# "HEINEKEN N.V."

# COMPANY REPORT

*"ALCOHOLIC BEVERAGES"*

JANNUARY 2019

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## "Brewing" into new segments

*Adapting to changing consumer preferences*

- Healthy lifestyles and moderate drinking are boosting the growth of low- and non-alcoholic beers and the expansion of the cider/perry market (consumption increased 19.2% in past 5 years). Furthermore, increase in disposable income is making consumers more willing to buy premium beverages (premium and super premium beer grew 3.1% and 5.0%, annually, since 2000).
- Heineken is including non-alcoholic beverages in its offerings (launch Radler 2.0%; Radler 0.0%; and Heineken 0.0) and enhancing the higher brackets of its portfolio. Currently, it is the biggest cider producer worldwide (market share of 18.7%) and the largest international premium beer in the world (premium volume increased 17.6%, in past 3 years, representing, in 2017, 14.3% of total volume).
- Heineken's performance also relies on M&A deals. In August 2018, it acquired a 40% stake on China Resources Beer Enterprise, which holds a position of 16.6% on the biggest beer market, Asia Pacific (beer consumption, in 2017, amounted to 717.3 million hectolitres). Furthermore, Asia Pacific expects to record a CAGR [2018 – 2031] on cider consumption of 4.8%.
- Heineken's coverage is initiated with a BUY recommendation, given a 28.2% upside potential (capital gains of 26.3% and dividend yield of 1.9%). Heineken's fair value, at 2019F, resulted from a DCF valuation, using a WACC of 4.57%.

### Company description

Heineken N.V. is a European-based global brewer. Currently, the company holds more than 250 brands in its beverage portfolio, which are sold in more than 190 countries, and operates 167 breweries, malteries and cider plants in more than 70 countries. Heineken is the #1 brewer in Europe and the #2 in the world.

| **Recommendation:** | **BUY** |
|---|---|
| *Vs Previous Recommendation* | - |
| **Price Target FY17:** | **97.52 €** |
| *Vs Previous Price Target* | - |
| **Price (as of 31-Dec-18)** | **77.20 €** |

Reuters: HEIN.AS, Bloomberg: HEIA:NA

| | |
|---|---|
| 52-week range (€) | 86.93-77.20 |
| Market Cap (€m) | 43 979.5782 |
| Outstanding Shares (m) | 569.684 |

Source: Bloomberg, Analyst estimates


Source: Bloomberg, Analyst estimates

| (Values in € millions) | 2017 | 2018E | 2019F |
|---|---|---|---|
| Revenues | 21 888 | 23 422 | 23 675 |
| EBITDA | 4 939 | 5 311 | 5 422 |
| EBITDA margin | 22.6% | 22.7% | 22.9% |
| Net Profit | 2 153 | 2 284 | 2 382 |
| Net Profit margin | 9.8% | 9.8% | 10.1% |
| NOPLAT | 2 443 | 2 519 | 2 601 |
| NOPLAT growth | 20.5% | 3.1% | 3.3% |
| ROIC | 8.4% | 8.1% | 8.2% |
| EPS | 3.78 | 4.01 | 4.18 |
| DPS | 1.79 | 1.46 | 1.52 |

Source: Company information, Analyst estimates

# Table of Contents

# Company Overview

## Company Description

***Heineken is the #1 brewer in Europe and #2 in the World.***

| HEINEKEN BRAND PORTFOLIO | | |
|---|---|---|
| BEER | FLAGSHIP BRAND | Heineken® |
| BEER | INTERNATIONAL BRANDS | Amstel, Desperados, Sol, Tiger, Tecade, Red Stripe, Krusovice, Birra Moretti |
| BEER | CRAFT & VARIETY | Affligem, Lagunitas |
| CIDER | FLAGSHIP BRAND | Strongbow Apple Ciders |
| CIDER | CIDER BRANDS | Orchard Thieves, Stassen, Bulmers, Old Mount, Blind Pig |

**Fig.1-** Heineken's brand portfolio
Source: Company website

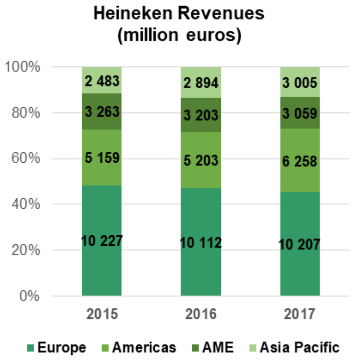


**Fig.2-** Heineken's revenues by region
Source: Company report

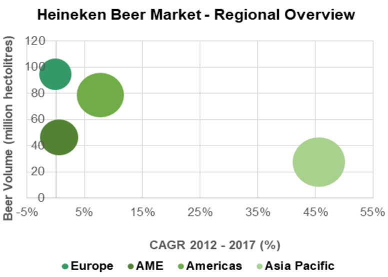


**Fig.3-** Heineken's beer volumes (absolute value and CAGR) by region (bubbles sizes refer to market size)
Source: Company report, Euromonitor, Statista

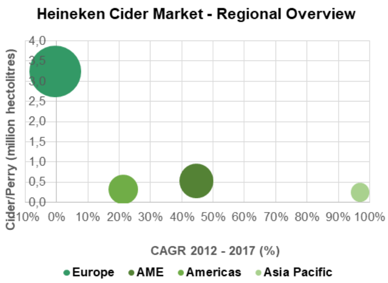


**Fig.4-** Heineken's cider volumes (absolute value and CAGR) by region (bubbles sizes refer to market size)
Source: Company report, Euromonitor, Statista

The Heineken N.V. Company was established in 1864 by the Heineken family, growing in the past 150 years from a single brewery in Amsterdam to one of the world's most international breweries. The company is engaged in the production and sale of alcoholic beverages, namely, beer and cider. Currently, it holds more than 250 brands in its beverage portfolio, which are sold in more than 190 countries, and operates 167 breweries, malteries and cider plants in more than 70 countries. Heineken is the number 1 brewer in Europe and the number 2 in the World, behind Anheuser-Busch InBev, following the acquisition of SAB Miller by A-B InBev, in 2016. In 2017, Heineken sold 247.3 million hectolitres of beer and 4.3 million hectolitres of cider and reached € 22 529 million in revenues.

In addition to its flagship brand, Heineken®, the company has other international beer brands, which includes low- and non- alcoholic beers, Craft and Specialty beers, Flavoured Beers and Cider Brands. The brands with more weight on revenues are the global brands - Heineken®, Amstel, Desperados and Sol; Craft and Specialty Beers- Affligem Abbey Beer; and Cider- Strongbow. Its diverse and wide brand portfolio allows Heineken to be well positioned in all segments of the market: premium, mainstream and economy. The company is the largest international premium beer in the world (in 2017, 14.3% of volume sold/ 36.0 million hectolitres was in the premium segment) and continues to expand its craft portfolio (acquisition of US-based Lagunitas). Furthermore, Heineken has been exploring opportunities resulting from a growing number of consumers worldwide appealing towards low- and non-alcoholic beers such as Radler (in 2015, Radler 2.0% and Radler 0.0% offers were expanded across all regions in over 45 markets) and Ciders (cider volumes sold increased 20.3%, in past 3 years). Currently, the company is the world's biggest cider producer, having its brands available in over 50 markets. Its flagship cider brand is Strongbow Apple Ciders.

The company operates through 4 regional segments: Europe (46.6%), Americas (28.6%), Africa, Middle East & Eastern Europe - AME (14.0%) and Asia Pacific (13.7%) and one segment related to common expenses: Head Office and Other/ Eliminations (-2.9%). Europe is the most important market for the company; nevertheless, it has a very strong position in Latin America and is investing in North America and Asia Pacific. In the last decade, Heineken has been increasing its exposure to emerging markets, which it expects to work as a catalyst for revenue's growth and brand awareness. From 2014 to 2017, the weight on revenues of Americas increased 4.6% and of Asia Pacific 2.9%.

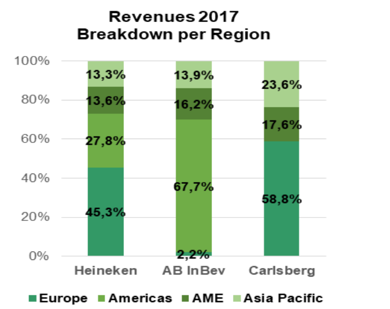


**Fig.5-** Top-3 players' revenue breakdown
Source: Company reports

The company stands out from other international brewers by its diverse range of products and its geographical diversification. Revenue breakdown per region of top-3 players in the market: Heineken, A-B InBev and Carlsberg reflect that Heineken has a more balanced geographic footprint. Following this higher degree of diversification, the company is less exposed to macroeconomic concerns (Heineken unlevered beta – 0.488 is lower than peers and industry average – 0.660) and shifts on consumer preferences, decreasing volatility at Heineken's top line (revenues) and lowering operational risk.

## Performance Analysis

***Heineken's value drivers are revenue growth and ROIC.***

Heineken's performance is, mainly, dependent on 2 key value drivers: revenue growth, which is driven by total consumption of beer and cider and Heineken's market share in each of these markets and return on invested capital (ROIC).

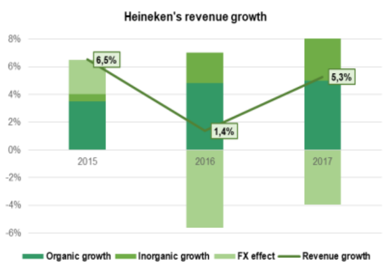


**Fig.6-** Heineken's revenue growth rate
Source: Company report

Heineken registered, on global terms, annual growth rates of beer volumes above the market (CAGR [2012 – 2017] was -0.1%, for the market, and 4.5%, for Heineken). The company started to expand its cider portfolio in 2015, from which it also recorded annual growth rates of cider volumes above the market (CAGR [2015 – 2017] was 1.2%, for the market, and 6.8%, for Heineken). Revenue growth was mainly driven by market shares gains (organic growth has been increasing in the last 3 years) and M&A deals. Revenue grew at 6.5%, in 2015; however, it slowdown in 2016, due to negative impact from fluctuations in exchange rates, recovering in 2017, with 5.3% growth rate. Americas and Asia Pacific are the 2 regional segments, experiencing higher growth rates. In 2017, revenues increased organically in all regions, except for AME.

