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TODAY´S RESILIENCE TO BE REWARDED TOMORROW
Nutrien´s case on Nitrogen and Phosphate

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Abstract
This report analysis Nutrien Ltd., focusing on the Nitrogen and Phosphate segments. For both sectors, an industry analysis overview is displayed, taking into account the competitive landscape of the markets. In the next topic, the revenues, operating expenses, capex and net working capital are forecasted for each segment, followed by a cash-flow analysis. In this report it is also performed a DCF valuation with sensitivity analysis, finalizing with a final recommendation for investor regarding Nutrien´s shares, while considering potential risks and the ESG performance of the company.

Keywords: Nutrien, Nitrogen, Phosphate, Valuation

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This report is part of the Equity Research Nutrien Ltd. report (annexed), developed by Diogo Roberto and João Vicente and should be read has an integral part of it.

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Introduction

Nutrien is the world´s largest provider of crop inputs and services. Headquartered in Saskatchewan, in Canada, the company operates all around the globe, with most of its production occurring in North America. The firm has 5 different operating segments: Retail (Nutrien Ag Solution), Potash, Nitrogen, Phosphate, and Corporate and Others. Nutrien is the global leader both in agricultural retail and in the Potash market, while also being very competitive in the remaining sectors (top-3 global Nitrogen producer and top-2 North American Phosphate producer).

The joint report starts with the company overview, where details about the company and its 5 segments are given, followed by an industry analysis, where, for each segment, the market is described, and the company competitors examined. After that, a financial analysis is performed, where a detailed view on past financial position health is given. In the next topic, revenues, operating expenses, capex and other balance sheet items are forecasted, given the future market projections for each segment. Moreover, in the valuation section, we first explain the valuation framework and calculate the appropriate cost of capital, followed by the DCF valuation implementation. A relative valuation containing three different multiples is then performed, allowing us to issue the final recommendation to investors to BUY Nutrien shares. At last, Nutrien´s operations associated risk and ESG performance are also analysed.

This report contains the industry analysis for the Nitrogen and Phosphate segments, including all their different subsegments. Then, their future revenues, operating expenses, and capex are forecasted, followed by a cash-flow analysis. Moreover, the DCF valuation is performed, including a sensitivity analysis, and the final recommendation to investors to BUY Nutrien´s shares is issued. To finalize, the future risks and ESG performance are evaluated.

The report of my colleague contains a detailed examination of Nutrien´s operations, with a brief overview of the company. Then, the Retail and Potash industries are analysed, focusing on Nutrien´s competitors. Afterwards, the financial position of the company is assessed, followed by the forecast of the revenues, operating expenses, and capex of these two segments. To conclude, a multiple valuation was computed, using three different multiples.

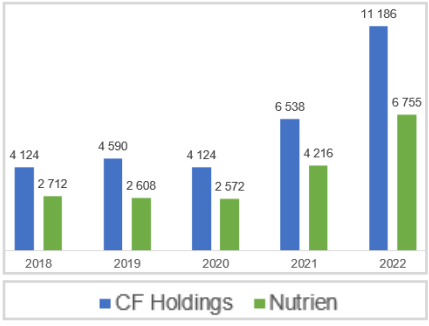
Industry Analysis

Nitrogen

The **Nitrogen** market can be divided into **3 different segments**: ammonia, urea, and solutions, nitrates and sulfates[1].

The production of ammonia is a very **energy-intensive process**, the hydrogen used in its production comes from natural gas or coal, with the production process of ammonia contributing from **1% to 2% of global carbon emissions**[2]. Since the decrease of carbon emissions in industrial production has been a priority worldwide, the popularity of more "environmentally friendly" ammonia is on the rise. This market is divided into two products, **blue ammonia**[3] (or "low carbon ammonia") and **green ammonia**[4] (or "clean ammonia"). One important change to this market happened in August of 2022, when the US Government approved the **Inflation Reduction Act**, where incentives[5] were offered to companies that invest in blue ammonia and green ammonia. This policy has already had impact on the market, since 11 out of the 20 projects in the world are being implemented in the US, accounting for almost **half of the global production capacity** of blue ammonia. In 2022, Nutrien planned to invest **$500 million** in order to build the world's largest clean Ammonia production facility in Geismar, Louisiana, with the capacity to produce **1,2 million tons of clean Ammonia**. In 2023, the project was suspended due to an increase in expected capital costs compared to the initial estimates, nonetheless, the company is still committed to achieve the 30 percent operational GHG emissions intensity reduction target by 2030.

Figure 1: Nitrogen revenues: Nutrien vs CF Holdings ($ billions). Source: CF Holdings and Nutrien.



In the Nitrogen segment, Nutrien's biggest competitor is **CF Holdings**, the largest producer of nitrogen-based fertilizers in North America. In 2022, both companies combined represented more than half of the production capacity of these fertilizers, 55% for ammonia, 57% for UAN, 66% for Urea, and 27% for ammonia nitrate. Looking at Figure 1, it can be seen that CF Holdings sales of nitrogen-based fertilizers are about 1,6 times the ones of Nutrien, which makes CF Holdings the company with the largest market share in the nitrogen-based fertilizers in 2022 (18% compared to Nutrien's 11%). **One advantage that CF**

[1] Includes Ammonium Nitrate, Ammonium Sulfate, Urea Ammonium Nitrate, Nitric Acid and Environmentally Smart Nitrogen.

[2] Source: Jones, N. (2022). From Fertilizer to Fuel: Can 'Green' Ammonia Be a Climate Fix?.

[3] Blue ammonia is produced by primarily using carbon capture, utilization, and storage or other low-emission production technologies, a process that reduces direct GHG emissions significantly.

[4] The production of green ammonia consists of using hydrogen obtained using innovative technology, such as auto-thermal reforming or water electrolysis (using renewable power), reducing direct GHG emissions by at least 90%.

[5] Subsidies were provided to producers in the form of tax credit, depending on the quantity produced.

Holdings holds over Nutrien, is that roughly 25% of Nutrien's Ammonia production and 20 % of the solid Urea production are produced in the Trinidad and Tobago plant, that historically has had problems with the supply of natural gas leading to frequent curtailments in production, while CF Holdings[6] is protected from any potential disruption in its production process. **One of Nutrien's main competitive advantages over CF Holdings** is the synergy that the nitrogen segment has with both retail and the phosphate segments. For example, in 2022 this segment earned $6,755 billion in third-party sales, but it also made $1,293 billion of intersegment sales to the retail segment, so by growing the retail segment Nutrien is also developing the nitrogen segment, something CF Holdings is unable to do, since it doesn't have a retail division. For the future, CF Holding is focusing on the **green ammonia section** of the market by building a new plant in 2025, this might be concerning for Nutrien, particularly since this year the company cancelled its green ammonia project, meaning that in the future it might lose some market share to its most direct competitor.

Phosphate

In the **Phosphate** market there are **three main products**, the first product produced during the production process is **phosphoric acid**, which is produced using phosphate rock and sulfuric acid. It is not normally used as a fertilizer by itself, but instead used[7] in the production process of other phosphate-based fertilizers. The most popular fertilizers in this market are **DAP (diammonium phosphate)** and **MAP (monoammonium phosphate)**, both of which are created as a reaction of phosphoric acid with ammonia.

Regarding the phosphate segment, Nutrien's main competitor is also **Mosaic** (previously mentioned in the potash segment), which in 2022 produced 74% of the phosphate-based fertilizers produced in North America and had a 15% market share in the global market (compared to the 4% of Nutrien). This is partly due to the scale of their phosphate operations, since Mosaic has 4 active phosphate rock mines in the US, compared to the 2 of Nutrien. Taking into account Nutrien's smaller scale, it will be difficult for the company to increase its market share. Where Nutrien is able to separate itself from the competition is by exploring the industrial section of the phosphate market, where for example Mosaic has a much smaller presence on selling phosphoric acid for industrial applications.

Financial Forecasts

[6] CF Holdings has a small investment in Trinidad and Tobago that represents 3% of its ammonia production.
[7] Phosphoric Acid also has other industrial applications, such as: livestock feed, soap, detergents, and other cleaning products.

Revenues

- Nitrogen

Figure 2: Nitrogen revenues by sub-segment from 2018 to 2022 ($ billions). Source: Nutrien.

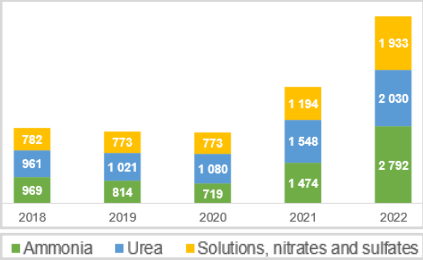


Figure 3: Nitrogen fertilizer consumption by type in thousands of tons (2021). Source: IFA.

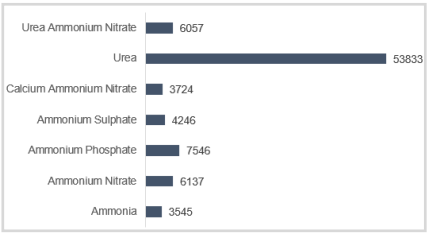
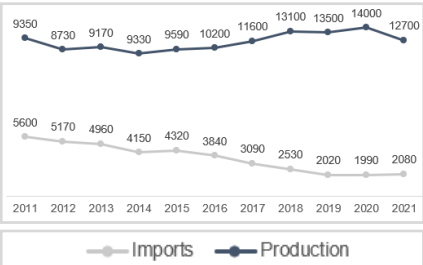


Figure 4: US Ammonia imports and production evolution (thousands of tons). Source: USGS.



As mentioned in the industry analysis topic, this market is divided into 3 different segments, in Figure 2, it can be observed the contribution that each sub-segment provides to the overall sales of the nitrogen segment. In the global market, the **ammonia and urea** sections are **clearly** the most important ones, but for different reasons. **Urea is by far the most consumed,** according to the IFA, nitrogen-based fertilizer in the world, with 53,8 million tons consumed in 2021, with **ammonium nitrate** being the closest one (6,1 million tons). While the consumption of ammonia is relatively low (3,5 million tons in 2021), its importance comes from the fact that it serves as an input for all other nitrogen-based fertilizers, so it is actually the second most produced (approximately 150 million tons in 2021). Compared to 2022, the uncertainty regarding the Ukraine war has started to decrease, with the expectation that the nitrogen-based fertilizer markets will return to their **long-term trends in 2025**, as the market share left by Russia in the international market is filled by countries such as Canada or the US. Nonetheless, the short-term supply will still be dependent on the outcome of western trade restrictions on Russia exports and if any trade arrangement between Ukraine and Russia can occur.

Ammonia In the **Ammonia** market, **India and the US were the two largest importers** in the world in 2021. Despite representing almost 8% of the world's production of ammonia, that is still not enough to meet the domestic demand, so **India** relies on imports of ammonia mainly from Middle Eastern countries[8]. The US ammonia market is one of the largest in the world, with the US being the world's **3rd largest producer**, but also being a net importer. The country has been gradually decreasing its ammonia imports, with **37%** of the ammonia used in the US in 2012 being imported, compared to **14%** in 2021, which happened because some of the plants that were closed in the beginning of the century[9] started to reopen, increasing the US production capacity. Considering the previously mentioned factors, the **sales volume** for 2023 is expected to increase by 2,8% considering Nutrien´s sales in the first 9 months of the year. For the period between 2024 and 2029 the growth is expected to slow down to 1,25%[10], after 2030 a growth of 1,4% per year is expected[11]. Since ammonia is an input for all other nitrogen-based fertilizers, its price trend is the most important to

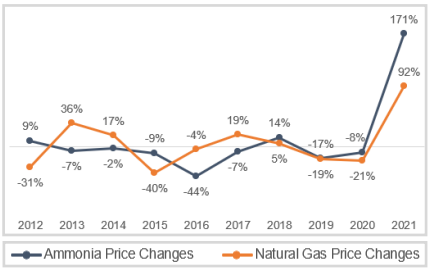
[8] Russia, Saudi Arabia, and Qatar were the 3 largest Ammonia import sources of India.

[9] Some US Ammonia plants were forced to close in the beginning of the century, due to the high natural gas prices.

[10] CF Holdings forecasted the market demand for nitrogen fertilizers to increase between 1% and 1,5% in this timeframe.

[11] Source: ACS Energy. Ammonia and Nitric Acid Demands for Fertilizer Use in 2050.

Figure 5: Ammonia vs Natural Gas price changes from 2012 to 2021. Source: USGS and EIA.



understand. According to the literature[12], **ammonia prices tend to be cyclical** with higher prices at the beginning of the year, and the prices are also very correlated across regions. Two of the most studied factors to impact the price of ammonia are **corn and natural gas prices**. **Natural Gas is the main input** used to produce ammonia, it represents 72%–85% of the costs of producing ammonia, so naturally there is expected to be a **positive correlation** (Figure 5) between natural gas prices and ammonia prices. The correlation between ammonia and corn prices is even **stronger** than the one between natural gas and ammonia, the explanation is that when corn prices increase, producers will have the incentive to produce more quantity of corn, leading to higher use of fertilizers. Considering the **average selling price** for ammonia in the first 9 months of the year and the previously mentioned cyclicality, the price is predicted to decrease by 51% in 2023, for 2024 the price is expected to decrease by roughly 21%[13]. From 2010 to 2020, the price of ammonia in the US increased on average 1,75%[14] per year, and since the market conditions were similar to the ones expected after 2025, we assumed that ammonia prices would grow each year at 1,75% after 2025.

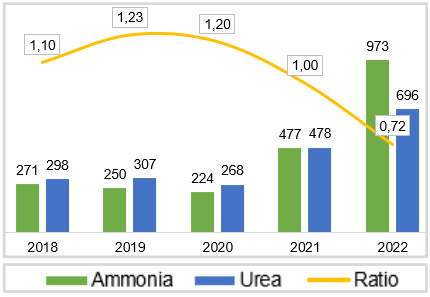
Urea Before the start of the war between Russia and Ukraine, **Russia was the world's largest exporter** of both Urea and Ammonia, but due to the restrictions imposed by Western countries, Russian exports decreased significantly. One of the strategies used by Russia to mitigate its losses was to **export Urea to India at a discounted price**, which benefited both of them, as India was able to buy urea at a lower cost and Russia was able to sell some of its production. In the past few years, **Brazil and India have been the two largest importers of Urea** in the world. Brazil, unlike most Western countries, decided to not impose trade sanctions on Russia, so Russia actually remained one of the highest exporters of urea to Brazil. One of the major changes in the global Urea market happened at the end of 2022, when **India** announced that it plans to stop the imports of urea by 2025, as they intend to build 5 different plants to produce it locally and **end their dependence on other countries**. Another major change in the urea market happened in 2021, when **China** introduced **restrictions** on urea exports due to the high prices in the urea market to protect its internal demand. A similar situation happened again in September of 2023, after a 50% increase in prices since July, China asked its producers to stop exporting urea and prioritize domestic consumption. This behaviour causes majors disruption in the global urea market (particularly in India) since China was the world's largest exporter of urea in 2021. Considering the current market scenario, the expectation is that the **sales volume**

[12] Source: Schnitkey, G. (2016). Anhydrous Ammonia, Corn, and Natural Gas Prices Over Time.

[13] Source: Fitch. Fertiliser Price Assumptions.

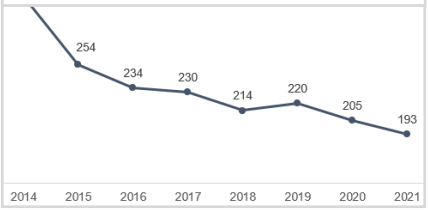
[14] Source: USGS. Annual Publications.

Figure 6: Nutrien´s Ammonia and Urea net selling price evolutions from 2018 to 2022 ($/ton) and respective ratio. Source: Nutrien.



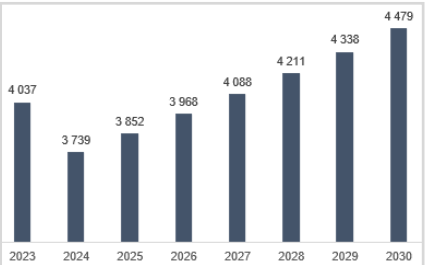
for urea would increase by 4%[15] in 2023, by 1,25%[10] each year from 2024 to 2029, after 2030 the sales volume is expected to grow at the historical CAGR verified from 2001 to 2021 in the nitrogen fertilizer market of 1,5%. To understand the **price of urea in the future**, it is important to analyse the relationship between ammonia prices and urea, considering that anhydrous ammonia is an input in the production of urea, it's normal that the coefficient of correlation between the prices of both materials is very high. According to the USDA, from 2010 to 2020 the **price of urea was on average 1.23 times higher than the price of anhydrous ammonia**. Looking at Figure 6, it can be seen that this ratio for Nutrien was close to the market average. However, this relation was disrupted in 2022 due to the demand for ammonia increasing much more than the demand for urea. Nonetheless, it's expected that the **price ratio will return to the historical average** in the long run. Due to the current disruption still felt in the market, we used the ratio of 1[15] for 2023, afterwards, we assumed the ratio would be fixed at 1,23.

Figure 7: Ammonium Nitrate consumption evolution (thousands of tons). Source: IFA.



Solutions, Nitrates and Sulfates As previously mentioned, this segment of the nitrogen market is represented by many products, so to analyse this segment we decided to focus on 2 specific products, ammonium nitrate and UAN. **Ammonium nitrate** is one of the most popular fertilizers due to its high nutrient content, it also has industrial applications being used in the production of herbicides or mining explosives. Its production process consists of reacting ammonia gas with nitric acid, excess water is then removed, and the solution is cooled. Ammonium nitrate's popularity as a fertilizer has been decreasing in the past few years (Figure 7), it has been slowly replaced by Urea and UAN since they have a higher nitrogen content and are more stable. Despite this, growth in this market will be driven by the expected higher demand in mining activity[16] in the future. On the other hand, **UAN** is produced by combining ammonium nitrate and urea in their liquid forms, due to its versatility (it can be mixed with other chemicals) and accessibility, it's the most popular liquid nitrogen fertilizer. In 2021, the US represented roughly 50% of the consumption of this product, while currently its inventories of UAN remain relatively low, so the demand for UAN in the American market is projected to increase in 2024. Another important development in the market is the price increase in the second half of 2023 due to production curtailment[17] in Europe, these struggles of European producers can benefit North American companies in 2024 since they have more stable access to natural gas. Considering the forecasts for the 2 products, the expectation is that **Nutrien's sales volume** will increase by 3,3%[15] in 2023, and 1,25%[10] between 2024 and

Figure 8: Nitrogen segment revenue forecast from 2023 to 2030 ($ billions).



[15] Estimates based on Nutrien´s Q3 report.

[16] Prices of metals such as zinc or nickel are forecasted to increase in the following years. Source: S&P Global.

[17] The main cause was higher natural gas prices.

Figure 9: Nutrien´s Ammonia and Solutions, Nitrates and Sulfates net selling price evolutions from 2018 to 2022 ($/ton) and respective ratio. Source: Nutrien.

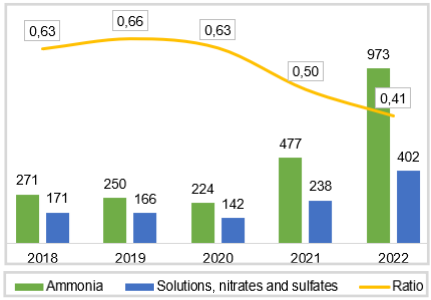


Figure 10: Phosphate revenues by sub-segment from 2018 to 2022 ($ billions). Source: Nutrien.

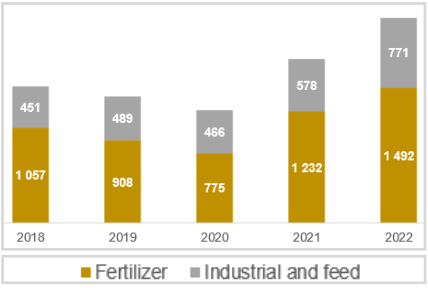
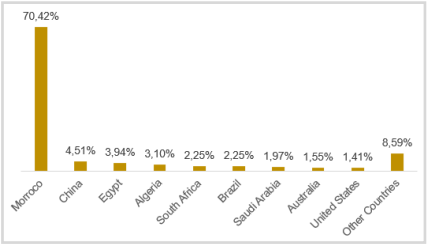


Figure 11: Phosphate rock reserves by region (2021). Source: USGS.



2029, after 2030 the growth is expected to remain at 1,5%[18] each year. This segment has a large variety of products, being much harder to forecast it, when compared to the other two, since each product has different characteristics resulting in different price patterns in the future. Considering that before the start of the war, **the ratio between the selling price of ammonia and the products sold in this segment was 0,63**, we assumed that after 2024 the **price relationship would remain at that value**, for 2023 the ratio of 0,5[15] was used since it reflects more accurately the current market conditions.

