks at the outlook for sustainability, as this is highly important for our analysis of Scatec ASA. To discuss this topic, we will provide information about global sustainability goals, the United Nations (UNs) “Paris Agreement” and the economic trends for renewable energy sources.

The Paris Agreement

The goal of the Paris Agreement is to limit global warming to achieve a climate neutral world by 2050 (UN, 2020). In the Paris Agreement (2015b), article 4, section 1, it is stated that all "Parties aim to reach global peaking of greenhouse gas emissions as soon as possible…" (UN, 2015, p. 4). In addition, the secretary-General of the UN has emphasized focus on climate-related governmental money for the recovery from the coronavirus (Guterres, 2020).

Sustainable development goals (SDGs)

The 2030 agenda for sustainable development was adopted for all member countries in the UN in 2015. This agenda provides a set of 17 SDGs, which are goals set to be met by 2030 by all countries. SDG 7 and 13 focuses on sustainability and the urge to combat climate change. The goals to be met for SDG 7 and 13 are explicitly focused on affordable and clean energy and climate action (UN, 2015a). These goals are great for multilateralism between countries, with the addition of the Paris Agreement, current and future international policies are significantly in favor of renewable energy.

4.3.6 Legal factors

The Paris agreement has put significant pressure on regulatory frameworks to develop NDCs to put in place specified goals for achieving the change to renewable energy sources. This regulatory environment is obviously a positive for Scatec and the whole industry. For example, Egypt made a new electricity law in 2015 to "provide legislative and regulatory frameworks needed to realize the electricity market reform targets" (IRENA, 2018). However, some of the high-risk operating countries of Scatec might not follow the guidance from the UN in the same fashion as more developed economies. The fact that Scatec has had operations in South Africa since 2013, Jordan in 2016, Malaysia in 2018 and Brazil in 2018 can mean that the company has established some kind of relationship with the regulatory bodies in these nations. However, it is not certain this relationship will continue to support a Norwegian based company over national companies.

There is always some exposure to compliance risk when the company is operating in many different regions. This can have a negative effect on the company's "operations, business, financial performance and prospects" (Scatec ASA, 2021a, p. 29).

4.4 Porter's five forces

According to Porter (2008) managers tend to often just think about their nearest and most direct competitors, instead of looking at the whole picture of the sector. To understand the competitors for a company, we can't just look at one simple variable like profit. We also need to look at four other factors: customers, suppliers, potential entrants and substitute products. These five variables are what Porter defines as "Porter's five forces" and he says that these are the factors that create competitive interactions in the industry and its structure in the market.

4.4.1 Threat of entry

When companies are trying to enter a new industry, they tend to bring new ideas and a lot of work capacity, which puts pressure on the already established companies in the same sector. This is due to the fact that they are getting forced to either use more money on their costs (for instance marketing), lower electricity prices (lower profit margin) and they need to improve efficiency to keep their market share. In general, if the threat of entry is high, the companies put the price down to try to eliminate other companies by trying to force bankruptcy (Porter, 2008).

For Scatec ASA's solar and storage section, the threat of entry is medium/high, due to the price of LCOE declining as can be seen in figure 10. So, these kinds of investments are more profitable than ever, which makes solar power more attractive for consumers. As stated earlier in this thesis, the LCOE is low, but the cost of the physical solar plants are high. This means that the entrance barrier is high for other solar companies. An important factor to take into consideration when operating solar PV plants, is that the contracts need to be won by giving the best price and solutions for customers (generally government contracts). Scatec

ASA needs to use their efficient operations and reputation to keep winning contracts in the countries they operate in.

The threat of entry for hydropower will depend on whether the company wants to construct the hydropower plants or buy up other companies. The reason why we take this assumption is due to hydropower having the highest average construction cost by any generating technology according to Hydroview (2018). Hydropower got the highest cost on the construction, which means that the companies who are willing to operate in the hydropower need to have access to large amounts of capital. On the other side, hydropower is one of the cheapest sources of electricity worldwide, so the investment will probably provide a great yield in the future anyways, according to hydroview, 2018. The threat of entry for hydropower will then be considered low/medium.

The threat of entry into wind power is set to medium/high from our perspective, due to the location and access to land to operate the wind turbines. The turbines have an expensive installation cost averaging $2-4 million, according to Weatherguard (2020) and are dependent on high yields to nullify depreciation and maintenance. Wind power is highly weather dependent, which means it is important to install them in wind heavy areas, for example near the coast or physically in the ocean. Wind power is one of the cheapest energy sources, which can make this kind of investment worthwhile.

4.4.2 Power of suppliers

Suppliers can create their value themselves by charging higher prices, limiting the quality of their products and deciding what the shifting cost is for their products or their service. In other words, the powerful suppliers can potentially try to keep the profitability as high as possible due to their market share and their products (Porter, 2008). Looking at solar PV technology (which is the tech used by Scatec in their power plants), the price has dropped 82% since 2010 and is expected to decrease about 30% more within 2030 (Barbose & Darghout, 2019 and PV-Magazine, 2020).

As for Hydropower, this is the cheapest option to generate electricity today and is expected to save the world USD 209 billion from avoiding global damage from climate change according to the U.S. Department of Energy (2016). Wind power is also according to the U.S.

Department of Energy (2016) very cost efficient and has decreased rapidly in costs over the past decades, while the use of wind energy has grown 15% per year.

According to SolarCity (2021), the power of the suppliers for solar power is low due to the number of competitors and the high level of suppliers. So, in other words the number of suppliers have no problem meeting the demand in the solar market. When it comes to hydropower, according to Renewables First (2015), the cost of building hydropower is very high, which we then can assume that the suppliers have a relatively strong power of supply, which can be used to force the profitability down. When it comes to the suppliers in the wind power industry, they have a certain power, because they can force the profitability down a bit according to Beroeinc (2019).

4.4.3 Power of buyers

The power of buyers works the opposite way of what power of suppliers. Buyers want lower prices, want better quality and want even better service to lower prices. Buyers can use their market influence (market share) as leverage for purchasing supplies at lower prices. This can result in a higher market share for the high market share companies, while reducing the share for smaller actors. Some examples of buying leverage are: low switching cost or the buyers can try to find alternative products (Porter, 2008). For Scatec ASA, who is mostly cooperating and working with state-owned utilities, which creates a certain advantage. The way Scatec ASA is getting contracts is by winning tenders different countries are offering. Now that Scatec ASA are going into hydro and wind power as well, they have even more possibilities to win more tenders and increase revenues (DN, 2020). This could increase the influence in the renewable energy market as Scatec ASA's experience, expertise and network is expanding. This can effectively increase their ability to win contracts. Which again makes it possible to choose among more projects in countries.
As stated earlier, Scatec ASA is cooperating with state-owned utilities (Norfund), which means they might have different views on how to run the business. One of the parties might look at a more economic profit point of view at that certain moment and the other party might just want to expand to be able to potentially win more contracts by offering a bit lower price to get more market share.

4.4.4 Threat of substitutes

A substitute to a product is another product that can give the same results, or close to the same result as the original product. When there is a threat for substitutes, this will bring the profitability down, due to lower prices for the suppliers. There is a bigger threat of substitutes if the price of the substitute product is lower or if the substitute product is better than the original (Porter, 2008).
For Scatec ASA there are a lot of substitutes. There are different forms of energy sources like other renewables and fossil. When looking only back a few years, Scatec ASA only focused on solar PV, which naturally makes CSP the closest substitute. This is also a renewable energy source that is using solar power, but with another technology. Looking at Scatec ASA annual report from 2020, it shows that Scatec has gone through some big changes and is now focusing on hydropower, battery storage and wind as well, which creates a little less fear of substitutes for Scatec ASA as a whole. There are still the likes of oil, gas and coal that can be a substitute for Scatec, which have always been the preferred method in the last century. According to figure 10, the price of PV energy is a lot more efficient now, which suggests that Scatec ASA is in a solid position for the future ahead.

The use of renewable energy is very environmentally dependent according to Ligonja & Nilsen (2017), which makes a lot of sense due to solar power needing sun to be efficient and wind power needing wind to be effectively turning the turbines. With this information, one can say that the threat of substitution is very environmental/weather dependent, due to where that specific renewable energy source fits best. In the countries Scatec ASA operates in, for instance Africa, solar power will probably be prioritized, and in a country like China, their substitute for energy will probably be coal, due to their weather conditions and high use of energy according to Statista (2019). According to Edfenergy (2021), Scatec ASA is operating with the three most popular renewable energy sources, which “eliminates” a lot of the threat of substitutes. According to Scatec ASA annual report from 2020, solar, wind, hydro and energy storage is estimated to be 73% of the global energy mix. Solar and wind accounted for 58% of them and the last 15% was hydropower and energy storage.

4.4.5 Industry rivalry

Industry rivalry exists in practically every industry in the world, besides the companies who have a monopoly. Examples of rivalry include the battle of price, product introduction, advertising campaigns and service improvements. The more competition there is, the more the industry gets pushed towards “perfect” competition, where marginal costs equal price, which creates less profitability, due to the competition to expand market share (Porter, 2008).

The hydropower, wind and PV industry compete with other sources of renewable energy like biomass, fuel cells and conventional power generation. Environmental issues are getting more attention in recent years, which leads to bigger and more intense competition among renewable energy companies like Scatec ASA. Rivalry amongst different renewable energy industries can be heavily influenced if different or new technology got greater policy support than Scatec ASA. Technological development can also be a big part of industry rivalry, which forces companies to use large amounts of capital on R&D to stay on top technologically in their industry, as mentioned in threat of entry (Nordea Markets, 2020).

According to Nordea Markets (2020), solar power plants and hydropower plants are highly technical.The potential industry rivals need to invest in energy-related infrastructure and power generation that involves technical and operational risk. Bad quality in this apartment will lead to more and expensive maintenance, which obviously leads to lower revenues and more cost in general. Mainly due to the product guarantees have expired and the providers refuse to help them out (Nordea Markets, 2020).

4.5 SWOT

According to Pickton Wright (1998) the analysis around the environmental part of the companies is a crucial part of the strategic management planning process. A SWOT analysis is a framework which includes strengths, weaknesses, opportunities and threats.It is used to categorize environmental factors, which are both external and internal factors of the organization.

4.5.1 Strengths

According to figure 11, solar energy will have a huge impact on the future, if the estimations done by Fraunhofer & Agora are assumed correct. This will give Scatec ASA huge benefits, because they already have big market shares in the industry they are operating in, according to Løvåsmoen & Solstad (2016).

The second strength that Scatec ASA has is their high degree of experience in the industry and the expertise of the management. According to their annual reports, one can see how much experience and knowledge each one of their board members have, which gives Scatec a solid foundation in their business to keep growing. Due to their different backgrounds and knowledge of the business their estimates should be somehow predictable. The knowledge of the boards and people around Scatec ASA, makes it even harder for new competitors to come into the market (Scatec 2019).

According to Scatec ASA`s annual reports, they are working on contracts with subsidized prices (fixed prices). This gives Scatec safety because they know how much money they will get each time even though the solar energy prices vary. In other words, it will make it easier for Scatec to predict their income and continue to make accurate estimates on the projects and income.

Scatec is operating with different types of renewable energy. Solar energy is for instance one of them and is an important source when trying to make the world more environmentally friendly. The different renewable energy sources that Scatec ASA is operating in will help to reduce CO2 emissions. According to DW, the CO2 emissions have gone down 7% last year, which there are a lot of factors in, and renewable energy is one of them (DW, 2021).

As seen in Scatec ASA's annual reports, they are trying to use as much local labor as possible. This generates a lot of workplaces to all of the countries where Scatec ASA is operating in, these countries can be seen in figure 2. With the use of local labor, Scatec is saving a lot of money with travelling costs and is also saving the earth from unnecessary CO2 emission.

The last strength that will be talked about in this SWOT analysis is the availability of their renewable energy sources. Solar energy for instance, is easily found in sunny locations. This provides Scatec with different possibilities as to where solar power plants should operate to capture as much energy as possible, while having a positive impact on the environment.

4.5.2 Weaknesses

One of the possible weaknesses to Scatec could be that it is very capital heavy to keep on growing like Scatec has done. When it is capital heavy to invest, another problem that can occur is a liquidity problem, which tells us how much money they are available to invest forward in the company.

Another possible weakness for Scatec is that they are operating in a lot of different countries, which can potentially give an exchange rate problem. The reason for this is if the exchange rate is low in the country that they are currently operating in compared to where they are receiving the money, they will be getting less money than they have anticipated, which can give lower return than planned (UPFX, 2019).

A weakness that is occurring in every company which operates in the Solar power business, is that the solar power is only available at daytime, which gives the companies some kind of restrictions that it is not effective every hour of the day (Chala & Guangul, 2019).

When looking at Scatecs debt ratio, they have a quite high share of debt, which will be a weakness for them. From 2016-2019 their debt ratio is around 0,83, which is relatively high. A high debt ratio could potentially mean that they will have trouble borrowing money from, for example, banks. In the Q4 2020 report, they reported a debt ratio of 0,64 , which is way lower than any other year. It is still at the high end of the scale, but the company is also experiencing strong growth (Scatec ASA, 2021a).

Numbers in million NOK	2016	2017	2018	2019	2020
Total Debt	5762	8353	12383	17939	17196
Total Assets	7075	10240	14857	21578	26663
Debt Ratio	0,81	0,82	0,83	0,83	0,64

Table 1. Debt ratio from balance sheet (Own creation).

The last weakness taken up in this thesis is that the space required for installing PV is very big, which means that they possibly need to use a lot more money to buy land to install new solar PV parks. The installation of solar PV and other items in the solar panels also has a high initial cost, which is a weakness for Scatec (Modernize, 2021).

4.5.3 Opportunities

Some of the opportunities for Scatec is to be able to join new markets due to more knowledge in the renewable energy sector. More and better technology allows people to make more use of solar energy, hydro power, wind power and battery storages, which gives Scatec ASA more opportunities to increase their market share. This could create a huge possibility for Scatec in the future if they are able to adapt.

Another possibility for Scatec is the big growth in renewable energy, which has been happening the last 20 years according to figure 11. It gives Scatec and other renewable energy companies even more possibilities to keep their focus on the development and try to make solar energy, as well as the other renewable sources, even more effective, because they can see that it is actually a good investment both money wise and for the environment (Energi og klima, 2015).

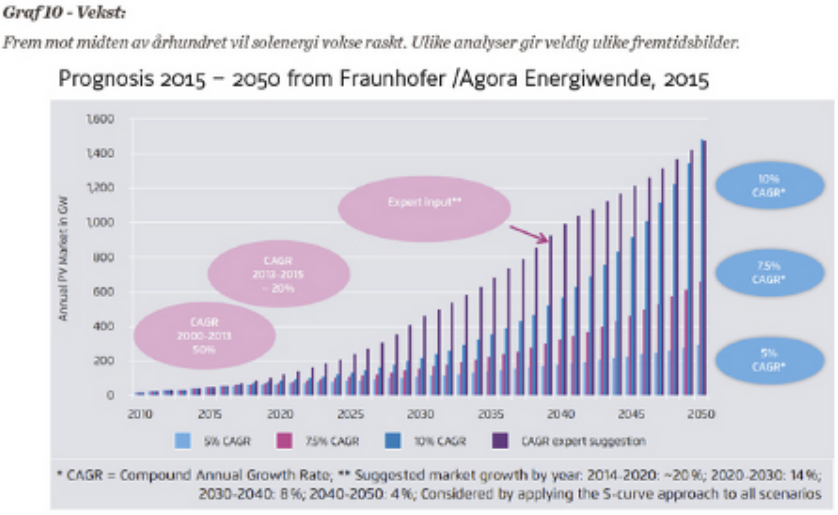


Figure 11. Growth in solar, 2015, by Energi og Klima. Retrieved from: https://energiogklima.no/kommentar/solenergi-hvor-stor-andel-kan-den-ta/

Scatec can also use information about fossil fuels to try to get more people and companies to think more environmentally friendly and try to get new customers and get bigger market

share due to favorable information for Scatec. “Everybody” knows that fossil fuel is bad for the environment, so Scatec could take advantage of this environmental awareness and encourage consumers to use “clean” energy.

The last possibility talked about in this thesis will be cost reduction. The more knowledge and information Scatec gets throughout their period of producing and gathering information about the production costs, they get the possibility to be able to reduce the cost of their products and the processes around it.

4.5.4 Threats

One of the major threats for Scatec can be outdated technology, due to the heavy research and development in renewable energy. They need to invest heavily and try to be the leading company within all of their renewable energy technologies to make them even more effective. According to Chala & Guangul (2019) there is a weakness in the effectiveness of solar panels as stated above. This means that they always need to have money available to invest in new technology.