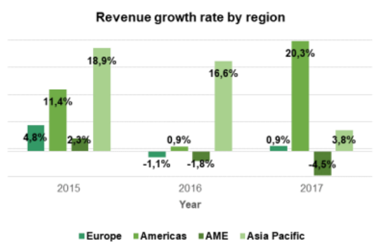


**Fig.7-** Heineken's regional revenue growth
Source: Company report

| Companies | CAGR [2014 - 2017] |
| --- | --- |
| Heineken | 4,4% |
| AB InBev | 6,2% |
| Carlsberg | -1,4% |
| Molson Coors Brewing | 38,4% |
| Boston Beer Company | -1,5% |
| Diageo | 5,5% |
| China Resources Enterprise Beer | 2,9% |
| Tsingtao Brewery | -3,3% |
| **Average** | 6,4% |
| **Median** | 3,6% |

**Fig.8-** Industry top-players' revenue growth
Source: Company reports

Gross profit margins have been fairly constant over the past years around 68%. Although costs with services, such as marketing, transportation, maintenance and warehousing, have been increasing in absolute value, as it would be expected with the increasing in revenues, it has been decreasing y-o-y as percentage of revenues, suggesting operational efficiency gains. Similarly, personnel costs were decreasing as percentage of revenues; however, last year, they rose due to acquisition of Brazil Kirin which increased the number of employees in Americas region. EBITDA margin have also been constant around 22 – 23%, with divergences mainly due to other income from sale of PPE and intangible assets. Abnormally high depreciations in 2016, due to impairment loses, led to the decrease of EBIT margin; however, normal levels were restored in 2017, with an EBIT margin of 15.3%. The average interest rate of past 4 years is 3.3%, without major fluctuations. Heineken has a gross margin above its biggest competitor and significantly above industry average and, in the past couple years, it has been improving its EBITDA margin. The company has in

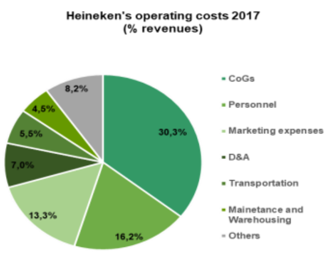


**Fig.9-** Heineken's operating costs structure 2017
Source: Company report

| Companies | Gross margin | EBITDA margin | EBIT margin |
|---|---|---|---|
| Heineken | 69,7% | 22,6% | 15,3% |
| AB InBev | 62,1% | 39,1% | 30,4% |
| Carlsberg | 50,9% | 22,1% | 14,5% |
| Molson Coors Brewing | 43,5% | 23,1% | 15,7% |
| Boston Beer Company | 52,1% | 19,3% | 13,4% |
| Diageo plc | 61,2% | 32,5% | 29,5% |
| China Resources Enterprise Beer | 33,7% | 12,3% | 6,5% |
| Tsingtao Brewery | 40,5% | 12,1% | 7,6% |
| **Average** | 51,7% | 22,9% | 16,6% |
| **Median** | 51,5% | 22,3% | 14,9% |

**Fig.10-** Industry top-players' margins
Source: Company reports

| Companies | Cycle (days) |
|---|---|
| Heineken | -27 |
| AB InBev | -149 |
| Carlsberg | -80 |
| Molson Coors Brewing | -19 |
| Boston Beer Company | 29 |
| China Resources Enterprise Beer | 73 |
| Tsingtao Brewery | -26 |
| **Average** | -28 |
| **Median** | -26 |

**Fig.11-** Industry top-players' cash cycle
Source: Company report, Bloomberg

| Companies | ROE | ROA | ROIC |
|---|---|---|---|
| Heineken | 14,8% | 6,5% | 8,5% |
| AB InBev | 7,2% | 1,7% | 5,9% |
| Carlsberg | 10,5% | 3,9% | 7,3% |
| Molson Coors Brewing | 20,2% | 8,5% | 10,6% |
| Boston Beer Company | 21,0% | 14,9% | 20,9% |
| Diageo | 28,3% | 9,3% | 14,1% |
| China Resources Enterpri | 8,2% | 2,8% | 6,3% |
| Tsingtao Brewery | 6,2% | 3,3% | 3,7% |
| **Average** | 14,5% | 6,4% | 9,7% |
| **Median** | 12,6% | 5,2% | 7,9% |

**Fig.12-** Industry top-players' return on capital
Source: Company report, Bloomberg

place a disciplined working capital management, which is reflected on a negative cash conversion cycle that has been improving y-o-y, even with frequent M&A. Although Heineken has a high operating cycle (159 days), mainly, caused by inventories storage (98 days), the company benefits from high bargaining power against suppliers (of barley, hops, bottles and cans – 186 days).

Heineken's ROIC has been between industry median and average and significantly above its top-2 competitors: A-B InBev and Carlsberg. In 2016, ROIC was lower than normal (6.9%) due to decrease in NOPLAT (-2.1%). However, recuperation of NOPLAT, which increased an exceptional 20.5%, in 2017, boosted ROIC to 8.5% (profit margin of 11.2% and invested capital turnover of 75.6%). The company is creating value, as the ROIC is higher than the estimate cost of assets (WACC = 4.57%). In the matter of ROA and ROE, Heineken is in line industry average, but once again substantial above its top-2 rivals. After a downturn in 2016, ROA has increased due to improvements in both net income margin and asset turnover ratio, achieving 5.2% (or 6.5% ignoring cost of debt), in 2017. ROE follows the trend of ROA as the equity multiplier has remain fairly stable over the last years. Therefore, after a slump in 2016, it recovered to 14.8%. The company is generating value for its shareholders, as the ROE is higher than the estimated cost of equity (Re = 5.2%).

The interest coverage ratio of 9.3x over the past couple years and the cash coverage ratio of 7.8x and 7.6x, in 2016 and 2017, respectively, signals a sustainable financing structure, as the likelihood of default is residual. Heineken's dividend policy is to have a payout ratio between 30% and 40% of full year net profit (not considering exceptional items). Past 4-years average payout ratio was 36.5%, excluding exceptional items, and 49.8%, considering entire net income.

## Shareholder structure

***Heineken's main shareholders are the Heineken family and FEMSA.***

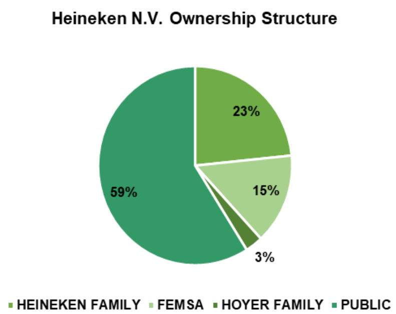


**Fig.13-** Heineken's shareholder structure
Source: Company website

Heineken N.V. is controlled by a structure that ensures the Heineken family has the majority of voting rights (23.37%), ensuring full control of management and strategic decisions. FEMSA is the 2$^{nd}$ most important shareholder, with a 14.76% position, although it has decreased its investment (sale of 5.24% of its investment), on September 2017, to take advantage of tax benefits. FEMSA is a multinational beverage and retail company headquartered in Mexico that operates as the largest independent Coca-Cola bottling group in the world and the largest convenience store chain in Mexico. The Hoyer family detains a smaller participation of 2.93%. The remaining shares (58.93%) are hold by the public. Heineken's shares are traded on the Euronext Amsterdam, where the company is included in the AEX Index. As of end 2018, there were 569 683 655 publically listed shares.

# Industry Overview

***In 2017, 1 962 and 23.1 million hectolitres of beer and cider, respectively, were consumed worldwide.***

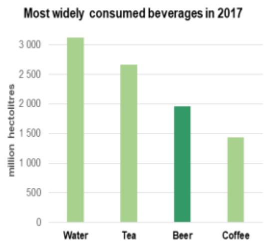


**Fig.14-** Worldwide consumption in 2017 of most popular drinks
Source: Euromonitor, Statista


**Fig.15-** Average beer prices on-trade vs off-trade (sample includes 75 cities worldwide)
Source: The Wall Street Journal, GoEuro

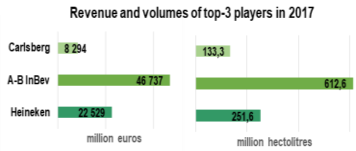


**Fig.16-** Revenues and volume of top-3 players in 2017
Source: Company reports

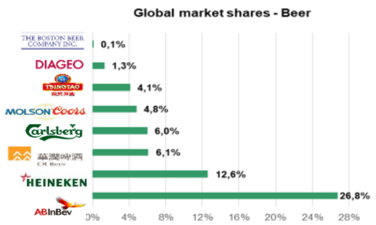


**Fig.17-** Global market shares - Beer
Source: Euromonitor, Company report

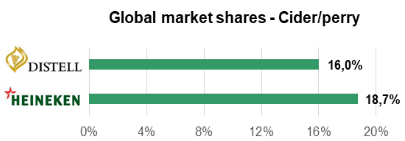


**Fig.18-** Global market shares – Cider/perry
Source: Euromonitor, Company report

The beer industry, primarily, manufactures and distributes alcoholic beverages that use malted barley and hops, and non-alcoholic beverages. Beer is the most popular and widely consumed beverage, being just surpassed by water and tea. The cider/perry industry produces and distributes mainly low alcohol drinks by partial or complete fermentation of fruit juices. In 2017, total consumption of beer and cider amounted to 1 962.0 and 23.1 million hectolitres, respectively.

Consumers can purchase beer and cider though on-trade channels, which includes bars, pubs, and restaurants for immediate consumption and off-trade channels, which includes supermarkets, specialist retailers and convenience stores. Prices for on-trade are higher than for off-trade, as in addition to pay for the drink, the consumer is paying for the atmosphere and the entertainment.

The top-3 players in the beer market are A-B InBev, Heineken and Carlsberg with a market share, in 2017, of 26.8%, 12.6% and 6.0%, respectively. A-B InBev reinforced its leading position with the acquisition of SAB Miller, in 2016. Heineken has consecutively been increasing its market share since 2012 (total increase of 2.3% from 2014 to 2017: of which 1.4% was organic). On the other side, Carlsberg has been losing market share to competitors. The top-2 players in the cider market are Heineken and Distell Group with a position, in 2017, of 18.7% and 16.0%, respectively. Heineken lost market share from 2012 to 2017; however, it has been starting to recuperate since 2015. In 2015, Heineken substantial expanded the geographical footprint of its cider portfolio, making it available to 41 markets and selling, for the first time, more than 1 million hectolitres outside the United Kingdom (UK).

There is a consolidation trend in the industry. A-B InBev is the company that accomplished more M&A deals, celebrating 22 big acquisitions on US, Colombia, Mexico, China, Brazil, Australia and Spain. However, following the acquisition of the 2nd largest company worldwide, SAB Miller, any future US acquisitions will need to be reviewed by the US Department of Justice to address potential competition issues. Therefore, it is likely A-B InBev has already been looking outside the US for M&A opportunities. Heineken also acquired strategic players on US, South Africa, Italy and UK, in 2017. Molson Coors took full control of the Miller Coors joint venture in the US, in 2016, while Asahi purchased SABMiller's European businesses. Carlsberg purchased London Fields Brewery, in 2017.

## Europe

***Europe represents 51.9% of beer market and 14.3% of cider/perry market.***

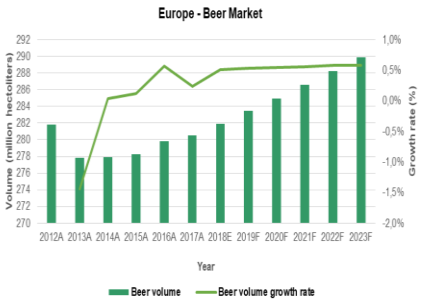


**Fig.19-** Beer market in Europe
Source: Euromonitor, Statista, Business Wire, Analyst estimates


**Fig.20-** Cider/perry market in Europe
Source: Euromonitor, Statista, Business Wire, Analyst estimates

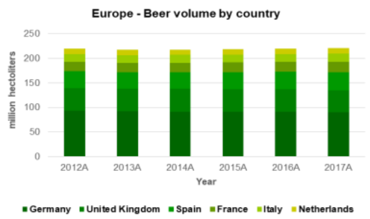


**Fig.21-** Beer volume by country in Europe
Source: Euromonitor

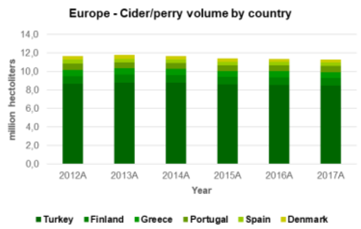


**Fig.22-** Cider volume by country in Europe
Source: Euromonitor

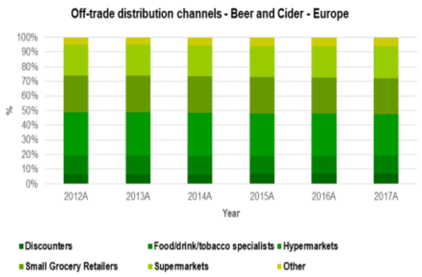


**Fig.23-** Off-trade channels in Europe
Source: Euromonitor

Europe is the world's largest cider market, representing 51.9% of total consumption worldwide. On the other hand, it only accounts for 14.3% of total beer consumption. Heineken is present in 22 countries, where top brands include Heineken® and Desperados. Europe is Heineken's biggest market in terms of total volume (38.9%) and beer volume (38.2%). Heineken is Europe's leading brewer both in beer and cider markets, with a significant advantage over competitors.