- Phosphate

Fertilizers Similarly, to the nitrogen-based fertilizers, Nutrien was responsible for 3% of the phosphate-based fertilizers production in the world in 2021, and its main export destinations being **India and Brazil**. Nutrien produces all its phosphate-based fertilizers in 4 smaller plants and 2 main production facilities where phosphate rock is also mined[19], one in Florida and one in North Carolina. Prior to 2022, India was focused on decreasing its dependence on imports of phosphate-based fertilizer, by using policies to foster domestic production. These policies led to a decrease of about **30%** in phosphate-based fertilizers from 2020 to 2021, making India the 2nd largest importer in the world. These policies were halted when in 2022, due to the high market prices for both DAP and MAP India approved an **$8 billion subsidy** to protect its farmers and ensure that the crop application season would run smoothly. India was able to buy DAP and MAP at a **10% discount** (compared to the market price) from Russia, increasing Russia's share in the Indian market at the expense of other countries such as China. This policy was introduced in the second half of 2022 but in September of 2023 Russia stopped selling fertilizers at a discount, since fertilizer prices have been decreasing. **Morocco has historically been one of the two largest exporters** of both DAP and MAP in the world, with its privileged geographic location being one of the key factors, since it contains about **70% of the world's reserves** of phosphate rock (Figure 11), the key input in the production of both fertilizers. Due to having access to a high amount of this natural resource, it naturally gives Morrocco some power to influence market prices. For example, after the increase in ammonia prices in 2021, Morocco has been decreasing its exports of both DAP and MAP, in order to maintain the market price of both products high. Considering the market trends mentioned above and Nutrien's sales volume in the first 3 quarters of 2023, the expectation is that **sales volume** this year will increase by 3,5%. For 2024, it's forecasted that the **worldwide demand for these products in 2024 will be between 73 and 76 million tonnes**, so we assumed that the

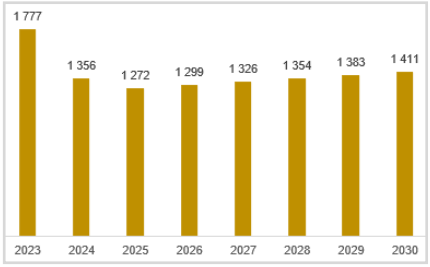
[18] As mentioned before, the historical CAGR verified from 2001 to 2021 in the nitrogen fertilizer market.

[19] All phosphate rock used by Nutrien is extracted from these two mines.

sales volume would increase by 1,5%[20]. In the period between 2025 and 2029, the expectations are that **growth stabilizes at 2% per year**[20], after 2030 the sales volume is expected to **grow at the annual rate of 1,9%**[21] per year. For the **average selling price of phosphate fertilizers** in 2023 the expectations are that the price will decrease by 30% considering the price in the first 9 months of the year. In 2024 and 2025 we projected that the selling price would decrease by 31% and 3%[22] respectively. From 2010 to 2020 (we used this time frame since the stability in the market environment at the time was similar to the expectations for the phosphate fertilizer market in 2026 and afterward) the price of DAP in the world increased on average 2,83%, so we forecasted the average selling price of phosphate fertilizers to increase by that amount each year after 2026.

Industrial and Feed As previously mentioned, phosphoric acid has other applications besides being used in the production of fertilizers, 2 of the most popular types of phosphoric acid used in industrial production are food-grade and industrial-grade. Food-grade phosphoric acid is used in the food and drink industry, to increase product longevity, as an additive or flavour enhancer, while the industrial-grade is more concentrated and used for example in metal cleaning or in the production of batteries. According to the Food and Agriculture Organization (FAO), the demand for processed and packaged food tends to be correlated with growing economic activity, since Nutrien's two biggest markets for food-grade phosphoric acid are Canada and the US, considering the current macroeconomic conditions in both countries, in the short term, the processed and packaged food market will stagnate a bit, with significant growth only expected in 2026. All around the world electric vehicles are becoming more popular[23] increasing the demand for car batteries both in the production of new cars and in the maintenance of old ones. In the medium/long term, this will be one of the key drivers, as the demand for industrial-grade phosphoric acid for use in lithium iron phosphate battery manufacturing is expected to increase as well, particularly in China. In 2023 **Nutrien's sales volume** is expected to decline 14%[15] due to the higher prices in the market, from 2024 onwards the expectation is that the sales volume will increase 0,99%[24] each year. Considering that this is a small section of the phosphate market, its hard to make a reliable price forecast, so we based ou predictions on the future movements in the price of phosphate rock[25]. For

Figure 12: Phosphate segment revenue forecast from 2023 to 2030 ($ billions).



[20] Mosaic forecasted the market demand for phosphate fertilizers to increase between 1% and 2% in 2024, and 2% from 2025 to 2029.

[21] This was the CAGR verified in the Phosphate market between 2001 and 2021.

[22] Source: Fitch Ratings. Fertilizer Price Assumptions.

[23] One big step in this direction happened in 2022 when the European Parliament approved the ban of the sales of new combustion engine cars by 2035.

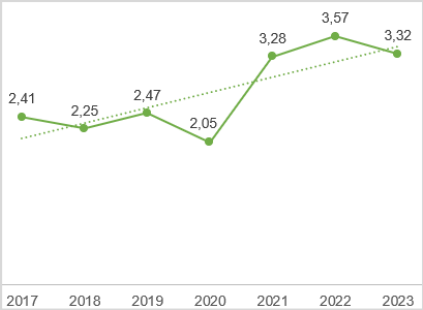
[24] CAGR of industrial phosphoric acid produced in the world from 2009 to 2021. Source: Statista.

[25] The main input of phosphoric acid.

2023 it is expected that the price will increase by 5%[15], while for 2024 and 2025 it was assumed that **prices** will decrease by **15% and 14%** as forecasted by the World Bank, respectively, after 2026 we assumed that the prices would grow at 0,51%[26] each year.

Freight, transportation and distribution

Figure 13: U.S. Regular Gasoline Prices ($/gallon). Source: EIA.



Freight, transportation, and distribution represent an important part of operating expenses in the potash, nitrogen, and phosphate segments. Due to higher oil prices, gasoline prices (Figure 13) have been increasing in the past few years, driving up transportation costs. EIA forecasts gasoline prices to increase by roughly 6% in 2024, considering the positive trend expected for gasoline prices in the future, we expect that freight, transportation, and distribution expenses **will increase as % of sales each year by 0,1% for the next 5 years** and remain **constant afterward.**

Operating Expenses

Nitrogen Nutrien's access to **low-cost Natural gas**, is one of their primary sources of **competitive advantage** in the nitrogen segment, compared to for example ammonia producers in Europe. In 2023, natural gas prices decreased substantially due to relatively high production and high inventories, while the expectations for 2024 is that US natural gas prices **will increase by around 17%** as a consequence of the increase in demand for US exports of natural gas. If ammonia prices don't increase in the same proportion, this can potentially decrease Nutrien´s margin in this segment. Another source of risk in this segment is that the long-term natural gas contract for the **Trinidad and Tobago plant expires in 2023**, and is still being renegotiated, depending on terms of the negotiation, Nutrien's **production cost of ammonia and urea might increase**. This plant has been having unplanned outages and natural gas curtailments in the past years, that have been causing some production constraints in that plant. In the future **Nutrien might need to invest in plants infrastructure** to fix these **problems. Both selling expenses and general and administrative expenses** have decreased as % of sales in 2021 and 2022, but the expectations are that in the future they will be closer to (but remain below) pre-pandemic levels, so we projected both captions to remain fixed at **0,7% and 0,5% of sales**, respectively, in the future.

Phosphate DAP and MAP prices are mainly influenced by the prices of **phosphate rock, sulfuric acid, and ammonia**, the three key inputs in their production process. Sulfuric acid is one of the most popular chemicals in the world, it's obtained by burning sulfur, and its main use (60% in 2020) is as input

[26] Prices of phosphate rock in the US increased on average 0,51% per year from 2011 to 2020, source USGS.

in the production of phosphoric acid. **Prices of sulfur reached all-time highs** in 2022 due to an increase in demand and some constraints in the supply chain. As the market stabilizes in 2023, prices have been decreasing at a steady pace but are still expected to be above pre-pandemic levels. Phosphate rock is the key input in the production process of DAP and MAP and, particularly in the short run, their prices are affected by shocks in the price of phosphate rock. These shocks still have some effects in the long-term price, but smaller than in the short-term. The price of phosphate rock was on a downward trend since 2013, but when the COVID-19 pandemic began, its price skyrocketed(27) **reaching price levels only seen in the 2008 crisis**, having remained stable at a high level in 2023. As production starts to increase at the final months of 2023, prices are expected to start to decrease, but it will still take some years for the prices of phosphate rock to reach pre-pandemic numbers. The final input in the production of phosphate-based fertilizers is ammonia. In the previous topic regarding the market of nitrogen-based fertilizers, we already addressed our expectations for the future behaviour of ammonia prices. Regarding the other operational expenses in this segment, **selling expenses** have been decreasing, so they were forecasted to be constant at **0,25% of sales**, while **general and administrative expenses** were assumed to remain fixed at **0,6% of sales** since in the previous years they have fluctuated around this value.

Capex

Phosphate In the phosphate segment, Nutrien has 2 phosphate mines from where it extracts all the phosphate rock used in its production process, the Aurora mine(28) in North Carolina, and the White Springs mine in Florida. One of **Nutrien's biggest challenges in the future will be the future of the White Springs mine**, this mine has an expected life of only 9 more years, taking that into account we consider that there are 2 different approaches that the company can make. In the first approach, when the mine ends its useful life, Nutrien would keep the plant operating by buying phosphate rock from the market. It could buy it from 1 of the 9 other existing mines in the US operated by their competitors, or it could buy from an international company, most likely from OCP(29). In this last case, transportation costs would be a key factor to take into account and the quality of the product might slightly different, which may result in some changes in the production process. Another hypothesis would be that the company would convert the plant from a plant that produces Phosphate-based fertilizers to one that produces Nitrogen-based fertilizers. A similar situation already happened in **2019**, when

[27] Prices in January of 2023 were approximately four times higher than the ones in January of 2020.
[28] This mine is expected to have a productive life until 2050.
[29] OCP is the state-owned firm that controls phosphate mining in Morrocco.

Nutrien converted its **Redwater phosphate facility** to an ammonium sulphate facility. This is the most likely scenario since Nutrien already dealt with the transformation of another plant in the same segment and would allow to increase production capacity in the Nitrogen segment. This could cause some disruption in the segment, as the transition might not be smooth, nonetheless, the remaining infrastructure in this segment would still be able (with some small investments over time) to meet the forecasted demand in the future. For 2023 we forecast **PPE to represent 79% of tonnes sold**, just slightly above the 78,31% in 2022, considering the investments over time to maintain or improve production capacity is expected to remain at 79%.

Nitrogen In this segment, no major change is expected, with **PPE as % of tonnes sold** being 57% in 2023 and remaining fixed at that % until 2033, where the ratio of PPE/Tonnes Sold would increase to 59% considering the new plant that would be added to the nitrogen segment[30].

Corporate and Others Finally, since this segment doesn't have sales, we forecasted the **capex based on the total sales of the company**, keeping this ratio fixed at 2,5%, taking into account the value in the previous 5 years and no plan by Nutrien to expand it.

Figure 14: Total Capex forecast from 2023 to 2030 (as % of total revenues).

In 2023, **capex (as % of sales)** is expected to slightly decrease given the smaller investments in the Retail segment compared with the all-time high investments of the previous year. Afterwards, its value is projected to remain reasonably stable between the 9% and 10% levels, with exception to the year of 2032, where the White Springs phosphate mine is anticipated to close activities, negatively impacting the capex on the phosphate segment. **Capex** is predicted to stabilize between the 5% and 6% of sales for the retail segment, while for the Potash, Nitrogen, and Phosphate ones, the values are between the 14% and 18% levels.

Net Working Capital

Receivables were forecasted using the Average Collection Period, following the trend from the 5-year period from 2018 to 2022, and company projections on its 3rd quarter report. On the retail segment, the Average Collection Period is expected to increase and to remain constant at the all-time high value of 90 days, which will impact Receivables to decrease in 2024 and 2025, but to grow in the remaining years. In the remaining segments, it is predicted to remain constant at a value within the average of the last 5 years: 90 days for Potash, and 35 for Nitrogen and Phosphate. The same reasoning was applied to the **Payables,** but this time using the **Average Payable Period**. Based on the trend of the past 5 years, the Retail and the Phosphate segments are projected to remain stable at

[30] This number assumes that the project would take 1 year and cost 200$ million, the same value as the previous phosphate plant that was converted to the nitrogen segment, which would roughly represent 2% of tonnes sold.

130 and 120 days. The Potash and Nitrogen ones showed higher volatility, so its values are expected to decline in the first years of projection - until 300 days in 2027 for Potash (where the volatility was higher due to the boom in revenues in this segment), and 160 days in 2025 for Nitrogen - remaining constant after that. Consequently, Payables are predicted to follow the same trend. For the **Inventories**, the projection was made in **percentage of COGS**, analysing again the trend of the past 5 years. In the Retail segment, Inventories are expected to grow and remain at 35% of COGS from 2024 onwards (in 2023 inventories were at a lower % of COGS, due to the high-cost inventory bought in 2022), while the other segments are expected to stabilize in 2023 – 35% for Potash, 22% for Nitrogen, and 37% for Phosphate of their respective COGS. Therefore, Inventories are expected to grow in line with COGS. The **remaining core balance sheet items** were projected as a percentage of revenues. **Non-Core items** were assumed to remain constant, except for investments, which are estimated to grow at 2% per year (in line with FED target inflation).

Cash-Flows Analysis

Figure 15: Nitrogen Return on Investment Capital forecast.

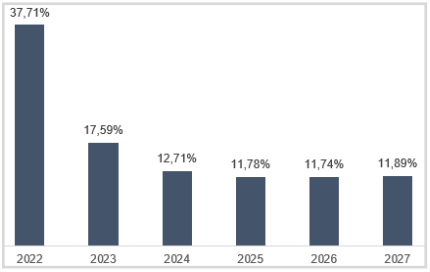
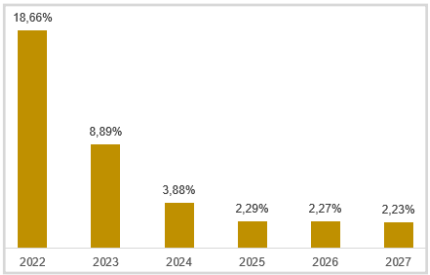


Figure 16: Phosphate Return on Investment Capital forecast.



Potash and Nitrogen The cash flows from both segments are very similar in the forecasted period, the major difference is that the potash segment is very affected in the short term by the lower prices, and the expected increase in demand is not enough to compensate. On the other hand, the prices for the Nitrogen segment are predicted to have a faster rebound from the peaks of 2022, being forecasted that from 2026 onwards the **Nitrogen segment will have the largest cash flow of all Nutrien's segments** (except in 2033). Both segments have the benefit of having large operational margins, due to them being very capital-intensive, meaning that the high initial fixed costs are diluted through time, having then lower operational costs, so they consequently have a **much larger ROIC than the Retail segment**.

Phosphate The phosphate segment is actually the least impacted segment from the drop in fertilizer prices in 2023, having positive cashflows every year due to the **lower capex costs**, after 2026, the cash flows from this segment stabilize but a very low number when compared with the other segments. This fact is also exhibited in the **ROIC**, as the operational margin is very small and is not able to compensate the small asset turnover.

DCF Valuation

Valuation Framework

Figure 17: Cost of Debt calculation.

Cost of Debt	
YTM (5,25% Coupon Bond with Maturity 2045)	5,66%
Probability of Default	0,19%
Loss Given Default	68,90%
Cost of Debt	**5,53%**

After forecasting **Nutrien's future cash flows** until the firm's growth stabilizes and reaches the steady state in **2040**, taking into account the firm's future

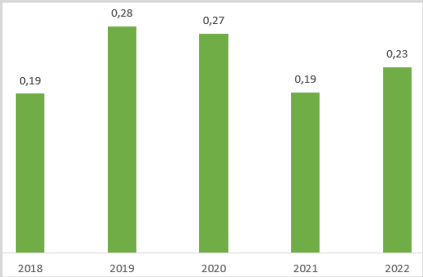
Figure 18: Cost of Equity calculation.

Cost of Equity	
Risk Free Rate	3,91%
Market Risk Premium	3,52%
Levered Beta	0,95
Cost of Equity	**7,24%**

intentions and expectations, while also considering the past trends and future market conditions, both from a supply and demand perspective in all segments of the company. **The DCF valuation** method was then applied, appropriately discounting the firm´s future cash flows at the **weighted average cost of capital (WACC)** and to account for the firm cash flows after **2040**, the terminal value was calculated using the **steady-state growth rate of 2,62%.**

WACC Calculation

Figure 19: Historical D/V ratio. Source: Refinitiv.



To accurately assess the proper cost of capital, it was first necessary to estimate the following figures: cost of debt, cost of equity and target capital structure. Firstly, to achieve the cost of debt, a publicly traded bond issued by the company, with a 22-year maturity and a coupon rate of 5%, was considered, currently that bond has a YTM of 5,66%[31]. Then, considering Nutrien's credit rating, Baa2 in Moody´s and BBB in S&P´s, a 31,10%[32] recovery rate for senior unsecured bonds and a 1-year probability of default of 0,19%[33] were accounted, resulting in a **cost of debt of 5,53%**. Furthermore, the **CAPM** model was used to estimate the cost of equity figure. The current yield on a 10-year US Treasury Bond was used for the risk-free rate[34] (3,91%), and the market risk premium was considered to be the US market equity risk premium[35] (3,52%). We opted to use the US market as a reference because many of Nutrien's operations are located in the US, and the overall larger consumer market for its products is the US. To calculate levered Beta, the monthly returns of Nutrien's shares were regressed with the monthly returns of the S&P 500, from October of 2018 to October of 2023, resulting in a levered beta of 0,95, with a 95% confidence interval of [1,34;0,55]. Using the CAPM formula, the **cost of equity output was estimated to be 7,24%**. Lastly, observing the company´s capital structure behaviour over the last 5-year period, we can observe that the company's D/V ratio has been relatively stable, so the target D/V ratio was assumed to be the **D/V ratio** in 2022 (**0,23**). Taking into consideration that Nutrien´s **statutory tax rate is 27%**, an **WACC output of 6,52%** was computed.

Figure 20: WACC final outputs.

WACC	
D/V Target	22,58%
E/V	77,42%
Statutory Tax Rate	27,00%
Cost of Debt	5,53%
Cost of Equity	7,24%
WACC	**6,52%**

Figure 21: DCF price per share computation.

Valuation Summary (Base Year 2024)	
Total Discounted FCF	17 250
Terminal Value	22 626
Enterprise Value	39 876
Net Debt [(1)]	9 306
Equity Value	30 570
Number of Shares Outstanding (Millions)	495
Price per Share	**61,81**

Terminal Value

To calculate the **terminal value**, the final forecasted free cash flow was multiplied by (1+terminal growth rate ("g")), and to that value, the growing perpetuity formula was applied, with the growth rate being **2,62%** (terminal growth rate) and the

[31] Source: Frankfurt Stock Exchange, consulted on 15/12/2023.

[32] Source: S&P 2022 Annual Global Corporate Default And Rating Transition Study.

[33] Source: Moody's Annual Default Study 2022.

[34] Source: US Department of Treasury, consulted on 15/12/2023.

[35] Source: Refinitiv.

discount rate being the previously mentioned **WACC**. That number was then discounted another 16 years at the WACC, since the valuation date is 2024, and the final forecasted year was 2040.

Investment Decision

Figure 22: DCF investment decision.

Investment decision	
Current Share Price	54,89
Forecasted Share Price	61,81
Dividends [2]	1,68
Capital Gains	12,61%
Dividend Yield	3,06%
Expected Return	15,68%
Signal	**Buy**

The total discounted free cash flows from 2025 to 2040 were added up to the terminal value to achieve the **enterprise value** (EV). After subtracting the Net Debt (the value includes non-controling interest) from the EV, the total value of Nutrien's equity was obtained. Dividing that value by the 494,547 million shares outstanding (number mentioned in the 2022 annual report), the **target price of $61,81 was achieved**. Considering that Nutrien's average payout ratio in the last five years was **41,96%**, it was assumed that the **payout ratio** in 2024 would be that value. Considering the forecasted share price ($61,81) and the forecasted dividends in 2024 ($1,68), since the **current share price is $54,89**, the decision would be to **buy Nutrien's shares**.

Sensitivity Analysis

Figure 23: Sensitivity analysis to changes in WACC and g.

g \ WACC	5,87%	6,19%	6,52%	6,84%	7,17%
$61,81					
2,35%	$73,72	$65,64	$58,83	$53,02	$48,00
2,49%	$75,96	$67,42	$60,27	$54,20	$48,98
2,62%	$78,38	$69,34	$61,81	$55,46	$50,02
2,75%	$81,00	$71,40	$63,46	$56,79	$51,11
2,88%	$83,85	$73,62	$65,23	$58,22	$52,28

In the last few years, inflation has been the main concern in the global economy. The changes in prices can strongly impact the economic future of a company and, consequently, its share price. Performing a **sensitivity analysis**, it is possible to observe how Nutrien´s share price would react when the **terminal growth rate and the WACC change simultaneously**. The defined range intervals for both variables were fixed between the 90% and 110% values: **5,87%-7,17% for WACC and 2,35%-2,88% for g**. At the **worst-case** scenario, WACC would be 10% higher and g 10% lower, resulting in a share price of **$48,00, a 22% decrease**. **On the other hand**, if WACC was 10% lower, and g 10% higher, the share price would **jump 36% to $83,85**. Therefore, it is possible to see that the firm´s stock price is **highly sensitive** to changes in both parameters.

Figure 24: Final share target price and investment decision.