The more popular and more researched areas around solar energy and the other renewable technologies Scatec ASA is involved with, is the fact that more cost efficient technology might increase the chances for new competitors to threaten the established businesses, due to lower R&D costs. However, patents are a way to avoid this threat in some fashion.

Another threat can also be other competitors in the renewable energy market. Scatec ASA operates with different renewable energy sources, which means that they are competing with other companies, like the competitors seen in chapter 10 (Comparables analysis). As seen in Porter's five forces, the threat of entry is medium/high, which means there are potentially many competitors to compete against, which means that the profit margin can be expected lower in the future.

When dealing with solar energy, Chala & Guangul (2019) found out that the lethal waste from the solar panels gives environmental danger due to certain components in their products.

Which gives Scatec something to think about if other companies are able to develop more environmentally friendly parts.

The last possible threat is political regulations, for example to lower fixed price agreements in the future. This would cause Scatec ASA to reduce revenue and margins. Another possible political regulation is revolving climate regulation, which for instance can set restrictions on how much solar energy Scatec can generate (Løvåsmoen & Solstad, 2016).

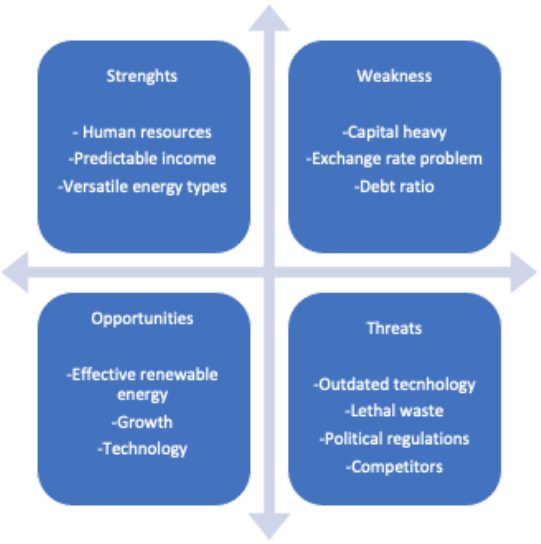


Figure 12. Main findings of SWOT analysis (own creation).

Chapter 5 - Financial statement analysis

5.1 Balance sheet

The balance sheet is a "snapshot" of the financial picture of the enterprise on a particular day, we use the "snapshots" from 31.12.2015 to the 31.12.2020 annual report. The balance sheet shows the company's assets; this means everything you own (e.g. buildings, machines, cash, account receivables, inventory etc.) and liabilities; everything you owe (e.g. long -or short-term loans, account payables). Retained earnings is an item visible on the liability side of the balance sheet, this is money that can be distributed as dividends (decreases retained earnings), or be used in future expansion of the business, thus creating a compounding interest effect on income if used efficiently in growth strategies. The balance sheet is a financial statement that provides the investor with a quick overview of the underlying "net worth" of the current business, which can be found by assessing the shareholder's equity section or through manual calculation. Net worth, book value and shareholder's equity will be used interchangeably throughout our analysis.

Net worth/book value/shareholder's equity = total assets – total liabilities

A company's net worth is not necessarily the same as liquidation value, or realizable value. This difference is probably not important unless the difference between net worth and liquidation value is vastly unrealistic, or if the company is considering liquidation.

Liquidation value = selling price of all assets – total liabilities

This seems logical enough and is the exact same method for calculating an individual's net worth. Therefore, the current net worth is used as the beginning value for our analysis. However, a company's intrinsic -or underlying value is equal to the value of all future cash flows discounted back to the present day, this can also be thought of as the company's earning power, dependent on the degree of certainty of such earnings (Graham & Dodd, 2009). In practice, this would typically mean macroeconomic and company-specific trends of earnings (net operating income). We will explain this in detail in the next section, under income statement analysis.

In Security Analysis sixth edition (2009), Benjamin Graham and David L. Dodd explain the concept of "tangible-asset value" (Graham & Dodd, p. 548), this is defined as the book value of the company deducting intangibles, such as goodwill. We follow this reasoning in our reformulated balance sheet, as the sellable value of assets in a solar PV company is directly tied to the tangible assets acquired by the company. It is noted that Scatec has a relatively low estimation of goodwill, but we exclude this to get as close as possible to the true tangible book value. However, we note the fact that the company is not inflating their perceived business worth through inflation of goodwill, this could indicate a good management.

Next, we will show Scatec's balance sheet to establish a starting point directly tied to the fundamental value the company possesses at the time of writing. The numbers in 2020 are from the annual report which was the last available report at the time of writing but should give us a correct current net worth of the business as of 31.12.2020. When reformulating the balance sheet, we have rearranged the accounts to reflect the company's operating assets/liabilities and financial assets/liabilities (Penman, 2013).

5.2 The reformulated balance sheet

These are the key figures from the reformulated balance sheet.

	Key figures reformulated balance sheet				
NOK millions	*2016*	*2017*	*2018*	*2019*	*2020*
Assets					
Operating assets					
Long-term operating assets excluding goodwill	5,550	6,555	10,391	17,059	17,564
Total current operating assets	1364	3603	4226	4417	8987
Total operating assets	**6914**	**10158**	**14617**	**21476**	**26551**
Financial assets					
Cash equivalents - restricted cash	*118*	*58*	*67*	*78*	*87*
Financial assets	*19*	*0*	*149*	*0*	*0*
Total financial assets	**137**	**58**	**216**	**78**	**87**
Liabilities					
Operating liabilities					
Long-term liabilities	128	185	345	437	205
Total current liabilities	502	908	1790	2719	3363
Total operating liabilities	**630**	**1093**	**2135**	**3156**	**3568**
Common shareholder's equity	*1312*	*1887*	*2475*	*3638*	*9468*
Financial liabilities					
Total financial liabilities	**5131**	**7260**	**10248**	**14784**	**13628**

Table 2. Key figures from the reformulated balance sheet (Own creation; see appendix).

5.3 Working capital

When analyzing the short-term liquidity of Scatec, we have chosen to deduct restricted cash of 87 million NOK from the current operating assets as these cash equivalents are "locked" for specific purposes. The current liabilities consists of the total current operating liabilities added with current financial liabilities:

Current assets = Total current operating assets + financial assets = 8987 + 0 = 8987 mill NOK.

Current liabilities = total current operating liabilities + financial liabilities

= 3363+131= 3495 mill NOK.

Estimated working capital = 8987 – 3495 = 5492 mill NOK

An alternative measure to short-term liquidity is the "current ratio". This ratio is great to see quickly how many times the company can pay all current liabilities with its current assets. This ratio can be calculated as following:

Current ratio = Current assets / Current liabilities

Current ratio = 8987/3495 = 2,57

For evaluating if the working capital and current ratio is sufficient, it is necessary to check the company's notes in their latest annual report (Scatec, 2021), note 5 provides us with the most prominent account for current assets, namely the cash & cash equivalent account. As discussed earlier, we made the decision to remove any restricted cash from our equation and rationalized this because these are "locked" for specific purposes, this also gives us a slight margin of safety when calculating the short-term liquidity ratios and could offset possible losses occurred from e.g., the trade and receivables account.

(1) Cash for operations	2016	2017	2018	2019	2020
Cash in power plant companies in operation	708	793	730	1567	1741
Cash in power plant companies under development	7	1324	1467	420	11
Free cash	304	688	1039	758	5949
Cash available for operations	**1019**	**2805**	**3236**	**2745**	**7701**

Table 3. Cash for operations in NOK millions, own creation. Numbers from Scatec ASA annual report 2021, Note 15: Cash and cash equivalents.

5.4 Income statement

The income statement reveals the profit of the company for a certain period of time, which is 12 months in the annual reports. The main information we get from the income statement is the company's profit, which is calculated by finding the difference between the expenses and the revenue. The expenses contain different posts such as depreciation and amortization, while the revenues come from selling the company's services or products (Plenborg & Kinserdal, p. 54, 2021).

Revenues
- Expenses
= Profit

All of the expenses and the income in a certain period of time, are included in the income statement if not a standard or an interpretation required otherwise according to the new IFRS presentation and disclosure from 2020 (Plenborg & Kinserdal, p. 55, 2021). There are some categories that needs to be included in the income statement which is listed below as:

Operating items:

- *Operating revenues and expenses*
- *Investing items: share profit from associates and joint ventures and dividends*

Financial items:

- *Finance income and expenses*
- *Income taxes*

- *Profit or loss of discontinued operations*

(Plenborg & Kinserdal, p. 55, 2021)

For the categories in the income statement, the amount presented are the minimum requirements. But this information alone does not provide enough information for a detailed analysis. When doing a presentation of the financial performance for a company like Scatec ASA, IASB says that it is required to add more line items to be able to get a better understanding of these numbers (Plenborg & Kinserdal, 2021). These lines are presented either in the notes or directly on the income statement according to Plenborg & Kinserdal, p. 55, 2021.

A company also needs to present the analysis of expenses in two classifications: nature expense and function costs. Some examples of nature expenses are raw materials and depreciation costs. For the function costs, it can for instance be the cost of goods sold and administrative expenses. By doing this, companies try to give the most precise and reliable information as possible, according to Plenborg & Kinserdal, p. 55-56, 2021.

5.5 Reformulated sustainable income statement

This section uses the accounting data for Scatec ASA from 2016-2020. The purpose of doing this is to try to get the most accurate and new information as possible. To do this, we exclude any sales of project assets which are wrongfully published as a part of the company's operating income. In 2016 such items gave a net gain of NOK 377 million and in 2017 a gain of NOK 75 million. These assets are a one-time income item (non-recurring items), which doesn't increase the earnings power for Scatec and therefore shouldn't be part of a reformulated income statement. This would consequently result in an overly optimistic valuation of future earnings.
After excluding these non-recurring items from the income statement, we can reformulate the statement to separate operating and financial income. This is the reformulated sustainable income statement found in appendix C.

A reformulated sustainable income statement is used by analysts to show the capacity of a company to generate operating income to pay interest payments. When reformulating an

income statement, it is done by separating operating and financial assets for the company. The purpose for doing this is to see where the value drivers come from (Penman, et.al., 2013, p. 243).

Operating income is the income generated by the company's core business operations and it is the main measurement for valuing a company, which is all future earnings discounted back to the present. Operating income is therefore a main component for understanding Scatec's earning power. Additionally, this important information shows how the business is going (Titman & Martin, 2016, p. 191). Earnings before interest and tax (EBIT) is used interchangeably with operating income from the core business.

When adding taxes, you will get the net operating profit after tax (NOPAT), as seen in the key findings from the reformulated income statement in table 4. The reformulated sustainable income statement can be seen in appendix C, where NOK 377 million (2016) and NOK 75 million (2017) have been deducted from the "Other income" item.

As seen in the table below, one can see the key findings from the reformulated income statement. The key findings we chose to focus on in this thesis are net revenue, EBITDA, EBIT, NOPAT, Profit after tax and comprehensive income. These items were chosen because they are important items for core profitability analysis.

(In mill nok)	2016	2017	2018	2019	2020
Net revenue	1010	1114	1214	1782	2755
EBITDA	758	863	903	1385	2070
EBIT	488	615	630	873	1293
NOPAT	460	592	533	844	1163
Profit after tax	-4	60	227	154	-367
Total comprehensive income	-81	46	191	-9	-761

Table 4. Key findings from the reformulated sustainable income statement, own creation.

Net revenue: As stated in the annual reports from Scatec, the revenues primarily come from transactions between the group companies, where Scatec holds the controlling interest. These transactions are from the international standard contracts and terms which are negotiated with each of the companies (Scatec ASA, 2019).

Earnings before interest, tax, depreciation and amortization (EBITDA): This calculation is done by taking total revenue and other income and subtracting that with the personnel expenses and other operating expenses. The EBITDA has a good positive trend except for 2018 when it went a bit down but got a big increase the last two years. This formula can be used to indicate if the company is earning profits from the underlying business, without considering variations such as tax -or depreciation rates. The expense has gone up each year, due to more facilities cost, new contracts, interest expense and professional fees to name the biggest changes, but the revenue had a big increase, especially in 2020 (Scatec, 2019).

Earnings before interest and tax (EBIT) provides us information about the earnings before tax deductions. This was calculated by taking the EBITDA and subtracting the depreciation, amortization and impairment. The depreciation of a solar power plant comes when the plant is ready for its intended use, usually the date of grid connection and commissioning. The residual value is accounted for when calculating the annual depreciation. The impairments are related to discontinued development to some projects of Scatec (Scatec ASA, 2019).

Net operating profit after tax (NOPAT) was calculated by taking (EBIT-NOPAT)/EBIT. This was the more precise way of calculating it, due to the fact that there are probably different tax rates in the different countries Scatec operates in.

Profit after tax was found by taking NOPAT and subtracting net financial expense. Scatec had positive profit after tax from 2016-2019, but had negative 367 million in 2020, according to the Q4. The financial expense post consists mainly of interest and other financial income, interest and other financial expenses and net foreign exchange gain/loss. In 2018 forward exchange contracts were set up to eliminate the exchange rate risk, and they were set up at fair value (Scatec ASA, 2019).

Total comprehensive income is found by taking the profit after tax and adding the net other comprehensive income (found in the consolidated statement of comprehensive income). The items included in the net other comprehensive income is net movement of cash flow hedges, income tax effect and foreign currency translation differences (Scatec ASA, 2019).

5.6 Profitability analysis

In this chapter the focus will be conducting a profitability analysis of Scatec ASA. According to Penman (2013), the core focus when analyzing a company's profitability is to be able to find the value drivers behind them.

In this thesis, the profitability analysis will be based on the DuPont model as shown in figure 13, this will present the relation between the different ratios of profitability. The DuPont approach in financial control provides more detailed subcomponents for the productivity and efficiency measures.

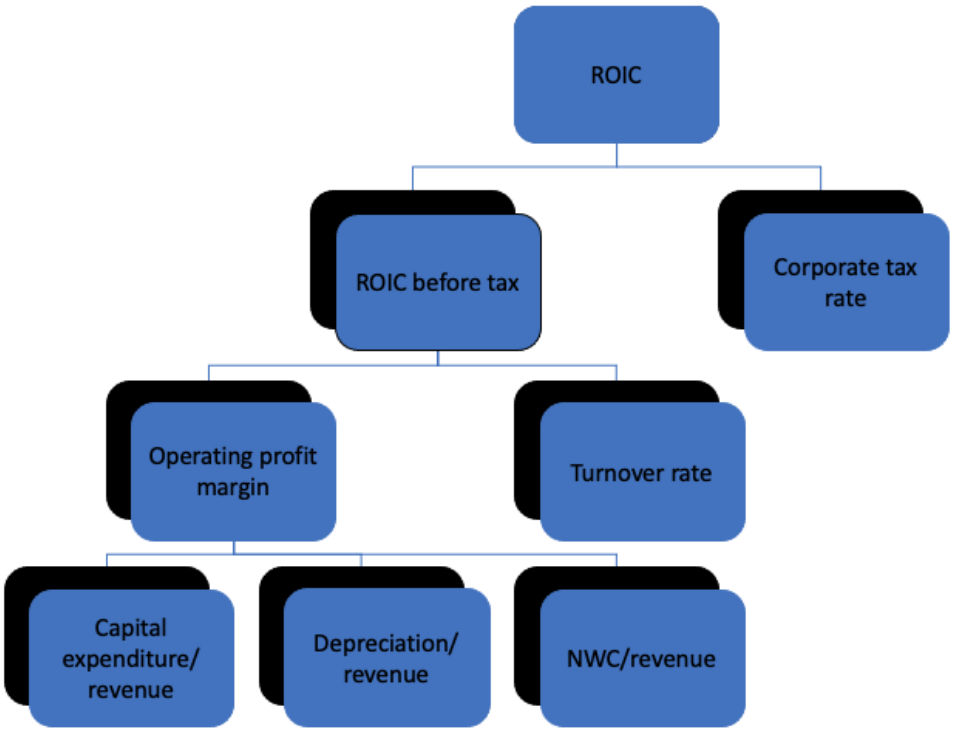


Figure 13. DuPont model (own creation).

5.6.1 Return on invested capital (ROIC)

Return on invested capital is found by dividing net operating profit after tax by the invested capital of Scatec ASA. ROIC measures the after-tax profit generated by the operations in the company, excluding any interest. To get the numbers in percent, you need to time it by 100. The formula used for ROIC can be seen in equation 1 (Kinserdal & Plenborg, p. 144, 2021).

$$ROIC = \frac{NOPAT}{Invested\ capital} * 100$$

Equation 1 – ROIC, own creation.

	2016	2017	2018	2019	2020
NOPAT	460	592	533	844	1163
Invested capital	6 412	9 250	12 827	18 757	23 188
ROIC	7,17 %	6,40 %	4,16 %	4,50 %	5,02 %

Table 5. Return on invested capital, own creation.