- Market overview

European countries have a well-established brewing tradition. Beer volumes have been around 280 million hectolitres, registering annual growth rates below 1%, from 2012 to 2017. This was mainly driven by the shrinkage of several national markets, highlighting, top-2 beer markets, Germany and UK, which decreased 3.5% and 2.4%, respectively, during the last 5 years. In contrast, other markets are gaining force, namely, Spain and France (+8.3% and +8.8%, respectively, from 2012 to 2017). Similarly, cider volumes have been around 12 million hectolitres, witnessing low and even negative annual growth rates, for the past 5 years. This follows the trend in the majority of national markets, highlighting the negative impact from Denmark (-22.1%, from 2012 to 2017).

Germany, UK and Spain are some of the major beer markets in Europe, representing 32.1%, 16.0% and 13.2%, respectively, of European beer consumption, in 2017. France, Italy and Spain are slowly expanding beer volumes in the last years due to popularity of craft-beer. Even though, in Turkey, cider consumption decreased 2.2%, in the past 5 years, it is still the biggest European market with a share of over 70% of consumption. Finland, Greece and Portugal are also key markets with an aggregate contribution of 17.7%, in 2017.

In Europe, off-trade dominates on-trade distribution channels on beer and cider markets (60.5% vs 39.5%, for beer and 63.7% vs 36.3%, for cider). In most of European countries, supermarkets (22.0%) and hypermarkets (28.6%) emerge as the most used sales channel owing to lower prices charged to consumers due to their ability to buy in bulk. Difficult economic conditions also contributed to the rise of discounters (6.7%) as another frequent distribution channel. Furthermore, online shopping is slowly gaining significance, leading brewers to search ways to leverage on that. For instance, Heineken, in 2016, established a partnership with Deliveroo, a British online food delivery company, across several cities in UK that allows consumers to order and get beer delivered at their houses in the space of 20 minutes. In 2017, it launched, in the Netherlands, Belgium, UK, France and Germany, an online craft & variety e-commerce platform called Beerwulf. In Europe, the European Union sets a minimum excise duty on beer of € 0.748 per

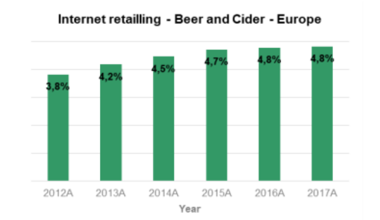


**Fig.24-** Online sales as percentage off-trade channels in Europe
Source: Euromonitor

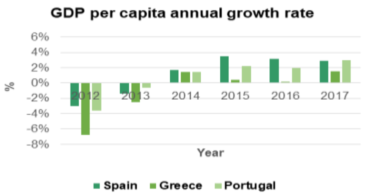


**Fig.25-** GDP per capital annual growth rate
Source: World Bank

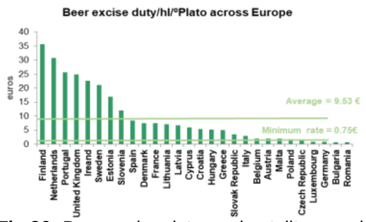


**Fig.26-** Beer excise duty per hectoliter per degree of plato across European countries
Source: European Commission, Directorate-general Taxation and Custom Union (July 2018)

| Market | Beer | Cider/perry |
|---|---|---|
| CAGR [2012A - 2017A] | -0,1% | -0,3% |
| CAGR [2018E - 2023F] | 0,6% | 1,1% |
| CAGR [2024F - 2031F] | 0,6% | 1,0% |

**Fig.27-** Beverages market growth in Europe
Source: Euromonitor, Statista, Business Wire, Analyst estimates

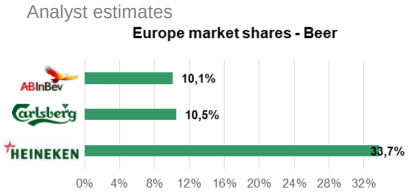


**Fig.28-** Europe market shares - Beer
Source: Euromonitor, Company report

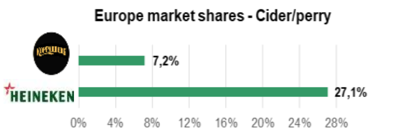


**Fig.29-** Europe market shares - Cider
Source: Euromonitor, Company report

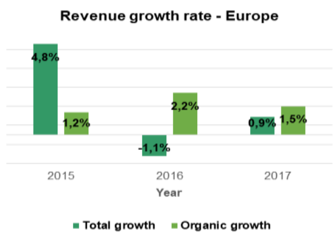


**Fig.30-** Revenue growth rate in Europe
Source: Company report

hectoliter per degree of plato or € 1.87 per hectoliter per degree of alcohol, which has not change since 1992. However, rates differ widely among countries.

Volume decline, in beer and cider markets, is related with market maturity, premiumtization trend (consumers drink less but better), demographic structure and though economic conditions, particularly in Southern European markets such as Spain, Portugal and Greece. According to market trends and macroeconomic and social factors (explained in next chapter), the beer market is expected to grow at fairly constant rates of 0.6%, while the cider market exhibits more attractive prospects with annual growth between 0.8% and 1.2%.

- ## Competitive environment

The beer market in Europe has several small regional players with redundant market shares and top-3 breweries which lead the market: Heineken, Carlsberg and A-B InBev, with markets shares of 33.7%, 10.5% and 10.1%, respectively, in 2017. Heineken is the #1 player, with a substantial advantage over #2 rival. To diversify its operations geographically, Asahi Breweries expanded to Europe by acquiring SABMiller's Western European operations, in 2016, raising its position to 2.5%, in 2017. Being a mature market, the competitive landscape is not expected to change considerable; however, changing consumer patterns and rise of microbrewers may pose a challenge environment.

Similarly, the cider market is highly fragmented, with only Heineken concentrating a substantial market share of 27.1%, in 2017. Its closest competitor is Kopparbergs Bryggeri, a Swedish brewery and cider company, with 7.2% market share. Carlsberg and A-B InBev only had an aggregate position of 6.2%.

- ## Heineken

Revenues in Europe increased organically, in the past years, which is reflected in organic market share gains in both beer (+0.5%) and cider market (+1.0%). Heineken was able to perform better than the market, in term of volumes, in recent years. Heineken's beer volume hit a turnaround in 2015, increasing 3.9% that year, due to organic market share gain potentiated by successful campaigns with UEFA Champions League, James Bond and Rugby World Cup. However, there has been a deceleration with beer volume growing 2.4%, in 2016, and 0.4%, in 2017. On the other hand, from 2013 until 2015, cider volumes have been shrinking, with a turnaround in 2016. During 2015 and 2016, Heineken expanded its cider offerings from 25 to 41 markets. In the past couple years, Heineken increased its cider volume 1.7% each year, reaching more than 50 markets, in 2017. Furthermore, by 2016, low- and non-alcohol products


**Fig.31-** Heineken in beer market in Europe
Source: Company report, Euromonitor, Statista, Business Wire, Analyst estimates

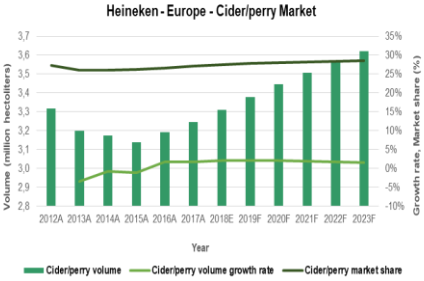


**Fig.32-** Heineken in cider market in Europe
Source: Company report, Euromonitor, Statista, Business Wire, Analyst estimates

| Heineken | Beer | Cider/perry |
|---|---|---|
| CAGR [2012A - 2017A] | 0,0% | -0,4% |
| CAGR [2018E - 2023F] | 0,7% | 1,8% |
| CAGR [2024F - 2031F] | 0,6% | 1,1% |

**Fig.33-** Heineken growth in Europe
Source: Company report, Euromonitor, Statista, Business Wire, Analyst estimates

represented around 5.0% of beer volume in Europe. In 2017, Heineken sold almost 13 million hectolitres of low- and no-alcohol products.

To counter European markets volume stagnation and lever on current trends with growth potential, Heineken reinforced its position on craft-beer and low- and non-alcoholic beers. In 2017, the company acquired a minority stake on Brixton, a craft brewery based in London, and bought Birrificio Hibu, a craft brewery and brew pub in Italy (investment expected to be completed by spring 2019, increasing brewing capacity from 12,000 to 60,000 pints a week), especially focused in Indian Pale Ale's beer. Furthermore, it continued to invest in pubs in UK, acquiring approximately 1,900 pubs from Punch Taverns, in 2017, by € 448.1 million. This deal turned Heineken into the 3rd largest pub company in the UK, with 1 995 pubs, after Greene King (over 2 900 pubs) and Enterprise Inns (over 5 000 pubs). In addition, it launched Heineken® 0.0, in 2nd quarter 2017, a non-alcoholic beer, in 16 markets, during the Formula 1® Grand Prix in Barcelona. In June 2018, Heineken acquired a minority stake on Beavertown Brewery, a premium craft brewer recognised in UK and worldwide, through an investment of around € 44 million. Moreover, in December 2018, it acquired a 51% stake on La Cibeles, a microbrewery producing small range of artisan beer in Spain, with sales of € 825 000.

## Americas

***Americas represents 29.8% of beer market and 17.4% of cider/perry market.***

Americas is the world's 2nd largest beer and cider market, responsible for 29.8% of total beer and 17.4% of total cider consumption. Heineken is present in 9 countries, operating 19 majority-owned breweries and 8 joint venture breweries. In addition to Heineken®, top brands include Dos Equis and Tecate. Americas is the 2nd most important beer market for Heineken, representing 31.4% of total volume and 31.8% of total beer volume, in 2017. Heineken occupies the 3rd place in the competitive landscape of the region in both markets.

### ▪ Market overview

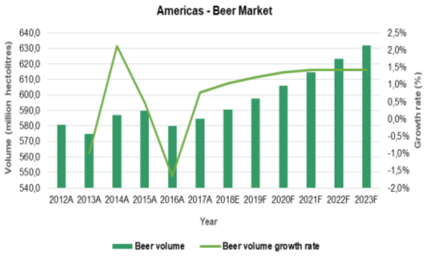


**Fig.34-** Beer market in Americas
Source: Euromonitor, Statista, Business Wire, Analyst estimates

Beer volume, in 2017, amounted to around 584.6 million hectoliters, registering a low CAGR of 0.1%, in the past 5 years, drove by the shrinkage of beer market in countries such as Canada, Brazil and Venezuela. This was mainly counteracted by strong growth in top markets such as Mexico and Colombia and other countries such as Peru and Chile. In contrast, cider market in Americas has been expanding, registering a CAGR, from 2012 to 2017, of 11.0% and attaining around 4.0 million hectoliters, in 2017. This expansion was mainly, due to a growth in volumes in North America (US and Canada consumption increased 162% and 132%, respectively, in the course of only 5 years).