Target Prices	
DCF Target	61,81
Forward P/E Target	53,38
Forward P/B Target	115,14
Forward EV/EBITDA Target	52,27
Weights	
DCF Weight	80%
Forward P/E Weight	10%
Forward P/B Weight	0%
Forward EV/EBITDA Weight	10%
Final Target Price	**60,02**
Investment Decision	
Final Target Price	60,02
Current Share Price	54,89
Dividends [2]	1,68
Capital Gains	9,34%
Dividend Yield	3,06%
Expected Return	12,40%
Signal	**Buy**

Final Recommendation

To calculate the final Target Price, a weighted average of the Target Price previously calculated in the DCF, and the ones calculated for the Multiple Valuation was used. Taking into account what was previously mentioned concerning the reliability of the Forward P/B in this specific case, we opted to use a simple weighting scheme of 80% for the DCF target, 10% for the Forward P/E and 10% for the Forward EV/EBITDA, prioritizing the weight of the DCF since theoretically provides a more accurate estimate. Considering these weights, the **final target price of 60,02$** was achieved, with an **expected return of 12,40%,**

9,34% in capital gains and 3,06% in dividend yield, so the **decision would be to buy Nutrien's shares**.

Figure 25: Major potential risks, with respective probability and impact.

Risk	Probability	Impact
Macroeconomic	High	Medium
Russia-Ukraine War	High	Medium
Competition	High	Low

Risks and ESG

Nutrien´s business operations and their performance are always subject to a vast range of risks and uncertainties, which can impact the firm´s financial health and operating results. The company is exposed to several risks, but the most critical ones will be discussed below. Firstly, the **economy in the US and Canada** (the 2 countries where Nutrien has most of its operations), for 2024, in expected to have a **low growth**, being associated with a lot of uncertainty. High interest rates are projected to prevail as a weapon to combat high inflation, which might impact Nutrien´s results. Moreover, the **outcome of the war between Russia and Ukraine** can also affect the company, especially the crop nutrition sub-segment, as well as the potash, nitrogen, and phosphate segments. As previously discussed, in 2022 Nutrien recorded all-time high revenues and earnings, boosted by the large escalation in prices, especially in the fertilizers market. However, until 2025, nutrients´ prices are expected to fall, some of them until pre-covid levels, which might impact the earnings of the firm. In addition, certain trade routes (such as the Belarusian Baltic Sea route) possibly will remain compromised due to sanctions imposed by Western countries on Russia and Belarus, decreasing the prospects of the fertilizers market. **Competition risk** is similarly a threat to the company. As previously discussed, Nutrien has several big competitors that can pressure its positive sales and results. Specifically, **BHP´s investment potash projects**, Jansen 1 and 2, represent a risk (only after 2026 according to Nutrien CEO Ken Seitz) to the company´s potash segment, a market where Nutrien is the global leader. To ensure its sustainability upon these risks, the company must have a **flexible structure and diversified business model to minimize impacts** created by the respective issues.

Figure 26: Key factors and applied measures for the 3 different ESG pillars.

Pillar	Topic	Measure
Environmental	GHG emissions	Reduce by 30%
Social	Health/Safety conditions	Improve TRIF and LTIF
Social	Non-discrimination	Clauses in suppliers contracts
Governance	Diversity	Exceed target of women in board
Governance	Cybersecurity	Quarterly training sessions

Figure 27: MSCI ESG Ratings: Nutrien vs Industry average (2022 and 2019). Source: MSCI.

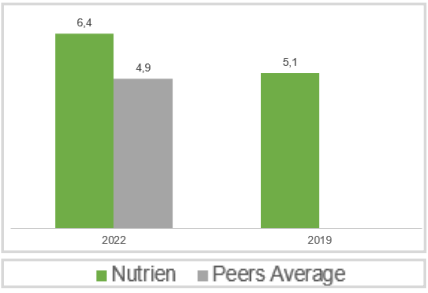


Figure 28: S&P Global Corporate Sustainability Assessment: Nutrien vs Industry average (2022 and 2019). Source: S&P Global.

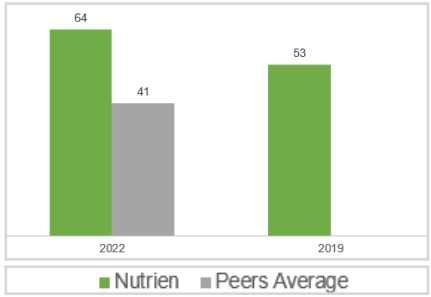
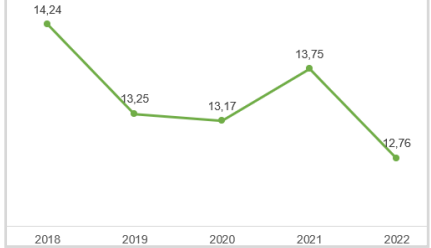


Figure 29: GHG emissions (million tons of CO2) from 2018 to 2022. Source: Nutrien.



Responsible investing is becoming more popular in financial markets, one metric used by investors to assess how companies perform in this department is the **ESG** rating, this rating system relies on 3 pillars: **Environmental, Social, and Governance.** When looking at 2 of the main ESG ratings, the MSCI ESG Ratings (Figure 27) and the S&P Global Corporate Sustainability Assessment (Figure 28), it can be seen that Nutrien is improving compared to its rating in 2019 and is well above its peers in 2022. The **Environmental pillar** evaluates companies' environmental impact, with one of Nutrien's main priorities being to reduce GHG emissions (Figure 29), through measures such as improving energy efficiency, increasing the production of renewable energy, or increasing the production of low carbon ammonia, with the end goal of achieving the target of **reducing GHG emissions by 30% in 2030** (baseline year 2018). Additionally, in the **Social pilar**,

Figure 30: TRIF of the different segments: Nutrien vs Peers vs Target. Source: Nutrien.

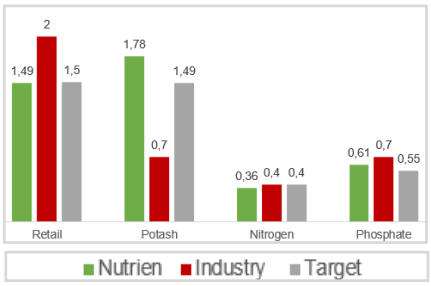
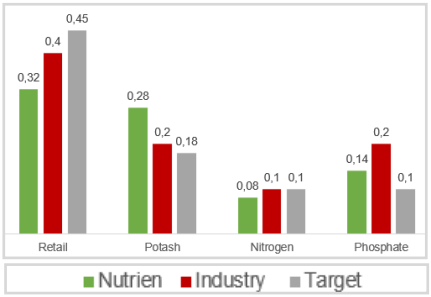


Figure 31: LTIF of the different segments: Nutrien vs Peers vs Target. Source: Nutrien.



Nutrien's main advantages compared to its peers comes from the **health and safety conditions** that it provides to its employees. This can be measured trough 2 different indicators TRIF (Total Recordable Injury Frequency – Figure 30) and LTIF (Lost Time Injury frequency rate – Figure 31), where in most of its segments Nutrien has been improving its performance and is outperforming its competitors. Another important topic where Nutrien differentiates itself is that in contracts with its suppliers, the firm includes expectations for **non-discrimination, and commitments to compliance with human rights laws** (for example no forced or child labor). In the final pillar, **Governance**, MSCI highlights Nutrien's commitment to SDG 5 gender equality, with measures such as **increasing board diversity** (exceeding the target of 33% women on the board). Also, in the area of cybersecurity, the company is making progress to **raise cybersecurity awareness** trough quarterly training sessions for their community and stakeholders. To conclude, Nutrien's good performance in this metric makes it more appealing to investors, especially when compared with its peers

NUTRIEN LTD.

COMPANY REPORT

FERTILIZERS & AGRICULTURAL CHEMICALS

20 DECEMBER 2023

STUDENTS: DIOGO ROBERTO & JOÃO VICENTE

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Today´s resilience to be rewarded tomorrow

Shaping the future of Agriculture

▪ The duration and outcome of the war between Russia and Ukraine is going to have a big impact on the fertilizer industry, since both Russia and Belarus are key players in this sector. In 2022 they suffered severe trade sanctions from Western countries, disrupting the global fertilizer market. Depending on when (or if) those sanctions are lifted, other countries might have the opportunity to increase their presence in the market.

▪ The demand for Potash in 2024 will be a key determinant in this segment's future performance, with Nutrien expecting an increase in the demand of this market by around 4% compared to the one in 2023.

▪ Ammonia prices tend to be highly correlated with natural gas prices. With the current scenario of higher US natural gas prices in 2024 and 2025, this will necessarily have a strong impact in this segment, potentially decreasing Nutrien's margin.

▪ Considering the 2024 price target of $62,31 (13,52% capital gain) and the expected dividend in 2024 of $1,68 (3,06% dividend yield), the final recommendation is to buy Nutrien's shares (16,58% expected return).

Company description

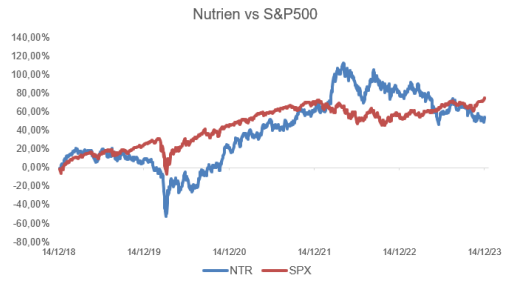
Nutrien Ltd. is a Canadian multinational corporation headquartered in Saskatchewan, Canada. The firm has 5 different business segments: Retail, Potash, Nitrogen, Phosphate and Corporate and Others. Supplies products in the crop nutrients/fertilizers, crop protection, and seed markets, also providing consultancy services. Produces potash, nitrogen, and phosphate fertilizers to support the agricultural industry.

Recommendation:	**BUY**
Price Target FY24:	**$60,02**
Price (as of 26-Feb-24)	**$54,89**

Reuters: NTR.TO, Bloomberg: NTR:US

52-week range ($)	52,23-85,16
Market Cap ($ billions)	27,125
Outstanding Shares (m)	494,547

Source: Refinitiv



Source: Nasdaq, Refinitiv

(Values in $ billions)	2022	2023E	2024F
Revenues	37,884	29,252	25,631
Gross Margin	15,424	8,860	7,481
EBITDA	12,170	6,207	5,336
EBIT	10,809	4,017	3,195
Net Profit	7,687	2,401	2,008
EPS	13,19	4,80	4,01

Source: Nutrien Annual Reports, Analysts´ estimates

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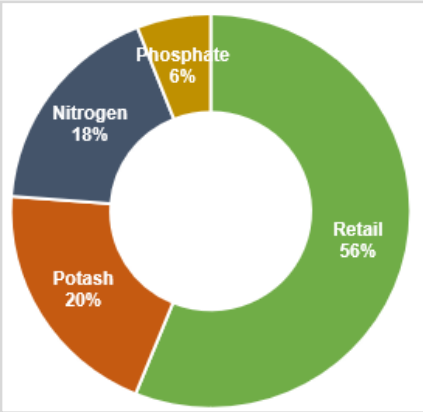
Company Overview

Figure 1: Composition of Sales by Segment (2022). Source: Nutrien.



Nutrien was created in 2018, as a result of the merger between **Agrium**, a retailer of agricultural products and services, and **PotashCorp**, a producer of Potash, Nitrogen, and Phosphate. The company´s headquarters are located in the province of **Saskatchewan in Canada**, and it is currently the world's largest provider of crop inputs and services. Nutrien operates **all around the world** with retail locations in countries like Australia, South Africa, and Brazil, but most of the company production occurs in North America. The company currently has **five different operating segments**: Retail (Nutrien Ag Solutions), Potash, Nitrogen, Phosphate, and Corporate and Others.

Nutrien Ag Solutions, the retail segment of the company, is undoubtedly the largest segment, representing about 56% of the Sales in 2022. Being the **global leader in agricultural retail**, Nutrien Ag Solutions is present in more than 2000 locations through 7 countries (US, Canada, Brazil, among others), and its network provides a vast collection of agriculture solutions, as crop nutrients, crop protections products, seed, application services and digital tools. Another important branch of this segment is Nutrien Financial, where the company concedes credit to low-default rate customers, earning revenues through interest and service fees that are charged to the remaining Retail branches. Nutrien also holds the title of the **world´s number 1 Potash producer**, counting with 6 low-cost potash mines located in the province of Saskatchewan, Canada, giving the company access to the best potash geology in the world. With a capacity of 20,6 million metric tons, the six-mine network produces granular and standard grade potash, which is then delivered to approximately 40 countries around the globe. It is the 2nd largest segment of the company, accounting for around 20% of the 2022 Sales. As a **top-3 global Nitrogen producer**, the company has 9 production facilities located throughout Canada, the US, and Trinidad, benefiting from access to the lowest cost natural gas in the globe. With a summed ammonia capacity of 7,1 million metric tons and a production capability of low-carbon ammonia of 1 million metric ton, Nutrien serves the agriculture and industrial markets, with 190 distribution points. In 2022, this segment accounted for almost 18% of the company Sales. Moreover, the company also ranks as a **top-2 North American Phosphate producer**. With 2 large integrated phosphate mines and 4 upgrade facilities, Nutrien has access to high quality phosphate rock, which enables the production of solid and liquid fertilizers, feed, and industrial acids.

Mostly sold in the North American market, these products represented approximately 6% of the 2022 total Sales. Finally, dedicating support and governance to the remaining operating segments, "**Corporate and Others**" is Nutrien´s non-operating segment, which englobes corporate and administrative functions.

Stock Description

Figure 2: Top-10 financial institutions shareholders. Source: Refinitiv.

Shareholder	Stake
The Vanguard Group, Inc	3,60%
Mackenzie Financial Corporation	2,65%
T. Rowe Price Associates, Inc	2,63%
DWS Investment GmbH	2,61%
RBC Dominion Securities, Inc	2,51%
RBC Global Asset Management Inc	2,48%
Dodge & Cox	2,34%
Parnassus Investments, LLC	2,03%
First Eagle Investment Management, LLC	1,87%
1832 Asset Management LP	1,47%

Nutrien currently has **494,547 million shares outstanding**, being traded in 2 stock exchanges, the New York Stock Exchange and the Toronto Stock Exchange. The firm is also one of the constituents of the **S&P/TSX 60**, an index with the 60 largest companies listed on the Toronto Stock Exchange. Regarding Nutrien's shareholder structure, currently, **69,43% are owned by financial institutions** with the Vanguard Group (3,6%) and the Mackenzie Financial Corporation (2,65%) being the top institutional holders, while the remaining **30,57% belonging to retail investors.**

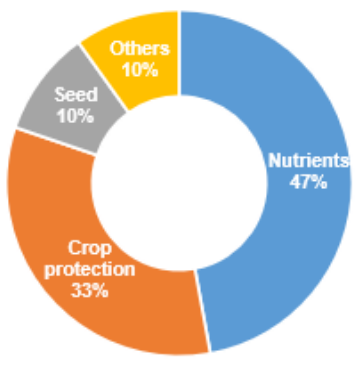
M&A History

Figure 3: Top-5 M&A transactions ($ millions). Source: Refinitiv.

Company/Stake	NTR Position	Value
24% of Sociedad Química y Minera	Seller	4060
28% of Arab Potash Co Ltd	Seller	502
Actagro LLC	Buyer	340
RuralCo	Buyer	273
Casa do Adubo	Buyer	205

After a process that lasted from September 2016 until January 2018, **PotashCorp** shareholders were given 52% of **Nutrien**, whereas **Agrium** shareholders were given the remaining 48%, finalizing the **merger** between the two firms. The first big deal in the history of Nutrien occurred in October 2018, when the company sold a **28% share in Arab Potash Co Ltd**, an Amman-based potash company, to the Chinese state-owned company Jordan for $502 million. Later, in December 2018, the firm sold a **24% stake in Sociedad Química y Minera**, a Chilean mining company, to the Chinese Tianqi Lithium for $4,06 billion. Moreover, Nutrien acquired 2 companies in 2019: **Actagro LLC**, from Norwest Equity Partners, for $340 million; **RuralCo**, for $272,58 million, through its Australian subsidiary Landmark Operations, with the goal of expanding its market in the country. Finally, in July 2022, the company announced the acquisition of **Casa do Adubo** for $205,16 million, a Brazilian retail fertilizer company, increasing its presence in Brazil and South America.

Figure 4: Composition of Retail Sales by sub-segment (2022). Source: Nutrien.



Industry Analysis

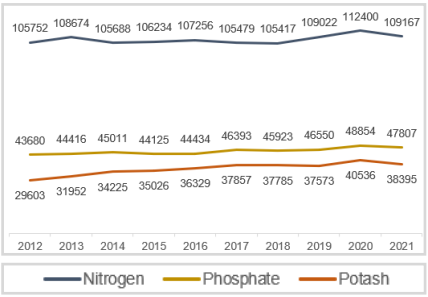
Nutrien Ag Solutions

The **agricultural retail market** has been increasing along the growing agricultural sector. With stronger agricultural activities to meet the growing global population demands, there is more needs of crop nutrients, crop protection products, seeds, or even agricultural advisory. On this matter, **Nutrien is the**

number 1 global agricultural retailer, operating a large direct-to-grower distribution network, containing 6 sub-segments: Crop Nutrients, Crop Protection, Seeds, Merchandise, Nutrien Financial, and Services.

- Crop Nutrients / Fertilizers

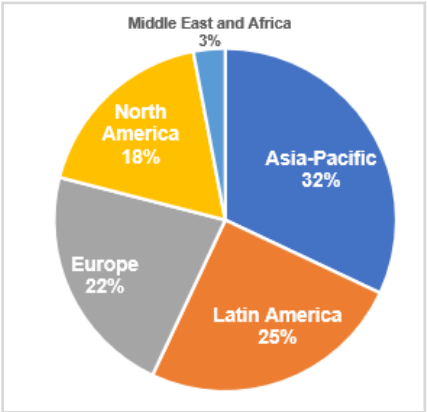
Figure 5: Fertilizer consumption breakdown by type, from 2012 to 2021 (thousands of tons). Source: IFA.



Being the largest sector of the agricultural retail market, **crop nutrition** is crucial to ensure a healthy growth and that the maximum yield potential is reached. Plants require a proper balance of nutrients during their whole development, where crops can receive several nutrients either through soil or fertilizer sources. The most common and essential nutrients are **Nitrogen (N), Potassium (K), and Phosphorous (P)**, but others as Calcium (Ca), Magnesium (Mg), and Sulfur (S) - secondary nutrients - also give a significant contribute to the plant growth. The **global crop nutrition market**, where Nutrien is one of the largest companies and one of the biggest producers, **depends heavily on the evolution of the markets of Potash, Nitrogen, and Phosphate**, as these are the most important nutrient fertilizers, as mentioned before. In the fertilizers industry, Nutrien has **several competitors**, as The Mosaic Company, Yara International, among others (these companies will be discussed later on the respective segment where they are competitors). However, Nutrien is the **most complete** in this field, producing large amounts of each of the three fertilizer nutrients (Potash, Nitrogen, and Phosphate), while its competitors focus on only one or two of them.

- Crop Protection

Figure 6: Crop Protection market share by region (2021). Source: S&P Global.

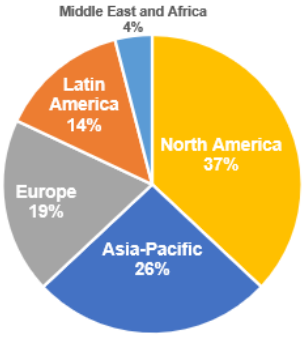


Among the major threats to agriculture, such as climate change or natural phenomena, there is one category that humans can actually prevent and significantly reduce its damages, which is **disease/pest management**. This implies defending the fields and crops against several threats, as pests, weeds, plant diseases, insects, rodents, and other organisms that can possibly hurt or even destroy the crops. The most common **crop protection** products are herbicides, fungicides, insecticides, and other disease and weed control products. The **global crop protection market** is estimated to have increased by 6,2% from 2021 to 2022, to reach a value of around $69 billion, according to S&P Global, following the agricultural retail market trend. It is led by the 2 largest R&D companies, **Bayer and Syngenta**, both with more than $10 billion in sales. Bayer is a German multinational that operates not only in the crop protection market, but also in the seed market and in the pharmaceuticals consumer health industries. Thus, its business operations are only partly focused on the agricultural industry, as Health is the focus of the company, both for people and for crops. On the other side, Syngenta is a Chinese company present in the crop protection and seed market, which additionally provides agribusiness consulting

services, being closer to Nutrien´s business. However, with the crop nutrients sub-segment, Nutrien has a larger network of the agribusiness market. Nutrien, with $7,04 billion in revenues in 2022, is inserted in the next level of the market - **$5 to $10 billion in sales** - along with companies like BASF, Corteva Agriscience, UPL and FMC.

- Seed

Figure 7: Seed market share by region (2021). Source: S&P Global.



The **seed market** is segmented into 2 different parts: the **conventional seed** market, which is global and highly developed, and the **genetically modified (GM)** seed market, which is now strongly established in North and South American and some parts of Asia, but only in its initial stages in Europe, due to strict consumer and regulatory measures imposed by EU organisms. Moreover, regarding the **conventional seed market, North America has undoubtedly the largest share** at a global scale (37%), followed by the Asia-Pacific region (26%), and Europe (19%) (figure 7). The global seed market is once again led by **Bayer** (with revenues of around $10 billion in its seed segment in 2022), alongside with **Corteva Agriscience**. The last is an American company which operates in the seed and crop protection markets, having revenues of around $8,98 billion in its seed segment in 2022 (Nutrien presented revenues of more than $2 billion). Like Syngenta, the company lacks the crop nutrition market, being slightly less complete than Nutrien in the agricultural industry. Nevertheless, it had revenues four times bigger than Nutrien in 2022, being much bigger in this sub-segment.