As seen in 2016 and 2017, the ROIC is relatively high with 7,17 % and 6,40 %, compared to 2018-2020, where the ROIC went down to 4,16 % in 2018. It is worth noting that it had a small growth with 4,61% and 5,06% in 2019 and 2020. These calculations tell us how much return on every dollar Scatec ASA is able to create. Scatec ASA was able to create 7,17 % and 6,40 % in return on every dollar in 2016 and 2017, before it fell down in 2018, but has somewhat stabilized in recent years.

5.6.2 ROIC before tax

There are different methods to calculate the return on invested capital, the other method used in this thesis is by dividing EBIT on invested capital. The reason for this is that Scatec ASA mainly operates in countries outside Norway, and due to this it will be interesting to see the pre-tax ROIC. The formula used for this can be seen in equation 2 (Kinserdal & Plenborg, p. 144, 2021).

$$ROIC = \frac{EBIT}{Invested\ capital} * 100$$

Equation 2. Pre-tax ROIC

	2016	2017	2018	2019	2020
EBIT	488	615	630	873	1293
Invested capital	6 412	9 250	12 827	18 757	23 188
ROIC	7,61 %	6,65 %	4,91 %	4,65 %	5,58 %

Table 6. ROIC before tax

From our perspective the impact of taxes doesn't result in a big difference, but it is still interesting to see the impact of corporate tax on the ROIC. As we can see, the percentage differences are relatively stable.

5.6.3 Operating profit margin

If we want to find out if there is a relation between the increased expense and revenue or to find a more effective method to see the capital drivers for ROIC, we need to divide the ROIC into different subsections.

$$ROIC = Operating\ profit\ margin * Turnover\ rate\ of\ inveted\ capital$$

Equation 3. ROIC: Profit margin and turnover rate.

The operating profit margin (PM) can be found with and without the tax deduction. To find the PM before tax, one needs to use the EBIT/Revenue, as seen in equation 4.

$$PM\ before\ tax = \frac{EBIT}{Revenues} * 100$$

Equation 4. PM before tax (Penman , 2013).

The PM is established on the basis of the total operating income and gives the relation between the earnings before interest and taxes and the revenue of the company. The profit margins are shown in percentage of revenues (Penman, p. 318, 2013).

To be able to find the PM after tax, the NOPAT needs to be used instead of EBIT.

$$PM\ after\ tax = \frac{NOPAT}{Revenues} * 100$$

Equation 5. PM after tax (Penman, 2013).

Table 7 and 8, shows the calculations for Scatec ASA of PM before and after tax for 2016-2020 with the use of the equations above.

	2016	2017	2018	2019	2020
EBIT	488	615	630	873	1293
Revenue	1013	1121	1151	1810	2771
PM before tax	48,17 %	54,86 %	54,74 %	48,23 %	46,66 %

Table 7. Operating profit margin before tax, own creation.

	2016	2017	2018	2019	2020
NOPAT	460	592	533	844	1163
Revenue	1013	1121	1151	1810	2771
PM after tax	45,41 %	52,81 %	46,31 %	46,63 %	41,97 %

Table 8. Operating profit margin after tax, own creation.

5.6.4 Turnover rate:

The turnover rate of invested capital can be calculated by using the equation below:

$$Turnover\ rate = \frac{Revenue}{Invested\ capital}$$

Equation 6. Turnover rate of invested capital (Berk & DeMarzo, 2020).

Turnover rate is another method to measure the working capital, according to Berk & De Marzo (2020). In other words, the efficiency of the invested capital. In this case, the turnover rate tells us how much revenue the company is able to create on every dollar invested in the company.

Table 9 shows us the turnover rate of the invested capital for Scatec ASA from 2016-2020.

	2016	2017	2018	2019	2020
Revenue	1013	1121	1151	1810	2771
Invested Capital	6 412	9 250	12 827	18 757	23 188
Turnover rate	0,16	0,12	0,09	0,10	0,12

Table 9. Turnover rate of invested capital, own creation.

The turnover rate from 2016 was 0,16 and this indicates that the invested capital is tied up for approximately 6,3 years (365/0,16). This needs to be done each year, so from 2017-2020 the number of years where the invested capital was tied up was 8,3 years in 2017, 11,1 in 2018, 10,4 in 2019 and 8,4 in 2020.

5.6.5 Capital expenditure on revenue

Capital expenditure (Capex) is the funds that Scatec ASA is using on purchasing and maintaining for instance property, plant and equipment. (Berk & DeMarzo, 2020, p. 1121). capex is also used to maintain or expand operational developments in Scatec ASA. When doing the calculations below in table 10, the ratio tells us how much they potentially use for their revenue on capex. To find the ratio of capex, it is necessary to divide it by total revenue. In the table below, one can see the ratios from 2016-2020 for Scatec ASA.

	2016	2017	2018	2019	2020
CapEx	884	673	3 565	6 502	1 774
Total revenues	1010	1114	1214	1782	2755
CapEx/Total revenue	87,52 %	60,41 %	293,66 %	364,87 %	64,39 %

Table 10 – CapEx/total revenues.

To find the capital expenditure, we examine the cash flow statements for Scatec ASA from 2016-2020. From table 10, we can see that they use a lot of capital on maintenance. In 2016 and 2017 they used 87,52% and 60,41% of their total revenue on capital expenditures, which is a very high percentage of their revenue. In 2018 and 2019 the numbers are extreme by 293,66 % and 364,87% of their total revenue. This indicates that they used a lot of other financial resources to be able to finance the capital expenditure, for instance loan. The reason for the high numbers could be that a large investment in the past needed a heavy maintenance cost. In 2020 the percentage was down again to relatively reasonable numbers with 64,39% of their total revenue. As long as these investments in capital expenditure are generating

income in the future, Scatec will likely continue to use large portions of their profits on capital expenditure.

5.6.6 Net working capital on revenue

Net working capital (NWC) can be calculated by taking current assets minus current liabilities. The reason for this is that current assets of Scatec ASA are expected to generate cash to the company within 12 months ,while the current liabilities in the company are different kinds of obligations that have a due to mature within one year (Penman, p. 684, 2013). When taking NWC and dividing that on revenue, it is possible to find the percentage of the NWC to revenue. This calculation will help us find out whether Scatec ASA is very dependent on a lot of assets to make the working capital to generate value or not. A low rate will imply that Scatec ASA does not need a lot of assets to generate value. High rate would imply the opposite.

Table 11 shows the net working capital and the NWC divided by total revenues in the period between 2016-2020.

	2016	2017	2018	2019	2020
Current Assets	1364	3603	4226	4417	8987
Current Liabilities	502	908	1790	2719	3363
Net working capital	862	2695	2436	1698	5624
Total revenues	1010	1114	1214	1782	2755
NWC/Revenues	85,35 %	241,92 %	200,66 %	95,29 %	204,14 %

Table 11. NWC/total revenues

Table 11 shows that Scatec ASA is very dependable on current assets to generate value for the company, which makes a lot of sense due to their type of company.

5.6.7 Depreciation on revenue

Berk & DeMarzo (2020) explains that depreciation is taken into account due to the fact that an equipment/asset is losing asset value over time. Therefore companies, such as Scatec ASA, need to reduce the value of the equipment/asset each year by deducting a depreciation expense. When dividing the depreciation expense on revenue, one will deduct Scatecs

non-cash expense relative to their income. Table 12 shows Scatecs ASA depreciation on revenue in the years from 2016-2020.

	2016	2017	2018	2019	2020
Depreciation	270	248	273	512	777
Revenue	1013	1121	1151	1810	2771
Depreciation/Revenue	26,65 %	22,12 %	23,72 %	28,29 %	28,04 %

Table 12. Depreciation/ratio

The results from table 12, shows a widespread depreciation on revenue from all the years. When the revenue goes a lot up, like 2019 and 2020, the depreciation follows. So it seems like there is a correlation with depreciation and revenue, which makes a lot of sense, due to Scatec ASA being a very asset heavy company and constantly needs reinvestment in more assets, which will cause more depreciation.

Chapter 6 - Management efficiency and growth

In this section we will analyze Scatec's historical growth from 2016-2020, a period of 5 years. We find the growth in percentage for each year, then calculate the average growth rate, which will be used in the final forecasting. Since the acquisition of SN Power, these numbers will probably not be completely accurate, but it can still be used as an argument of continued growth in equity. Since we are interested in the shareholder's value in this valuation, we will discuss the use of return on equity (ROE) and return on net operating assets (RNOA) for the expected growth calculations. We use ROE because it uses the tie between the income statement and balance sheet through the shareholder's equity. RNOA, however, takes ROE to another level through the separation of operations and financial activities. For RNOA, we will use the reformulated balance sheet and reformulated sustainable income statement. RNOA is a better metric for estimating the efficiency of NOA because it separates the operating and financial activities. It should be noted that the growth rate we find in this chapter only applies for the solar PV part of the business. Any additional benefits from SN Power also need careful consideration for our discounted cash flow (DCF) estimations.

We will also present the average growth over the 5-year period for revenue/sales, maintenance capex/depreciation, amortization and impairment (D&A), NOPAT and shareholder's equity.

6.1 Return on equity (ROE)

$$Return\ on\ Equity\ (ROE)\ at\ year\ 1 = \frac{Net\ income\ at\ year\ 1}{Shareholder's\ equity\ at\ year\ 0}$$

Equation 7. Return on equity, own creation.

The reason for using the shareholder's equity at year 0, instead of an average shareholder's equity at year 0 and 1, is the fact that we want to see how much income was generated in exactly one year compared to the starting book value. Over the period of 5 years, we expect the average to account for any asymmetrical relationship between the net income and the equity, and consequently result in a clear picture of the ROE for Scatec ASA.

We could also calculate the ROE on a per-share basis where:

$$ROE = EPS\ year\ 1\ /\ BPS\ year\ 0.$$

EPS – earnings (net income) per share
BPS – Book value (shareholder's equity) per share

However, since we are using an average over a period of time, any stock issuance or repurchases will affect the BPS and EPS differently (Penman, 2013). In the case of stock repurchases, the number of outstanding shares will decline, thus increasing the EPS. On the contrary, a repurchase will consequently reduce the BPS because the company uses cash assets to buy the shares. Therefore, you end up inflating the EPS and deflating the BPS. In result, this will inflate the ROE drastically. A stock issuance will have the exact opposite effect, EPS is deflated and BPS is inflated, resulting in a lower ROE.
To avoid this estimation trap, we use the total amount of outstanding shares including all outstanding share options as of 31.12.2020 and use this to calculate EPS and BPS from previous years. There are 1,071,000 share options outstanding as of 31.12.2020 (Scatec, 2021, p. 66), so these options must be included in the total amount of shares because we cannot know with certainty if these options are going to be exercised, but we are going to assume all options are exercised. This will give us realistic values, while accounting for share dilutions. If we apply the "new total shares" as of today and use this to calculate our average growth in ROE, we will avoid the yearly fluctuations outstanding shares might cause.
The results will then be exactly the same whether ROE is calculated on a normal or per-share basis, but we will show the per-share basis method below. Both methods can be found in the appendix.

	2016	2017	2018	2019	2020	
Net income (profit after tax)	-4000000	60000000	227000000	154000000	-367000000	
Common shareholder's equity	1312000000	1887000000	2475000000	3638000000	9468000000	
Shares outstanding	*158335667*					
All share options available	*1071000*					
New total shares	***159406667***					
EPS (adjusted)	-0,03	0,38	1,42	0,97	-2,30	
BPS	8,23	11,84	15,53	22,82	59,40	
ROE		4,57 %	12,03 %	6,22 %	-10,09 %	
Average growth in ROE						**3,18 %**

Table 13. Return on equity including share options. On a per-share basis, own creation.

From the table, we can clearly see the volatility of ROE in analyzing a growth company instead of a large, stable company with limited debt. We can also clearly spot the increase in BPS, or shareholder's equity per share. Our choice of using the current outstanding shares including share options have given us a clear picture of the effects of share issuance to both EPS and BPS. The current pandemic doesn't seem to influence EPS in any significant way, the difference between 2019 EPS and 2020 EPS is due to increases in financial expenses, dragging the average ROE down. This is the downside of ROE, it uses net income instead of separating the operations from financial activity for estimating management efficiency.

6.2 Return on net operating assets (RNOA)

To evaluate the management efficiency, ROE is a bad metric for a growth company like Scatec. We have to separate the operating and financial activities (Penman, 2013). To do this, we are calculating the return on net operating assets (RNOA). This metric shows the return from net operating profit after tax achieved (NOPAT) on the net operating assets (NOA).

$$RNOA = \frac{Net\ operating\ profit\ after\ tax}{Net\ operating\ assets}$$

Equation 8. Return on net operating assets, own creation.

NOPAT is calculated by deducting the operating liabilities (non-interest bearing) from the operating assets. NOA is operating assets minus operating liabilities.

Numbers in NOK million	2016	2017	2018	2019	2020	Average growth
NOPAT	460	592	533	844	1163	
Net operating assets (NOA)	6284	9065	12482	18320	22983	
RNOA	***7.32 %***	***6.53 %***	***4.27 %***	***4.61 %***	***5.06 %***	***5.56 %***

Table 14: Return on net operating assets, own creation.

Scatec is earning an average of 5,56% on its net operating assets, which is considered sufficient in low interest environments. However, sharp increases in interest rates can increase the net borrowing cost (NBC) for bond issues which are directly tied to NIBOR or EURIBOR rates, thus increasing interest expenses and reducing profitability.

6.2.1 Scatec's dividend policy

In the annual report for 2020, Scatec is providing us with information about the future dividend policy for the company. The policy includes (Scatec, 2021, p. 28):

- Paying consistent and growing cash dividends.
- Over time, pay dividends representing 50% of free cash distributed from the producing power plants.
- NOK 1,09 per share dividends in 2020.
- From 2021, minimum dividend payout of 25%.

The dividend transactions do not increase nor decrease the equity value from the DCF analysis. The economical reasoning for this is the fact that paying cash dividends does not add value to the company or shareholders as the cash can be effectively reinvested in the business to earn investors compounded returns.
Another negative effect of cash dividends are tax considerations, dividends are taxed on the whole amount received by the shareholders but capital gain taxes are only taxed on the difference between buy and sell price. Cash dividends are therefore effectively destroying shareholders wealth when growth of operations is possible.

6.3 Other types of growth

The table below contains the accounting numbers for the last 5 years in revenue/sales, maintenance capex/depreciation, amortization and impairment (D&A), NOPAT and shareholder's equity. Since Scatec is a company in growth, such high average growth rates will probably not continue when the company matures, this needs to be thought of in our perpetual growth estimations later on.

Numbers in million NOK	*2016*	*2017*	*2018*	*2019*	*2020*	***Average***
Revenues	1013	1121	1151	1810	2771	
Revenue growth (decrease)		10,66 %	2,68 %	57,25 %	53,09 %	***30,92 %***
Maintenance Capex (D&A)	-270	-248	-273	-512	-777	
Maintenance Capex growth (decrease)		-8,15 %	10,08 %	87,55 %	51,76 %	***35,31 %***
NOPAT (adjusted)	460	592	533	844	1163	
NOPAT growth (decrease)		28,70 %	-9,97 %	58,35 %	37,80 %	***28,72 %***
Net income (adjusted)	-4	60	227	154	-367	
Net income growth (decrease)			278,33 %	-32,16 %	-338,31 %	***-30,71 %***
Shareholder's equity	1312	1887	2475	3638	9468	
Shareholder's equity growth (decrease)		43,83 %	31,16 %	46,99 %	160,25 %	***70,56 %***

Table 15: Averages of other types of growth measures, own creation.

Some of the numbers in the table above need explaining. Firstly, to find the true growth we have adjusted the income statement by removing any non-recurring items like proceeds from sales of project assets, which was found in the income statements under "Other income" for the years 2016-2017. The adjustments for non-recurring assets can be seen in the "Sustainable income statement" in appendix C. This item has increased the reported net income and NOPAT in these years significantly, which would give us a pseudo high growth rate from 2016 to 2017 but lowered the average for the years these items aren't included in the reporting.

Secondly, the net income growth isn't providing us with great insight, as Scatec's financial expenses are increasing with interest and bond repayments etc.

Thirdly, the high increase in shareholder's equity is because of share issuances and not abnormal earning power.

Since the capital expenditures are erratic while the free-cash flows (FCF) is inconsistent because of the growth investments made by Scatec, we are assuming that maintenance capex is equal to depreciation & amortization. The capital expenditure (capex) is found in the consolidated cash flow statements from the years examined and are divided into maintenance capex and growth capex.

Numbers in million NOK	*2016*	*2017*	*2018*	*2019*	*2020*	**Average growth capex**
Maintenance capex (D&A)	-270	-248	-273	-512	-777	
Capex (Cash-flow statement, 2020)	884	673	3,565	6,502	1,774	
Capex growth in % (total spent on capex)		-23.87 %	429.72 %	82.38 %	-72.72 %	
Growth capex (spent to grow the business)	***614***	***425***	***3292***	***5990***	***997***	***2263.6***

Table 16: Maintenance capex and growth capex estimations, own creation.