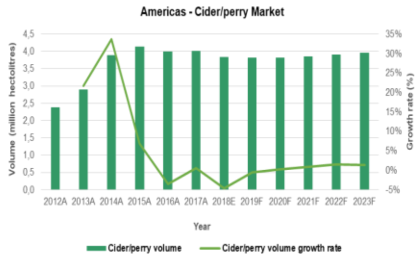


**Fig.35-** Cider/perry market in Americas
Source: Euromonitor, Statista, Business Wire, Analyst estimates

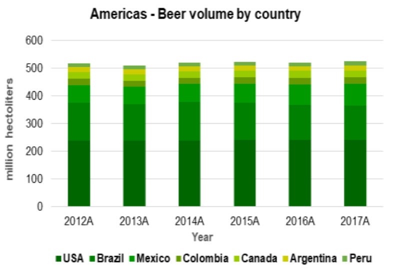


**Fig.36-** Beer volume by country in Americas
Source: Euromonitor

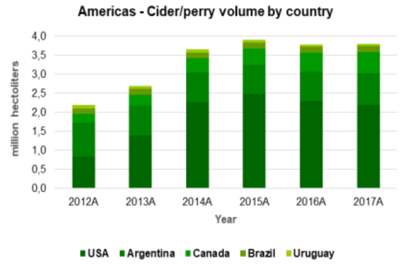


**Fig.37-** Cider/perry market in Americas
Source: Euromonitor, Analyst estimates

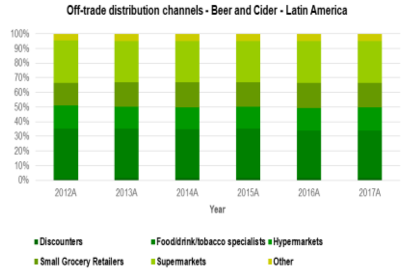


**Fig.38-** Off-trade channels in Latin America
Source: Euromonitor

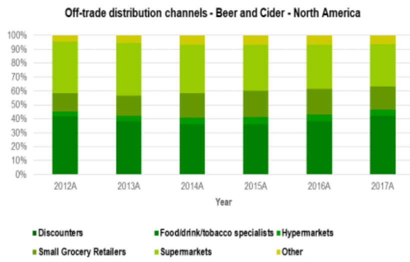


**Fig.39-** Off-trade channels in North America
Source: Euromonitor


**Fig.40-** GDP per capita annual growth rate
Source: World Bank

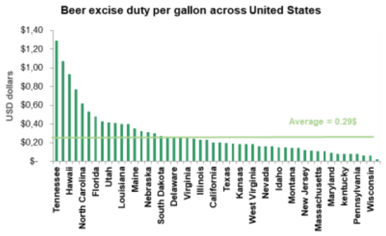


**Fig.41-** Beer excise duty per gallon across US
Source: Federation of Tax and Administrators (February 2018)

The US is the biggest beer and cider market in Americas, representing 41% and 54% of beer and cider consumption, respectively. Even though the Brazilian beer market has been contracting, it still is the 2nd biggest beer market in Americas, responsible for 23% of consumption. Another important country is Mexico, which has been expanding due to improvement of living standards and represents 13% of total beer consumption. Developed countries, namely, US and Canada have been playing an important role in the propagation of cider consumption, representing together almost 70% of consumption. Nevertheless, this tendency is spreading to emerging economies such as Brazil (consumption increased 12.2% in the past 5 years) and Argentina (21% of consumption).

In Latin America, off-trade dominates on-trade distribution channels on beer and cider (60.9% vs 39.1% for beer and 81.8% vs 18.2% for cider). In North America, off-trade channels are also more used than on-trade channels (75.7% vs 24.3% for beer and 74.8% vs 25.2% for cider).Supermarkets (28.4% / 30.5%) and hypermarkets (15.6% / 4.5%) play a relatively small role in off-trade beer sales across the majority of Latin / North America, resulting from the fragmented retail industry in the region. The most important distribution channel are specialist drink outlets or independent stores (32.6% / 41.9%). Brewpubs are also emerging as a popular way used by microbrewers to generate interest of consumers. In Canada, there was a slight change in excise beer taxes, on April 2018, from $ 2.643 to $ 2.683 per hectoliter. In the US, in December 2017, the Congress approved a temporary reduction in federal excise taxes on beer, for a period of 2 years, according to the Tax Cuts and Jobs Act. In Latin America, countries report minimum excise taxes as percentage of selling price: Argentina – 8.0%; Brazil – 5.0%-15.0%; Chile – 10.0%-50.0%; Mexico – 26.5%; and Venezuela – 15.0%.

Shrinking of beer and cider market in Venezuela is related to deterioration of macroeconomic conditions, significantly rises in prices (inflation in 2015 - 112% and in 2017 – 2400%), difficulty in obtaining raw materials and complications for consumers to have access to essential goods (currency devaluation due to high inflation – August 2018, currency devaluated 95%). Declining disposable income in countries, such as Brazil and Argentina, are causing consumers to cut back on discretionary spending. According to market trends and macroeconomic and social factors (explained in next chapter), the beer market is expected to grow around 1.0% and 1.4%, while the cider market grows at more moderated level.

- Competitive environment

The beer market in Americas region is highly consolidated, with top-3 players: A-B InBev, Molson Coors and Heineken accounting, in aggregate terms, for 80% of total beer volumes, in 2017. In North America, A-B InBev and Molson Coors, in

| Market | Beer | Cider/perry |
|---|---|---|
| CAGR [2012A - 2017A] | 0,1% | 11,0% |
| CAGR [2018E - 2023F] | 1,4% | 0,7% |
| CAGR [2024F - 2031F] | 1,0% | 1,1% |

**Fig.42-** Beverages market growth in Americas
Source: Euromonitor, Statista, Business Wire, Analyst estimates

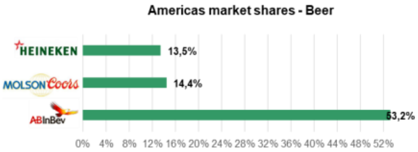


**Fig.43-** Americas market shares – Beer
Source: Euromonitor, Company report

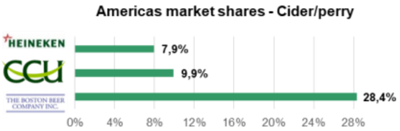


**Fig.44-** Americas market shares – Cider
Source: Euromonitor, Company report

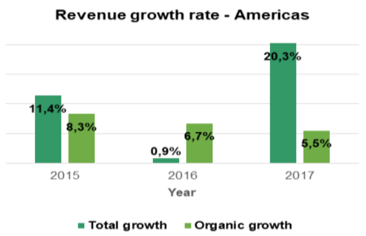


**Fig.45-** Revenue growth rate in Americas
Source: Company report


**Fig.46-** Heineken in beer market in Americas
Source: Company report, Euromonitor, Statista, Business Wire, Analyst estimates

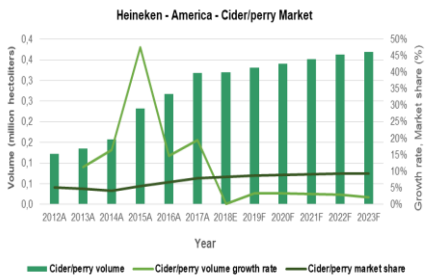


**Fig.47-** Heineken in cider market in Americas
Source: Company report, Euromonitor, Statista, Business Wire, Analyst estimates

2017, have a market share of 43.6% and 26.0%, respectively. It has proven to be a difficult market to penetrate, explaining that even though Heineken has been expanding volume sold, its market share was only 4.3%, last year. In Latin America, A-B InBev, once more, takes the lead with a market share of 64.8%, in 2017. Heineken follows, with a market share of 19.3%. Americas became the largest regional market of A-B InBev, in 2013, after the acquisition of Modelo, reinforcing its contribution with the company's acquisition of SABMiller.

In the cider market, Boston Beer takes the lead with a market share of 28.4%, followed by Cía Cervecerías Unidas with a position of 9.9%, in 2017. Heineken is ranked 3rd player, with a market share of 7.9%. In North America, in the cider market, there are 3 significant players: Boston Beer, Heineken and A-B InBev, with positions of 41.5%, 11.6% and 7.3%, in 2017, respectively. None of them is present in Latin America. Instead, the cider market in Latin America is dominated by regional brands such as Cía Cervecerías Unidas, a Chilean beverages company, and Bodegas Cuvillier, an Argentinean brewer.

- Heineken

Revenue growth in Americas, in 2015 and 2016, was, mainly, driven by increases in organic market share gains in beer market (+0.9%). In 2017, the majority of growth is inorganic; nevertheless, organic market share still increased 0.3%. Heineken was able to grow above the market both in beer and cider volumes. The vast majority of its volumes are contributed by the 2 leading markets: Brazil and Mexico. In the past 4 years, beer volumes' annual growth rates rounded between 4-5%, with exception of last year which registered a growth rate of 31.7%, mainly driven by acquisition of Brazil Kirin. On the other hand, cider volumes witnessed double digits annual growth rates from 2012 until 2017, being the latter a particular strong year with a growth rate of 19.4%.

Heineken's excellent performance in 2017 can be explained by the expansion of its brand portfolio and acquisition of strategic players in the region. In February 2017, Heineken added Kirin Brasil to its Brazilian operations, through an investment of € 664.0 million, significantly increasing its exposure to the region: Heineken became the 2nd largest brewery in Brazil, raising its position from 7% to 17%. Moreover, the deal allowed Heineken to acquire mainstream brands such as Schin and Devassa and speciality brands Baden and Eisenbahn and to expand its soft drinks portfolio through the Itubaína brand. Additionally, this acquisition allowed Heineken to strengthen its operational independence in Brazil, as it gained control of a vastly improved distribution network and strong commercial platform. Previously, the company relied on a partnership with Coca-Cola to ensure distribution across the country. Moreover, in the same month, on

| Heineken | Beer | Cider/perry |
|---|---|---|
| CAGR [2012A - 2017A] | 7,7% | 21,3% |
| CAGR [2018E - 2023F] | 2,6% | 3,0% |
| CAGR [2024F - 2031F] | 1,3% | 1,5% |

**Fig.48-** Heineken growth in Americas
Source: Company report, Euromonitor, Statista, Business Wire, Analyst estimates

a deal amounted to € 440.0 million, it acquired 50% of American craft beer Lagunitas, levering its position to 100%, which will help to penetrate in the US. Lagunitas is the market leader in the IPA segment, selling over 1 million hectolitres, per year, which will reinforce Heineken's craft-beer portfolio. On February 2017, Heineken undertook an investment of € 440.0 million to open a brewery in Mexico, with a production capacity of 6 million hectoliters per year, which will produce leading brands such as Tecate, Dos Equis and Heineken® for the Mexican market and for export. This plant was designed to operate 100% from renewable energy. Furthermore, by 2020, it is expected to only use 2 litres of water for every litre of beer produced instead of the current 3.6 litres.

In May 2018, Heineken announced it acquired a minority stake in Belize Brewing, which is Belize's market leader in beer and acts as an important distributor of Heineken's brands Heineken®, Amstel and Red Stripe. This acquisition expands Heineken geographical footprint. Heineken is facing some problems concerning the rights to spring water supplying an important Heineken plant in Brazil, Bahia, bought in 2017 as part of the acquisition of Kirin Brazil operations. Heineken has assured that this will not affect the factory's operations and business performance is improving; however, investors got nervous which could be reflected on the decline share price in the second half of 2018, around 6.1%.