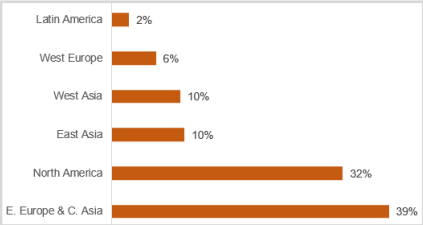
- Merchandise, Nutrien Financial and Other Services

To sustain and give support to the agriculture branches analysed above, there are other markets such as other agricultural equipment and products, consulting, and services. Thus, Nutrien also has these branches inside its agricultural retail scope: “**Merchandise**”, which supplies storage and irrigation equipment, fencing, feed supplement, among others; “**Nutrien Financial**”, the consulting division of the company, supporting the remain areas and its customers; “**Services and other**”, supplying diverse agricultural services, as product application, soil and leaf testing, and others.

Potash

Potash is a key element in food production, as it is crucial in several procedures in the **growth and development of plants** - activates enzymes, enhances photosynthesis, helps the plant fighting stress, among others. Potassium chloride (KCl) is mostly mined from deep underground ore deposits or extracted from salt lakes or seas, and can be used for **fertilizers**, industrial water treatment, animal feed supplements, cement, fire extinguishers and textile production.

Figure 8: Potash production market share by region (2021). Source: IFA.



According to Statista, in 2022, Nutrien had the biggest market share of the global potash nameplate capacity with 21%, also recording $7,60 billion in sales in its Potash segment. Its biggest competitors, each with 15% of the global potash nameplate capacity, are **The Mosaic Company and Belaruskali**. The first is a North American based company, headquartered in Florida, which is the greatest potash and phosphate producer in the United States, having revenues of $5,20 billion derived from its potash segment in 2022. Mosaic has a similar operation system as Nutrien, having some potash mines in Saskatchewan and a retail segment focused on crop nutrition sales of both potash and phosphate fertilizers. However, Mosaic has seven potash and phosphate mines, some of them located in Florida, while all Nutrien´s potash mines are in Saskatchewan and are focused on mining just that nutrient, which might be less efficient for the overall business of the firm. **Both companies are members of Canpotex Ltd**, an export association of Canadian potash producers to facilitate potash sales outside North America. On the other hand, **Belaruskali is one of the biggest state-owned Belarusian companies** and one of the largest potash producers in the world, which was severely impacted with the sanctions imposed by Western countries against Belarus upon Russia´s invasion of Ukraine. Recently, while attempting Nutrien´s acquisition (failed), **BHP Billiton**, an Australian giant in the mining and oil industries, has been announcing large investments on potash mining projects in Saskatchewan, the same region where Nutrien has its 6 mines. In August 2021, Jansen Stage 1, an investment of $5,70 billion, was approved by the firm for the first potash project, after a pre-project investment of around $4,50 billion. Later, in October 2023, Jansen Stage 2 was announced, a project that will cost BHP $4,90 billion. **These announcements may represent a threat** to Nutrien, as a new big player is entering the industry. However, the firm considers that possible **effects will only start to be experienced after 2026**, since Jansen is a challenging project, and its production is not expected to launch before that date.

Nitrogen

The **Nitrogen** market can be divided into **3 different segments**: ammonia, urea, and solutions, nitrates and sulfates[36].

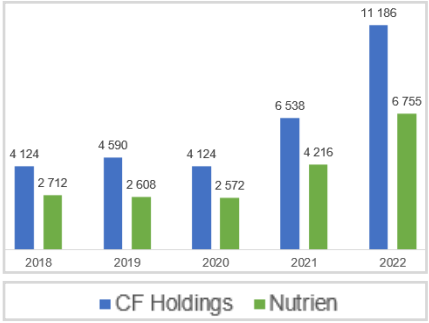
The production of ammonia is a very **energy-intensive process**, the hydrogen used in its production comes from natural gas or coal, with the production process of ammonia contributing from **1% to 2% of global carbon emissions**[37]. Since the decrease of carbon emissions in industrial production

[36] Includes Ammonium Nitrate, Ammonium Sulfate, Urea Ammonium Nitrate, Nitric Acid and Environmentally Smart Nitrogen.

[37] Source: Jones, N. (2022). From Fertilizer to Fuel: Can 'Green' Ammonia Be a Climate Fix?.

has been a priority worldwide, the popularity of more "environmentally friendly" ammonia is on the rise. This market is divided into two products, **blue ammonia**[38] (or "low carbon ammonia") and **green ammonia**[39] (or "clean ammonia"). One important change to this market happened in August of 2022, when the US Government approved the **Inflation Reduction Act**, where incentives[40] were offered to companies that invest in blue ammonia and green ammonia. This policy has already had impact on the market, since 11 out of the 20 projects in the world are being implemented in the US, accounting for almost **half of the global production capacity** of blue ammonia. In 2022, Nutrien planned to invest **$500 million** in order to build the world's largest clean Ammonia production facility in Geismar, Louisiana, with the capacity to produce **1,2 million tons of clean Ammonia**. In 2023, the project was suspended due to an increase in expected capital costs compared to the initial estimates, nonetheless, the company is still committed to achieve the 30 percent operational GHG emissions intensity reduction target by 2030.

Figure 9: Nitrogen revenues: Nutrien vs CF Holdings ($ billions). Source: CF Holdings and Nutrien.



In the Nitrogen segment, Nutrien's biggest competitor is **CF Holdings**, the largest producer of nitrogen-based fertilizers in North America. In 2022, both companies combined represented more than half of the production capacity of these fertilizers, 55% for ammonia, 57% for UAN, 66% for Urea, and 27% for ammonia nitrate. Looking at Figure 9, it can be seen that CF Holdings sales of nitrogen-based fertilizers are about 1,6 times the ones of Nutrien, which makes CF Holdings the company with the largest market share in the nitrogen-based fertilizers in 2022 (18% compared to Nutrien's 11%). **One advantage that CF Holdings holds over Nutrien**, is that roughly 25% of Nutrien's Ammonia production and 20 % of the solid Urea production are produced in the Trinidad and Tobago plant, that historically has had problems with the supply of natural gas leading to frequent curtailments in production, while CF Holdings[41] is protected from any potential disruption in its production process. **One of Nutrien's main competitive advantages over CF Holdings** is the synergy that the nitrogen segment has with both retail and the phosphate segments. For example, in 2022 this segment earned $6,755 billion in third-party sales, but it also made $1,293 billion of intersegment sales to the retail segment, so by growing the retail segment Nutrien is also developing the nitrogen segment, something CF Holdings is unable to do, since it doesn't have a retail division. For the future, CF Holding is

[38] Blue ammonia is produced by primarily using carbon capture, utilization, and storage or other low-emission production technologies, a process that reduces direct GHG emissions significantly.

[39] The production of green ammonia consists of using hydrogen obtained using innovative technology, such as auto-thermal reforming or water electrolysis (using renewable power), reducing direct GHG emissions by at least 90%.

[40] Subsidies were provided to producers in the form of tax credit, depending on the quantity produced.

[41] CF Holdings has a small investment in Trinidad and Tobago that represents 3% of its ammonia production.

focusing on the **green ammonia section** of the market by building a new plant in 2025, this might be concerning for Nutrien, particularly since this year the company cancelled its green ammonia project, meaning that in the future it might lose some market share to its most direct competitor.

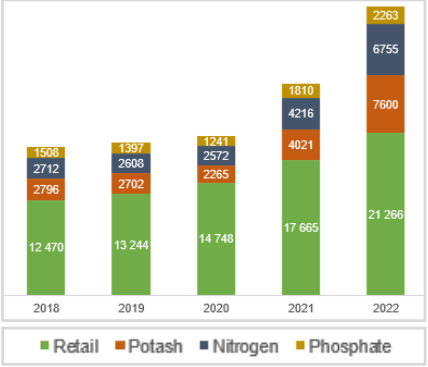
Phosphate

In the **Phosphate** market there are **three main products**, the first product produced during the production process is **phosphoric acid**, which is produced using phosphate rock and sulfuric acid. It is not normally used as a fertilizer by itself, but instead used[42] in the production process of other phosphate-based fertilizers. The most popular fertilizers in this market are **DAP (diammonium phosphate)** and **MAP (monoammonium phosphate)**, both of which are created as a reaction of phosphoric acid with ammonia.

Regarding the phosphate segment, Nutrien's main competitor is also **Mosaic** (previously mentioned in the potash segment), which in 2022 produced 74% of the phosphate-based fertilizers produced in North America and had a 15% market share in the global market (compared to the 4% of Nutrien). This is partly due to the scale of their phosphate operations, since Mosaic has 4 active phosphate rock mines in the US, compared to the 2 of Nutrien. Taking into account Nutrien's smaller scale, it will be difficult for the company to increase its market share. Where Nutrien is able to separate itself from the competition is by exploring the industrial section of the phosphate market, where for example Mosaic has a much smaller presence on selling phosphoric acid for industrial applications.

Financial Analysis

Figure 10: Revenue evolution by segment, from 2018 to 2022 ($ billions). Source: Nutrien.



Analysing a company´s financial statements is a key process to identify possible risks that it is going to face and where the firm is more financially robust. **Nutrien´s total sales** have almost doubled from $19,64 billion in 2018 to $37,88 billion in 2022. However, until 2020 ($20,91 billion sales) it was increasing smoothly, being then impacted by high fertilizer prices, especially in 2022, year where the growth in sales was almost 37%. **EBITDA and EBIT margins** behaved in the same way in the last 2 years, ending up on 33,84% and 28,53% of sales, respectively, due to the all-time high revenues. From 2018 to 2020, their behaviour was highly volatile, with the minimum value being recorded in 2018 for both margins (10,22% for EBITDA and 2,11% for EBIT, which caused net result to be negative this year).

[42] Phosphoric Acid also has other industrial applications, such as: livestock feed, soap, detergents, and other cleaning products.

Figure 11: EBITDA and EBIT Margins evolution from 2018 to 2022. Source: Nutrien.

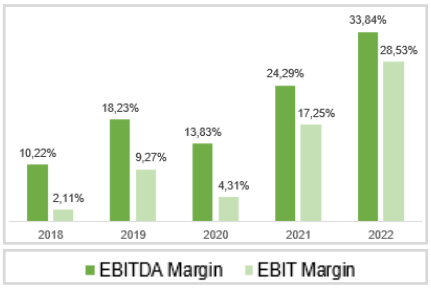


Figure 12: Capex and D&A evolution from 2019 to 2022 ($ billions). Source: Nutrien.

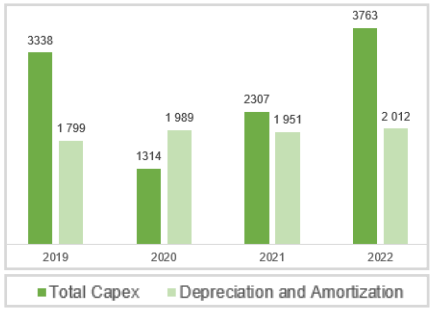


Figure 15: Profitability evolution from 2018 to 2022. Source: Nutrien.

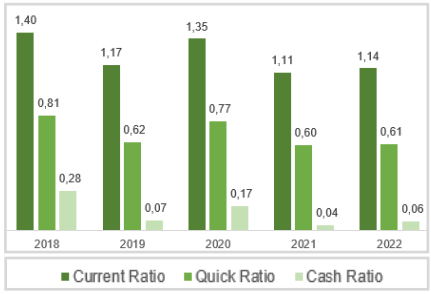
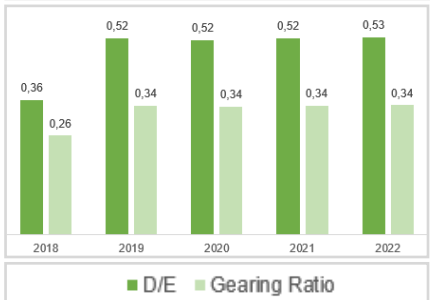
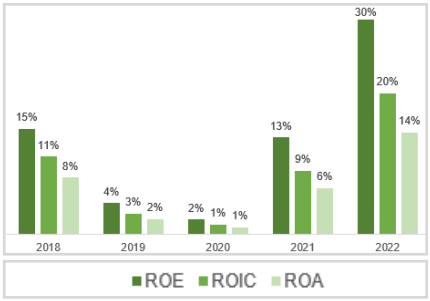


Figure 14: Capital Structure evolution from 2018 to 2022. Source: Nutrien.



Moreover, the **Retail segment**, the one which contributes the most to the total sales, followed the same trend, growing at a slower pace in the first 3 years of the period (from $12,47 billion in 2018 to $14,75 billion in 2020), jumping in the next 2 years to $21,27 billion in 2022. This growth was mostly driven by the crop nutrients/fertilizers branch, as it shown a significantly larger increase in sales than the other product segments inside Retail (net selling price of fertilizers was extremely affected by inflation). On the other hand, all the other segments – **Potash, Nitrogen, and Phosphate** – showed a slightly downward trend from 2018 to 2020, being then impacted in the same way as Retail in 2021 and 2022, especially Potash and Nitrogen (increased from $2,27 and $2,57 billion in 2020 to $7,60 and $6,76 billion in 2020, respectively, driven by inflation in their net selling prices). Additionally, **capex** has shown volatility in every segment of the company, with exception for the Retail segment, where it has been considerably increasing, due to the several acquisitions the company has been performing. **Total capex** was at 16,62% of sales in 2019, suffering a large decrease to half of that value in 2020, mainly because of the decrease in PP&E in the phosphate segment and the small capex investments in the retail and nitrogen segments. Since then, capex has been increasing, reaching 9,93% of total sales, even with the all-time high values for sales, due to the large investments in PP&E on the Retail and Potash (2021) and on the Nitrogen and Phosphate (2022) segments.

Looking at the **liquidity position** of a company, it is possible to understand if it is able to fulfil its short-term liabilities, using the current assets. In the 5-year period from 2018 to 2022, Nutrien´s current ratio decreased (mainly because of the sharp increase in Payables) but remains well above 1 (1,14), meaning the company faces a small risk of not meeting its short-term obligations. The quick ratio of 0,61 shows the company is not able to handle its current liabilities without selling inventory, and the low cash ratio of 0,06 shows that the company has a very low amount of cash, which might be a problem in future investments. Moreover, the **solvency and capital structure ratios** allow us to understand a firm´s ability to meet its long-term obligations, and how the company mostly finances itself. Since 2019, Nutrien is financed slightly more through Debt than Equity, with its liabilities exceeding equity (E/L of 0,90). Additionally, the interest coverage ratio also shows that the company can comfortably pay its financing costs. Furthermore, Nutrien has been improving its **cash conversion cycle** (currently at 33 days), meaning the company is now managing better the cash flow cycle to meet its obligations. This is due to the increase in the payable period to suppliers and to the small reductions in both the holding period of inventory and the collection period from customers. Finally, the **profitability ratios** of the company have been varying throughout the years. With a high level



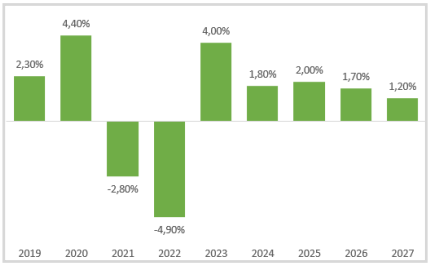
of earnings in 2022, due to inflation and high fertilizer prices, ROIC (19,51%), ROA (14,08%) and especially ROE (29,72%) were very high when compared with the previous years, meaning that for each dollar invested in capital, in assets, and in equity, respectively, a higher return was obtained. When looking at the **Du Pont Decomposition**, it is possible to see that ROA and consequently ROE were so high in 2022, because of the net profit margin (20,29%) and asset turnover (69,40%) high ratios.

Financial Forecasts

Revenues

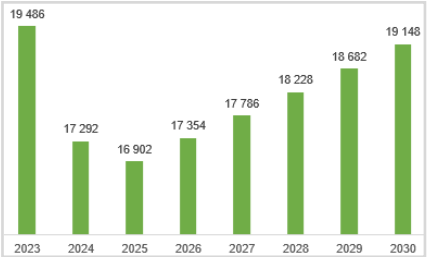
- Nutrien Ag Solution - Retail

Figure 16: Fertilizer consumption annual growth forecast. Source: IFA.



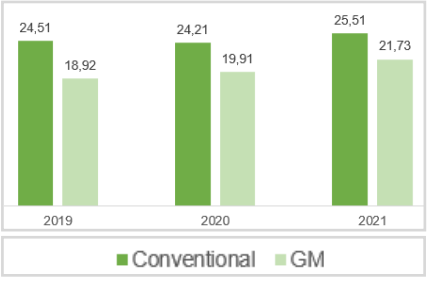
Crop Nutrients/Fertilizers Similarly to what happened in 2021, according to IFA, fertilizer use decreased 5% to 185,1 million tons in 2022, 15 Mt lower than the record level (200,2 Mt in 2020). Fertilizer prices rose to levels not experienced since 2008, which contributed to lower fertilizer affordability by agricultural producers. East Asia and South Asia (Pakistan floods) were the regions where this decline was felt the most, representing around 60% of the decrease. In 2023, fertilizers consumption is expected to grow by 4% to 192,5 Mt, where South Asia and Latin America are predicted to be the largest gainers, accounting for 60% of the total growth. **Government regulations on fertilizer use**, especially on Nitrogen based products, are the **biggest threats to the crop nutrition market** growth. Furthermore, growth in the **global fertilizer market is expected to slow from 4% in 2023 to 1,2% in 2027** (figure 12). Despite the threats mentioned above, and others, such as climate change, and consequences of the war between Russia and Ukraine, in other countries like India, which represents 15% of the global fertilizer use, government supports farmers on fertilizer purchases. South Asia and Latin America regions are expected to contribute 40% to the overall growth, and fertilizer affordability is predicted to return to its pre-pandemic levels, which contributes to the offsetting of the threats seen in Europe, China, and others, resulting in a low medium-term annual growth. Knowing this, **net selling prices** are projected to decrease at a slowing rate until 2025 – 20%, 15%, and 10%, in 2023, 2024 and 2025, respectively, consistent with the **World Bank projections**. Subsequently, they are estimated to constantly increase at the steady state rate of 2%. Following the market projections (Figure 16), the **sales volume** (in tons) is predicted to rise at a declining rate in the following years: 4% in 2023, and 1,8% in 2024, 2% in 2025, 1,7% in 2026, increasing then every year at the constant rate of 1,2%. Hence, **Nutrien´s total sales in the fertilizers market** are anticipated to drop until 2025, increasing afterwards.

Figure 17: Retail segment revenue forecast from 2023 to 2030 ($ billions).



Crop Protection Despite some impacts from the pandemic, **Brazil remains the market leader** for crop protection products, followed by the US. Latin and North America regions were the ones with higher growth from 2021 to 2022, with changes of 16,9% and 9,3%, respectively. **Ukraine** general agriculture market has suffered large consequences upon Russia´s invasion, with the most important crops (wheat, sunflowers, and maize) seeing its productions areas being largely reduced. The country´s crop protection market, valued at $849 million in 2021, **has declined by a third until the end of 2022**. On the other hand, despite of several sanctions from Western countries, Russia´s crop protection market was not significantly impacted, as the country increased agricultural production to meet domestic food demand and ensure its security. The **biggest concern** regarding the future of the crop protection market is certainly the **high regulatory activity in Europe**, where crucial molecules are banned/restricted, limiting the use and production of several important pesticides. Unfavourable weather, the drought in China and in Europe, and the war´s impact are among the other threats. By the end of 2023, the global crop protection market is projected to suffer a small contraction due to the fall in glyphosate (widely used herbicide to monitor broadleaf weeds and grasses) prices. On the retail segment, only crop nutrition´s sales volume and net selling price are available[43]. Thus, considering all the projections, the **firm´s gross margin** is expected to return to pre-2021 levels, falling 15% in 2023 and 2024. From 2025 onwards, it is expected to grow at 2%, while staying fixed at 23% of revenues in every year after 2023. This combination causes the **company´s crop protection sales** to drop significantly in 2024, growing smoothly in every other year.

Figure 18: Seed market evolution by type, from 2019 to 2021 ($ billions). Source: S&P Global.



Seeds The **total market for seeds** has been following the trend, growing in line with agricultural activity. From 2020 to 2021, it increased by 7,1%, to **$47,2 billion**, where around $25,5 billion (54%) derived from the conventional seed market, whereas the remaining $21,7 billion (46%) were originated in the genetically modified market, despite of only having 19% of the crop area. (Figure 18). In the same year, the global seed market expanded in every region, with North America presenting the biggest growth. As said above, the **genetically modified** seed market has been highly affected by **EU restrictions**, which promote organic agriculture and focus on chemical usage reduction, leading consumers to search high-value organic seeds. However, policies to meet sustainability goals, climate change and pest pressure have been forcing producers to invest in research and development of new seed varieties, with higher yield, stronger climate tolerance, and low water and NPK needs, causing a

[43] The company only discloses information on the gross margin values for the remaining sub-segments, being this the only way to forecast future revenues.