Maintenance capex is the amount of NOK needed to maintain the current levels of PP&E; therefore, it makes sense to use depreciation charges as a proxy (which decreases PP&E on the balance sheet). Growth capex is the remaining amount of capex after maintenance, which is used for investments for acquiring and upgrading PP&E.

Chapter 7 - Analysis of liquidity/credit risk

In this chapter we will discuss the balance sheet and the income statement to assess short -and long term liquidity risks from debt issuances. As shareholders are owners of junior securities, this means creditors have a higher rank in order of repayment. This is why a sufficient analysis of liquidity is needed, the cost of equity capital is riskier than debt and a thorough analysis will determine if debt repayments are manageable.

7.1 Short-term liquidity risk

To determine if the company has short-term liquidity risk, we can apply the quick and efficient current ratio (Graham & Zweig, 2005). This ratio shows the number of times the current assets within a company can pay for the current liabilities. A sufficient ratio is > 2 for asset-heavy companies, which Scatec falls under. This is the current assets, which is assets that can be turned into cash within a year from the report (e.g. cash or account receivables), divided by the current liabilities, which is liabilities with maturity shorter than a year. Current assets and current liabilities can be found on the balance sheet.

$$Current\ ratio = \frac{Current\ assets}{Current\ liabilities}$$

$$Scatec\ current\ ratio = \frac{9074}{3495} = 2{,}6$$

$$Working\ capital = 9074 - 3495 = 5579\ NOK\ million$$

Equation 9. Current ratio, own creation.

Since the current ratio for Scatec shows a sufficient 2,6 times current assets over current liabilities, we do not use any other metric in measuring the short-term risks. The company is clearly liquid in the short-term.

7.2 Mid -to Long-term liquidity risk

For assessing the long-term liquidity risk, we are analyzing the current outstanding non-recourse financing loans, as well as the acquisition of SN Power. These long-term debt items are the most prominent for the solvency of Scatec in the future, therefore it needs

careful assessment in line with historical earnings and capital requirements. The amount of outstanding non-current liabilities is NOK 13 701 million, and 11 350 million of these are non-recourse project financing (Scatec, 2021). The pledged solar plants have an estimated book value of 14 877 million to cover potential losses.

The most challenging part of this section is the fact that the acquisition and the recent bond issue of EUR 250 million is not included in the financial statements. Therefore, we will use the available statements and make adjustments where we find it necessary.

7.2.1 Non-recourse financing and senior unsecured bond

As described in the 2020 annual report, non-recourse financing has a limited risk profile. As we discussed earlier, this means that creditors can only claim repayments of the loans from the cash flows generated on the financed power plant. Even though there is limited bankruptcy risk from these loans, it does not make them risk free for investors in any case. Defaults on any loans will still result in large loss of book value (seized assets) and loss of current and future income. The most interest heavy loan is located in the South Africa portfolio, with an annual interest rate of 12,61% with NOK 1 887 million of liabilities, which amounts to NOK 238 million in interest payments a year.

Below is the repayment structure for the non-recourse financing loans (Scatec, 2021, p. 83):

NOK million	Loan repayment	Interest payment	Total
2021	767	740	1,507
2022	789	724	1,513
2023	869	672	1,541
2024	946	619	1,565
2025	973	558	1,531
2026	1,035	495	1,530
2027	1,000	430	1,430
2028	1,039	368	1,407
2029	781	300	1,082
2030	629	254	883
2031	623	214	837
2032	579	177	756
2033	565	141	706
2034	588	103	691
2035	624	66	691
2036	192	28	221
2037	135	6	141
Total future loan repayment	12,134	5,897	18,031

Table 17. Repayment structure of debt, 2021a, by Scatec ASA, p. 83. Retrieved from: https://scatec.com/wp-content/uploads/sites/7/2021/03/Scatec-Annual-Report-2020.pdf

We note that about **NOK 1 500** million are scheduled to be repaid each year during the period 2021-2026.

7.2.2 Acquisition of SN Power

Since we do not know if there is an agreed exchange rate set for the acquisition or the related financing, we assume the exchange rate at 31.12.2020 is used (1 USD = 8,5326 NOK). Financing of the SN Power acquisition of a total of USD 1 166 million (NOK 9 949 million) include the following debt facilities (Scatec, 2021, p. 105):

- *USD 200 million (NOK 1 707 million) Vendor financing with a tenor of 7 years from closing.*
- *USD 150 million (NOK 1 280 million) Green Term loan with maturity 4 years from closing.*
- *USD 400 million (NOK 3 413 million) acquisition finance with a tenor of 18 month from closing.*
- *Remainder (USD 416 million, or NOK 3 550 million) is a cash payment from Scatec. At 31.12.2020, the working capital amounted to NOK 5 579 million.*

Scatec has available funding of USD 180 million (NOK 1536 million) from a Revolving Credit Facility (RCF) as of January 2021. This is credit which is available at any time the company needs it, the available funding is the maximum amount the company can borrow as part of the agreement. This agreement somewhat hedges against short-term fluctuations in earnings.

7.2.3 Senior unsecured bond

In February 2021, Scatec got EUR 250 million from an unsecured bond issue with maturity in August 2025. As of 31.12.2020, the exchange rate for 1 Euro was 10,47 NOK, meaning bond proceedings equals about NOK 2 618 million. The bond pays a coupon of 3-month EURIBOR + 250 bps, which equals an annual interest rate of 1,963% which is paid quarterly. Annual interest payment equals (at the time of writing) to 2 618*0,0193 = ***NOK 51,39 million*****, or 51,39/4 = NOK ~12,85 million quarterly.** The proceeds from the bond will be

used to pay the outstanding bond maturity amount of NOK 750 million and partially pay the acquisition facility of USD 400 million for the acquisition (see above).

$$Use\ of\ proceeds\ from\ bond\ (NOK) = 2\,618 - 750 = 1\,868\ million\ (expired\ bond)$$
$$Remainding\ on\ acquisition\ loan\ (NOK) = 3\,413 - 1\,868 = 1\,545\ million$$

So, the newly completed bond can pay back the par value of the bonds, plus pay an additional NOK 1 868 million of the acquisition loan of USD 400 million with the shortest expiration date (18 months). This means Scatec have to pay the remainder of the acquisition loan of NOK 1 545 million from its working capital, this leaves the following results in working capital:

$$Working\ capital\ after\ acqusistion\ loan\ (NOK) = 5579 - 1545 = 4034\ million$$

Next, the second most urgent payment is the cash payments from Scatec to Norfund. This is equal to about NOK 3 550 million and is expected to be paid in cash. The remaining working capital is expected to be used for operational activities after the acquisition.

$$Working\ capital\ after\ cash\ payment\ (NOK) = 4034 - 3550 = 484\ million$$

After all the most urgent necessary payments, i.e. bond face value repayment & acquisition related, the company's long-term payments will be dependent on cash flows generated from operations, in EBIT. This is because interest on loans are tax deductible, meaning EBIT shows the best measure for whether the company can cover its interest payments.

Scatec's 2020 annual report debt-financing structure (does not include bond or acquisition)
The overall debt-to-capital ratio is also shown below, as it shows the allocation of debt to equity capital for the company. A very high ratio can indicate possible insolvency in the future due to large amounts of debt.

$$Debt - to - capital\ ratio = \frac{Debt}{Debt + Shareholder's\ equity}$$

Equation 10. Debt-to-capital ratio, own creation.

$$Scatec\ debt - to - capital\ ratio = \frac{17\ 196}{26\ 663} = 0{,}645 = 64{,}5\%$$

From the equation above, we can see that Scatec operated with 64,5% debt financing in 2020. After the acquisition and bond repayment, this number is expected to increase. This is expected because the increase in loan amounts and decrease in working capital, outweigh the book values of SN Power. The company has the RCF amount available if future earnings aren't enough for interest coverage, however, an extended period of unsatisfactory earnings can/will cause financial trouble in the future, especially if future earnings are impacted by an extension of COVID-19 or other unexpected scenarios.

7.2.4 EBIT estimation for solar PV part of the business

For assessing the liquidity of covering interest charges with earnings before interest and tax, we look at the historical average increases in EBIT. These estimations use the "Sustainable income statement" in appendix C. When adjusting the EBIT amounts for non-recurring items, we get an average increase in EBIT of 28,79% for the solar plants.

Growth estimates	2016	2017	2018	2019	2020	Average
EBIT		26,02 %	2,44 %	38,57 %	48,11 %	28,79 %
NOPAT		28,70 %	-9,97 %	58,35 %	37,80 %	28,72 %

Table 18. Growth estimates for EBIT and NOPAT (Own creation).

If we use this growth estimate for EBIT for the next five years, we get the following expected EBIT numbers for Scatec's solar PV plants (all numbers in million NOK):

Forecasted year	2021f	2022f	2023f	2024f	2025f
EBIT estimation	1665,21	2144,56	2761,89	3556,94	4580,85

Table 19. EBIT estimations from 2021-2025 (Own creation).

7.2.5 Interest coverage for the solar PV plants

Interest and repayments of loans include the non-recourse financing amounts (table above), bond interest, Green Term loan and the Vendor financing loan. The interest related to the Green term and Vendor financing loans are not available, so we need a high interest coverage ratio for the accounting period 2019-2020 to compensate for this uncertainty.

$$Interest\ Coverage\ ratio = \frac{EBIT}{Interest\ Expense}$$

Equation 11. Interest Coverage ratio, own creation.

$$Scatec's\ interest\ Coverage\ ratio = \frac{1293}{1189} = 1{,}09$$

The interest coverage ratio for the latest accounting period is low compared to a sufficient coverage ratio of >2. There are expected annual payments of approximately NOK 1500 million for non-recourse financing, plus NOK 51,39 million in bond interest payments (=NOK 1551,39 million) for the next year (excluding both Green and Vendor loans). In addition, all proceeds from the bond issuance are expected to be used for the acquisition and payment of the face value of the old bonds (NOK 750 million). We expect payments for the annual report 2021 to exceed NOK 2301,39 million, still excluding Green and Vendor loans. To be conservative in our calculations, we apply a 5% interest on both Green and Vendor loans since we don't have the actual annual interest payments available. This brings the total expected financial expenses for 2021 to approximately NOK 2450 million in total.
Therefore, the liquidity risk is highly dependent on the earning before interest and taxes (EBIT) for SN Power. A presentation held by Scatec on 16. October 2020 (Scatec ASA, 2020b) gives us some financial information about the earning power from SN Power over the years 2018 and 2019.

7.2.6 SN Power expected to increase EBIT significantly

Since we use conservative measures (high interest rates) on the Green and Vendor loans, Scatec is expected to have a low coverage ratio for 2021 (mainly because the old bonds will be repaid). From 2022, the coverage ratio is expected to significantly improve.

The acquisition presentation gives us some clues on the expected EBITDA from SN Power pre synergies. Since we cannot estimate these synergies nearly accurately, we assume there are no synergies in these calculations.

Firstly, EBITDA from SN Power was NOK 1149 million in 2019 (Scatec, 2020b), compared to NOK 1279 million in 2018 (Scatec ASA, 2020b, p. 10-11). The annual maintenance capex is projected to be about NOK 90 million (D&A). This gives us an EBIT of NOK 1059 million for 2019 and NOK 1189 million for 2018. The year 2020 was experiencing some reduced water in-flow compared to 2019, therefore we use the average EBIT for 2018 and 2019 as they represent "normal" earnings. The average EBIT in these years was NOK 1124 million and is the expected EBIT for 2021.

Pre synergies, we could expect an EBIT for Scatec post acquisition of:

$$Scatec\ expected\ EBIT\ for\ 2021\ +\ SN\ Power\ expected\ EBIT\ for\ 2021$$
$$=\ 1665{,}21\ (table\ ())\ +\ 1124\ =\ NOK\ {\sim}2789\ million.$$

This would give us a coverage ratio for 2021 of:

$$Estimated\ coverage\ ratio\ for\ 2021\ post\ acquisition = \frac{2789}{2450} = 1{,}14$$

The interest coverage ratio for 2021 is expected to be low as we noted above. If these calculations are assumed to be somewhat correct, the company is liquid. But the repayments are highly dependent on future earnings, which carry uncertainty risks.

Chapter 8 - Fundamental analysis

The fundamental analysis of Scatec ASA will be performed in this chapter. First, we look at the strategic and financial value drivers for the company. Then we discuss the theory around the fundamental analysis and our estimations for the required return on both equity capital and terminal growth rate. Thirdly, we discuss our thought process for estimating cash flows from operating activities, capex, implications from the SN Power acquisition and calculations of net debt. Lastly, we present our results from the DCF analysis which includes the company value, the equity value and per share equity value for Scatec ASA.

8.1 Strategic and financial value drivers

In this section we are going to look at two of the main value drivers for Scatec ASA.. The first value driver we are going to look at is the strategic value drivers as discussed in chapter 4, and then going to look at the financial value drivers which we analyzed in chapter 6. When putting these value drivers together, they will help us create a foundation for the forecasting of the future performance and the value of Scatec ASA.

8.1.1 Strategic value drivers

Strategic value driver is defined as “Strategic or an operational initiative that can be undertaken by a company with the purpose of improving value” according to (Kinserdal & Plenborg, p. 690, 2021). This type of value driver can be looked at as different input factors that can potentially generate value for Scatec ASA and can be calculated and seen in the financial performance. Some examples of different strategic value drivers are entering new markets, development of new products and outsourcing their products. The growth of revenue for companies does not necessarily come instant but with the help of these factors from the strategic value drivers, they can help to create it.The strategic drivers are classified both company- and industry specific. From these factors, one can see that it can potentially take some time before the strategic value drives can be shown in the financial measures, according to (Kinserdal & Plenborg, p. 254, 2021).

The first strategic value driver is when Scatec ASA is entering new markets. As talked about earlier in this master thesis, Scatec ASA bought SN Power in 2020, they entered some new

markets like battery, wind, storage and hydropower. By doing this Scatec ASA is involved, as stated earlier, in the most influential renewable energy sources. Scatec ASA now has the possibilities to operate in even more countries and expand due to their diverse knowledge. With the possibility to increase revenue and operate with these different renewable energy sources, it is a value driver for Scatec ASA.

The second strategic value driver in this thesis is Scatec ASA potential development of new projects. Scatec ASA are expanding operations to compete in different renewable markets, this adds value and a competitive advantage for the company long-term. These investments are made in operating assets which do not produce income instantly, e.g. building new solar PV parks. So, their investment in new projects (solar, hydro, or wind turbines) will probably give lower cash flow in the early stages of development, which leads to lower profit margins in the short -to mid-term, but increases long-term earnings. Scatec ASA is as stated earlier a growth company, which means that they are constantly investing in new projects, so it is important that Scatec ASA has a healthy and sustainable balance sheet, which creates value over time, both economically and reputationally.

The third strategic value driver is outsourcing. They could potentially agree on a development outsourcing in another high-risk country with another big renewable energy source company to try a high risk, high reward option. SN Power did development outsourcing in 2019 according to Nordea Markets (2020, p. 34). If Scatec ASA does this, they can potentially earn a lot of money, and if they do not succeed they will take the loss and split it with the other company they are cooperating with.

The fourth strategic value driver is the ability to use and improve the use of new technology and make it more cost efficient for Scatec ASA. As seen on figure 8, 9 and 10, the technology for solar power and hydropower is getting more and more cost efficient through the years. If Scatec ASA is continuing to be able to make all their renewable energy sources more cost efficient, they will probably be able to increase their profitability.

The political agreements can be a fifth strategic value driver for Scatec ASA. The Paris agreement is talked about in the environmental factors in the PESTEL analysis. This gives renewable energy companies like Scatec ASA different incentives to be able to help the

world to a more environmentally friendly place. To be a part of the environmental change, they will potentially be able to create a value for both the company and the world.

The sixth strategic value driver can possibly be to use more environmentally friendly parts. As mentioned in chapter SWOT, they can try to change out the parts that are an environmental danger to something that is more environmentally friendly. It could be a possibility to try to negotiate with any kind of political power to be able to sponsor their research on this. This could possibly be a value driver because they could get more contracts knowing they protect the environment even more than other renewable resource companies.

The last strategic value driver is to keep looking at the possibilities in the industry. As Scatec ASA did in 2020, they bought SN Power and increased their diversity in the renewable resource industry. They should keep their eyes open to look at other potential cooperation, mergers or acquisitions. With this they can get lower costs of their parts, lower rent prices or just get the possibility to get a bigger part of the market share in the renewable energy source.