Regarding potential acquisitions, Heineken could take full control of Compañía Cervecerías Unidas, in Chile, in which Heineken already has a major stake (60%). The total takeover could expand Heineken's footprint as it produces over 24.8 million hectolitres of beverages, reaching over 286 000 customers in Chile and Argentina (28.5 and 0.8 million hectoliters of beer and cider, respectively, consumed, in 2017, in aggregate terms). Another opportunity arises in Brazil, by acquiring Cervejaria Petrópolis, which has a 4.9% market share in Latin America beer market, after a failed attempt in 2012. Furthermore, a partnership between Molson Coors and Heineken could also be settled, as there is already a strong collaboration between them: the former distributes most of the Heineken brands in Canada and the later distributes Coors and Miller in Mexico and Bahamas.

## Africa, Middle East & Eastern Europe

***AME represents 19.4% of beer market and 23.7% of cider/perry market.***

AME accounts for 19.4% and 23.7% of total beer and cider consumption worldwide, respectively. Heineken is present in 23 countries and produces many iconic brands in the region, namely Star®, in Nigeria, and Primus®, which is brewed in 4 Central African countries. AME represented 18.7% of total Heineken volume and 18.8% of beer volume, in 2017. Heineken occupies the 3$^{rd}$ place in the beer market and the 2$^{nd}$ place in the cider market.


**Fig.49-** Beer market in AME
Source: Euromonitor, Statista, Business Wire, Analyst estimates

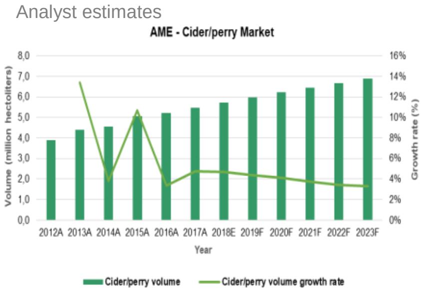


**Fig.50-** Cider/perry market in AME
Source: Euromonitor, Statista, Business Wire, Analyst estimates

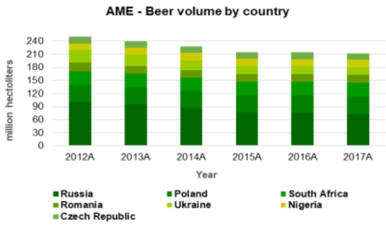


**Fig.51-** Beer volume by country in AME
Source: Euromonitor

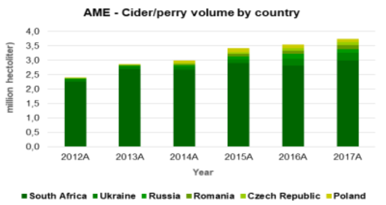


**Fig.52-** Cider volume by country in AME
Source: Euromonitor

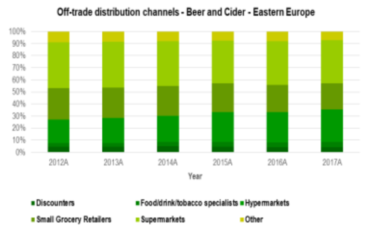


**Fig.53-** Off-trade channels in Eastern Europe
Source: Euromonitor

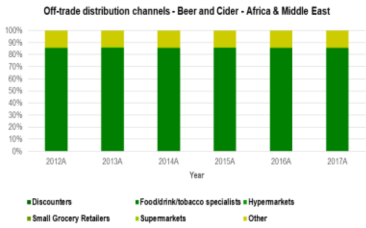


**Fig.54-** Off-trade channels in Africa & Middle East
Source: Euromonitor

- Market overview

After beer volume shrinkage until 2015, the beer market hit a turning point in 2016, when it registered a positive growth rate of 1.3%, attaining 379.7 million hectolitres, in 2017. This weak performance of beer market until 2015 is due to significant decrease in beer volumes in the major markets, such as Russia (-27.1%) and Ukraine (-39.29%). Contrariwise, the cider market has been in strong expansion, recording a CAGR of 7.1%, between 2012 and 2017, attaining 5.5 million hectolitres, in 2017. Soft drink positioning in many Muslim-majority markets allows access to a far wider consumer pool than alcoholic beers.

The continuous decline in beer consumption in Russia was driven by regulatory and legal changes imposed by the government (tripling excise taxes and imposing strict restrictions on sales, advertising and consumption, in 2010) and by severe macroeconomic conditions, namely related to the drop in oil price. Nevertheless, the country continues to assume the leading position in the beer market, accounting for 15.7% of total beer consumption, followed by Poland (8.4%) and South Africa (7.0%). South Africa also has an important role in the cider market, as it represents 54.7% of consumption.

In AME, off-trade channels display a major role, especially looking to Eastern Europe markets, where off-trade channels are responsible for over 80% of traded beer and for over 75% of traded cider, above the worldwide averages. In fact, even though modern grocery retailing chains have emerged, the majority of Eastern countries still rely their activity in small and traditional groceries (21.4%). Nonetheless, the trend towards modernization and urbanization is expected to positively impact the on-trade channels, namely the brewpubs.

The rise in disposable income, namely in the countries who lead both markets, combined with a change in consumption patterns have been driving the increase demand since last year, especially for cider. The region, which includes underdeveloped countries, is also benefiting from projects towards high levels of urbanizations and development of distributions channels. According to market trends and macroeconomic and social factors (explained in next chapter), both beer and cider market are expected to record growth rates above 1% and 2%, respectively.

- Competitive environment

The beer market in AME is marked by the presence of several market players with small positions and is dominated by top-3 players: A-B InBev, Carlsberg and Heineken that have an aggregate market share of 43.3%, in 2017. Considering the Eastern Europe beer market, Carlsberg assumes the leading position, with a

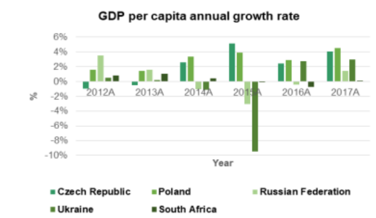


**Fig.55-** GDP per capita annual growth rate
Source: World Bank

| Market | Beer | Cider/perry |
|---|---|---|
| CAGR [2012A - 2017A] | -0,8% | 7,1% |
| CAGR [2018E - 2023F] | 1,7% | 3,8% |
| CAGR [2024F - 2031F] | 1,1% | 2,7% |

**Fig.56-** Beverages market growth in AME
Source: Euromonitor, Statista, Business Wire, Analyst estimates

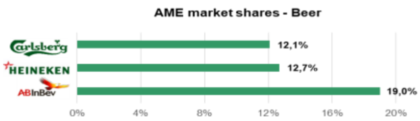


**Fig.57-** AME market shares - Beer
Source: Euromonitor, Company report

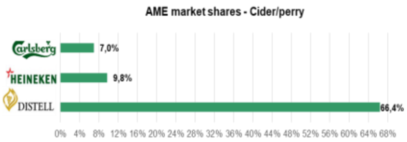


**Fig.58-** AME market shares - Cider
Source: Euromonitor, Company report

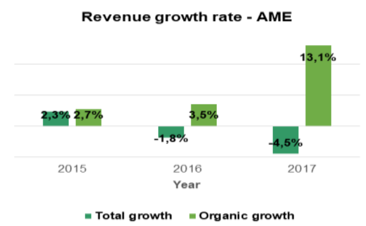


**Fig.59-** Revenue growth rate in AME
Source: Company report

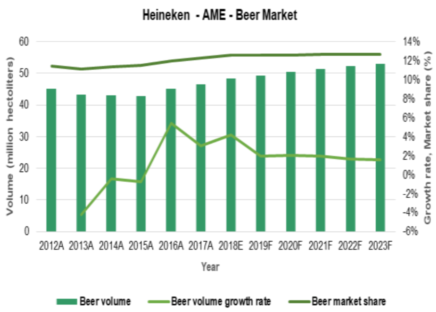


**Fig.60-** Heineken in beer market in AME
Source: Company report, Euromonitor, Statista, Business Wire, Analyst estimates

position of 21.2%, followed by Heineken, which controls 18.2% of the market. However, Carlsberg has gradually been losing market share, whereas Heineken has been gaining exposure, owing to offer of non- and low- alcoholic beers. The former has suffered from its exposure to Russia market and its consequent downturn in beer consumption. On other hand, in Middle East and Africa, A-B InBev assumes the leading position, holding a stake of 33.0%, since 2016, when it acquired SAB Miller. In fact, until that point AB InBev used to have a residual stake in the region (0.5%) and SAB Miller was the uncontestably market leader. Additionally, Diageo and Castle Group detain substantial positions.

The cider market is highly consolidated, being controlled by Distell Group, Heineken and Carlsberg, with market shares of 66.4%, 9.8% and 7.0%, respectively. Small players are gradually penetrating the market due to the craft trend across the region, but it has not really impacted the market yet. In Eastern Europe, Carlsberg and Heineken have been dominating the cider market, controlling over 46.0% of the market, in the last 5 years. In Middle East and Africa, Distell, which is not present in the Eastern Europe market, clearly monopolizes the market, holding a stake of 86.2%. Nonetheless, the rivalry with Heineken, which reached a share of 7.8%, in 2017, expanding its positioning from previous stakes around 2.0%, caused Distell to lose share of the market.

- Heineken

Growth in revenues in AME was driven by organic market shares gains in beer market (+0.1%, in 2015, and +0.4%, in 2017). Although the beer market in AME has been sluggish during the last 5 years, Heineken was able to outperform the market. It also experienced negative growth rates from 2013 to 2015; however, it started to expand in 2016, following the industry trend, recording an annual growth rate of 5.4%. On other hand, enjoying the expansion of the cider market, Heineken recorded a CAGR of 44.7%, from 2012 to 2017.

Heineken's expansion was largely driven by the macroeconomic trend in its major markets, namely South Africa, Nigeria and Poland. Moreover, M&A strategy also contributed for Heineken's performance. In Africa and Middle East, it acquired 75% stake in DHN Drinks and 15% of Namibia Breweries Limited and gained control over the Sedibeng Brewery. This restructuring process costed Heineken € 138.0 million. In Eastern Europe, it acquired 53.43% stake in Pivovarna Lasko, the leading Slovenian brewer, by € 119.5 million. This acquisition strengthened Heineken's position within the region and brought 2 additional strong local brands (Lasko and Union) to its portfolio. In 2017, Heineken opened the first brewery in Mozambique, with a production capacity of 0.8 million hectolitres, by investing € 85.0 million. This acquisition particularly

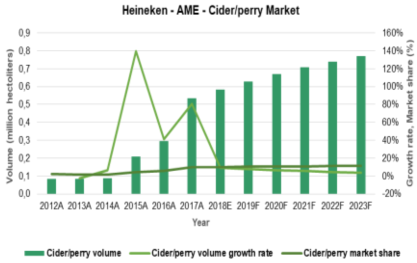


**Fig.61-** Heineken in cider market in AME
Source: Company report, Euromonitor, Statista, Business Wire, Analyst estimates

| Heineken | Beer | Cider/perry |
|---|---|---|
| CAGR [2012A - 2017A] | 0,6% | 44,7% |
| CAGR [2018E - 2023F] | 1,8% | 5,7% |
| CAGR [2024F - 2031F] | 1,1% | 3,0% |

**Fig.62-** Heineken growth in AME
Source: Company report, Euromonitor, Statista, Business Wire, Analyst estimates

challenges its main competitor A-B InBev, who also gained a brewery in Mozambique through the acquisition of SABMiller. Additionally, Heineken launched Heineken 0.0 in Russia, attempting to lessen the impacts from regulation. Furthermore, it acquired 2 breweries in South Africa: Stellenbrau and Soweto. Those deals allowed Heineken to include in its portfolio brands such as Craven Craft Lager, Jonker's Weiss, Alumni Ale and Governor's Red rooibos lager, increasing the value of its intangible assets around € 85.0 million. Following the launch, in 2016, of Salone, a 100% locally sourced sorghum beer, in Sierra Leone, Heineken opened a new brewery, in Ivory Coast, in 2017, Brassivoir (51% owned by Heineken and 49% owned by CFAO), with an annual production capacity of 1.6 million hectolitres. This costed € 150 million. In November 2018, Heineken signed an agreement to acquire 100% of Browar Namysłów, by €115.92 million, one of the largest regional breweries, in Poland, with an annual production of about 1.7 hectolitres.