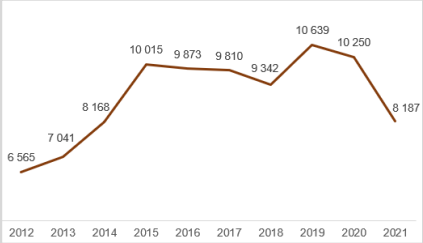
conflict of interests. To prevent the placement of new restrictions, the focus of this market for the future passes through the development of **crops oriented for sustainability traits**. The innovation and adoption of genetically modified crops, and the possible commercialization of GM biofuel crops in China are key drivers that will impact seed market growth. The market is expected to slightly grow by the end of 2023, due to the rise in commodity prices, where seeds were no exception. In this way, **seed´s gross margin** is expected to grow at 2% in perpetuity. It is also estimated to remain stable at 20% of revenues, as it happened in the past 5 years, causing **Nutrien´s seeds sales** to raise smoothly in every year of projection.

Merchandise, Nutrien Financial and Services All these markets´ growth is automatically linked with the other branches growth, as these services/products will be more required as the industry grows. Therefore, they are expected to grow in line with the forecasts previously mentioned, with the **gross margins of the Merchandise, Nutrien Financial, and Services** branches staying at 17%, 100%, and 74% of their revenues, respectively. Following Nutrien´s 3rd quarter report, their gross margin is predicted to show different behaviours in the first years of projections. **Merchandise´s gross margin** is expected to decrease 10% in 2023 and 2024, growing at 2% after that, while **Services and others´s** one is estimated to decline 10% only in 2023. As a recent subsegment, **Nutrien Financial** has more intense growths than the others, being then predicted to raise 20% in 2023 and 10% in 2024, growing at 2% afterwards. These subsegments´ revenues are then expected to follow their gross margin´s trends.

- Potash

Over the last decade, **potash annual production has been increasing steadily**, showing an evolution from 50,5 million tons in 2012 to 71,9 million tons in 2021. However, in 2022, namely because of the war between Russia and Ukraine, it decreased 15% to 62,1 million tons. Its large reserves are concentrated in a few countries, which contributed to the consolidation of the production market. In 2021, only 3 countries, Canada, Russia, and Belarus contributed to around 70% of the global production, with these countries also being the top-3 exporters. With 31,4% of potash reserves worldwide in 2021, Canada is the global leader on Potash production, with **Nutrien being the number 1 producing company in the world.** On the other side, in 2021, **China and Brazil stand at the top of potash fertilizer consumption**, with more than 8,1 and 8 million tons consumed, respectively, followed by the US, with 3,8 million tons. When it comes to imports, Brazil is at the top, followed by the US and China. The **expansion of the potash market size** over the past decade can

Figure 19: China potash fertilizer consumption from 2012 to 2021 (thousands of tons). Source: IFA.



be justified by the **rising global population**. As the agricultural production increased to meet the growing demand for food, potash demand has also been driven up. China, the largest consumer, has been having serious concerns on the sustainability of potash supply. With more than 20% of the world´s population, China´s potassium demand has doubled over the last decade and domestic extraction of potassium resources has increased from 2,89 million tons in 2010 to 4,15 in 2019. Moreover, only accounting for 10% of world´s reserves, China was forced to increase its imports to 7,4 million tons in 2021, being now in the global top-3 importers, as mentioned above. Furthermore, with the war between Russia and Ukraine, **global inflation** escalated in 2022, and **potash prices were no exception**. For example, the FOB Vancouver Spot Price (Muriate of Potash Spot Price) increased from $345,50/ton in the end of April 2021 to $1202,00/ton in the end of April 2022, an all-time high. Moreover, Russian fertilizers exports, contrary to initial concerns, continued even with the war. Thus, potash exports from Russia were not significantly affected, despite their slight decrease. In the other hand, the Belarusian potash sector suffered explicit sanctions, which conditioned their Baltic Sea transportation via EU territory, and forced Belarus to reposition their exports to China, through rail networks. For the end of 2023, **North America´s potash demand is expected to significantly increase** from 8,4Mmt in the previous year to approximately 10Mmt, namely because of high commodity prices and increased agricultural production. Latin America´s demand is also predicted to grow, boosted by Brazil, whose imports in the first half of 2023 were in line with previous years, and potash affordability has become more attractive. According to data from International Fertilizer Association, **global potash fertilizer capability forecasts** are dependent on Belarus´ ability to grow its alternative market routes and are predicted to expand from 46,7 million tons in 2022 to 54,6 in 2027, a growth rate of 17%[44]. Nutrien estimates **global potash total demand to strongly increase** from 65-67 million tons in 2023 to 67-71 in 2024 and to 70-75 in 2025, since this has been the historical behaviour after years with below-trend demands, like the one we experienced in 2022. Taking all that into account, after an all-time high year of 2022 for **potash net selling prices**, these are projected to suffer a large decrease of 50% in 2023, declining then until reaching pre-covid values in 2025[45]. After that, prices are estimated to keep increasing at 2% until 2032, and at 1% onwards. With the decrease in prices, **potash sales (in tons)** are predicted to grow 4% in 2023 and 2024, and 2,8% in 2025, in line with the company´s expectations for this market. After that,

Figure 20: Potash fertilizer capability forecast from 2022 to 2027 (millions of tons). Source: IFA.

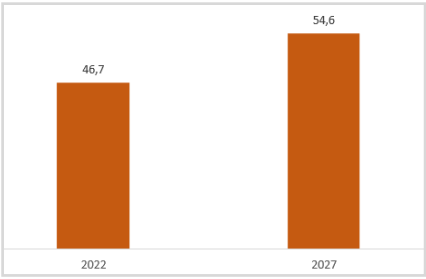
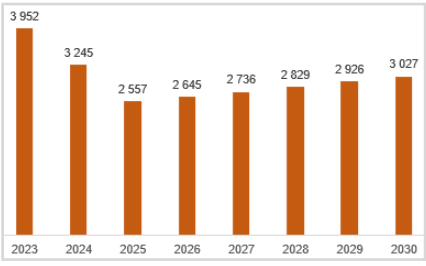


Figure 21: Potash segment revenue forecast from 2023 to 2030 ($ billions).



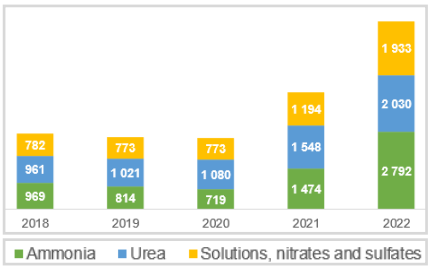
[44] International Fertilizer Association data only accounts for Potash sold with intentions to be used as a fertilizer, excluding other uses for Potash that were previously mentioned.

[45] Source: Fitch Ratings. Fertilizer Price Assumptions.

growth is expected to stay at the half of that value, at the 1,4% level. Therefore, **total sales** are predicted to strongly shrink until 2025, increasing then onwards.

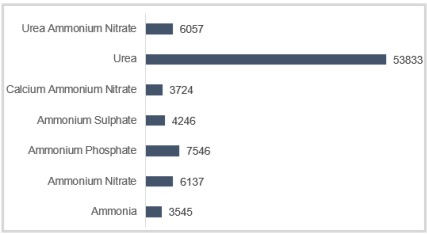
- Nitrogen

Figure 22: Nitrogen revenues by sub-segment from 2018 to 2022 ($ billions). Source: Nutrien.



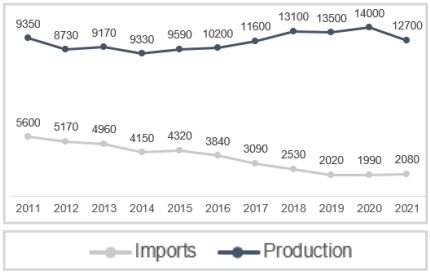
As mentioned in the industry analysis topic, this market is divided into 3 different segments, in Figure 22, it can be observed the contribution that each sub-segment provides to the overall sales of the nitrogen segment. In the global market, the **ammonia and urea** sections are **clearly** the most important ones, but for different reasons. **Urea is by far the most consumed,** according to the IFA, nitrogen-based fertilizer in the world, with 53,8 million tons consumed in 2021, with **ammonium nitrate** being the closest one (6,1 million tons). While the consumption of ammonia is relatively low (3,5 million tons in 2021), its importance comes from the fact that it serves as an input for all other nitrogen-based fertilizers, so it is actually the second most produced (approximately 150 million tons in 2021). Compared to 2022, the uncertainty regarding the Ukraine war has started to decrease, with the expectation that the nitrogen-based fertilizer markets will return to their **long-term trends in 2025**, as the market share left by Russia in the international market is filled by countries such as Canada or the US. Nonetheless, the short-term supply will still be dependent on the outcome of western trade restrictions on Russia exports and if any trade arrangement between Ukraine and Russia can occur.

Figure 23: Nitrogen fertilizer consumption by type in thousands of tons (2021). Source: IFA.



Ammonia In the **Ammonia** market, **India and the US were the two largest importers** in the world in 2021. Despite representing almost 8% of the world's production of ammonia, that is still not enough to meet the domestic demand, so **India** relies on imports of ammonia mainly from Middle Eastern countries(46). The US ammonia market is one of the largest in the world, with the US being the world's **3rd largest producer**, but also being a net importer. The country has been gradually decreasing its ammonia imports, with **37%** of the ammonia used in the US in 2012 being imported, compared to **14%** in 2021, which happened because some of the plants that were closed in the beginning of the century(47) started to reopen, increasing the US production capacity. Considering the previously mentioned factors, the **sales volume** for 2023 is expected to increase by 2,8% considering Nutrien´s sales in the first 9 months of the year. For the period between 2024 and 2029 the growth is expected to slow down to 1,25%(48), after 2030 a growth of 1,4% per year is expected(49). Since ammonia is an input for

Figure 24: US Ammonia imports and production evolution (thousands of tons). Source: USGS.



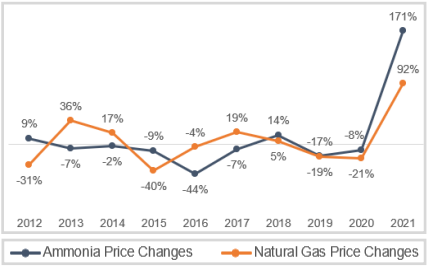
46 Russia, Saudi Arabia, and Qatar were the 3 largest Ammonia import sources of India.

47 Some US Ammonia plants were forced to close in the beginning of the century, due to the high natural gas prices.

48 CF Holdings forecasted the market demand for nitrogen fertilizers to increase between 1% and 1,5% in this timeframe.

49 Source: ACS Energy. Ammonia and Nitric Acid Demands for Fertilizer Use in 2050.

Figure 25: Ammonia vs Natural Gas price changes from 2012 to 2021. Source: USGS and EIA.



all other nitrogen-based fertilizers, its price trend is the most important to understand. According to the literature(50), **ammonia prices tend to be cyclical** with higher prices at the beginning of the year, and the prices are also very correlated across regions. Two of the most studied factors to impact the price of ammonia are **corn and natural gas prices**. **Natural Gas is the main input** used to produce ammonia, it represents 72%–85% of the costs of producing ammonia, so naturally there is expected to be a **positive correlation** (Figure 25) between natural gas prices and ammonia prices. The correlation between ammonia and corn prices is even **stronger** than the one between natural gas and ammonia, the explanation is that when corn prices increase, producers will have the incentive to produce more quantity of corn, leading to higher use of fertilizers. Considering the **average selling price** for ammonia in the first 9 months of the year and the previously mentioned cyclicality, the price is predicted to decrease by 51% in 2023, for 2024 the price is expected to decrease by roughly 21%(51). From 2010 to 2020, the price of ammonia in the US increased on average 1,75%(52) per year, and since the market conditions were similar to the ones expected after 2025, we assumed that ammonia prices would grow each year at 1,75% after 2025.

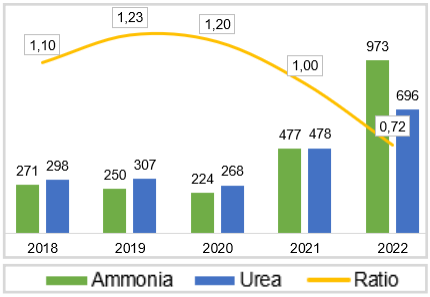
Urea Before the start of the war between Russia and Ukraine, **Russia was the world's largest exporter** of both Urea and Ammonia, but due to the restrictions imposed by Western countries, Russian exports decreased significantly. One of the strategies used by Russia to mitigate its losses was to **export Urea to India at a discounted price**, which benefited both of them, as India was able to buy urea at a lower cost and Russia was able to sell some of its production. In the past few years, **Brazil and India have been the two largest importers of Urea** in the world. Brazil, unlike most Western countries, decided to not impose trade sanctions on Russia, so Russia actually remained one of the highest exporters of urea to Brazil. One of the major changes in the global Urea market happened at the end of 2022, when **India** announced that it plans to stop the imports of urea by 2025, as they intend to build 5 different plants to produce it locally and **end their dependence on other countries**. Another major change in the urea market happened in 2021, when **China** introduced **restrictions** on urea exports due to the high prices in the urea market to protect its internal demand. A similar situation happened again in September of 2023, after a 50% increase in prices since July, China asked its producers to stop exporting urea and prioritize domestic consumption. This behaviour causes majors disruption in the global urea market (particularly in India) since China was the world's largest exporter of urea in 2021.

50 Source: Schnitkey, G. (2016). Anhydrous Ammonia, Corn, and Natural Gas Prices Over Time.

51 Source: Fitch. Fertiliser Price Assumptions.

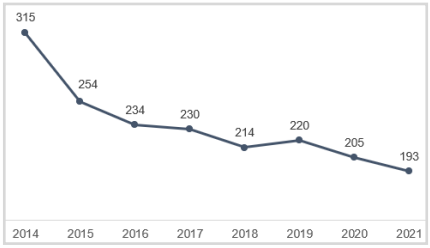
52 Source: USGS. Annual Publications.

Figure 26: Nutrien´s Ammonia and Urea net selling price evolutions from 2018 to 2022 ($/ton) and respective ratio. Source: Nutrien.



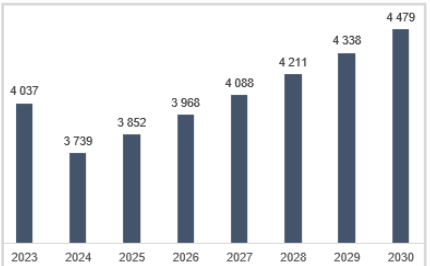
Considering the current market scenario, the expectation is that the **sales volume for urea** would increase by 4%[53] in 2023, by 1,25%[13] each year from 2024 to 2029, after 2030 the sales volume is expected to grow at the historical CAGR verified from 2001 to 2021 in the nitrogen fertilizer market of 1,5%. To understand the **price of urea in the future**, it is important to analyse the relationship between ammonia prices and urea, considering that anhydrous ammonia is an input in the production of urea, it's normal that the coefficient of correlation between the prices of both materials is very high. According to the USDA, from 2010 to 2020 the **price of urea was on average 1.23 times higher than the price of anhydrous ammonia**. Looking at Figure 26, it can be seen that this ratio for Nutrien was close to the market average. However, this relation was disrupted in 2022 due to the demand for ammonia increasing much more than the demand for urea. Nonetheless, it's expected that the **price ratio will return to the historical average** in the long run. Due to the current disruption still felt in the market, we used the ratio of 1[18] for 2023, afterwards, we assumed the ratio would be fixed at 1,23.

Figure 27: Ammonium Nitrate consumption evolution (thousands of tons). Source: IFA.



Solutions, Nitrates and Sulfates As previously mentioned, this segment of the nitrogen market is represented by many products, so to analyse this segment we decided to focus on 2 specific products, ammonium nitrate and UAN. **Ammonium nitrate** is one of the most popular fertilizers due to its high nutrient content, it also has industrial applications being used in the production of herbicides or mining explosives. Its production process consists of reacting ammonia gas with nitric acid, excess water is then removed, and the solution is cooled. Ammonium nitrate's popularity as a fertilizer has been decreasing in the past few years (Figure 27), it has been slowly replaced by Urea and UAN since they have a higher nitrogen content and are more stable. Despite this, growth in this market will be driven by the expected higher demand in mining activity[54] in the future. On the other hand, **UAN** is produced by combining ammonium nitrate and urea in their liquid forms, due to its versatility (it can be mixed with other chemicals) and accessibility, it's the most popular liquid nitrogen fertilizer. In 2021, the US represented roughly 50% of the consumption of this product, while currently its inventories of UAN remain relatively low, so the demand for UAN in the American market is projected to increase in 2024. Another important development in the market is the price increase in the second half of 2023 due to production curtailment[55] in Europe, these struggles of European producers can benefit North American companies in 2024 since they have more stable access to natural gas.

Figure 28: Nitrogen segment revenue forecast from 2023 to 2030 ($ billions).

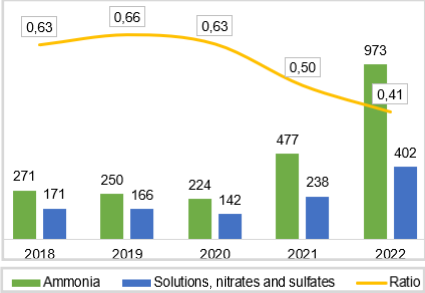


53 Estimates based on Nutrien´s Q3 report.

54 Prices of metals such as zinc or nickel are forecasted to increase in the following years. Source: S&P Global.

55 The main cause was higher natural gas prices.

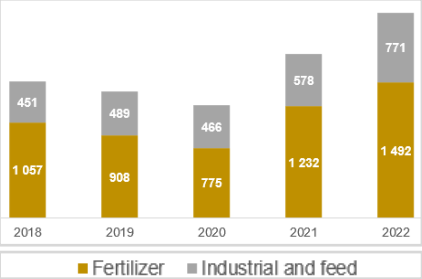
Figure 29: Nutrien´s Ammonia and Solutions, Nitrates and Sulfates net selling price evolutions from 2018 to 2022 ($/ton) and respective ratio. Source: Nutrien.



Considering the forecasts for the 2 products, the expectation is that **Nutrien's sales volume** will increase by 3,3%[18] in 2023, and 1,25%[13] between 2024 and 2029, after 2030 the growth is expected to remain at 1,5%[56] each year. This segment has a large variety of products, being much harder to forecast it, when compared to the other two, since each product has different characteristics resulting in different price patterns in the future. Considering that before the start of the war, **the ratio between the selling price of ammonia and the products sold in this segment was 0,63**, we assumed that after 2024 the **price relationship would remain at that value**, for 2023 the ratio of 0,5[18] was used since it reflects more accurately the current market conditions.

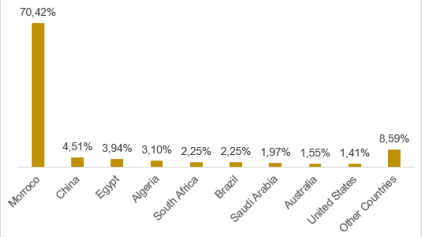
- Phosphate

Figure 30: Phosphate revenues by sub-segment from 2018 to 2022 ($ billions). Source: Nutrien.



Fertilizers Similarly, to the nitrogen-based fertilizers, Nutrien was responsible for 3% of the phosphate-based fertilizers production in the world in 2021, and its main export destinations being **India and Brazil**. Nutrien produces all its phosphate-based fertilizers in 4 smaller plants and 2 main production facilities where phosphate rock is also mined[57], one in Florida and one in North Carolina. Prior to 2022, India was focused on decreasing its dependence on imports of phosphate-based fertilizer, by using policies to foster domestic production. These policies led to a decrease of about **30%** in phosphate-based fertilizers from 2020 to 2021, making India the 2nd largest importer in the world. These policies were halted when in 2022, due to the high market prices for both DAP and MAP India approved an **$8 billion subsidy** to protect its farmers and ensure that the crop application season would run smoothly. India was able to buy DAP and MAP at a **10% discount** (compared to the market price) from Russia, increasing Russia's share in the Indian market at the expense of other countries such as China. This policy was introduced in the second half of 2022 but in September of 2023 Russia stopped selling fertilizers at a discount, since fertilizer prices have been decreasing. **Morocco has historically been one of the two largest exporters** of both DAP and MAP in the world, with its privileged geographic location being one of the key factors, since it contains about **70% of the world's reserves** of phosphate rock (Figure 31), the key input in the production of both fertilizers. Due to having access to a high amount of this natural resource, it naturally gives Morrocco some power to influence market prices. For example, after the increase in ammonia prices in 2021, Morocco has been decreasing its exports of both DAP and MAP, in order to maintain the market price of both products high. Considering the market trends mentioned above and Nutrien's sales volume in the first 3

Figure 31: Phosphate rock reserves by region (2021). Source: USGS.



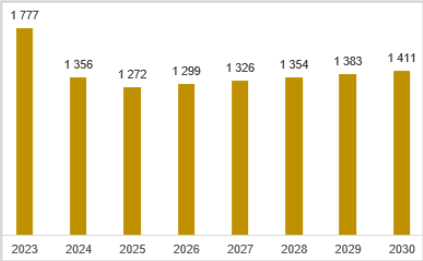
[56] As mentioned before, the historical CAGR verified from 2001 to 2021 in the nitrogen fertilizer market.