8.1.2 Financial value drivers

Financial value driver is defined as “A financial ratio that mirrors the company's underlying performance and is closely related to value creation according to (Kinserdal & Plenborg, p.687, 2021). The financial value drivers can be seen as a product out of the factors from the drivers that we talked about in the first section of this chapter. Some examples from the financial value drivers are for instance margins, investment ratio and growth.

The financial value drivers this thesis will focus on which are the output factors from the strategic value drivers is profitability, revenue growth, capital expenditure, investment in working capital and depreciation. Scatec ASA is a growth company and therefore we see these factors as important as the financial value drivers and it will help to estimate the future free cash flow for Scatec ASA.

Scatec ASA have a lot of focus on their capex costs, this is due to they have a huge focus on their maintenance and their maintenance cost. This makes a lot of sense due to most of their products being outside, which means they need to be able to handle all kinds of climates. This

is a reason why their capex costs are so high versus their revenue. This is an important factor to look at when Scatec ASA wants to estimate their value driver and see how much the expense cost is on maintenance and how it will affect Scatec ASA`s value. An important factor when looking at maintenance cost for the company, is to look at the net working capital. This shows how much liquidity the company got, and it is important to see if the company got enough money to be able to handle those costs.

Two of the most important factors for any company, especially for Scatec ASA, is profitability and growth in revenue. Scatec ASA is a growth company and needs to see that their investments give the necessary revenue growth and also get the reduction in cost at the same time. This will increase the profitability of the company and let them keep investing their money or to keep the money for instance for maintenance costs. Scatec ASA expects to keep growing in the future, make good profit and keep improving the technology, so they are able to reduce the cost of renewable energy sources.

Another financial value driver can be Scatec ASA`s access to capital. They are able to get more capital through for instance their green bonds, as they did on the ninth of February 2021. The green bond can be used for a lot of different things like refinancing some of their investments, investing in new projects or refinancing outstanding bonds. This can possibly be a financial value driver due to the fact that they can easily get access to new capital, which makes it possible for Scatec to refinance/invest in something that gives a positive net present value.

The board of Scatec ASA and their management can be a financial value driver. This is due to their high knowledge of the industry and how it works. All of their board members have long experience with operating in big companies like Scatec and know how much work and commitment it takes to create a solid foundation and keep on growing.

As seen earlier in this thesis, Scatec ASA is in a very leverage heavy industry, which gives a high amount of debt relative to the equity. As seen in table 1, Scatec got a high debt ratio, but as a growth company, they need to keep investing. Therefore one can see the context of the green bonds and leverage. This could be both a financial value driver and a weakness for Scatec. The reason for this is if they are able to get good NPV out of their investments it will

create value, but if their investments are not successful, they can in the worst case go bankrupt.

The last potential value driver in this chapter is RNOA that we talked about in chapter 6.2 and shows the efficiency of the operations. We also looked at how effective Scatec ASA is compared to similar solar PV companies in chapter 10.3. In chapter 6.2 we see that the average RNOA is 5,56%, but we expect this to be higher after the acquisition of SN power, due to the effectiveness and the low operating cost of hydro power. This is therefore a potential financial value driver for Scatec ASA.

8.2 Present value

To be able to find the fundamental or intrinsic value in equity valuation, we need to use the present value approaches which helps us to calculate the "true" value which is unconventional from its market value. Fundamental valuation or present value is one of the most frequently used valuation methods according to Kinserdal & Plenborg, p.336,2021. To be able to find the value, we need to see the analyst`s projections of the cash flows of a company, in this paper Scatec ASA, and use the discount factor(CAPM), that shows the risk of the cash flow and the time value of the money. One of the main premises of the present value approaches is that they are all a consequence of the dividend discount model (Kinserdal & Plenborg, p. 336, 2021). The different present value approaches are theoretical equivalent, so according to this, if they are based on the same input their yield should have identical value estimates.

8.3 The discounted cash flow approach

When looking at present value approaches, the discounted cash flow model is unquestionably the most popular one. This model can be described in two separate ways. The first approach estimates the equity value and the second method estimates the enterprise value(ev). According to the EV approach, the worth of a company is determined by the PV of future FCF (Kinserdal & Plenborg, p. 341, 2021). In this discounted cash flow model, discount rate, cash flows from operations and capital expenditure are affecting the market value of the

company. Which means a lower discount rate and higher free cash flows will increase the value of the company. A big difference between other valuation models and discounted cash flow models is the fact that it uses actual cash flows from operating activities for valuing the business, this means that e.g. depreciation and interest expenses is added back to net income before subtracting capex. This results in free cash flow to the company, then we remove Scatec's net debt to arrive at the equity value of the company.

8.4 Cost of capital

According to Kinserdal & Plenborg (2021, p.686), the cost of capital is the price investors request for providing capital. There are mainly two factors that set the price of capital, the factors are the time value of the money and the risk involved in providing the necessary funds to a company. Stakeholders need to find their rate of underlying risk of an investment and try to find their cost of capital measure, this can for instance be required return or expected return on their potential investment. Cost of capital is a very challenging thing to estimate due to the risks involved. WACC has a number of limitations which makes it unreliable for estimating a required return on equity. Required return on equity cannot be calculated perfectly by a mathematical formula, but by assessing all the risks associated with the company analyzed. In this master thesis, we are using CAPM, but also adding additional percentages based on risks found from the strategic analysis.

8.5 Flaws of WACC

The mathematical formula for WACC is shown below:

$$WACC = \frac{NIBL}{NIBL + Equity} * r_d * (1 - t) + \frac{Equity}{NIBL + Equity} * r_e$$

Equation 12. WACC, Own creation.

NIBL = Market value of net interest-bearing liabilities (net financial items)
Equity = Market value of equity
r_d = Required rate of return in NIBL

r_e = *Required rate of return on equity*
t = Corporate tax rate

On the cost of equity side (CAPM), the volatility measure, **β** (beta), are entirely relying on price data correlation between a market index and the particular company, not business fundamentals. We need to apply some rationality to this, because if the stock is highly volatile (both upwards and/or downwards), a higher than average beta would suggest higher risk, even if the fundamentals are solid. This would in turn increase the WACC and reduce the equity value (added risk).

In the calculations of cost of debt, we need to be aware enough to notice any excess amounts of interest payments due to high leverage. The cost of debt calculations (below) shows that the tax benefit of debt is overall reducing debt, but this is only true if the company isn't illiquid. For example: Company A has the following capital structure:

Debt (current liabilities): NOK 10.000.000

Effective interest rate: 15%

Cash & cash equivalents: NOK 1.000.000

Tax rate: 30%

Annual interest payment 10.000.000*0.15 = *NOK 1.500.000*

If we try to calculate the cost of debt in this case, we get:

15%*(1-0.3) = *10,5%*

As seen in this example, debt is a benefit for tax reduction from debt but it is not accounting for business fundamentals. Therefore, if we were to use this number as a reliable risk measure in the valuation, it would not be correct, because the company suffers from illiquidity and should have an equity value close to zero. Therefore, we have to assess liquidity before estimating a discount rate.

By a quick glance at the formula for cost of equity, we can see no relationship between the fundamental value and the supposed return on equity. Instead, this method entirely relies on

the view of the market, even if such views can be proven incorrect by analysis.We cannot make our valuation based on whether or not the market is irrational and volatile. For example, a highly popular stock for retail investors can cause extreme volatility, either up or downwards (e.g. Norwegian Air Shuttle), which in either case increases the company's beta coefficient, β. Should an analyst therefore resign the opportunity to invest in the stock if it's been beating down far below intrinsic worth? Obviously, the answer is no. A lower price should encourage purchase of the stock *if* the fundamentals of the underlying business are unchanged.

8.6 Overall assessment of discount rates for equity valuation

By following the logic shown above, we can also rationalize the importance of debt analysis through a thorough analysis of balance sheets and income statements. Since we are valuing the equity value of Scatec ASA, we have chosen to focus solely on the cost of equity (CAPM) side of the WACC. However, since the CAPM has limitations which have been addressed in this chapter, we have to use our own assessment through our analysis for determining an appropriate discount factor for the discounted cash flow analysis.

8.6.1 Required rate of return on equity valuation

In the equation presented below from Plenborg & Kinserdal (2021, p. 303), shows that the systematic risk is represented as **β** (beta). The equation is defined as:

$$r_e = r_f + \beta_{e*(r_m - r_f)}$$

Equation 13. Required rate of return on equity, own creation.

Where:

r_e = *Required rate of return on equity*

r_f = *Risk-free interest rate*

β =*Systematic risk on equity (levered beta written with the symbol b)*

r_m =*Return on market portfolio*

8.6.2 Risk free rate

According to Plenborg & Kinserdal, 2021, p.304, the risk-free interest rate shows how much an investor is able to earn without taking any risk, this typically means the return on a 10 year government bond. To get a normalized risk-free interest rate we average the last 15 years of Norwegian 10 year government bond rates (appendix K). The risk-free rate is used in the equations shown above, and the risk-free rate we are using is 2,73% on a normalized basis.

8.6.3 Beta estimation

Berk & DeMarzo defines "when a company wants to measure the systematic risk of a stock, they need to decide how much of the variability of its return is because of the systematic, market-wide risks versus diversifiable, company specific risk". Plenborg & Kinserdal (2021) p.306 says that the higher the beta, the higher rate of return is required for the investor who wants to be compensated for the risk they are taking. The reason for doing this is to see how sensitive the stocks are to the systematic shocks that will occur in the world economy (Berk & DeMarzo, 2017, p.379). There are different ways of calculating the beta. We used the historical returns of the company and a market portfolio from the last five years, and then did a regression analysis in Microsoft Excel (Kinserdal & Plenborg, 2021, p.306). The results yield a beta-coefficient of 0,97 (appendix J).

8.6.4 Market risk premium

The market risk premium is the difference between the market returns (index returns) and the long-term risk-free rates (Plenborg & Kinserdal, 2021). To say it in another way it is the extra amount an investor demands to get in return to willingly make the investment in the stock market portfolio, instead of investing the money in a risk-free asset. The level of market risk premium is one of the most discussed academic subjects and it is normally between 3-9% and it varies over time. Scatec ASA is a Norwegian company listed on the Oslo Stock Exchange and operates around the world. The market risk premium for the norwegian stock market is 5%, which was found from a survey conducted by PWC in 2020.

8.6.5 Additional return for strategic and uncertainty risks

After reviewing all elements of the PESTEL analysis, and the uncertainties in future estimations of cash flows, we have concluded to add an additional 2,4% to our CAPM calculations, to arrive at an even 10% discount rate. This is done both for convenience, as a margin of safety measure, and for the fact that CAPM doesn't capture all uncertainty risks covered in the PESTEL analysis. The entire calculation for our discount rate is provided below.

$$Required\ rate\ of\ return = CAPM + additional\ risk$$

Equation 14. Required rate of return on equity (Own creation).

$$Required\ rate\ of\ return = 2{,}73\% + (0{,}97 * 5\%) + 2{,}4\% = 10\%$$

8.6.6 Terminal value

Penman (2013) explains the concept of a terminal value, which is the residual value of the stock after the estimation period, in our case after 5 years (since forecasting beyond 5 years for a growth company is speculation at best). The formula used is the following:

$$Terminal\ value = \frac{Projected\ net\ income\ at\ year\ t * (1+g)}{i-(1+g)}$$

Equation 15. Terminal value, own creation.

g = growth rate after year 5

i = average long-term risk-free interest rate

This terminal value will give the future value (FV) of all cash flows after a point in time. We then use a forecasting period of 5 years because the future becomes more and more uncertain the longer we forecast. Since Scatec is a growing company, any forecasts past year 5 are purely speculative and don't provide any realistic projection of future value. After year 5, we

apply a conservative constant growth rate of 2 % (because global inflation is expected to be around 2%) to remain conservative. This is especially needed when valuing a company with large uncertainties of future growth. The perpetuity growth rate has to be lower than the growth of the economy at 4% (Penman, 2013). If we set a higher growth rate from year 5 to perpetuity, the company is projected to grow larger than the economy itself at some point.

8.7 Discounted free cash flow estimation for Scatec ASA

In our forecast for the period 2021-2025, we have estimated the average growth in the net cash flow from operating activities, maintenance -and growth capex, and after tax earnings from the acquisition of SN Power. First, we will discuss the growth in cash flows, and forecast capex for the next 5 years. Then we look at the earnings assumptions from SN Power pre synergies, and the net debt positions of Scatec from the annual report for 2020. Lastly, we use all of this information to conduct a discounted cash flow analysis, discounting the future cash flows back to present, remove net debt, and arrive at the current equity value.

8.7.1 Cash flows from operating activities growth and forecast of capex

The cash flow from operating activities is found in the cash flow statement, where any non-cash transactions are added back from net income from the income statement. We found an average increase in cash flow from operating activities of 25,51%, which is applied in the forecast. Further, we have calculated an annual growth rate of 35,31% for depreciation (maintenance capex).

Numbers in NOK million	*2016*	*2017*	*2018*	*2019*	*2020*	*Average*
Cash flow from operating activities	732	844	1248	1860	1671	
Operating cash flow growth		15.30 %	47.87 %	49.04 %	-10.16 %	25.51 %
Depreciation	270	248	273	512	777	
Depreciation growth		-8.15 %	10.08 %	87.55 %	51.76 %	35.31 %

Table 20. Cash flow from operating activities and depreciation, own creation.

Next, we are applying the growth rate in maintenance capex in our forecast plus an additional NOK 90 million for each year to maintain the SN Power hydropower plants. This number was found in the presentation for the acquisition of SN Power (Scatec, 2020b). The

presentation also states an additional NOK 50 million in growth capex, this is simply disregarded in the calculations as we don't have the necessary data to calculate an applicable growth rate.

Then we use the average of 5 year historical capex for the entire forecast period. This is done because of the volatility in growth capex outflows, so we have assumed an annual growth capex of NOK 2264 million for the entire forecast. Lastly, we add the maintenance and the growth capex to arrive at the forecasted capex for each forecasting year. The forecasted capex calculations are shown below.

Numbers in NOK million	*2021f*	*2022f*	*2023f*	*2024f*	*2025f*
Maintenance capex	1141	1634	2301	3204	4425
Growth capex	2264	2264	2264	2264	2264
Forecasted capex	**3405**	**3898**	**4565**	**5468**	**6689**

Table 21. Forecasted capex, own creation.

8.7.2 Assumptions after earnings income from SN Power

Since there are limited information around the earning power of SN Power, we are simply using the average of "normal earnings" for 2018-2019, which results in an EBIT of NOK 1124 million, Scatec have paid an average tax rate of 7,2%, giving us an after tax earnings estimate of NOK 1043 million. This is held constant throughout the forecasting period.

8.7.3 Net debt

To calculate the net debt for Scatec we use the following formula:

$$\textbf{Net debt} = \textbf{Total debt} - \textbf{cash \& cash equivalents}$$

Equation 16. Net debt, own creation.

The net debt is the current debt of the company. All numbers are retrieved from the 2020 annual report and are shown in the table below.

Numbers in NOK million	2020
Short-term liabilities	3495
Long-term liabilities	13701
Cash & cash equivalents (free cash)	5949
Net debt	11247

Table 22. Net debt, own creation.

8.7.4 Discounted cash flow analysis for Scatec ASA

To arrive at the free cash flow (FCF) from operating activities, we are subtracting total capex (maintenance + growth) from net cash flow from operating activities. The terminal value uses a 2% growth rate for conservative reasons (avoid overvaluation), and is well below the growth of the long-term economy at 4%. These values are then discounted with a discount rate of 1.1^t (t = year 1-5) and added together to arrive at the enterprise value of Scatec ASA. Lastly, we subtract the book value of net debt of NOK 11,247 bln to arrive at the equity value of NOK 34,349 bln, which equals a per share value of NOK 215,48.

Numbers in million NOK, excluding per share value	2016	2017	2018	2019	2020	2021f	2022f	2023f	2024f	2025f
Net cash flow from operating activities	732	844	1248	1860	1671	3140	4985	7299	10204	13850
Total Capex	883	673	3565	6502	1774	3405	3898	4565	5468	6689
Free cash flow (FCF)	-151	171	-2317	-4642	-103	-265	1087	2734	4737	7161
Discount rate (10%)						1.100	1.210	1.331	1.464	1.611
PV of free cash flowst to 2025						-241	898	2054	3235	4447
Total PV to 2025	10393									
Terminal value (TV)										56694
PV of TV	35203									
Enterprise value of Scatec ASA (FCFF)	45596									
Book value of net debt	11247									
Value of equity (FCFE)	34349									
Total shares (options included)	159.406667									
Value per share	**215.48**									

Table 23. DCF of Scatec ASA, all numbers in million NOK except value per share, own creation.