There are some windows of opportunity for Heineken regarding potential partnerships or acquisitions that could certainly boost its expansion in this region. Considering that Heineken has already a stake of 29.9% in Namibia Breweries, its acquisition could be one to be taken into consideration given its total share of 69%, in Namibia market, and 3%, in South Africa (beer consumption, in 2017, amounted to 32.2 million hectolitres). Nevertheless, the opportunity that stands out is the possible acquisition of Castel, one of the main players in Middle East and Africa. The Group produces 28 million hectolitres of beer and soft drinks in Africa, annually, and sponsors relevant teams and events, namely the South African Cricket, Rugby Teams and "Bafana Bafana". However, this can be a deal hard to reach given the regulatory authorities, the family bonds to the brand and the presence of A-B InBev, also running for its acquisition.

## Asia Pacific

***Asia Pacific represents 36.6% of beer market and 6.9% of cider/perry market.***

Asia Pacific is the world's largest beer market, responsible for 36.6% of total beer consumption worldwide. On the other hand, it only represents 6.9% of total cider consumption worldwide. Heineken is present in 19 countries, holding 45 breweries, which are responsible for the production and distribution of around 50 brands. Top brands include Tiger®, which has grown to become a major global brand, Kingfisher®, that is India's best-selling beer, and Bintang, that is Indonesia's most iconic beer brand. It represents 11.0% of total Heineken volume and 11.1% of total beer volume, in 2017. Heineken occupies the 7$^{th}$ place region beer market and the 3$^{rd}$ place in the cider market.

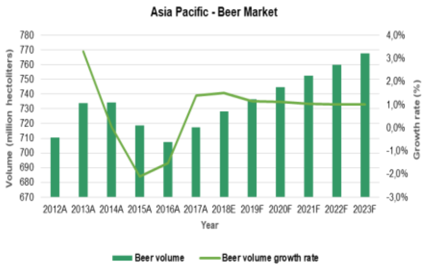


**Fig.63-** Beer market in Asia Pacific
Source: Euromonitor, Statista, Business Wire, Analyst estimates

- Market overview

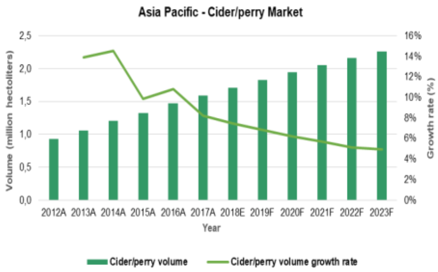


**Fig.64-** Cider/perry market in Asia Pacific
Source: Euromonitor, Statista, Business Wire, Analyst estimates

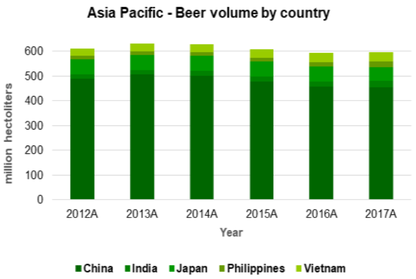


**Fig.65-** Beer volume by country in Asia Pacific
Source: Euromonitor

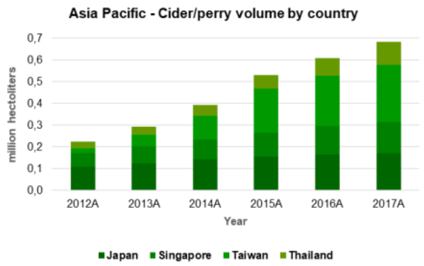


**Fig.66-** Cider volume by country in Asia Pacific
Source: Euromonitor

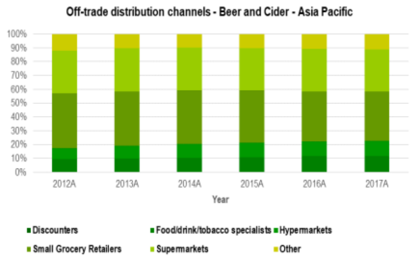


**Fig.67-** Off-trade channels in Asia Pacific
Source: Euromonitor

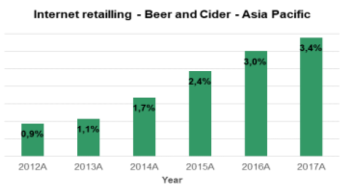


**Fig.68-** Online sales as percentage off-trade channels in Asia Pacific
Source: Euromonitor


**Fig.69-** GDP per capita annual growth rate
Source: World Bank

Although the beer market in Asia Pacific has presented moderate growth rates in 2014 and even decreased in the subsequent 2 years, driven by deceleration in nominal GDP growth, it has started to recuperate in 2017, registering an annual growth rate of 1.4%. Beer volumes, in 2017, amounted to 717.3 million hectolitres. On the other hand, the cider market, in the past 5 years, recorded double digits annual growth rates, attaining around 1.6 million hectolitres, in 2017. Nevertheless, there has been a deceleration on cider volumes expansion, with volumes, in 2017, growing 8.2%.

The emerging economies China, Vietnam and India have been playing an important role in the expansion of beer consumption, while Taiwan and Thailand provide a significant contribute to the expansion of cider consumption. China represents around 60% of total market in Asia Pacific. Even though Japan is still the 2$^{nd}$ biggest consumer of beer in Asia Pacific (7.8%), the beer market size has been decreasing since 2015, from 60.3 million hectolitres to 57.8 million hectolitres, in detriment of the expansion of cider market, which suggests a slightly change in Japaneses' patterns of consumption.

In Asia Pacific, there is an equilibrated distribution among off-trade and on-trade distribution channels, for both markets. Nonetheless, in the beer market, the off-trade channel displays a more dominant positioning, accounting for 53.2% of the whole distribution, in 2017, whereas in the cider market, the on-trade channels assume a more relevant role, being responsible for 56.5% of sales. Supermarkets (30.5%) and hypermarkets (10.8%) represent an important supply chain due to a more flexible negotiation between companies and these chained retailers. On other hand, it also benefits companies as it decreases its logistics costs and allows for economies of scale. In Asia Pacific, there is already a considerable share of distribution through online platforms, reflecting the different cultural mind-sets and stages of these countries. Most countries belonging to Asia Pacific display a severe regulatory environment regarding beer consumption. On average, they apply excise taxes between 30% and 50%.

Indeed, the growing population, especially youth, has been boosting the acceptance and adoption of beer and cider in Asia Pacific. Additionally, the increase in disposable income and improvement of living standards have also contributed to this cultural change in their habits and preferences. According to market trends and macroeconomic and social factors (explained in next chapter), the cider market offer particularly attractive prospects with growth rates above 4%, while the beer market grows at more moderated rates.

- Competitive environment

| Market | Beer | Cider/perry |
|---|---|---|
| CAGR [2012A - 2017A] | 0,2% | 11,4% |
| CAGR [2018E - 2023F] | 1,1% | 5,8% |
| CAGR [2024F - 2031F] | 0,7% | 4,0% |

**Fig.70-** Beverages market growth in Asia Pacific
Source: Euromonitor, Statista, Business Wire, Analyst estimates

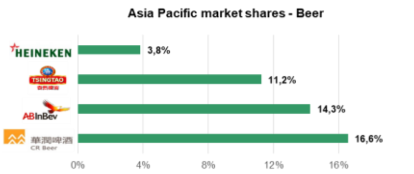


**Fig.71-** Asia Pacific market shares - Beer
Source: Euromonitor, Company report

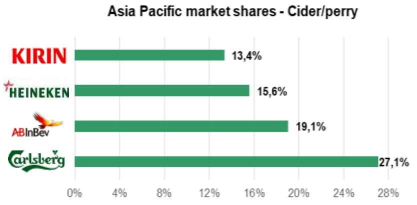


**Fig.72-** Asia Pacific market shares - Cider
Source: Euromonitor, Company report

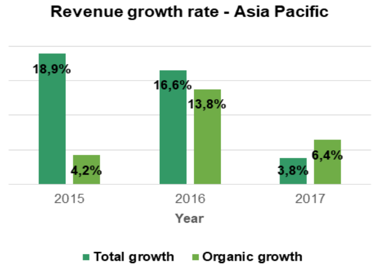


**Fig.73-** Revenue growth rate in Asia Pacific
Source: Company report


**Fig.74-** Heineken in beer market in Asia Pacific
Source: Company report, Euromonitor, Statista, Business Wire, Analyst estimates

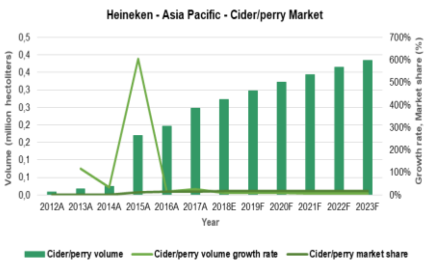


**Fig.75-** Heineken in cider market in Asia Pacific
Source: Company report, Euromonitor, Statista, Business Wire, Analyst estimates

The beer market in Asia Pacific is highly fragmented with a lot of players with market shares between 0.1% and 4%, emerging 3 players which dominate the market: China Resources Enterprise, A-B InBev and Tsingtao Brewery with market shares, in 2017, of 16.6%, 14.3% and 11.2%, respectively. Beijing Yanjing Brewery and Carlsberg also detain a sizeable participation of the beer market of 6.5% and 5.9%, respectively. Heineken is ranked as the 6th largest brewery in the region, with a position of 3.8%, in 2017.

The cider market is controlled by Carlsberg, A-B InBev, Heineken, Kirin Holdings and Åbro Bryggeri with market shares of 27.1%, 19.1%, 15.6%, 13.4% and 8.3%, respectively. Important to note that A-B InBev was not present in the Asia Pacific cider market until it acquired SAB Miller, jumping to the 2nd leading position.

- Heineken

The main driver of Heineken's expansion in this region comes from its ability to acquire positions on strategic market players to penetrate new markets, expanding its capacity and brands' portfolio across several countries. Nevertheless, the region still registers positive organic growth driven by organic market share gains in beer market. Heineken was able to record exponential volume increase in 2013 (triple digit growth), maintaining considerable annual growth rates in the following years. The CAGR, from 2012 to 2017, was 45.6%. Enjoying the expansion of the cider market, it outperformed the industry growing at 96.9% p.a., from 2012 to 2017. Biggest market share gains happened in 2013 and 2015, for both markets, which coincides with strategic acquisitions and expansion of brand portfolio by launching Radler, in 2014, and launching internationally Strongbow, in 2015.