[57] All phosphate rock used by Nutrien is extracted from these two mines.

quarters of 2023, the expectation is that **sales volume** this year will increase by 3,5%. For 2024, it's forecasted that the **worldwide demand for these products in 2024 will be between 73 and 76 million tonnes**, so we assumed that the sales volume would increase by 1,5%(58). In the period between 2025 and 2029, the expectations are that **growth stabilizes at 2% per year**(23), after 2030 the sales volume is expected to **grow at the annual rate of 1,9%**(59) per year. For the **average selling price of phosphate fertilizers** in 2023 the expectations are that the price will decrease by 30% considering the price in the first 9 months of the year. In 2024 and 2025 we projected that the selling price would decrease by 31% and 3%(60) respectively. From 2010 to 2020 (we used this time frame since the stability in the market environment at the time was similar to the expectations for the phosphate fertilizer market in 2026 and afterward) the price of DAP in the world increased on average 2,83%, so we forecasted the average selling price of phosphate fertilizers to increase by that amount each year after 2026.

Industrial and Feed As previously mentioned, phosphoric acid has other applications besides being used in the production of fertilizers, 2 of the most popular types of phosphoric acid used in industrial production are food-grade and industrial-grade. Food-grade phosphoric acid is used in the food and drink industry, to increase product longevity, as an additive or flavour enhancer, while the industrial-grade is more concentrated and used for example in metal cleaning or in the production of batteries. According to the Food and Agriculture Organization (FAO), the demand for processed and packaged food tends to be correlated with growing economic activity, since Nutrien's two biggest markets for food-grade phosphoric acid are Canada and the US, considering the current macroeconomic conditions in both countries, in the short term, the processed and packaged food market will stagnate a bit, with significant growth only expected in 2026. All around the world electric vehicles are becoming more popular(61) increasing the demand for car batteries both in the production of new cars and in the maintenance of old ones. In the medium/long term, this will be one of the key drivers, as the demand for industrial-grade phosphoric acid for use in lithium iron phosphate battery manufacturing is expected to increase as well, particularly in China. In 2023 **Nutrien's sales volume** is expected to decline 14%(18) due to the higher prices in the market, from 2024 onwards the expectation is that the sales

Figure 32: Phosphate segment revenue forecast from 2023 to 2030 ($ billions).



58 Mosaic forecasted the market demand for phosphate fertilizers to increase between 1% and 2% in 2024, and 2% from 2025 to 2029.

59 This was the CAGR verified in the Phosphate market between 2001 and 2021.

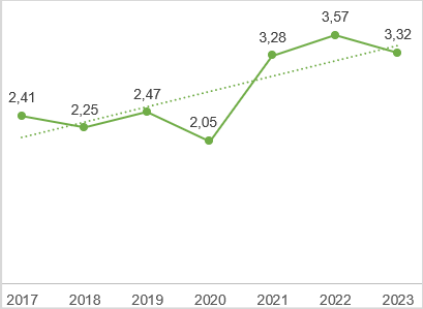
60 Source: Fitch Ratings. Fertilizer Price Assumptions.

61 One big step in this direction happened in 2022 when the European Parliament approved the ban of the sales of new combustion engine cars by 2035.

volume will increase 0,99%[62] each year. Considering that this is a small section of the phosphate market, its hard to make a reliable price forecast, so we based ou predictions on the future movements in the price of phosphate rock[63]. For 2023 it is expected that the price will increase by 5%[18], while for 2024 and 2025 it was assumed that **prices** will decrease by **15% and 14%** as forecasted by the World Bank, respectively, after 2026 we assumed that the prices would grow at 0,51%[64] each year.

Freight, transportation and distribution

Figure 33: U.S. Regular Gasoline Prices ($/gallon). Source: EIA.



Freight, transportation, and distribution represent an important part of operating expenses in the potash, nitrogen, and phosphate segments. Due to higher oil prices, gasoline prices (Figure 33) have been increasing in the past few years, driving up transportation costs. EIA forecasts gasoline prices to increase by roughly 6% in 2024, considering the positive trend expected for gasoline prices in the future, we expect that freight, transportation, and distribution expenses **will increase as % of sales each year by 0,1% for the next 5 years** and remain **constant afterward.**

Operating Expenses

Nutrien Ag Solutions Representing 56% of the total sales in 2022, this segment counts with more than **2000 retail selling locations** and more than **4000 crop consultants** to provide more than 500.000 client accounts. Within the crop nutrients/fertilizers section, the operating costs will be highly **dependent of the ones from potash, nitrogen, and phosphate** productions, as these segments produce the macronutrients needed for the fertilizers. Relatively to the crop protection products and seed sections, Nutrien has both private label and third-party supplier products, meaning that operating costs will follow the same trend of each market. Lastly, the consulting services costs provided by Nutrien Financial, and the operating costs of the "Services and other" and the "Merchandise" departments will also progress according to the projections for the market demand of the company. **Cost of sales** are expected to stabilize at **75%** of sales in 2025. The remaining expenses of the retail segment will follow the revenues, with the **selling expenses fixed at 17% of sales**, while the **general and administrative** will represent a lower percentage of sales, with only **1%**.

Potash Being the largest potash producer globally, Nutrien represents **57% of the North America production**, having 6 mines in the Saskatchewan region.

[62] CAGR of industrial phosphoric acid produced in the world from 2009 to 2021. Source: Statista.

[63] The main input of phosphoric acid.

[64] Prices of phosphate rock in the US increased on average 0,51% per year from 2011 to 2020, source USGS.

The mines operations occupy approximately 282.000 hectares out of the 383.000 that the local Ministry of Energy and Resources granted the company the exclusive right to mine. 5 of the mines produce mainly operating with convention mining methods, whereas Patience Lake mine uses solution mining. In 2022, **production costs** increased due to higher royalties resulting from increased net realized selling prices, and due to lower production volumes and higher maintenance activities. Costs are expected to follow the same path as the production volume, being always subject to usual risks, as mechanical failures, delays, unexpected geological conditions, among others. Thus, they are projected to progressively **increase to 30% of sales in 2025, stabilizing onwards**. In contrast with the retail segment, the potash segment is projected to have a lower weight of **selling expenses, and general and administrative expenses** in percentage of its revenues, fixed at **0,40% and 0,30% of sales**, respectively. However, it also accounts with the provincial mining taxes imposed by the Saskatchewan authorities on the potash extraction activities, where the potash **production tax** is expected to be fixed at **12% of sales**, and the **resource surcharge** at the **3,50% level.**

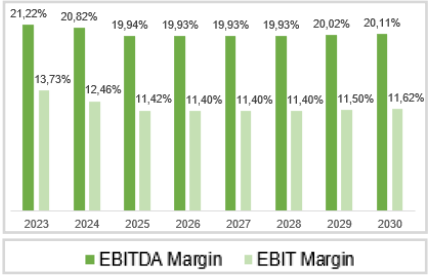
Nitrogen Nutrien's access to **low-cost Natural gas**, is one of their primary sources of **competitive advantage** in the nitrogen segment, compared to for example ammonia producers in Europe. In 2023, natural gas prices decreased substantially due to relatively high production and high inventories, while the expectations for 2024 is that US natural gas prices **will increase by around 17%** as a consequence of the increase in demand for US exports of natural gas. If ammonia prices don't increase in the same proportion, this can potentially decrease Nutrien´s margin in this segment. Another source of risk in this segment is that the long-term natural gas contract for the **Trinidad and Tobago plant expires in 2023**, and is still being renegotiated, depending on terms of the negotiation, Nutrien's **production cost of ammonia and urea might increase**. This plant has been having unplanned outages and natural gas curtailments in the past years, that have been causing some production constraints in that plant. In the future **Nutrien might need to invest in plants infrastructure** to fix these **problems. Both selling expenses and general and administrative expenses** have decreased as % of sales in 2021 and 2022, but the expectations are that in the future they will be closer to (but remain below) pre-pandemic levels, so we projected both captions to remain fixed at **0,7% and 0,5% of sales**, respectively, in the future.

Phosphate DAP and MAP prices are mainly influenced by the prices of **phosphate rock, sulfuric acid, and ammonia**, the three key inputs in their production process. Sulfuric acid is one of the most popular chemicals in the

world, it's obtained by burning sulfur, and its main use (60% in 2020) is as input in the production of phosphoric acid. **Prices of sulfur reached all-time highs** in 2022 due to an increase in demand and some constraints in the supply chain. As the market stabilizes in 2023, prices have been decreasing at a steady pace but are still expected to be above pre-pandemic levels. Phosphate rock is the key input in the production process of DAP and MAP and, particularly in the short run, their prices are affected by shocks in the price of phosphate rock. These shocks still have some effects in the long-term price, but smaller than in the short-term. The price of phosphate rock was on a downward trend since 2013, but when the COVID-19 pandemic began, its price skyrocketed[65] **reaching price levels only seen in the 2008 crisis**, having remained stable at a high level in 2023. As production starts to increase at the final months of 2023, prices are expected to start to decrease, but it will still take some years for the prices of phosphate rock to reach pre-pandemic numbers. The final input in the production of phosphate-based fertilizers is ammonia. In the previous topic regarding the market of nitrogen-based fertilizers, we already addressed our expectations for the future behaviour of ammonia prices. Regarding the other operational expenses in this segment, **selling expenses** have been decreasing, so they were forecasted to be constant at **0,25% of sales**, while **general and administrative expenses** were assumed to remain fixed at **0,6% of sales** since in the previous years they have fluctuated around this value.

EBIT and EBITDA margins

Figure 34: EBITDA and EBIT Margins evolution forecast from 2023 to 2030.



EBIT and EBITDA margins (Figure 34) are forecasted to decrease from the high levels in 2022 and 2021, but remaining above the pre-pandemic levels, as a consequence of the lower prices of fertilizers in 2023 compared to historically high values in 2022. Nonetheless, after 2023 it is expected that both margins will remain relatively stable with a slight positive trend, as more stable market conditions are expected from 2024 onwards, since inflation is starting to decrease in North America and Europe and the war between Russia and Ukraine has stabilized. Combined with the low threat of new competitors in the retail and nitrogen segment, these factors are expected to provide **long-term stability** in terms of both EBIT and EBITDA margins in the future.

Capex

Nutrien Ag Solutions In 2022, Nutrien continued its expansion in Brazil, by acquiring Casa do Adubo S.A. This strategic investment extended the company´s presence in the country from 5 states to 13, adding 39 retail locations and 10

[65] Prices in January of 2023 were approximately four times higher than the ones in January of 2020.

distribution centres to its network. 20 other acquisitions were made in Brazil, US and Australia, for an investment amounting to $400 million. To forecast the PPE in the retail segment, we used as an indicator the ratio of **PPE/Sales** of the retail segment. Considering the continuation of the expansion, it is expected that the ratio increases in 2023 to 45% and to 50% in 2024, remaining at 50% in the future. For the **potash, nitrogen, and phosphate** segments due to their more specific characteristics the most accurate way to forecast future PPE, would be to explore the relationship between the **PPE and the tonnes sold** in the respective segment.

Potash In 2022, Nutrien announced a capital investment that will increase their annual operational capability of potash to 18 million tonnes until 2026, representing a low capital cost of $150 to $200 per tonne. This investment comes in line with the projections for the potash market demand, since in 2022 the ratio of **PPE/Tonnes Sold** was at 39,87%, and we expect that the PPE in this segment will remain fixed at 39% of tonnes sold.

Phosphate In the phosphate segment, Nutrien has 2 phosphate mines from where it extracts all the phosphate rock used in its production process, the Aurora mine(66) in North Carolina, and the White Springs mine in Florida. One of **Nutrien's biggest challenges in the future will be the future of the White Springs mine**, this mine has an expected life of only 9 more years, taking that into account we consider that there are 2 different approaches that the company can make. In the first approach, when the mine ends its useful life, Nutrien would keep the plant operating by buying phosphate rock from the market. It could buy it from 1 of the 9 other existing mines in the US operated by their competitors, or it could buy from an international company, most likely from OCP(67). In this last case, transportation costs would be a key factor to take into account and the quality of the product might slightly different, which may result in some changes in the production process. Another hypothesis would be that the company would convert the plant from a plant that produces Phosphate-based fertilizers to one that produces Nitrogen-based fertilizers. A similar situation already happened in **2019**, when Nutrien converted its **Redwater phosphate facility** to an ammonium sulphate facility. This is the most likely scenario since Nutrien already dealt with the transformation of another plant in the same segment and would allow to increase production capacity in the Nitrogen segment. This could cause some disruption in the segment, as the transition might not be smooth, nonetheless, the remaining infrastructure in this segment would still be able (with some small investments over time) to meet the forecasted demand in the future. For 2023 we forecast **PPE to represent 79% of tonnes sold**, just slightly above the 78,31% in 2022,

66 This mine is expected to have a productive life until 2050.

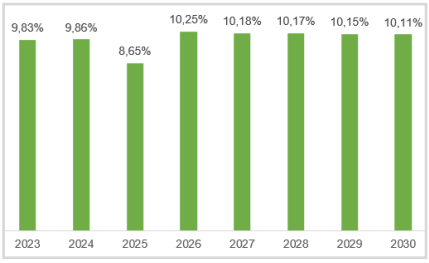
67 OCP is the state-owned firm that controls phosphate mining in Morrocco.

considering the investments over time to maintain or improve production capacity is expected to remain at 79%.

Nitrogen In this segment, no major change is expected, with **PPE as % of tonnes sold** being 57% in 2023 and remaining fixed at that % until 2033, where the ratio of PPE/Tonnes Sold would increase to 59% considering the new plant that would be added to the nitrogen segment[68].

Corporate and Others Finally, since this segment doesn't have sales, we forecasted the **capex based on the total sales of the company**, keeping this ratio fixed at 2,5%, taking into account the value in the previous 5 years and no plan by Nutrien to expand it.

Figure 35: Total Capex forecast from 2023 to 2030 (as % of total revenues).



In 2023, **capex (as % of sales)** is expected to slightly decrease given the smaller investments in the Retail segment compared with the all-time high investments of the previous year. Afterwards, its value is projected to remain reasonably stable between the 9% and 10% levels, with exception to the year of 2032, where the White Springs phosphate mine is anticipated to close activities, negatively impacting the capex on the phosphate segment. **Capex** is predicted to stabilize between the 5% and 6% of sales for the retail segment, while for the Potash, Nitrogen, and Phosphate ones, the values are between the 14% and 18% levels.

Net Working Capital

Receivables were forecasted using the Average Collection Period, following the trend from the 5-year period from 2018 to 2022, and company projections on its 3rd quarter report. On the retail segment, the Average Collection Period is expected to increase and to remain constant at the all-time high value of 90 days, which will impact Receivables to decrease in 2024 and 2025, but to grow in the remaining years. In the remaining segments, it is predicted to remain constant at a value within the average of the last 5 years: 90 days for Potash, and 35 for Nitrogen and Phosphate. The same reasoning was applied to the **Payables,** but this time using the **Average Payable Period**. Based on the trend of the past 5 years, the Retail and the Phosphate segments are projected to remain stable at 130 and 120 days. The Potash and Nitrogen ones showed higher volatility, so its values are expected to decline in the first years of projection - until 300 days in 2027 for Potash (where the volatility was higher due to the boom in revenues in this segment), and 160 days in 2025 for Nitrogen - remaining constant after that. Consequently, Payables are predicted to follow the same trend. For the **Inventories**, the projection was made in **percentage of COGS**, analysing again the trend of the past 5 years. In the Retail segment, Inventories are expected to

[68] This number assumes that the project would take 1 year and cost 200$ million, the same value as the previous phosphate plant that was converted to the nitrogen segment, which would roughly represent 2% of tonnes sold.

grow and remain at 35% of COGS from 2024 onwards (in 2023 inventories were at a lower % of COGS, due to the high-cost inventory bought in 2022), while the other segments are expected to stabilize in 2023 – 35% for Potash, 22% for Nitrogen, and 37% for Phosphate of their respective COGS. Therefore, Inventories are expected to grow in line with COGS. The **remaining core balance sheet items** were projected as a percentage of revenues. **Non-Core items** were assumed to remain constant, except for investments, which are estimated to grow at 2% per year (in line with FED target inflation).

Figure 36: Retail Return on Investment Capital forecast.

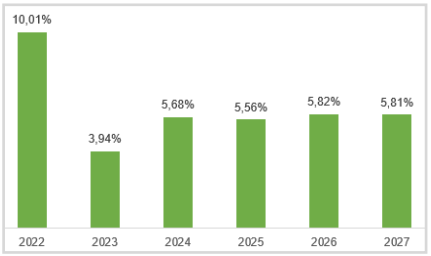


Figure 37: Potash Return on Investment Capital forecast.

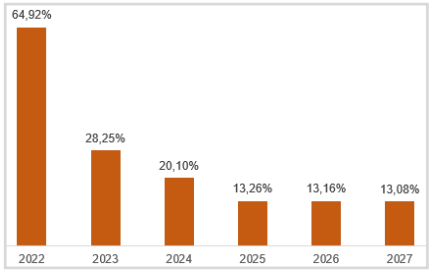


Figure 38: Nitrogen Return on Investment Capital forecast.

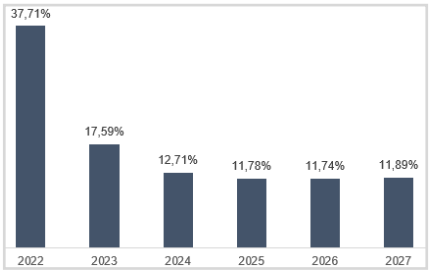
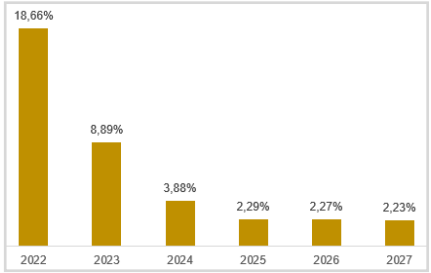


Figure 39: Phosphate Return on Investment Capital forecast.



Cash-Flows Analysis

Retail In the short term, the retail segment suffers from high volatility in its cash-flows, given the decrease in prices from crop nutrients, as they represent roughly half of the revenues in this segment. When the prices start to stabilize after 2026, the cashflows start to increase, taking benefit of the investments made in 2022, such as **expansions of the retail segment to the Brazilian market**. Despite having a low operational margin, as expected in more traditional retail businesses, due to the high asset turnover this segment can have a good and **stable ROIC in the forecasted period**.

Potash and Nitrogen The cash flows from both segments are very similar in the forecasted period, the major difference is that the potash segment is very affected in the short term by the lower prices, and the expected increase in demand is not enough to compensate. On the other hand, the prices for the Nitrogen segment are predicted to have a faster rebound from the peaks of 2022, being forecasted that from 2026 onwards the **Nitrogen segment will have the largest cash flow of all Nutrien's segments** (except in 2033). Both segments have the benefit of having large operational margins, due to them being very capital-intensive, meaning that the high initial fixed costs are diluted through time, having then lower operational costs, so they consequently have a **much larger ROIC than the Retail segment**.

Phosphate The phosphate segment is actually the least impacted segment from the drop in fertilizer prices in 2023, having positive cashflows every year due to the **lower capex costs**, after 2026, the cash flows from this segment stabilize but a very low number when compared with the other segments. This fact is also exhibited in the **ROIC**, as the operational margin is very small and is not able to compensate the small asset turnover.

DCF Valuation

Valuation Framework

Figure 40: Cost of Debt calculation.

Cost of Debt	
YTM (5,25% Coupon Bond with Maturity 2045)	5,66%
Probability of Default	0,19%
Loss Given Default	68,90%
Cost of Debt	**5,53%**

Figure 41: Cost of Equity calculation.

Cost of Equity	
Risk Free Rate	3,91%
Market Risk Premium	3,52%
Levered Beta	0,95
Cost of Equity	**7,24%**

Figure 42: Historical D/V ratio. Source: Refinitiv.

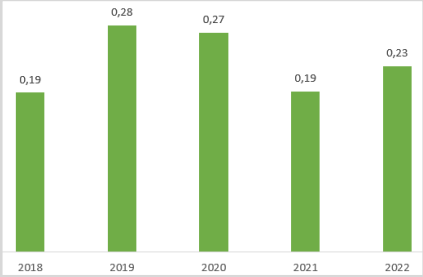


Figure 43: WACC final outputs.

WACC	
D/V Target	22,58%
E/V	77,42%
Statutory Tax Rate	27,00%
Cost of Debt	5,53%
Cost of Equity	7,24%
WACC	**6,52%**

Figure 44: DCF price per share computation.