Chapter 9 - Sensitivity and probability analysis

9.1 Sensitivity analysis

A sensitivity analysis shows how sensitive the value estimates are when changing different variables. There are different assumptions we need to take into consideration in a sensitivity analysis when calculating the NPV. When conducting a sensitivity analysis, we change some of the variables to see how the NPV changes according to how sensitive some of the variables are. This type of analysis uses the different assumptions of the various components in a NPV calculation and reveals how the NPV varies as a part of the assumption change (Berk & DeMarzo, 2017 & Plenborg & Kinserdal, 2021). With a sensitivity analysis we can explore the effect of potential future changes in different key value drivers to see how bad or good it potentially can affect the valuation of the company (Berk & DeMarzo, 2017 p. 294-295). According to Plenborg & Kinserdal (2021, p. 371), every valuation should be complemented with a sensitivity analysis to see the possible outcomes for the company in the key value drivers.

In this chapter we will focus on changes in: revenue, capital expenditure and WACC to analyze their effect on the Scatec ASA's share price. All of the calculations in this chapter can be found in appendix O.

9.2 Changes in net cash flow from operations

Net cash flow from operating activities shows the amount of cash inflows and outflows. The number for net cash flow from operating activities highly depends on Scatec ASA's ability to be able to keep all their renewable energy plants operating and winning contracts. On the basis of the operating activities, we will conduct a sensitivity analysis to see what different change in this net cash flows will affect the share price for Scatec ASA. The sensitivity analysis was done by estimating the operating activities from positive 20% to negative 20%. To be able to see how the effect is on the share price, we changed the numbers in our FCFF model. As seen in the graph below, it illustrates the changes in operating activities and how it affects the share price.

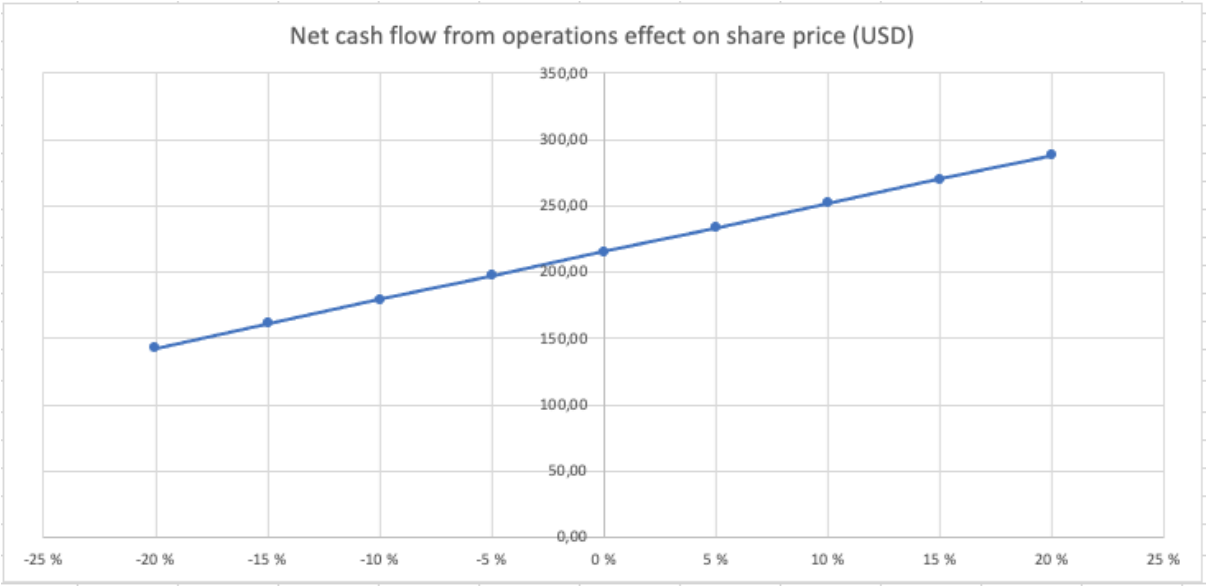


Figure 14. Net cash flow from operations effects on share price, own creation.

As seen in figure 14, an increase in cash flow from operating activities by 20%, we will get a share price of USD 288,13 instead of USD 215,48. This indicates an increase of 33,72% per share. When we calculate with a decrease of 20%, which gives a per share price of 142,83 USD instead of the calculated 215,48 USD. This indicates a decrease of 33,72% per share. This will be considered as a risk for Scatec ASA when forecasting the operating activities to calculate the company's intrinsic equity value.

We will also take a look at a smaller decrease/increase of the forecasted net cash flow from operating activities. If we increase net cash flow from operations by 10%, we end up with an estimated share value of USD 251,80 instead of USD 215,48. This is an increase of 16,9% from our estimated share value. It is also a 16,9% decrease when calculating the other way (-10%). This indicates that we need to be as accurate as possible when forecasting their future cash flows to avoid large divergences.

9.3 Changes in capital expenditure

Scatec ASA is an asset heavy growth company highly focused on large investments in capital expenditure. The long-term assets obviously need maintenance to keep the plants operational. This is one of the reasons why we think it is important to make a sensitivity analysis on capital expenditure. This will give us an insight on how much their capital expenditure affects our estimated share price for Scatec ASA. The same method as in net cash flow from

operations is utilized, we changed the numbers in the FCFF to show how the different percentage changes impacted the share price. The effects are shown in figure 15 below.

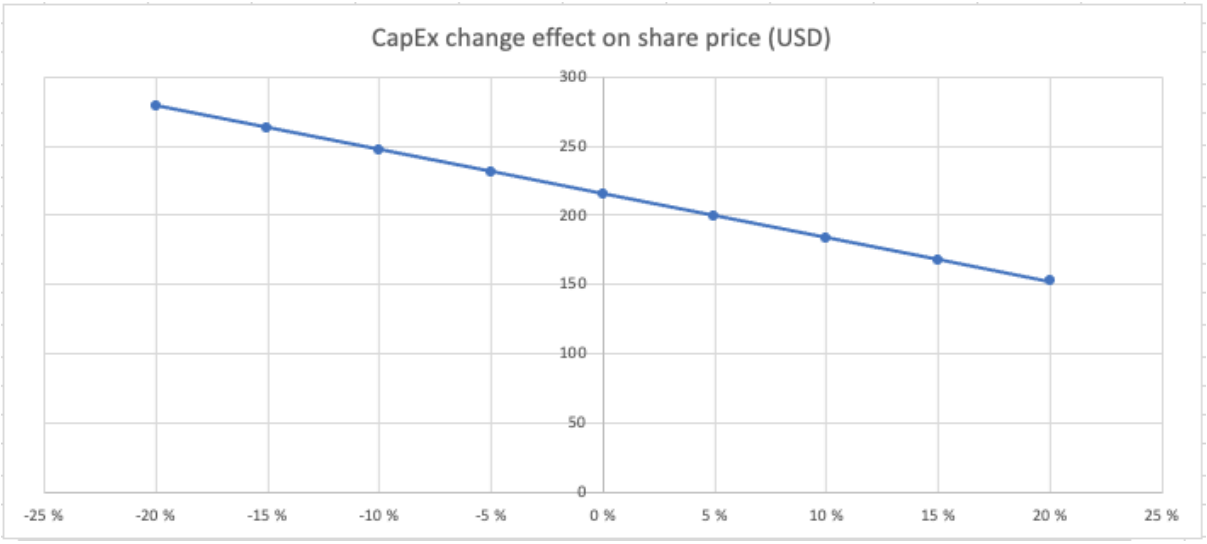


Figure 15. Capital expenditure change effects on share price, own creation.

As seen in figure 15, when the capital expenditure is increased by 20%, the share price is 152,1 USD compared to 215,48 USD, which is a decrease of 29,4%. This is a bit lower than the effect of cash flow from operating activities, but it is still a big impact. The percentage change is the same the other way (+20%), resulting in a share price of 278,86 USD. In our opinion, there is a bigger chance that this forecast can be underestimated than overestimated. The reason for this is the available capital needed to increase CAPEX.

According to our calculations the percentage change in cash flow from operating activities has a bigger impact on the changes than the capital expenditure, but lack of investments in CAPEX over time will consequently decrease the growth rate in cash flows from operations.

9.4 Changes in CAPM

In this master thesis, we have used CAPM plus an additional risk factor from uncertainties (discussed in section 8.6.5) as the discount rate in our discounted cash flow analysis to be able to use the right estimates to our calculations. It is necessary for this thesis to see how the changes in CAPM impacts the share price. Therefore CAPM will be the last estimation in this sensitivity analysis.

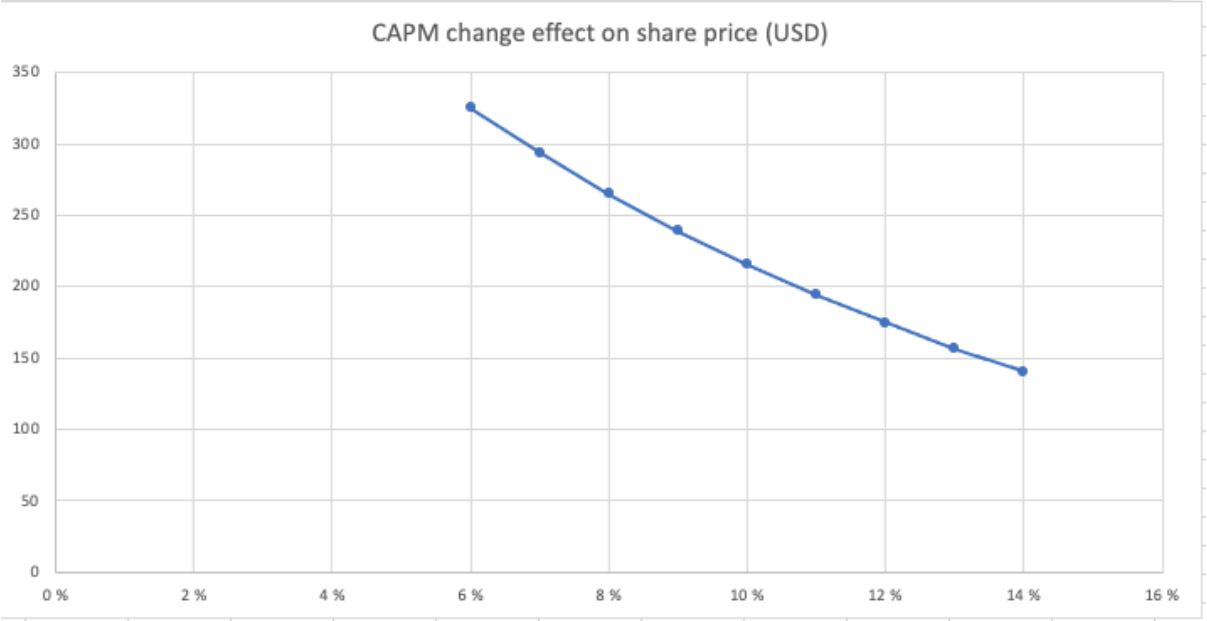


Figure 16. CAPM changes effects on share price, own creation.

As seen in figure 16, one can see that for each percentage of change in the CAPM as used as the discount rate, have a significant impact on the share price for Scatec ASA. We can for instance see that when we go from 10% to 14% in CAPM, the share price changes from 215,48 to 140,24, which gives a percentage decrease of 35%. When going from 10% down to 6%, the price per share was 215,48 and went up to 325,29, which gives an increase of 51%. This percentage increase might look larger at first, but an increase of 51% is offset by an approximate 33,8% decline.

To see the impact of going up to 12% and down to 8% as well, the change in percentage is on respectively negative 19% and positive 23%. By looking at these numbers, the change in CAPM has a very significant impact on the share price for Scatec ASA. This tells us that it is very important for investors to use a well reflected discount rate when forecasting.

9.5 Probability analysis

By using statistical analysis of historical price data for Scatec ASA, we can calculate the historical volatility and average logarithmic returns. These numbers can then be further manipulated to run a large number of simulations for future price movements. In this case, we limit ourselves to a 12 month price forecast because the fundamentals could change if we try to estimate longer in the future.

To do this, we are assuming the market follows “a random walk” (Malkiel, 2003, p. 24) for the short term market movements. Of course, any attempt at forecasting future price

movements are only using past price data as reference, therefore, no fundamental intrinsic value is "backing" the expected end price. However, it can be useful from a risk-management standpoint to calculate the statistical probability of the price staying within a certain range of values. Paired with the fundamental analysis performed earlier in this thesis, we can see if the implied intrinsic equity value is within the 5% and 95% confidence intervals for the next 12 months.

9.6 Monte Carlo simulation

For performing this statistical simulation, we have chosen to simulate price movements for Scatec ASA's shares for the next 12 months, repeated 10.000 times. To do this, logarithmic returns (appendix I) have been used to calculate the monthly expected return (i.e. average of mean log returns) and the monthly standard deviations. The simulation was performed in Excel with the =NORM.INV function. The corresponding values for executing this function includes probabilities, average logarithmic (compounded) expected returns and volatility (monthly standard deviation of log returns).

For performing the Monte Carlo simulation, we did the following calculations and assumptions:

- The probability was set as rand(), which outputs a random number between 0 and 1, this is done because the market prices are perceived as random in the short term.
- The average logarithmic return for historical price movement was calculated using the =LN(new price/old price) function. This provides the simulation with a "drift" which moves the overall direction of the shares upwards.
- Volatility (standard deviation) are also called "shocks" in a Geometric Brownian Motion version of Monte Carlo simulation. The monthly volatility of log returns was found by using the =STDEV.S() formula. This gave us a monthly volatility of 10,67%, which randomly affects the price throughout the simulation.

Monte Carlo simulation outputs	
Starting price	215.00
Monthly volatility of log returns	10.67%
Mean price	304.63
Median price	287.72
Standard deviation	110.68
Probability percentiles:	
5%	157.90
25%	224.96
75%	367.47
95%	507.42

Table 24. Monte Carlo simulation performed 10.000 times (1 year forecast).

Table 24 shows the findings from the Monte Carlo simulation conducted. The results show the probabilities for future prices 12-months ahead with data from 01.11.2014 - 01.04.2021. The most important confidence intervals (percentiles) are the 5% and the 95%, which means it is highly probable that the price of the shares are within this range.

Chapter 10 - Method of comparables

In this chapter we will use the method of comparables or "screening" of three businesses which utilizes solar PV technology. We will start with explaining the limits of screening for valuation purposes, then provide the most useful multiples used in such analysis. Lastly, we conclude our analysis of comparable measures compared to analysis of financial statements.

The three businesses we are examining in this chapter are: Ocean Sun (noted on Oslo Børs), ReneSola Ltd. (noted on NYSE) and Sunworks, Inc (noted on Nasdaq). The reason for including these two American companies is the fact that Ocean Sun is the only listed company on Oslo Børs with comparable underlying businesses, however in the form of solar PV in the ocean, not on-land power plants.

10.1 Limits of screening

Screening is supposed to be an easy way to evaluate whether a company trades cheaper than other comparable companies operating in the same industry. However, as we will see later, this method of analysis has far too many assumptions and fallacies to prove useful in investment decisions. This type of quick valuation is not based on the fundamentals of the business, but rather says that any business in the industry is priced efficiently (Penman, 2013). We know the market isn't so efficient that no stock or security is under -or overvalued (just look at Berkshire Hathaway as an example). Market efficiency is one of the bold assumptions in screening analysis, which means all comparable companies are expected to be priced efficiently. So, if one of the comparables is mispriced, this would lead to a completely wrong valuation for the company in question (Penman, 2013).

However, we can compare ratios for the operating profit margin for all companies to check whether the efficiency of operations are better or worse than competitors. This could also be misleading if the comparables have additional costs relating to COVID-19.

10.2 Comparables analysis

For the multiple analysis, we are comparing the multiples acquired from the financial statements of income for all companies. By knowing the limitations of such analysis, we use multiples (P/B & P/E) and operating margin to compare the companies. We will not use these numbers for calculating an estimated valuation of Scatec's equity because of the method's limitations.

The calculations required for this analysis is simple, and the formulas used are provided below:

$$\frac{P}{B} multiple = \frac{Market\ value\ of\ equity}{Book\ value}$$

$$\frac{P}{E} multiple = \frac{Market\ value\ of\ equity}{Net\ income}$$

$$Operating\ margin = \frac{EBITDA}{Revenue}$$

$$EBITDA = Operating\ profit\ (loss) + depreciation\ \&\ amortization$$

Equation 17. Comparability ratios.

We chose to use EBITDA in these calculations of operating margin because this number shows how efficiently the core operations are managed. This also avoids impact from rapid depreciation charges which impacts EBIT.

In the table below, we have provided all multiples and the current market capitalization of each company.