There is a long historic of acquisitions. In 2017, Heineken completed the merger of its business in Mongolia with APU JSC, the country's leading beverage business, retaining 25% of the merged business afterwards. Moreover, in order to accelerate its expansion in Australia and reinforce its relation with the company Lion Beer Australia, it signed a new Trade Mark Licensing and Distribution Agreements, which costed around € 5.0 million, regarding the brands Heineken® and Birra Moretti, respectively. This allowed Heineken to be considered an international brand produced in Australia rather than an import, as it happens with the brands Guinness and Stella Artois. It also contributed for the expansion in the premium segment, which represents around 10% of Australian beer market. Furthermore, allowed Heineken to access the distribution network of Lion Nathan. Additionally, it acquired Tuatara craft brewery, one of the biggest players in the country (production capacity of around 2 million hectolitres), through its subsidiary DB Breweries, by € 3.2 million.

| Heineken | Beer | Cider/perry |
|---|---|---|
| CAGR [2012A - 2017A] | 45,6% | 96,9% |
| CAGR [2018E - 2023F] | 4,3% | 7,0% |
| CAGR [2024F - 2031F] | 1,4% | 4,2% |

**Fig.76-** Heineken growth in Asia Pacific
Source: Company report, Euromonitor, Statista, Business Wire, Analyst estimates

Recently, on August 2018, Heineken invested € 2.2 billion in the acquisition of 40% of China Resources Holding, China's largest beer company, to strengthen its distribution network and its position as leader in premium beer. In the aftermath of the announcement, there was a positive market reaction, with stock price rising 2%. China is the largest beer market in the world with an annual consumption of 457.8 million hectolitres, twice as much as the US, and more than 5 times as Germany, the largest beer market in the EU. However, macroeconomic, legislative and political events can threat Heineken's expansion, since the country faces tremendous challenges, both internally and externally, mainly regarding its high levels of indebtedness (total debt represents 257.1% of GDP) and trade issues ($ 250 billion of Chinese goods were hit by US with tariffs since July, and China has retaliated by imposing duties on $110 billion of US products. China's economic growth has been cooling, and its growth rate is decreasing to values around 6.5%).

Potential deals include San Miguel Corporation, in Philippines, and Boon Rawd, in Thailand. San Miguel has a 90%, 29% and 16% share in the Philippines, Indonesia and Hong Kong markets, respectively, that had an aggregate beer consumption of 24.5 million hectolitres, in 2017. Its biggest shareholder is Kirin Holdings (48%). Boon Rawd has a 59% share in the Thailand market (in 2017, beer and cider consumption amounted to 20.8 and 0.1 million hectolitres, respectively). Its biggest shareholder is Thai Beverage Company (33%).

# Industry Trends and Value Drivers

There are, currently, 4 global trends on the alcoholic beverages industry: preferences shift towards non- and low-alcoholic drinks; market premiumtization; cross-pollination initiatives; and legalization of cannabis. In addition to these trends, alcoholic beverages consumption is also impacted by macroeconomic and demographic factors. Furthermore, marketing investments, namely strategic partnerships, particularly with the sports industry, drives consumption and determines engagement with customers through increase in brand awareness.

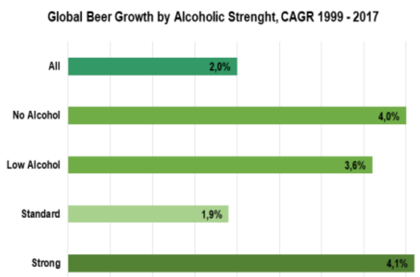


**Fig.77-** Global beer growth by alcoholic strength (CAGR[1999 – 2017])
Source: Global Data

## Preferences shifting

Healthy lifestyles and moderate drinking are shifting consumer preferences towards low- and non-alcoholic products across all categories. Beer companies are diversifying their portfolio by including non-alcoholic beer; radler; and cider in their offerings. Furthermore, brewers promote responsible drinking. In fact, 10% of Heineken's expenditure on marketing is on advertisement initiatives that

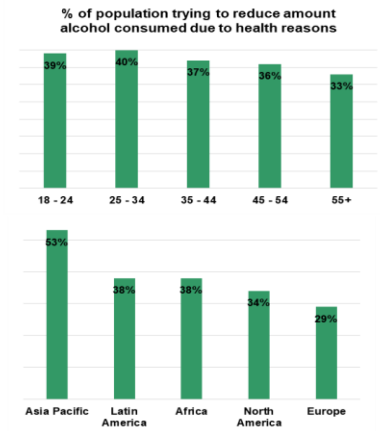


**Fig.78-** Proportion of population trying to reduce alcohol consumption due to health reasons
Source: Global Data

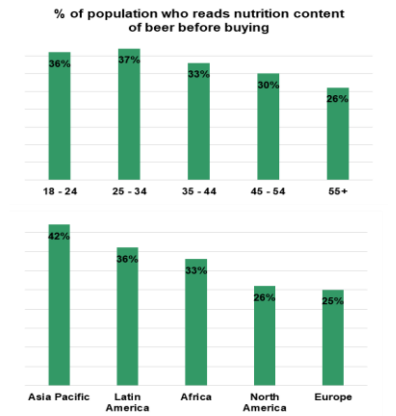


**Fig.79-** Proportion of population who reads nutrition content of beer before buying
Source: Global Data

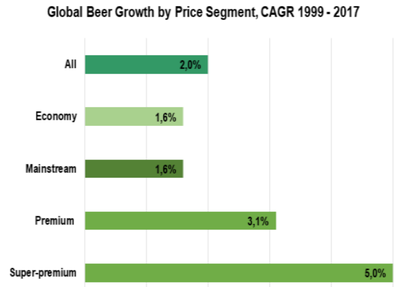


**Fig.80-** Global beer growth by price segment (CAGR[1999 – 2017])
Source: Global Data

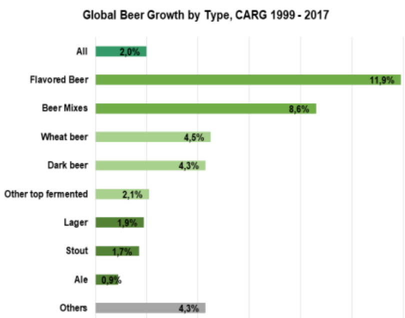


**Fig.81-** Global beer growth by category (CAGR[1999 – 2017])
Source: Global Data

promote moderate alcohol consumption. Low- and non- alcoholic offers are very attractive, because these beers are sold for prices not much different from standard beers (for instance, a 6 pack of 330ml bottles of regular Heineken is sold by € 12.83, while Heineken 0.0 is sold at € 11.45), though falling into lower tax brackets, which allows brewers to collect higher margins.

A survey by Global Data concluded that 84% of worldwide alcoholic beverages consumers are trying to reduce or moderate their alcohol consumption. Another survey by Global Data concluded that 37% of consumers intend to reduce their alcohol consumption for health reasons, being this trend stronger among the male population than the female population (39% vs 34%) and among the younger layers of population (18 – 34). Moreover, data shows these concerns are more evident on emerging regions. Low- and non- alcoholic beer have been growing at rates above the market, registering, globally, a CAGR, over the past 2 decades, of 3.6% and 4.0%, respectively. Despite the trend towards alcohol free beers, beers with strong alcohol content are growing even faster, at 4.1% p.a. over last 2 decades, due to growth of craft and premium beer.

## Market premiumtization

Driven by GDP growth and expansion of economies, the alcoholic beverages industry is witnessing a premiumtization trend, with consumers more willing to pay more for quality. Beer companies are working to enhance the higher brackets of their portfolios through premium beer and more niche offerings such as craft and specialty beer. High-value brackets of the market are very attractive to brewers as it allows to charge higher prices to consumers.

A survey by Global Data concluded that 37% of worldwide alcoholic beverages consumers are willing to pay more for a drink that can provide extra levels of enjoyment and indulgence. Premium and super premium beer have been growing at rates above the market. Over the past 2 decades, globally, premium beer has grown by 3.1% p.a. and super premium beer by 5.0% p.a. compared to 1.6% growth in mainstream and economy beer. Furthermore, flavoured beer and beer mixed, which belong to premium category, increased significantly, above the market, in detriment of traditional beers such as lager and stout.

## Cross-pollination initiatives

To attract more consumers, especially millennials and generation Z, beer companies will need to make radical experiments with hybrid products straddling category lines. Those cross-pollination initiatives may result from combining lager and ale yeast strains; changing ageing time of beer barrels or joining hops to gin, for instance. These offers are inserted in the premium segment of the market,


**Fig.82-** IPA popularity
Source: IRI Worldwide


**Fig.83-** Pricing standard vs cross-pollinated beer
Source: Zenith Global Ltd 2017

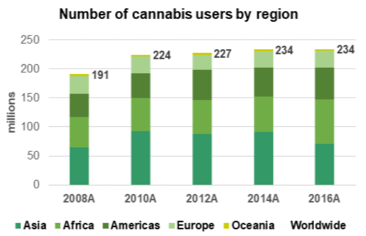


**Fig.84-** Number of cannabis users worldwide
Source: Statista

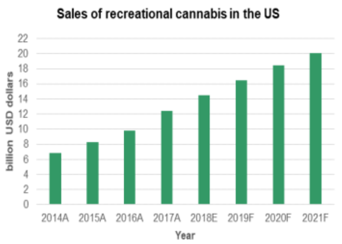


**Fig.85-** Sales of recreation cannabis in the US
Source: Statista

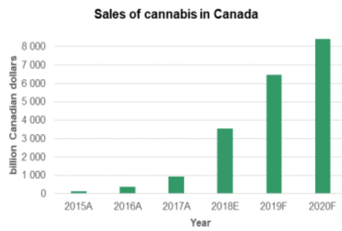


**Fig.86-** Sales of recreation cannabis in Canada
Source: Statista

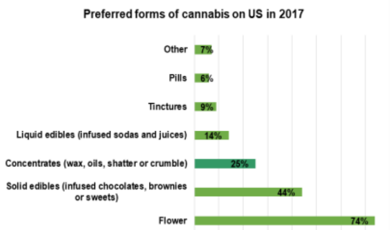


**Fig.87-** Preferred forms of cannabis' consumption in US
Source: Statista

allowing breweries to charge higher prices to consumers. According to Zenith's market study, these types of beer are, on average, priced up to an additional € 2.22 per litre, compared to standard beer products.

New styles and fusions are gaining popularity, namely Hazy and Juicy IPA's (known as "New England Style" Indian Pale Ale), a beefed-up version of pale ale beer, which is made with lactose, oats, vanilla, fruity hop varieties and high-pectin fruit. According to IRI Worldwide, global sales grew by more than € 155 million, in 2017, which corresponds to a 16% increase. Another unexpected partnership gaining momentum is between breweries and beekeepers. There is a growing number of breweries establishing relationships with beekeepers or installing their own hives, namely in United States. In 2014, in the first Craft Brewers Conference, 20% of the brewers were already brewing with honey. This percentage increased to 80% in the last year.

## Legalization of cannabis

The rise of interest towards cannabis, particularly in North America, may potentially cause disruptions on the alcohol industry through substitution, for example. However, it can also represent an opportunity, as consumers show curiosity in consuming beers with infusion of the cannabis plant.

Cannabis, for recreational use, is already legal in 9 states in the US and became legal in Canada on 17th October 2018, with supply exhausting after only 2 days. Given the recent legalization, Canada is the market that offers higher growth prospects; nevertheless, California and Nevada are attractive markets within the US. Consumers are interested in consuming edibles and concentrates, in addition to simple flowers (particularly, 14% of US consumers indicated they prefer to consume cannabis on liquid form by infusion on beverages). The global alcoholic beverages- based cannabis market size is estimated to be around €1 218.1 million, in 2019, reaching € 7 122.6 million by 2031. The global cannabis-based beer market represents 77.5% of the total alcoholic beverages.

## Macroeconomic and demographic drivers

Consumption of alcoholic beverages is, also, influenced by macroeconomic indicators, namely, growth in disposable income; by demographic indicators, explicitly, the population growth rate and the age profile of population; and by beverages prices and consumers' sensitivity to price changes.