Valuation Summary (Base Year 2024)	
Total Discounted FCF	17 250
Terminal Value	22 626
Enterprise Value	39 876
Net Debt [(1)]	9 306
Equity Value	30 570
Number of Shares Outstanding (Millions)	495
Price per Share	**61,81**

After forecasting **Nutrien's future cash flows** until the firm's growth stabilizes and reaches the steady state in **2040**, taking into account the firm's future intentions and expectations, while also considering the past trends and future market conditions, both from a supply and demand perspective in all segments of the company. **The DCF valuation** method was then applied, appropriately discounting the firm´s future cash flows at the **weighted average cost of capital (WACC)** and to account for the firm cash flows after **2040**, the terminal value was calculated using the **steady-state growth rate of 2,62%.**

WACC Calculation

To accurately assess the proper cost of capital, it was first necessary to estimate the following figures: cost of debt, cost of equity and target capital structure. Firstly, to achieve the cost of debt, a publicly traded bond issued by the company, with a 22-year maturity and a coupon rate of 5%, was considered, currently that bond has a YTM of 5,66%[69]. Then, considering Nutrien's credit rating, Baa2 in Moody´s and BBB in S&P´s, a 31,10%[70] recovery rate for senior unsecured bonds and a 1-year probability of default of 0,19%[71] were accounted, resulting in a **cost of debt of 5,53%**. Furthermore, the **CAPM** model was used to estimate the cost of equity figure. The current yield on a 10-year US Treasury Bond was used for the risk-free rate[72] (3,91%), and the market risk premium was considered to be the US market equity risk premium[73] (3,52%). We opted to use the US market as a reference because many of Nutrien's operations are located in the US, and the overall larger consumer market for its products is the US. To calculate levered Beta, the monthly returns of Nutrien's shares were regressed with the monthly returns of the S&P 500, from October of 2018 to October of 2023, resulting in a levered beta of 0,95, with a 95% confidence interval of [1,34;0,55]. Using the CAPM formula, the **cost of equity output was estimated to be 7,24%**. Lastly, observing the company´s capital structure behaviour over the last 5-year period, we can observe that the company's D/V ratio has been relatively stable, so the target D/V ratio was assumed to be the **D/V ratio** in 2022 (**0,23**). Taking into consideration that Nutrien´s **statutory tax rate is 27%**, an **WACC output of 6,52%** was computed.

Terminal Value

69 Source: Frankfurt Stock Exchange, consulted on 15/12/2023.

70 Source: S&P 2022 Annual Global Corporate Default And Rating Transition Study.

71 Source: Moody's Annual Default Study 2022.

72 Source: US Department of Treasury, consulted on 15/12/2023.

73 Source: Refinitiv.

To calculate the **terminal value**, the final forecasted free cash flow was multiplied by (1+terminal growth rate ("g")), and to that value, the growing perpetuity formula was applied, with the growth rate being **2,62%** (terminal growth rate) and the discount rate being the previously mentioned **WACC**. That number was then discounted another 16 years at the WACC, since the valuation date is 2024, and the final forecasted year was 2040.

Investment Decision

Figure 45: DCF investment decision.

Investment decision	
Current Share Price	54,89
Forecasted Share Price	61,81
Dividends [2]	1,68
Capital Gains	12,61%
Dividend Yield	3,06%
Expected Return	15,68%
Signal	**Buy**

The total discounted free cash flows from 2025 to 2040 were added up to the terminal value to achieve the **enterprise value** (EV). After subtracting the Net Debt (the value includes non-controling interest) from the EV, the total value of Nutrien's equity was obtained. Dividing that value by the 494,547 million shares outstanding (number mentioned in the 2022 annual report), the **target price of $61,81 was achieved**. Considering that Nutrien's average payout ratio in the last five years was **41,96%**, it was assumed that the **payout ratio** in 2024 would be that value. Considering the forecasted share price ($61,81) and the forecasted dividends in 2024 ($1,68), since the **current share price is $54,89**, the decision would be to **buy Nutrien's shares**.

Sensitivity Analysis

Figure 46: Sensitivity analysis to changes in WACC and g.

g \ WACC	$61,81	5,87%	6,19%	6,52%	6,84%	7,17%
2,35%	$73,72	$65,64	$58,83	$53,02	$48,00	
2,49%	$75,96	$67,42	$60,27	$54,20	$48,98	
2,62%	$78,38	$69,34	$61,81	$55,46	$50,02	
2,75%	$81,00	$71,40	$63,46	$56,79	$51,11	
2,88%	$83,85	$73,62	$65,23	$58,22	$52,28	

In the last few years, inflation has been the main concern in the global economy. The changes in prices can strongly impact the economic future of a company and, consequently, its share price. Performing a **sensitivity analysis**, it is possible to observe how Nutrien´s share price would react when the **terminal growth rate and the WACC change simultaneously**. The defined range intervals for both variables were fixed between the 90% and 110% values: **5,87%-7,17% for WACC and 2,35%-2,88% for g**. At the **worst-case** scenario, WACC would be 10% higher and g 10% lower, resulting in a share price of **$48,00, a 22% decrease**. **On the other hand**, if WACC was 10% lower, and g 10% higher, the share price would **jump 36% to $83,85**. Therefore, it is possible to see that the firm´s stock price is **highly sensitive** to changes in both parameters.

Multiples Valuation

Figure 47: Group of possible peers for the multiple valuation.

Peer	Market	Included
The Mosaic Company	Potash/Phosphate	Yes
FMC Corporation	Crop Protection	Yes
Corteva Inc	Crop Protection/Seed	Yes
CF Industries Holdings	Nitrogen/Crop Protection	Yes
Yara international	Nitrogen/Crop Nutrients	Yes
FertiGlobe	Nitrogen/Crop Nutrients	Yes
ICL Group Ltd	Energy/Industrial	No
Intrepid Potash Inc	Potash/Crop Nutrients	No

A multiple valuation is an important step on assessing a company´s fair value, as crucial insights might be taken out from its **group of peers**. Thus, to correctly create this group, several criteria was followed to ensure the peers would give, in fact, a good estimate on Nutrien´s share price: **similar industries and market capitalization values** and must be a **publicly traded company**. The following

Figure 48: P/E, P/B and EV/EBITDA multiples of the group of peers. Source: Refinitiv.

Peers	P/E	P/B	EV/EBITDA
The Mosaic Company	10,89	0,95	6,1
FMC Corporation	13,4	2,09	10,34
Corteva Inc	15,51	1,26	10,23
CF Industries Holdings	11,16	2,19	6,57
Yara international	11,61	1,13	5,6
FertiGlobe	15,6	3,4	6,39

Figure 49: Forward P/E multiple share price calculation and investment decision.

Forward P/E	
Multiple	12,51
Nutrien EPS 2024	4,01
Price Target 2023	50,11
Cost of Capital	6,52%
Price Target 2024	53,38
Current Share Price	54,89
Price Target 2024	53,38
Dividends (2)	1,68
Capital Gains	-2,75%
Dividend Yield	3,06%
Signal	**Hold**

Figure 50: Forward P/B multiple share price calculation and investment decision.

Forward P/B	
Multiple	1,68
Nutrien Book Value per Share 2024	64,53
Price Target 2023	108,09
Cost of Capital	6,52%
Price Target 2024	115,14
Current Share Price	54,89
Price Target 2024	115,14
Dividends (2)	1,68
Capital Gains	109,76%
Dividend Yield	3,06%
Signal	**Buy**

Figure 51: Forward EV/EBITDA multiple share price calculation and investment decision.

Forward EV/EBITDA	
Multiple	6,48
Nutrien EBITDA 2024	5 336
Nutrien Net Debt 2023	8 731
Nutrien # shares	495
Price Target 2023	52,27
Cost of Capital	6,52%
Price Target 2024	55,67
Current Share Price	54,89
Price Target 2024	55,67
Dividends (2)	1,68
Capital Gains	1,43%
Dividend Yield	3,06%
Signal	**Hold**

list of companies were then selected to be part of the group of peers: **The Mosaic Company**, headquartered in Florida, is the most similar firm of Nutrien, and it is also a global leader in the crop nutrients market and in the production of potash and phosphate, having a large part of its operations in Canada; **FMC Corporation**, an American firm, is focused on the development and production of crop protection products; **Corteva**, another US-based company, operates in the seed and crop protection fields, as well as in the agricultural consultancy services; Moreover, **CF Industries Holdings**, based on Illinois, is the global leader on the production of hydrogen and nitrogen products, operating in the crop nutrients market; Headquartered in Oslo, Norway, **Yara International** is focused on the production of nitrogen-based products, being present in the crop nutrients and agricultural consultancy markets; Lastly, **Fertiglobe PLC** is an Abu Dhabi based company that operates in the nitrogen-based fertilizers market. Two other companies were considered to be part of the group but were discarded as the criteria were not fully met: **ICL Group Ltd** is an Israeli multinational company which also produces fertilizers, but its business operations are too vast (also operates in the Energy, Industrial, Health & Personal Care, Transportation, Construction, and several other industries); **Intrepid Potash Inc**, located in Colorado, is an American producer of potash fertilizers, but its market capitalization of $255 million is relatively low when compared with Nutrien and the remaining companies of the group of peers (all are valued at more than $6 billion of market capitalization).

Furthermore, to perform the multiples valuation, 3 different multiples were considered: the **price-to-earnings ratio (P/E), the price-to-book ratio (P/B), and the Enterprise Value-to-EBITDA-ratio (EV/EBITDA).** We decided to use the **forward multiples** in all 3 cases because they are forward-looking, meaning that they reflect expectations about the future of the company, although they also have the disadvantage of relying on estimates that might not be accurate. After creating the **peer group of 6 companies** operating in similar segments to Nutrien, the median of each multiple was obtained. For the **P/E multiple**, we multiplied the forecasted Earnings per share for 2024 (EPS) with the median multiple from the peers, arriving to the price target for 2023. That number was then capitalized (using the previously calculated cost of capital) to achieve the 2024 target price of **$53,38**. Then, for the **P/B multiple**, the process was similar, but instead, the median multiple from the peers was multiplied by the forecasted Book Value per share in 2024, the value obtained was also capitalized, achieving a 2024 target price of **$115,14**. Finally, for the **EV/EBITDA multiple**, the median multiple was multiplied by the forecasted EBITDA for 2024, and then the forecasted value of Net Debt in 2023 was subtracted, obtaining the equity value for 2023, which was

Figure 52: Final share target price and investment decision.

Target Prices	
DCF Target	61,81
Forward P/E Target	53,38
Forward P/B Target	115,14
Forward EV/EBITDA Target	52,27
Weights	
DCF Weight	80%
Forward P/E Weight	10%
Forward P/B Weight	0%
Forward EV/EBITDA Weight	10%
Final Target Price	**60,02**
Investment Decision	
Final Target Price	60,02
Current Share Price	54,89
Dividends (2)	1,68
Capital Gains	9,34%
Dividend Yield	3,06%
Expected Return	12,40%
Signal	**Buy**

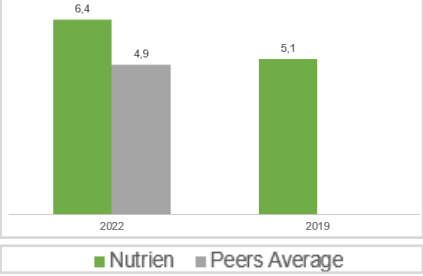
Figure 53: Major potential risks, with respective probability and impact.

Risk	Probability	Impact
Macroeconomic	High	Medium
Russia-Ukraine War	High	Medium
Competition	High	Low

Figure 54: Key factors and applied measures for the 3 different ESG pillars.

Pillar	Topic	Measure
Environmental	GHG emissions	Reduce by 30%
Social	Health/Safety conditions	Improve TRIF and LTIF
Social	Non-discrimination	Clauses in suppliers contracts
Governance	Diversity	Exceed target of women in board
Governance	Cybersecurity	Quarterly training sessions

Figure 55: MSCI ESG Ratings: Nutrien vs Industry average (2022 and 2019). Source: MSCI.



then divided by the number of shares and capitalized, achieving the 2024 target price of **$55,67**. Comparing these 3 values with the ones obtained in DCF valuation, it can be seen that the target price with **P/B multiple is much higher than the ones of the DCF, the P/E multiple** and **the EV/EBITDA multiple** which is a consequence of the high book value per share forecasted for 2024, after achieving historical highs in 2022. Another possibility to explain it is that since Nutrien is a company that operates in multiple segments, it becomes **challenging to define an accurate group of peer companies**. Nonetheless, considering the current share price and the expected dividends for 2024, for both the **P/E and EV/EBITDA multiples** used in this analysis, the decision would be to **hold Nutrien shares**, while for the **P/B multiple** the decision would be to **buy the firm´s shares.**

Final Recommendation

To calculate the final Target Price, a weighted average of the Target Price previously calculated in the DCF, and the ones calculated for the Multiple Valuation was used. Taking into account what was previously mentioned concerning the reliability of the Forward P/B in this specific case, we opted to use a simple weighting scheme of 80% for the DCF target, 10% for the Forward P/E and 10% for the Forward EV/EBITDA, prioritizing the weight of the DCF since theoretically provides a more accurate estimate. Considering these weights, the **final target price of 60,02$** was achieved, with an **expected return of 12,40%,** 9,34% in capital gains and 3,06% in dividend yield, so the **decision would be to buy Nutrien's shares**.

Risks and ESG

Nutrien´s business operations and their performance are always subject to a vast range of risks and uncertainties, which can impact the firm´s financial health and operating results. The company is exposed to several risks, but the most critical ones will be discussed below. Firstly, the **economy in the US and Canada** (the 2 countries where Nutrien has most of its operations), for 2024, in expected to have a **low growth**, being associated with a lot of uncertainty. High interest rates are projected to prevail as a weapon to combat high inflation, which might impact Nutrien´s results. Moreover, the **outcome of the war between Russia and Ukraine** can also affect the company, especially the crop nutrition sub-segment, as well as the potash, nitrogen, and phosphate segments. As previously discussed, in 2022 Nutrien recorded all-time high revenues and earnings, boosted by the large escalation in prices, especially in the fertilizers market. However, until 2025, nutrients´ prices are expected to fall, some of them until pre-covid levels,

Figure 56: S&P Global Corporate Sustainability Assessment: Nutrien vs Industry average (2022 and 2019). Source: S&P Global.

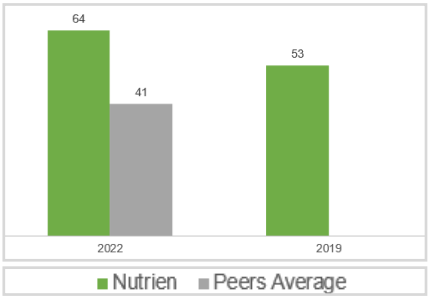


Figure 57: GHG emissions (million tons of CO2) from 2018 to 2022. Source: Nutrien.

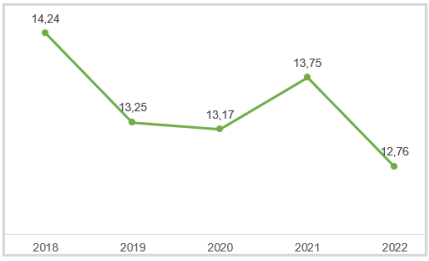


Figure 58: TRIF of the different segments: Nutrien vs Peers vs Target. Source: Nutrien.

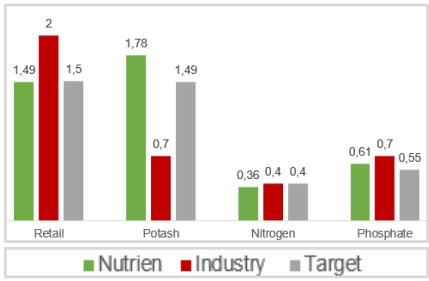
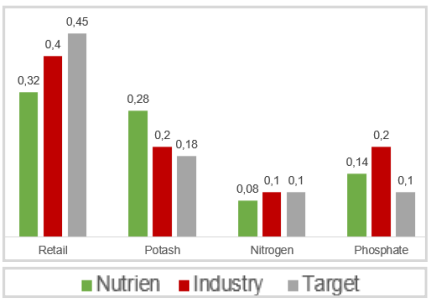


Figure 59: LTIF of the different segments: Nutrien vs Peers vs Target. Source: Nutrien.



which might impact the earnings of the firm. In addition, certain trade routes (such as the Belarusian Baltic Sea route) possibly will remain compromised due to sanctions imposed by Western countries on Russia and Belarus, decreasing the prospects of the fertilizers market. **Competition risk** is similarly a threat to the company. As previously discussed, Nutrien has several big competitors that can pressure its positive sales and results. Specifically, **BHP´s investment potash projects**, Jansen 1 and 2, represent a risk (only after 2026 according to Nutrien CEO Ken Seitz) to the company´s potash segment, a market where Nutrien is the global leader. To ensure its sustainability upon these risks, the company must have a **flexible structure and diversified business model to minimize impacts** created by the respective issues.

Responsible investing is becoming more popular in financial markets, one metric used by investors to assess how companies perform in this department is the **ESG** rating, this rating system relies on 3 pillars: **Environmental, Social, and Governance.** When looking at 2 of the main ESG ratings, the MSCI ESG Ratings (Figure 55) and the S&P Global Corporate Sustainability Assessment (Figure 56), it can be seen that Nutrien is improving compared to its rating in 2019 and is well above its peers in 2022. The **Environmental pillar** evaluates companies' environmental impact, with one of Nutrien's main priorities being to reduce GHG emissions (Figure 57), through measures such as improving energy efficiency, increasing the production of renewable energy, or increasing the production of low carbon ammonia, with the end goal of achieving the target of **reducing GHG emissions by 30% in 2030** (baseline year 2018). Additionally, in the **Social pilar**, Nutrien's main advantages compared to its peers comes from the **health and safety conditions** that it provides to its employees. This can be measured trough 2 different indicators TRIF (Total Recordable Injury Frequency – Figure 58) and LTIF (Lost Time Injury frequency rate – Figure 59), where in most of its segments Nutrien has been improving its performance and is outperforming its competitors. Another important topic where Nutrien differentiates itself is that in contracts with its suppliers, the firm includes expectations for **non-discrimination, and commitments to compliance with human rights laws** (for example no forced or child labor). In the final pillar, **Governance**, MSCI highlights Nutrien's commitment to SDG 5 gender equality, with measures such as **increasing board diversity** (exceeding the target of 33% women on the board). Also, in the area of cybersecurity, the company is making progress to **raise cybersecurity awareness** trough quarterly training sessions for their community and stakeholders. To conclude, Nutrien's good performance in this metric makes it more appealing to investors, especially when compared with its peers.