All 2020 numbers in millions	Market cap	P/B	P/E	EBITDA	Operating margin
Ocean Sun (NOK)	1390	13.88	N/A	-10.68	-174.25 %
ReneSola Ltd. (USD)	676	3.69	313.38	8.212	11.17 %
Sunworks Inc (USD)	308	7.96	N/A	-14.898	-39.30 %
Scatec ASA (NOK)	35660	4.04	N/A	2070	75.14 %

Table 25. Method of comparables. Numbers from the individual company's 2020 annual reports, own creation.

By comparing these metrics, it seems that Scatec ASA isn't overvalued, and has a much higher operating margin than other companies in the solar PV industry. This would indicate that Scatec is a more mature company (and thus more valuable) than the comparables. Operations are run effectively as we can see on the EBITDA number for 2020.

Only ReneSola Ltd. has a positive P/E number (negative is noted as N/A), which means depreciation & amortization, interest and taxes are negatively influencing the net income figure. However, this is expected for growth companies with high leverage.

10.3 Results from screening

This chapter has shown the limitations of the screening method for equity valuation. We can, however, conclude that Scatec is a much more mature (higher market capitalization) and efficiently run company than the comparables chosen in this analysis. This can clearly be seen as a competitive advantage, and thus is reflected in the market capitalization of NOK 35,66 bln. Additionally, Scatec's EBITDA shows a company which has scaled its operations way further than the comparables. It would probably provide more insight if the comparables were larger in size with efficient operations, but the limitations of multiple analysis makes it of little practical use when a much more elaborate fundamental analysis is done.

Chapter 11 - Conclusion

This thesis has looked at the intrinsic value of Scatec ASA. We have conducted a thorough fundamental analysis of the company, and used this in a discounted cash flow model. Through our estimations we find an intrinsic equity value of about NOK 215 per share, while the traded price is NOK 209 (~2,87% below our estimation) on May 10th 2021. The market is from our analysis and estimations efficiently pricing Scatec's equity at the moment. Our estimates for the forecasting period were decided from an average of historical cash flows from operating activities, while the terminal value was set at a 2% perpetuity growth rate. Scatec has historically erratic uses of investments in PP&E, forcing us to use an average to set a consistent growth capex of NOK 2264 million annually. Throughout the thesis, we have focused on being conservative to avoid any excess speculation about future cash flows. However, the acquisitions of SN Power has made the fundamental analysis much more complex and difficult to forecast, hence our conservative approach in SN Power earning forecasts.

11.1 Limitations

One of the limitations of our thesis is the fact that intrinsic business value isn't a precise number which can be calculated using a set formula. For example, we use CAPM as a theoretical framework for estimating a discount rate but added 2,4% for any additional risk we felt was necessary based on our PESTEL analysis and uncertainties. Our goal was then to arrive within an acceptable range of this "intrinsic value" to determine if the shares of the company were significantly over -or undervalued by the market. Since our estimations only resulted in a value only 2,87% higher than the market value, we believe the market is valuing the company close to intrinsic value, but outside an acceptable range for investment at the current time. An additional limitation is the mentioned acquisition of SN Power, which was difficult to estimate realistic earnings for the next 5 years. This caused us to keep it conservative in order to avoid overvaluation, so these estimations can be proven too conservative. If SN Power has a positive growth rate in the next 5 years, the share price should be significantly higher.

In regards of critique to our own work, we felt like the comparable companies used in the screening weren't the most comparable as they were largely different in both size and maturity. If we included companies which were more similar, we could have spotted if Scatec has a clear advantage in terms of operating efficiency and valuation. Compared with smaller companies which haven't had the time to improve their operating efficiency, they didn't provide much valuable information of the competitive advantage.

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Appendices

Appendix A: Reformulated balance sheet.

	Reformulated balance sheet				
NOK millions	2016	2017	2018	2019	2020
Assets					
Operating assets excluding goodwill					
Long-term operating assets					
PP&E	5,081	5,618	9,008	15,401	16,086
Deferred tax assets	327	402	526	781	722
Investments in joint ventures and companies	0	415	745	728	612
Financing & loans for related parties	142	120	112	149	144
Total other long-term assets excluding goodwill	**5,550**	**6,555**	**10,391**	**17,059**	**17,564**
Current operating assets					
Trade and other recievables	231	239	279	461	623
Other current assets	114	559	711	1211	663
Cash for operation (1)	*1019*	*2805*	*3236*	*2745*	*7701*
Total current operating assets	**1364**	**3603**	**4226**	**4417**	**8987**
Total operating assets	**6,914**	**10,158**	**14,617**	**21,476**	**26,551**
Financial assets					
Cash equivalents - restricted cash	*118*	*58*	*67*	*78*	*87*
Financial assets	*19*	*0*	*149*	*0*	*0*
Total financial assets	**137**	**58**	**216**	**78**	**87**
Liabilities and shareholder's equtiy					
Operating liabilities					
Long-term liabilities					
Deferred tax liabilities	128	185	345	437	205
Current liabilities					
Bonds maturity	0	0	0	0	748
Trade and other payables	29	216	162	888	760
Income tax payable	11	19	34	92	90
Non-recource project financing	279	317	364	837	913
Other current liabilties	183	356	1230	902	852
Total current liabilities	**502**	**908**	**1790**	**2719**	**3363**
Total operating liabilities	**630**	**1093**	**2135**	**3156**	**3568**
Equity					
Total paid in capital	821	1197	1797	3111	9724
Retained earnings	-222	31	8	-134	-708
Other reserves	85	82	79	-2	-221
Non-controlling (minority) interest	628	577	591	663	673
Common shareholder's equity	**1312**	**1887**	**2475**	**3638**	**9468**
Financial liabilities					
Non-recourse project financing	4304	6164	8643	12228	11350
Bonds	495	741	743	745	0
Other financial liabilities (long -and short term)	14	56	124	351	703
Other long-term liabilities	318	299	738	1460	1575
Total financial liabilities	**5131**	**7260**	**10248**	**14784**	**13628**

Appendix B: Cash for operations

(1) Cash for operations	2016	2017	2018	2019	2020
Cash in power plant companies in operation	708	793	730	1567	1741
Cash in power plant companies under development	7	1324	1467	420	11
Free cash	304	688	1039	758	5949
Cash available for operations	**1019**	**2805**	**3236**	**2745**	**7701**

Appendix C: Sustainable income statement: Nonrecurring items excluded.

Sustainable income statement: Excluding nonrecurring items					
in nok million	*2016*	*2017*	*2018*	*2019*	*2020*
Revenues	1013	1121	1151	1810	2771
Other income	-3	-7	63	-28	-16
Total revenue and other income	1010	1114	1214	1782	2755
Personell expenses	-86	-95	-137	-163	-262
Other operating expenses	-166	-156	-174	-234	-423
EBITDA	758	863	903	1385	2070
Depreciation,amortasion and impairment	-270	-248	-273	-512	-777
EBIT	488	615	630	873	1293
Corporation tax	-28	-23	-97	-29	-130
Effective tax rate(%)	5,0 %	2,3 %	15,4 %	3,3 %	10,1 %
NOPAT	460	592	533	844	1163
Interest and other financial income	51	51	197	66	57
Interest and other financial expense	-505	-524	-518	-744	-1189
Net foreign exchange gain/(loss)	-10	-60	15	-13	-398
Net financial expense	-464	-532	-306	-690	-1530
Adjusted net income	-4	60	227	154	-367

Appendix D: Calculation of (EBIT-NOPAT)/EBIT.

Reformulated income statement	2016	2017	2018	2019	2020
in nok million					
Revenues	1013	1121	1151	1810	2771
Other income	72	370	63	-28	-16
Total revenue and other income	1085	1491	1214	1782	2755
Personell expenses	-86	-95	-137	-163	-262
Other operating expenses	-166	-156	-174	-234	-423
EBITDA	833	1240	903	1385	2070
Depreciation,amortasion and impairment	-270	-248	-273	-512	-777
EBIT	563	992	630	873	1293
Corporation tax	-28	-23	-97	-29	-130
Effective tax rate(%)	4,97 %	2,32 %	15,40 %	3,32 %	10,05 %
NOPAT	535	969	533	844	1163
Interest and other financial income	51	51	197	66	57
Interest and other financial expense	-505	-524	-518	-744	-1189
Net foreign exchange gain/(loss)	-10	-60	15	-13	-398
Net financial expense	-464	-532	-306	-690	-1530
Profit after tax	71	437	227	154	-367
Profit/(loss) attributes to:					
Equity holders of the parent	3,5	339	140	-39	-478
Non-controlling interest	67	99	86	194	110
Basic earnings per share (NOK)	0,04	3,36	1,29	-0,31	-3,51
Number of shares outstanding(in 1000)	93,8	101	108,8	125,1	135,9
Other comprehensive income:					
Net movement of cash flow hedges	115	-62	-74	-233	-376
Income tax effect	32	17	20	58	98
Foreign currency translation differences	5	31	18	12	-116
Net other comprehensive income	152	-14	-36	-163	-394
Total comprehensive income for the year, net of tax	223	423	191	-9	-761

Appendix E: Growth in ROE from sustainable income (not on per-share basis).

Numbers in million NOK	*2016*	*2017*	*2018*	*2019*	*2020*	
Net income (adjusted)	-4	60	227	154	-367	
Common shareholder's equity	1312	1887	2475	3638	9468	
ROE		4,57 %	12,03 %	6,22 %	-10,09 %	
Average growth in ROE						**3,18 %**

Appendix F: Other growth measures.

Numbers in million NOK	*2016*	*2017*	*2018*	*2019*	*2020*	***Average***
Revenues	1013	1121	1151	1810	2771	
Revenue growth (decrease)		10,66 %	2,68 %	57,25 %	53,09 %	***30,92 %***
Maintenance Capex (D&A)	-270	-248	-273	-512	-777	
Maintenance Capex growth (decrease)		-8,15 %	10,08 %	87,55 %	51,76 %	***35,31 %***
NOPAT (adjusted)	460	592	533	844	1163	
NOPAT growth (decrease)		28,70 %	-9,97 %	58,35 %	37,80 %	***28,72 %***
Net income (adjusted)	-4	60	227	154	-367	
Net income growth (decrease)			278,33 %	-32,16 %	-338,31 %	**-30,71 %**
Shareholder's equity	1312	1887	2475	3638	9468	
Shareholder's equity growth (decrease)		43,83 %	31,16 %	46,99 %	160,25 %	***70,56 %***

Appendix G: Consolidated statement of cash flow.

Consolidated statement of cash flow					
NOK million	*2016*	*2017*	*2018*	*2019*	*2020*
Cash flow from operating activities					
Profit before taxes	99	461	323	184	-238
Taxes paid	29	-17	-65	-61	-214
Carry-back tax payment recieved	-	8	-	-	-
Depreciation and impairment	270	248	273	512	777
Net proceeds from sales of fixed assets	-	-	5	6	26
Net income from associated companies	-72	-371	-63	28	16
Interest and other financial income	-51	-51	-197	-66	-57
Interest and other financial expenses	505	524	518	744	1189
Unrealised foregin exchange (gain)/loss	29	-56	-15	13	398
(Increase)/decrease in working capital (CA-CL)	-77	98	469	501	-226
Net cash flow from operating activities	732	844	1248	1860	1671
Cash flow from investing activities					
Interest received	51	51	77	76	57
Investments in PP&E	-883	-673	-3565	-6502	-1774
Net investments and distributions from associated companies	251	-252	-321	-14	12
Net cash flow used in investing activities	-582	-874	-3809	-6439	-1704
Cash flow from financing activities					
Proceeds from non-controlling interest shareholder financing	-	31	624	307	159
Interest paid	-509	-476	-588	-711	-894
Proceeds from non-recourse project financing	241	1974	2855	3937	135
Repayment of non-recouse project financing	-157	-231	-266	-291	-678
Payment of principal portion of lease liabilities	-	-	-	-7	-18
Interest paid on lease liabilities	-	-	-	-11	-18
Proceeds from bond	-	750	-	-	-
Repayment of bond	-	-523	-	-	-
Share capital increase		373	596	1307	6576
Dividends paid	-236	-258	-287	-288	-279
Net cash flow from financing activities	-660	1640	2934	4232	4984

Appendix H: Correlation S&P500 & OBX.

Shows the correlation between the US S&P500 and the Norwegian OBX between Jan. 2013-Mar. 2021. The correlation-coefficient is over 72%, which suggests strong correlation. Further, this is evidence of interconnectivity in the modern economy.

Date	Adj close S&P500	Adj close OBX	% change S&P500	% change OBX	Correlation
mar.21	3943.34	933.07	3.47 %	4.26 %	**0.723528**
feb.21	3811.15	894.94	2.61 %	3.69 %	
jan.21	3714.24	863.06	-1.11 %	0.49 %	
Dec 20	3756.07	858.86	3.71 %	4.78 %	
nov.20	3621.63	819.7	10.75 %	15.71 %	
Oct 20	3269.96	708.43	-2.77 %	-5.04 %	
sep.20	3363	746.05	-3.92 %	-1.17 %	
aug.20	3500.31	754.9	7.01 %	3.57 %	
jul.20	3271.12	728.89	5.51 %	1.93 %	
jun.20	3100.29	715.09	1.84 %	-0.27 %	
May 20	3044.31	717.05	4.53 %	1.01 %	
apr.20	2912.43	709.87	12.68 %	9.35 %	
mar.20	2584.59	649.19	-12.51 %	-13.18 %	
feb.20	2954.22	747.75	-8.41 %	-9.07 %	
jan.20	3225.52	822.33	-0.16 %	-2.49 %	
Dec 19	3230.78	843.35	2.86 %	2.40 %	
nov.19	3140.98	823.58	3.40 %	-0.09 %	
Oct 19	3037.56	824.36	2.04 %	1.27 %	
sep.19	2976.74	814.01	1.72 %	3.18 %	
aug.19	2926.46	788.95	-1.81 %	-0.37 %	
jul.19	2980.38	791.9	1.31 %	-0.79 %	
jun.19	2941.76	798.18	6.89 %	1.77 %	
May 19	2752.06	784.31	-6.58 %	-3.43 %	
apr.19	2945.83	812.14	3.93 %	2.37 %	
mar.19	2834.4	793.33	1.79 %	-0.69 %	
feb.19	2784.49	798.85	2.97 %	3.09 %	
jan.19	2704.1	774.88	7.87 %	4.80 %	
Dec 18	2506.85	739.42	-9.18 %	-6.51 %	
nov.18	2760.17	790.91	1.79 %	-4.20 %	
Oct 18	2711.74	825.6	-6.94 %	-5.24 %	
sep.18	2913.98	871.27	0.43 %	3.69 %	
aug.18	2901.52	840.23	3.03 %	1.50 %	
jul.18	2816.29	827.84	3.60 %	1.74 %	
jun.18	2718.37	813.68	0.48 %	1.37 %	
May 18	2705.27	802.67	2.16 %	1.09 %	
apr.18	2648.05	793.99	0.27 %	7.86 %	
mar.18	2640.87	736.13	-2.69 %	-2.02 %	
feb.18	2713.83	751.32	-3.89 %	1.74 %	
jan.18	2823.81	738.49	5.62 %	-0.58 %	
Dec 17	2673.61	742.8	0.98 %	1.82 %	
nov.17	2647.58	729.52	2.81 %	-1.41 %	
Oct 17	2575.26	739.93	2.22 %	3.68 %	
sep.17	2519.36	713.68	1.93 %	6.53 %	
aug.17	2471.65	669.91	0.05 %	1.45 %	
jul.17	2470.3	660.35	1.93 %	5.59 %	
jun.17	2423.41	625.42	0.48 %	-1.81 %	
May 17	2411.8	636.97	1.16 %	2.13 %	
apr.17	2384.2	623.66	0.91 %	0.87 %	
mar.17	2362.72	618.27	-0.04 %	-0.15 %	
feb.17	2363.64	619.2	3.72 %	-0.70 %	
jan.17	2278.87	623.54	1.79 %	0.94 %	
Dec 16	2238.83	617.75	1.82 %	4.96 %	
nov.16	2198.81	588.53	3.42 %	3.32 %	

Oct 16	2126.15	569.62	-1.94 %	3.15 %
sep.16	2168.27	552.21	-0.12 %	0.40 %
aug.16	2170.95	550.03	-0.12 %	0.82 %
jul.16	2173.6	545.55	3.56 %	0.80 %
jun.16	2098.86	541.23	0.09 %	-2.16 %
May 16	2096.95	553.17	1.53 %	1.44 %
apr.16	2065.3	545.3	0.27 %	5.48 %
mar.16	2059.74	516.97	6.60 %	0.94 %
feb.16	1932.23	512.18	-0.41 %	2.36 %
jan.16	1940.24	500.38	-5.07 %	-7.16 %
Dec 15	2043.94	538.98	-1.75 %	-4.07 %
nov.15	2080.41	561.85	0.05 %	2.32 %
Oct 15	2079.36	549.11	8.30 %	6.07 %
sep.15	1920.03	517.7	-2.64 %	-2.74 %
aug.15	1972.18	532.26	-6.26 %	-7.35 %
jul.15	2103.84	574.48	1.97 %	1.07 %
jun.15	2063.11	568.41	-2.10 %	-2.31 %
May 15	2107.39	581.86	1.05 %	0.66 %
apr.15	2085.51	578.04	0.85 %	3.02 %
mar.15	2067.89	561.09	-1.74 %	0.62 %
feb.15	2104.5	557.66	5.49 %	2.82 %
jan.15	1994.99	542.37	-3.10 %	3.57 %
Dec 14	2058.9	523.68	-0.42 %	1.49 %
nov.14	2067.56	515.97	2.45 %	-3.37 %
Oct 14	2018.05	533.94	2.32 %	-4.29 %
sep.14	1972.29	557.87	-1.55 %	0.18 %
aug.14	2003.37	556.88	3.77 %	-0.34 %
jul.14	1930.67	558.8	-1.51 %	-1.44 %
jun.14	1960.23	566.95	1.91 %	2.26 %
May 14	1923.57	554.43	2.10 %	4.69 %
apr.14	1883.95	529.61	0.62 %	3.17 %
mar.14	1872.34	513.34	0.69 %	1.08 %
feb.14	1859.45	507.84	4.31 %	3.60 %
jan.14	1782.59	490.21	-3.56 %	-2.65 %
Dec 13	1848.36	503.58	2.36 %	1.07 %
nov.13	1805.81	498.25	2.80 %	1.88 %
Oct 13	1756.54	489.07	4.46 %	6.42 %
sep.13	1681.55	459.57	2.97 %	0.59 %
aug.13	1632.97	456.88	-3.13 %	-0.02 %
jul.13	1685.73	456.99	4.95 %	6.02 %
jun.13	1606.28	431.03	-1.50 %	-5.02 %
May 13	1630.74	453.82	2.08 %	2.16 %
apr.13	1597.57	444.24	1.81 %	2.31 %
mar.13	1569.19	434.21	3.60 %	-0.31 %
feb.13	1514.68	435.58	1.11 %	1.33 %
jan.13	1498.11	429.85		

Appendix I: Adjusted close and monthly return of OSEBX and SCATC.

Includes logarithmic returns and average log returns for Scatec. (Data retrieved from Investing.com).

Date	Adjusted close		Monthly returns		Log returns
	OSEBX	SCATC	OSEBX	SCATC	SCATC
4/1/2021	1066.33	256.70	0.71%	-0.73%	-0.74%
3/1/2021	1058.86	258.60	5.14%	3.03%	2.98%
2/1/2021	1007.07	251.00	4.15%	-23.01%	-26.14%
1/1/2021	966.90	326.00	-0.73%	-4.51%	-4.62%
12/1/2020	973.97	341.40	4.68%	22.72%	20.47%
11/1/2020	930.39	278.20	14.60%	32.48%	28.12%
10/1/2020	811.85	210.00	-5.17%	-2.78%	-2.82%
9/1/2020	856.09	216.00	-0.37%	13.86%	12.98%
8/1/2020	859.26	189.70	4.00%	20.98%	19.05%
7/1/2020	826.23	156.80	3.90%	0.26%	0.26%
6/1/2020	795.22	156.40	-0.19%	-4.81%	-4.93%
5/1/2020	796.77	164.30	2.79%	9.75%	9.31%
4/1/2020	775.11	149.70	9.61%	13.32%	12.51%
3/1/2020	707.13	132.10	-14.83%	-18.05%	-19.91%
2/1/2020	830.26	161.20	-9.14%	2.48%	2.45%
1/1/2020	913.81	157.30	-1.89%	26.75%	23.71%
12/1/2019	931.45	124.10	3.21%	13.13%	12.33%
11/1/2019	902.45	109.70	0.49%	7.44%	7.18%
10/1/2019	898.05	102.10	1.29%	-12.66%	-13.54%
9/1/2019	886.60	116.90	2.94%	10.49%	9.98%
8/1/2019	861.29	105.80	0.25%	15.69%	14.58%
7/1/2019	859.14	91.45	-0.63%	7.27%	7.02%
6/1/2019	864.63	85.25	1.47%	0.47%	0.47%
5/1/2019	852.09	84.85	-3.27%	3.73%	3.66%
4/1/2019	880.91	81.80	2.06%	-7.78%	-8.10%
3/1/2019	863.11	88.70	-0.25%	6.74%	6.52%
2/1/2019	865.28	83.10	3.59%	-1.07%	-1.08%
1/1/2019	835.31	84.00	4.48%	13.82%	12.95%
12/1/2018	799.46	73.80	-7.15%	-0.14%	-0.14%
11/1/2018	860.98	73.90	-3.22%	28.75%	25.27%
10/1/2018	889.66	57.40	-5.18%	-4.65%	-4.76%
9/1/2018	938.26	60.20	3.48%	2.03%	2.01%
8/1/2018	906.69	59.00	1.15%	-6.05%	-6.24%
7/1/2018	896.40	62.80	1.96%	13.97%	13.08%
6/1/2018	879.14	55.10	0.41%	-8.62%	-9.02%
5/1/2018	875.52	60.30	1.81%	20.60%	18.73%
4/1/2018	859.96	50.00	6.78%	9.05%	8.66%
3/1/2018	805.32	45.85	-1.76%	5.89%	5.72%
2/1/2018	819.77	43.30	1.08%	-4.10%	-4.18%
1/1/2018	811.01	45.15	-0.42%	-9.70%	-10.20%
12/1/2017	814.45	50.00	2.21%	7.99%	7.69%
11/1/2017	796.83	46.30	-1.25%	-1.49%	-1.50%
10/1/2017	806.95	47.00	3.05%	12.44%	11.73%
9/1/2017	783.09	41.80	5.84%	-9.72%	-10.22%
8/1/2017	739.87	46.30	1.00%	0.43%	0.43%
7/1/2017	732.51	46.10	4.86%	-2.54%	-2.57%
6/1/2017	698.58	47.30	-1.66%	11.29%	10.70%
5/1/2017	710.34	42.50	1.82%	9.25%	8.85%
4/1/2017	697.66	38.90	1.43%	1.57%	1.55%
3/1/2017	687.85	38.30	-0.35%	0.79%	0.79%
2/1/2017	690.27	38.00	-0.41%	2.70%	2.67%
1/1/2017	693.12	37.00	1.35%	-3.90%	-3.97%
12/1/2016	683.87	38.50	4.15%	13.91%	13.02%
11/1/2016	656.63	33.80	2.89%	1.50%	1.49%
10/1/2016	638.20	33.30	2.49%	7.42%	7.16%
9/1/2016	622.69	31.00	0.61%	-0.32%	-0.32%
8/1/2016	618.93	31.10	1.03%	-12.64%	-13.51%
7/1/2016	612.63	35.60	1.62%	-2.47%	-2.50%
6/1/2016	602.86	36.50	-2.34%	-11.41%	-12.11%
5/1/2016	617.31	41.20	1.82%	16.06%	14.89%
4/1/2016	606.28	35.50	4.94%	-9.44%	-9.91%
3/1/2016	577.75	39.20	0.92%	13.95%	13.06%
2/1/2016	572.50	34.40	2.06%	-6.52%	-6.74%
1/1/2016	560.93	36.80	-8.08%	-5.64%	-5.81%
12/1/2015	610.26	39.00	-2.94%	-4.88%	-5.00%
11/1/2015	628.76	41.00	2.20%	-2.84%	-2.88%
10/1/2015	615.24	42.20	5.75%	5.76%	5.60%
9/1/2015	581.79	39.90	-2.07%	-8.06%	-8.41%
8/1/2015	594.10	43.40	-7.02%	-9.58%	-10.07%
7/1/2015	638.93	48.00	1.56%	19.11%	17.48%
6/1/2015	629.11	40.30	-2.57%	-7.36%	-7.64%
5/1/2015	645.68	43.50	0.99%	-1.36%	-1.37%
4/1/2015	639.36	44.10	3.26%	22.50%	20.29%
3/1/2015	619.20	36.00	0.58%	4.35%	4.26%
2/1/2015	615.64	34.50	3.26%	15.00%	13.98%
1/1/2015	596.19	30.00	3.50%	-1.64%	-1.65%
12/1/2014	576.04	30.50	1.71%	12.96%	12.19%
11/1/2014	566.34	27.00			SCATC
				Mean log	2.92%

Appendix J: Regression output and beta estimation.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.359728592
R Square	0.12940466
Adjusted R Square	0.117796722
Standard Error	0.104186266
Observations	77

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.121008475	0.121008475	11.14795	0.001312336
Residual	75	0.814108349	0.010854778		
Total	76	0.935116824			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 095%*	*Upper 095%*
Intercept	0.026653726	0.012164217	2.191158379	0.031546	0.002421363	0.050886089	0.002421363	0.050886089
X Variable 1	0.970984524	0.290813717	3.338853935	0.001312	0.391653891	1.550315156	0.391653891	1.550315156

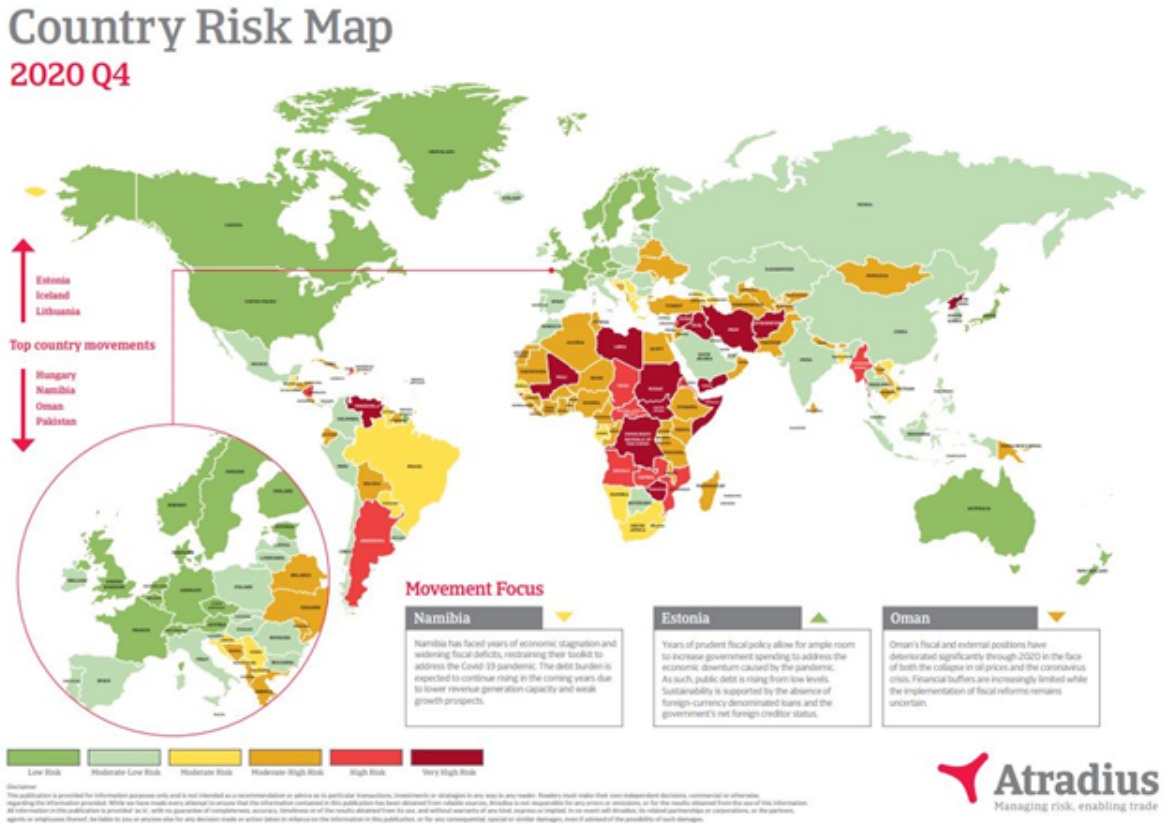
Variance OSEBX	**Covariance**	**Beta/Slope**
0.001666865	0.0016185	0.970984524

Appendix K: Normalized risk-free Norwegian 10 year government bond rates.

Diverse renter, årsgjennomsnitt av daglige noteringer			
	Effektiv rente		
	Obligasjoner		
	3 års *3 year*	5 års *5 year*	10 års *10year*
2020	0.44	0.56	0.82
2019	1.23	1.28	1.49
2018	1.15	1.44	1.88
2017	0.77	1.07	1.64
2016	0.61	0.84	1.33
2015	0.76	0.99	1.57
2014	1.52	1.82	2.52
2013	1.63	1.93	2.58
2012	1.44	1.59	2.10
2011	2.24	2.56	3.12
2010	2.46	2.83	3.52
2009	2.71	3.33	4.00
2008	4.53	4.43	4.47
2007	4.79	4.77	4.78
2006	3.74	3.90	4.07
2005	2.90	3.27	3.74
Average	**2.06**	**2.29**	**2.73**
Median	**1.58**	**1.88**	**2.55**

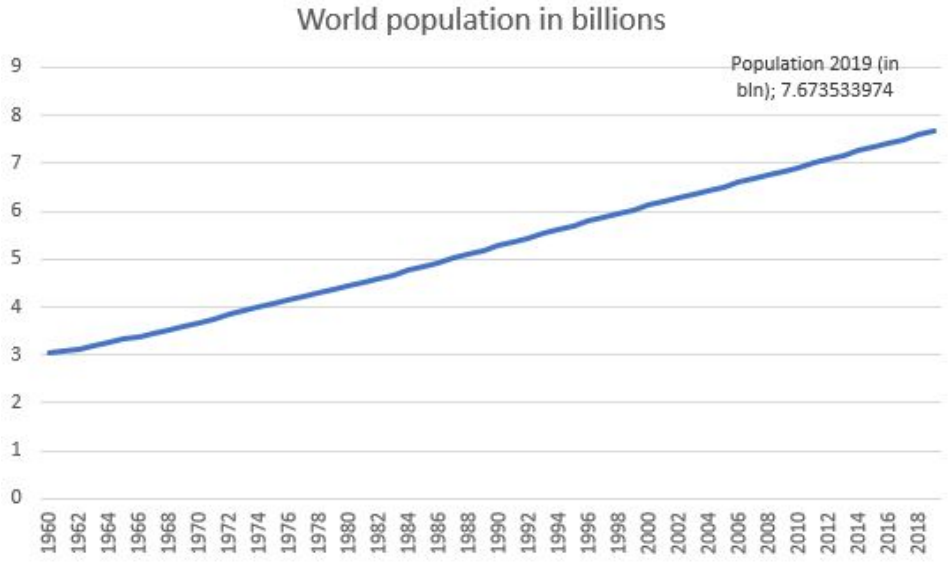
Appendix L: *Country risk map for 2020 Q4.*

Atradius (2021). Retrieved from: https://group.atradius.com/publications/trading-briefs/risk-map.html#



Appendix M: Total world population in billions.

Data from World Bank, own production.



Appendix N: Percentage growth in world population is decreasing as population increases.

Appendix O: Sensitivity analysis calculations.

Net cash flow from operating activities (In 1000 usd)	2021f	2022f	2023f	2024f	2025f
-20 %	2512	3988	5839	8163	11080
-15 %	2669	4237	6204	8673	11773
-10 %	2826	4487	6569	9184	12465
-5 %	2983	4736	6934	9694	13158
0 %	3140	4985	7299	10204	13850
5 %	3297	5234	7664	10714	14543
10 %	3454	5484	8029	11224	15235
15 %	3611	5733	8394	11735	15928
20 %	3768	5982	8759	12245	16620

Operating activites change	Share price
-20 %	142,83
-15 %	161,00
-10 %	179,16
-5 %	197,32
0 %	215,48
5 %	233,64
10 %	251,80
15 %	269,96
20 %	288,13

Total capex (In 1000 usd)	2021f	2022f	2023f	2024f	2025f
-20 %	2724	3118	3652	4374	5351
-15 %	2894	3313	3880	4648	5686
-10 %	3065	3508	4109	4921	6020
-5 %	3235	3703	4337	5195	6355
0 %	3405	3898	4565	5468	6689
5 %	3575	4093	4793	5741	7023
10 %	3746	4288	5022	6015	7358
15 %	3916	4483	5250	6288	7692
20 %	4086	4678	5478	6562	8027

Total capex change	Share price (usd)
-20 %	278,86
-15 %	263,01
-10 %	247,17
-5 %	231,32
0 %	215,48
5 %	199,63
10 %	183,79
15 %	167,94
20 %	152,1

CAPM	Share price (usd)
14 %	140,24
13 %	156,54
12 %	174,4
11 %	193,98
10 %	215,48
9 %	239,1
8 %	265,09
7 %	293,72
6 %	325,29