Appendix

Financial Statements

Forecasted Income Statement

Core Business Retail	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Sales [1]	**12 470**	**13 244**	**14 748**	**17 665**	**21 266**	**19 486**	**17 292**	**16 902**	**17 354**	**17 786**	**18 228**	**18 682**	**19 148**
Crop nutrients	4 559	4 975	5 187	7 262	10 020	8 337	7 214	6 622	6 870	7 091	7 320	7 556	7 799
Crop protection products	4 843	4 969	5 588	6 308	7 039	7 052	5 994	6 114	6 236	6 361	6 488	6 618	6 750
Seed	1 680	1 707	1 786	2 000	2 104	2 140	2 183	2 227	2 271	2 317	2 363	2 410	2 459
Merchandise	582	596	941	1 029	1 015	900	810	826	843	860	877	894	912
Nutrien Financial (net of retail interbranch eliminations)	0	0	9	90	126	151	166	169	172	176	179	183	187
Services and other	807	997	1 238	976	962	906	924	943	962	981	1 001	1 021	1 041
Net Sales	**12 470**	**13 244**	**14 748**	**17 665**	**21 266**	**19 486**	**17 292**	**16 902**	**17 354**	**17 786**	**18 228**	**18 682**	**19 148**
Cost of goods sold	9 440	9 948	11 018	13 077	16 095	15 199	13 142	12 676	13 016	13 339	13 671	14 012	14 361
Gross Margin	**3 030**	**3 296**	**3 730**	**4 588**	**5 171**	**4 287**	**4 150**	**4 225**	**4 339**	**4 446**	**4 557**	**4 671**	**4 787**
Selling expenses	2 303	2 484	2 795	3 124	3 380	3 313	2 940	2 873	2 950	3 024	3 099	3 176	3 255
General and administrative expenses	100	112	135	168	200	195	173	169	174	178	182	187	191
Provincial mining taxes	0	0	0	0	0	0	0	0	0	0	0	0	0
Core Result before Tax	**627**	**700**	**800**	**1 296**	**1 592**	**779**	**1 037**	**1 183**	**1 215**	**1 245**	**1 276**	**1 308**	**1 340**
Statutory Tax	169	189	216	350	430	210	280	319	328	336	345	353	362
Core Result Retail	**458**	**511**	**584**	**946**	**1 162**	**569**	**757**	**864**	**887**	**909**	**931**	**955**	**978**
Core Business Potash	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Sales	**2 796**	**2 702**	**2 265**	**4 021**	**7 600**	**3 952**	**3 245**	**2 557**	**2 645**	**2 736**	**2 829**	**2 926**	**3 027**
Freight, transportation and distribution	335	276	318	325	250	314	339	362	381	400	420	425	431
Net Sales	**2 461**	**2 426**	**1 947**	**3 696**	**7 350**	**3 638**	**2 906**	**2 195**	**2 264**	**2 336**	**2 410**	**2 501**	**2 595**
Cost of goods sold	983	923	978	965	856	948	909	767	794	821	849	878	908
Gross Margin	**1 478**	**1 503**	**969**	**2 732**	**6 494**	**2 690**	**1 997**	**1 428**	**1 471**	**1 515**	**1 561**	**1 623**	**1 687**
Selling expenses	14	9	9	9	6	16	13	10	11	11	11	12	12
General and administrative expenses	10	6	7	8	9	12	10	8	8	8	8	9	9
Provincial mining taxes	244	287	201	466	1 149	613	503	396	410	424	439	454	469
Core Result before Tax	**1 210**	**1 201**	**752**	**2 249**	**5 330**	**2 050**	**1 471**	**1 014**	**1 042**	**1 072**	**1 103**	**1 149**	**1 197**
Statutory Tax	327	324	203	607	1 439	553	397	274	281	289	298	310	323
Core Result Potash	**883**	**877**	**549**	**1 642**	**3 891**	**1 496**	**1 074**	**740**	**761**	**782**	**805**	**839**	**874**
Core Business Nitrogen	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Sales	**2 712**	**2 608**	**2 572**	**4 216**	**6 755**	**4 037**	**3 739**	**3 852**	**3 968**	**4 088**	**4 211**	**4 338**	**4 479**
Ammonia	969	814	719	1 474	2 792	1 406	1 124	1 158	1 193	1 229	1 266	1 304	1 346
Urea	961	1 021	1 080	1 548	2 030	1 446	1 422	1 465	1 509	1 554	1 601	1 650	1 704
Solutions, nitrates and sulfates	782	773	773	1 194	1 933	1 184	1 193	1 229	1 266	1 304	1 344	1 384	1 430
Freight, transportation and distribution	332	288	336	338	408	438	455	472	489	506	524	531	539
Net Sales	**2 380**	**2 320**	**2 236**	**3 878**	**6 347**	**3 599**	**3 284**	**3 380**	**3 479**	**3 581**	**3 687**	**3 807**	**3 940**
Cost of goods sold	1 577	1 615	1 745	2 199	3 078	2 018	2 094	2 234	2 301	2 371	2 442	2 516	2 598
Gross Margin	**803**	**706**	**491**	**1 680**	**3 269**	**1 580**	**1 190**	**1 146**	**1 178**	**1 210**	**1 244**	**1 291**	**1 342**
Selling expenses	32	25	27	24	24	28	26	27	28	29	29	30	31
General and administrative expenses	20	15	8	15	17	20	19	19	20	20	21	22	22
Provincial mining taxes	3	2	1	0	0	0	0	0	0	0	0	0	0
Core Result before Tax	**748**	**664**	**455**	**1 641**	**3 228**	**1 532**	**1 146**	**1 100**	**1 130**	**1 161**	**1 194**	**1 239**	**1 289**
Statutory Tax	202	179	123	443	872	414	309	297	305	314	322	335	348
Core Result Nitrogen	**546**	**485**	**332**	**1 198**	**2 357**	**1 118**	**836**	**803**	**825**	**848**	**871**	**905**	**941**
Core Business Phosphate	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Sales	**1 508**	**1 397**	**1 241**	**1 810**	**2 263**	**1 777**	**1 356**	**1 272**	**1 299**	**1 326**	**1 354**	**1 383**	**1 411**
Fertilizer	1 057	908	775	1 232	1 492	1 081	758	753	772	791	811	832	852
Industrial and feed	451	489	466	578	771	696	597	519	527	535	543	551	559
Freight, transportation and distribution	197	204	201	189	213	230	236	243	250	257	264	269	273
Net Sales	**1 311**	**1 193**	**1 040**	**1 621**	**2 050**	**1 547**	**1 120**	**1 029**	**1 049**	**1 069**	**1 090**	**1 114**	**1 138**
Cost of goods sold	1 230	1 196	999	1 212	1 560	1 244	976	941	961	981	1 002	1 023	1 044
Gross Margin	**81**	**-3**	**41**	**409**	**490**	**303**	**144**	**88**	**88**	**88**	**88**	**91**	**94**
Selling expenses	10	5	6	6	6	4	3	3	3	3	3	3	4
General and administrative expenses	9	7	10	11	13	11	8	8	8	8	8	8	8
Provincial mining taxes	1	1	0	0	0	0	0	0	0	0	0	0	0
Core Result before Tax	**61**	**-16**	**25**	**392**	**471**	**288**	**132**	**77**	**77**	**77**	**77**	**79**	**82**
Core Business Corporate and Others	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Sales	**150**	**133**	**82**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Net Sales	**150**	**133**	**82**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Cost of goods sold	150	133	74	0	0	0	0	0	0	0	0	0	0
Gross Margin	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Selling expenses	-22	-18	-24	-21	-1	0	0	0	0	0	0	0	0
General and administrative expenses	284	264	269	275	326	322	320	307	316	324	333	342	351
Provincial mining taxes	2	2	2	0	0	0	0	0	0	0	0	0	0
Core Result before Tax	**-264**	**-248**	**-239**	**-254**	**-325**	**-322**	**-320**	**-307**	**-316**	**-324**	**-333**	**-342**	**-351**
Statutory Tax	-71	-67	-65	-69	-88	-87	-87	-83	-85	-88	-90	-92	-95
Core Result Corporate and Others	**-193**	**-181**	**-174**	**-185**	**-237**	**-235**	**-234**	**-224**	**-231**	**-237**	**-243**	**-249**	**-256**
Total Core Result	**1 739**	**1 680**	**1 309**	**3 887**	**7 516**	**3 159**	**2 530**	**2 239**	**2 298**	**2 359**	**2 421**	**2 506**	**2 597**
Non Core	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Performance Based Compensation (Stock Options)	23	19	14	14	11	20	18	17	18	18	19	19	20
Performance Based Compensation (Cash Settled)	93	85	55	184	52	117	103	98	101	104	106	109	112
(Reversal of) Impairment of Assets	1 809	120	824	33	-780	0	0	0	0	0	0	0	0
Other expenses	43	215	-2	312	204	172	151	145	149	153	157	161	165
Interest income	17	5	1	8	25	0	0	0	0	0	0	0	0
Non-Core Result before Tax	-1 951	-434	-890	-535	538	-310	-271	-260	-268	-275	-282	-289	-297
Tax Adjustments	-60	-37	-180	-136	-207	0	0	0	0	0	0	0	0
Statutory Tax	-527	-117	-240	-144	145	-84	-73	-70	-72	-74	-76	-78	-80
Net earnings from discontinued operations	3 604	0	0	0	0	0	0	0	0	0	0	0	0
Other Comprehensive (Loss) Income	-302	36	194	78	-177	0	0	0	0	0	0	0	0
Non-Core Result	**1 937**	**-244**	**-276**	**-176**	**423**	**-226**	**-198**	**-190**	**-195**	**-200**	**-206**	**-211**	**-217**
Financial	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Total interest expense	501	508	495	492	521	698	411	413	420	428	435	442	449
Loss on early extinguishment of debt	0	0	0	142	0	0	0	0	0	0	0	0	0
Unwinding of discount on asset retirement obligations	51	54	33	-9	29	0	0	0	0	0	0	0	0
Interest on net defined benefit pension and other post-retir	15	15	13	9	8	10	10	10	10	10	10	10	10
Borrowing costs capitalized to property, plant and equipm	-12	-18	-20	-29	-37	-23	-23	-23	-23	-23	-23	-23	-23
Other finance costs	0	0	0	16	67	44	47	47	48	48	49	50	51
Financial Result before Tax	-555	-559	-521	-621	-588	-728	-444	-446	-454	-463	-471	-479	-487
Statutory Tax	-150	-151	-141	-168	-159	-197	-120	-120	-123	-125	-127	-129	-131
Non Controlling Interest	0	0	0	25	26	26	26	26	26	26	26	26	26
Financial Result	**-405**	**-408**	**-380**	**-478**	**-455**	**-558**	**-350**	**-351**	**-358**	**-364**	**-370**	**-375**	**-381**
	2018	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Total Comprehensive Income	**3 271**	**1 028**	**653**	**3 232**	**7 484**	**2 375**	**1 982**	**1 697**	**1 745**	**1 794**	**1 845**	**1 920**	**1 999**

Forecasted Balance Sheet

Core Business Retail	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Operating Cash	624	662	737	883	1 063	974	865	845	868	889	911	934	957
Receivables	1 990	2 780	2 954	3 524	4 280	4 805	4 264	4 167	4 279	4 385	4 495	4 607	4 722
Inventories	3 729	3 772	3 832	5 018	6 035	4 560	6 052	5 916	6 074	6 225	6 380	6 539	6 702
Prepaid expenses and other current assets	692	974	1 030	1 054	907	585	865	845	868	889	911	934	957
Property, Plant and Equipment	5 891	6 726	6 603	7 243	8 136	8 769	8 819	8 620	8 851	9 071	9 296	9 528	9 766
Intangible Assets	693	803	802	847	859	974	1 037	1 014	1 041	1 067	1 094	1 121	1 149
Trade Payables and Customer Prepayments	3 001	3 793	4 418	5 218	5 146	5 413	4 681	4 515	4 636	4 751	4 869	4 990	5 115
Net Deferred Income Tax Liabilities	1 709	1 910	2 051	1 851	1 740	1 949	1 729	1 690	1 735	1 779	1 823	1 868	1 915
Other Assets	23	24	215	106	30	39	35	34	35	36	36	37	38
Retail Invested Capital	**8 932**	**10 037**	**9 705**	**11 606**	**14 424**	**13 344**	**15 526**	**15 236**	**15 644**	**16 033**	**16 432**	**16 841**	**17 261**

Core Business Potash	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Operating Cash	140	135	113	201	380	198	162	128	132	137	141	146	151
Receivables	654	422	326	1 234	1 345	974	800	631	652	675	698	722	746
Inventories	259	275	280	312	398	332	318	269	278	287	297	307	318
Prepaid expenses and other current assets	155	199	158	240	324	238	195	154	159	165	170	176	182
Property, Plant and Equipment	4 770	4 408	4 468	5 007	4 793	4 893	5 089	5 231	5 304	5 379	5 454	5 530	5 608
Intangible Assets	561	526	543	585	506	395	487	511	529	547	566	585	605
Trade Payables and Customer Prepayments	673	774	678	1 188	1 839	1 299	1 120	841	761	675	698	722	746
Net Deferred Income Tax Liabilities	383	390	315	421	622	395	357	307	317	328	340	351	363
Other Assets	5	5	33	24	11	8	6	5	5	5	6	6	6
Potash Invested Capital	**5 488**	**4 807**	**4 927**	**5 994**	**5 296**	**5 344**	**5 581**	**5 781**	**5 982**	**6 192**	**6 295**	**6 400**	**6 507**

Core Business Nitrogen	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Operating Cash	136	130	129	211	338	202	187	193	198	204	211	217	224
Receivables	433	220	232	425	426	387	359	369	380	392	404	416	430
Inventories	415	482	417	553	706	444	461	491	506	522	537	554	572
Prepaid expenses and other current assets	150	192	180	251	288	202	262	270	278	286	295	304	314
Property, Plant and Equipment	5 218	6 047	5 921	5 714	6 037	6 039	6 242	6 320	6 399	6 479	6 560	6 642	6 725
Intangible Assets	614	722	719	668	637	605	673	770	794	818	842	868	896
Trade Payables and Customer Prepayments	653	747	770	1 245	1 635	995	975	979	1 009	1 039	1 071	1 103	1 139
Net Deferred Income Tax Liabilities	372	376	358	442	553	404	523	539	556	572	590	607	627
Other Assets	86	94	127	113	114	101	131	135	139	143	147	152	157
Nitrogen Invested Capital	**6 028**	**6 764**	**6 595**	**6 249**	**6 358**	**6 581**	**6 815**	**7 030**	**7 130**	**7 232**	**7 336**	**7 441**	**7 550**

Core Business Phosphate	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Operating Cash	75	70	62	91	113	89	68	64	65	66	68	69	71
Receivables	241	118	112	183	143	146	130	122	125	127	130	133	135
Inventories	514	446	401	445	493	460	361	348	356	363	371	379	386
Prepaid expenses and other current assets	84	103	87	108	96	89	81	76	78	80	81	83	85
Property, Plant and Equipment	2 279	2 679	2 155	1 549	2 034	2 020	2 048	2 083	2 120	2 157	2 195	2 233	2 271
Intangible Assets	268	320	262	181	215	267	271	254	260	265	271	277	282
Trade Payables and Customer Prepayments	363	400	372	535	548	409	321	309	316	323	329	336	343
Net Deferred Income Tax Liabilities	207	201	173	190	185	178	176	165	169	172	176	180	183
Other Assets	3	3	18	11	3	4	3	3	3	3	3	3	3
Phosphate Invested Capital	**2 894**	**3 136**	**2 552**	**1 843**	**2 364**	**2 487**	**2 464**	**2 476**	**2 520**	**2 566**	**2 612**	**2 660**	**2 706**

Core Business Corporate and Others	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Operating Cash	8	7	4	0	0	0	0	0	0	0	0	0	0
Receivables	24	3	2	0	0	0	0	0	0	0	0	0	0
Inventories	0	0	0	0	0	0	0	0	0	0	0	0	0
Prepaid expenses and other current assets	8	10	6	0	0	0	0	0	0	0	0	0	0
Property, Plant and Equipment	638	475	514	503	768	731	641	615	632	648	666	683	702
Intangible Assets	75	57	62	59	81	59	51	49	51	52	53	55	56
Trade Payables and Customer Prepayments	36	38	25	0	0	0	0	0	0	0	0	0	0
Net Deferred Income Tax Liabilities	21	19	11	0	0	0	0	0	0	0	0	0	0
Other Assets	0	0	1	0	0	0	0	0	0	0	0	0	0
Corporate and Others Invested Capital	**696**	**494**	**554**	**561**	**849**	**790**	**692**	**664**	**682**	**700**	**719**	**738**	**758**
Total Core Invested Capital	**24 037**	**25 238**	**24 333**	**26 254**	**29 291**	**28 546**	**31 078**	**31 186**	**31 959**	**32 723**	**33 394**	**34 080**	**34 783**

Non Core	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Other Assets	192	190	278	313	363	363	363	363	363	363	363	363	363
Investments	878	821	562	703	843	860	877	895	912	931	949	968	988
Goodwill	11 431	11 986	12 198	12 220	12 368	12 368	12 368	12 368	12 368	12 368	12 368	12 368	12 368
Other Payables	1 302	1 311	1 401	1 509	1 743	1 743	1 743	1 743	1 743	1 743	1 743	1 743	1 743
Pension and other post-retirement benefit lia	395	433	454	419	319	319	319	319	319	319	319	319	319
Asset Retirement Obligations and Accrued	1 673	1 650	1 597	1 566	1 403	1 403	1 403	1 403	1 403	1 403	1 403	1 403	1 403
Total Non-Core Invested Capital	**9 131**	**9 603**	**9 586**	**9 742**	**10 109**	**10 126**	**10 143**	**10 161**	**10 178**	**10 197**	**10 215**	**10 234**	**10 254**

Total Invested Capital	**33 168**	**34 841**	**33 919**	**35 996**	**39 400**	**38 672**	**41 221**	**41 347**	**42 137**	**42 920**	**43 609**	**44 315**	**45 036**

Financial	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Net Finacial Assets	**8 743**	**11 972**	**11 554**	**12 344**	**13 582**	**8 731**	**9 306**	**9 334**	**9 513**	**9 690**	**9 845**	**10 005**	**10 168**

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Shareholders Equity	**24 425**	**22 869**	**22 365**	**23 652**	**25 818**	**29 941**	**31 915**	**32 012**	**32 624**	**33 230**	**33 764**	**34 310**	**34 869**

Free Cash-Flow Map

Retail	2022	2023	2024	2025	2026	2027	2028	2029	2030
Core Result Retail	1 162	569	757	864	887	909	931	955	978
Depreciation and Amortization	752	751	735	719	739	759	779	798	818
Gross Cash Flow	**1 914**	**1 320**	**1 492**	**1 583**	**1 626**	**1 668**	**1 711**	**1 753**	**1 797**
Capex	1 644	1 385	785	520	970	979	1 005	1 030	1 056
Changes in NWC	1 879	-1 629	1 854	-106	194	185	190	195	200
Change in Intangible Assets	12	116	63	-23	27	26	27	27	28
Change in Net Deferred Income Tax Liabilities	-111	209	-219	-39	45	43	44	45	47
Change in Other Assets	-76	9	-4	-1	1	1	1	1	1
Gross Investment	**-3 570**	**329**	**-2 917**	**-429**	**-1 147**	**-1 148**	**-1 178**	**-1 208**	**-1 238**
Retail FCF	**-1 656**	**1 650**	**-1 425**	**1 154**	**479**	**520**	**533**	**545**	**558**

Potash	2022	2023	2024	2025	2026	2027	2028	2029	2030
Core Result Potash	3 891	1 496	1 074	740	761	782	805	839	874
Depreciation and Amortization	443	512	500	489	503	517	531	544	557
Gross Cash Flow	**4 334**	**2 008**	**1 574**	**1 229**	**1 264**	**1 299**	**1 336**	**1 382**	**1 431**
Capex	229	612	696	632	576	591	606	620	635
Changes in NWC	-191	-165	-87	-15	120	128	20	21	22
Change in Intangible Assets	-80	-111	92	25	18	18	19	19	20
Change in Net Deferred Income Tax Liabilities	200	-226	-38	-50	11	11	11	12	12
Change in Other Assets	-13	-3	-1	-1	0	0	0	0	0
Gross Investment	**255**	**-560**	**-737**	**-690**	**-704**	**-727**	**-634**	**-649**	**-664**
Potash FCF	**4 589**	**1 448**	**837**	**539**	**560**	**573**	**702**	**734**	**767**

Nitrogen	2022	2023	2024	2025	2026	2027	2028	2029	2030
Core Result Nitrogen	2 357	1 118	836	803	825	848	871	905	941
Depreciation and Amortization	558	630	616	603	620	637	654	670	686
Gross Cash Flow	**2 915**	**1 749**	**1 453**	**1 406**	**1 445**	**1 484**	**1 525**	**1 574**	**1 627**
Capex	880	633	819	681	699	717	735	752	769
Changes in NWC	-72	116	53	51	10	11	11	11	13
Change in Intangible Assets	-31	-32	67	97	23	24	25	25	28
Change in Net Deferred Income Tax Liabilities	111	-149	120	16	16	17	17	18	20
Change in Other Assets	0	-13	30	4	4	4	4	4	5
Gross Investment	**-666**	**-854**	**-850**	**-818**	**-720**	**-739**	**-757**	**-775**	**-795**
Nitrogen FCF	**2 248**	**895**	**603**	**588**	**725**	**746**	**768**	**799**	**832**

Phosphate	2022	2023	2024	2025	2026	2027	2028	2029	2030
Core Result Phosphate	344	210	97	56	56	56	56	58	60
Depreciation and Amortization	188	234	228	223	230	236	242	248	254
Gross Cash Flow	**532**	**444**	**325**	**280**	**286**	**292**	**298**	**306**	**314**
Capex	673	220	256	259	266	273	280	287	292
Changes in NWC	6	77	-56	-19	6	6	7	7	7
Change in Intangible Assets	34	52	5	-17	5	5	6	6	6
Change in Net Deferred Income Tax Liabilities	-4	-7	-1	-11	3	4	4	4	4
Change in Other Assets	-8	0	-1	0	0	0	0	0	0
Gross Investment	**-709**	**-357**	**-206**	**-235**	**-275**	**-282**	**-289**	**-296**	**-301**
Phosphate FCF	**-177**	**87**	**119**	**45**	**12**	**11**	**9**	**10**	**13**

Corporate and Others	2022	2023	2024	2025	2026	2027	2028	2029	2030
Core Result Corporate and Others	-237	-235	-234	-224	-231	-237	-243	-249	-256
Depreciation and Amortization	71	63	62	60	62	64	65	67	69
Gross Cash Flow	**-166**	**-172**	**-172**	**-164**	**-169**	**-173**	**-178**	**-182**	**-188**
Capex	336	26	-29	34	79	80	83	85	87
Changes in NWC	0	0	0	0	0	0	0	0	0
Change in Intangible Assets	22	-23	-7	-2	1	1	1	1	1
Change in Net Deferred Income Tax Liabilities	0	0	0	0	0	0	0	0	0
Change in Other Assets	0	0	0	0	0	0	0	0	0
Gross Investment	**-359**	**-4**	**36**	**-32**	**-80**	**-82**	**-84**	**-86**	**-88**
Corporate and Others FCF	**-525**	**-176**	**-136**	**-196**	**-249**	**-255**	**-262**	**-268**	**-276**

Non Core	2022	2023	2024	2025	2026	2027	2028	2029	2030
Non Core Result	423	-226	-198	-190	-195	-200	-206	-211	-217
Changes in Non Core Invested Capital	367	17	17	18	18	18	19	19	19
Non Core FCF	**56**	**-243**	**-215**	**-208**	**-213**	**-219**	**-224**	**-230**	**-236**

Financial	2022	2023	2024	2025	2026	2027	2028	2029	2030
Financial Result	-455	-558	-350	-351	-358	-364	-370	-375	-381
Changes in net debt	1 239	-4 852	576	28	178	177	156	159	163
Flow to debtholders	**783**	**-5 409**	**225**	**-323**	**-179**	**-187**	**-214**	**-216**	**-218**
Changes in Equity	2 166	4 123	1 974	97	612	606	534	546	559
Total Comprehensive Income	7 484	2 375	1 982	1 697	1 745	1 794	1 845	1 920	1 999
Flow to equity holders	**-5 318**	**1 748**	**-8**	**-1 600**	**-1 133**	**-1 188**	**-1 312**	**-1 374**	**-1 440**
Financing FCF	**-4 535**	**-3 661**	**217**	**-1 923**	**-1 312**	**-1 376**	**-1 526**	**-1 590**	**-1 658**

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Buy	Expected total return (including expected capital gains and expected dividend yield) of more than 10% over a 12-month period.
Hold	Expected total return (including expected capital gains and expected dividend yield) between 0% and 10% over a 12-month period.
Sell	Expected negative total return (including expected capital gains and expected dividend yield) over a 12-month period.

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