After the great recession, economies started to recuperate (increase in nominal growth rates). Emerging and developing regions, namely, Latin America, Africa, Middle East & Eastern Europe (AME) and Asia Pacific exhibit growth rates above

8%, while Europe is expected to grow steadily around 3.5% - 4.0%. Those forecasts reflect converge towards an accommodative monetary and fiscal policy, increase in consumer confidence and increase in economy output.

| Nominal GDP growth | 2012A | 2013A | 2014A | 2015A | 2016A | 2017A | 2018E | 2019F | 2020F | 2021F | 2022F | 2023F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **World** | **7,7%** | **7,3%** | **6,9%** | **6,4%** | **6,1%** | **6,9%** | **7,5%** | **7,4%** | **7,2%** | **7,0%** | **7,1%** | **7,1%** |
| Europe | 2,0% | 1,7% | 2,3% | 2,3% | 2,2% | 4,0% | 3,7% | 3,6% | 3,4% | 3,5% | 3,5% | 3,5% |
| Americas | 4,7% | 3,8% | 4,7% | 3,5% | 3,2% | 4,8% | 5,5% | 5,0% | 4,5% | 4,4% | 4,3% | 4,3% |
| AME | 11,5% | 9,5% | 8,4% | 9,0% | 8,9% | 8,4% | 10,3% | 10,3% | 9,4% | 8,6% | 8,4% | 8,2% |
| Asia Pacific | 10,0% | 10,1% | 9,3% | 8,3% | 8,0% | 8,4% | 9,0% | 8,9% | 9,0% | 8,9% | 8,8% | 8,8% |

**Fig.88-** Nominal GDP growth
Source: FMI, World Bank, Analyst estimates

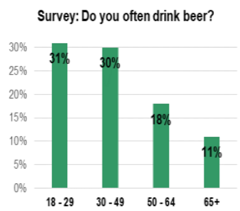


**Fig.89-** Frequency of beer consumption by age segment
Source: Gallup

Target consumers of alcoholic beverages and beer, in particular, are, mainly, the younger layers of population above the legal age of consumption (18+, for the majority of countries), considering they consume beer more frequently. Due to low population growth rates (around 1.0% worldwide), the proportion of population with ages between 15 -40 is expected to slightly decrease, particularly in Europe and Americas. Nevertheless, apart from Europe, that exhibits population growth rates of 0.2%, other regions register almost 40% of population with ages between 15 and 40, supporting beer and cider demand.

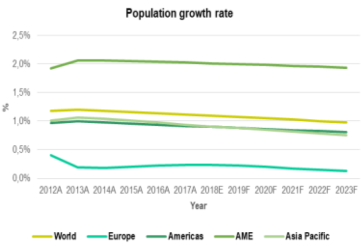


**Fig.90-** Population growth rate
Source: FMI, World Bank, Analyst estimates

| Population 15-40 (%Total) | 2012A | 2013A | 2014A | 2015A | 2016A | 2017A | 2018E | 2019F | 2020F | 2021F | 2022F | 2023F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **World** | **39,5%** | **39,2%** | **39,0%** | **38,8%** | **38,5%** | **38,4%** | **38,2%** | **38,0%** | **37,9%** | **37,7%** | **37,5%** | **37,4%** |
| Europe | 31,1% | 30,8% | 30,5% | 30,2% | 30,0% | 29,7% | 29,5% | 29,3% | 29,1% | 29,0% | 28,8% | 28,7% |
| Americas | 38,7% | 38,7% | 38,6% | 38,4% | 38,3% | 38,2% | 38,0% | 37,8% | 37,6% | 37,4% | 37,2% | 37,0% |
| AME | 39,1% | 39,0% | 38,8% | 38,7% | 38,6% | 38,5% | 38,5% | 38,4% | 38,4% | 38,3% | 38,3% | 38,3% |
| Asia Pacific | 40,6% | 40,3% | 40,0% | 39,7% | 39,4% | 39,2% | 39,0% | 38,8% | 38,6% | 38,4% | 38,2% | 37,9% |

**Fig.91-** Proportion of population with ages between 15 and 40
Source: FMI, World Bank, Analyst estimates

| | Alcoholic Beverages | Beer |
|---|---|---|
| Developed countries | -0,51 | -0,6 |
| Developing countries | -0,41 | -0,49 |
| Global | -0,44 | -0,51 |

**Fig.92-** Demand price elasticities
Source: Euromonitor

Empirical evidence from long-run global price elasticity for 80 countries suggests the alcoholic beverages industry is highly inelastic (-0.40); however, the levels of global price elasticity vary significantly across alcoholic product categories. For the particular case of beer, the demand price elasticity is -0.51, indicating consumers are not highly susceptible to changes in beer prices. Furthermore, beer demand in developed countries (-0.60) is more elastic than in emerging and developing countries (-0.49), which may imply beer is still in the early stage of the product lifecycle in emerging markets.

## Strategic partnerships – marketing

To spread awareness of Heineken® brand and culture, the company established several strategic partnerships across relevant sectors such as sports, music and cinema that materialize in global market campaigns. The company's marketing expenses as percentage of total operating expenditures have been fairly constant around 15.7%, highlighting the increase in 2015, a year that registered a revenue growth rate, above average, of 6.5%, mainly due to organic market share gains. Alliances with the sports industry are particular relevant for proliferation of alcohol consumption. According to a study developed by the University of Minnesota, 48% of the audience at a sporting event would drink at least 1 beer.

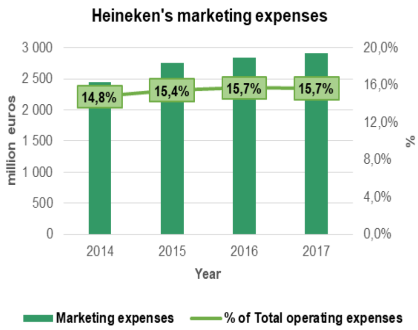


**Fig.93-** Heineken's marketing expenses
Source: Company report

Heineken® collaborated with Formula 1® through the design of 2 campaigns for TV and digital platforms: "When You Drive, Never Drink" and "More than a Race" to spread the message of responsible drinking habits. The deal is understood to have options that may be extended until the end of 2023 and may be worth up to € 220 million, enabling Heineken to reach the average 4 million spectators who attend the races, and 400 million television viewers every year. This sponsorship deal implies an annual pro rata payment around € 34.4 million, translating on an average return of 127.9%, over a 5-year period. Another partnership is with the UEFA Champions League, which has an estimated audience of 4.2 billion people, by creating an ad: "Share the drama". The sports research firm IMR estimates that the current sponsorship agreement costs € 61.5 million, yearly. During the previous 8-year partnership, Heineken's brand awareness grew 60% among UEFA Champions League fans, which translated into an average return on costs of 225%.

Morover, Heineken® has a relation with the Rugby World Cup, since 1995. The company will sponsor the Ruby World Cup 2019 in Japan, participating in several match traditions, serving as examples the Heineken® Coin Toss and the Heineken® Back Stage Stadium Tour. This deal, which reportedly costed Heineken € 27.0 million, includes a clause stating: Heineken's lager is the sole brand sold in the stadiums hosting the tournament's matches and is the only one that can be marketed within 500 meters of those venues. In June 2018, Heineken has announced it will return as the main sponsor of European Rugby Champions Cup, which will be re-named as 'Heineken® Champions Cup', and will cost Heineken € 8.0 million per season. On October 2018, Heineken reached an agreement to become an official partner of the ABB FIA Formula E Championship, for 5 years.

In the movie industry, Heineken also has a long-time partnership with the James Bond saga, which dates from 1997. On average, Heineken spent € 40 million to cover each movie, just deviating in 2015, when its biggest campaign costed around € 87.8 million to celebrate an 18-year partnership. Heineken's sales have gone up around 5.3% in Western Europe since Daniel Craig swigged from a bottle of Heineken in the movie Skyfall.

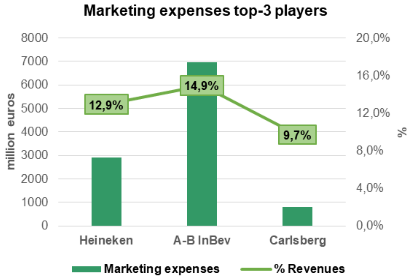

**Fig.94-** Marketing expenses of top-3 players
Source: Company reports

Comparing to the main players in the industry, Heineken is only surpassed, in total cost, by A-B InBev, especially considering its massive investment last year, to be completed in 2020, of € 2.0 billion, to bolster its flagships brands. A-B InBev also has strategic partnerships in the sports industry, sponsoring the Major League Baseball, since 1985, (estimated to cost € 35.0 million per season, roughly half of which is devoted to TV advertising and promotional commitments) and the National Basketball League, since 1998, (estimated to cost around €

18.0 million per season), in United States, where the company has a dominant role. The only major pro sports league the brewer dos not control is the National Hockey League, which signed a 7-year deal with Molson Coors, in 2011. A-B InBev's sponsorships are largely tied up in sports, but it is also the undisputed leader in music, sponsoring more than half of the music festivals, according to ESP, which represents for the company an annual expenditure around € 1.35 billion. Carlsberg has less visible and meaningful partnerships, mainly linked to the UK market. Namely, it has a long-time partnership with Live Nation's Festivals, which costs Carlsberg around € 17 million, and sponsors some football teams, mainly in the Premier League.

# Forecast

## Revenues

***Revenues are driven by total quantity sold and revenue per hectolitre.***

***Volume sold was estimated using a top-down approach, for each reporting segment.***

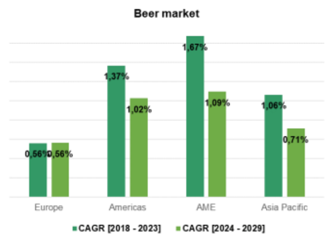


**Fig.95-** Beer market growth forecast
Source: Euromonitor, Statista, Business Wire, Analyst estimates

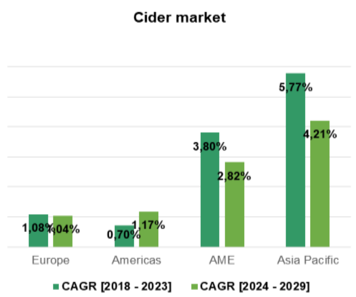


**Fig.96-** Cider market growth forecast
Source: Euromonitor, Statista, Business Wire, Analyst estimates

Heineken's top line performance is mainly driven by total quantity of beer and cider sold and revenue per hectolitre. Revenue was estimated by region, considering Heineken's reporting operating segments: Europe, Americas, Africa, Middle East & Eastern Europe and Asia Pacific. A top-down forecast procedure was used to estimate beverages volumes sold by sizing the total market of beer and cider, in each region, and by determining Heineken's market share in each market of each region. Revenue per hectolitre evolution was estimated to follow the path of local inflation, adjusted for the currency translation effect as revenues are estimated in a common-currency, euro.

Considering ongoing industry trends, the beer and cider markets are estimated to grow at a CAGR of 1.20% and 2.08%, from 2018 to 2023 and of 0.86% and 1.85%, from 2024 to 2029, respectively. The cider market is in strong expansion in Asia Pacific and AME, while the beer market records higher growth rates in AME and Americas. Since 2015, Heineken has already positioned itself to take advantage of market premiumtization and preference shifting towards low- and non-alcoholic beverages, by developing its craft portfolio, creating low-and non-alcoholic beer offers and expanding in the cider market. Given that the company already capitalized from these ongoing trends, future market share gains, in each market, in each region, were estimated using as proxy average organic market share gains in the past 3 years, in each market, in each region, accordingly. Additionally, the incremental position gains were weighted by a decreasing factor, as Heineken ability to grow decreases.

| Market shares - Beer | 2016A | 2017A | 2018E | 2019F | 2020F | 2021F | 2022F | 2023F | 2024F | 2025F | 2026F | 2027F | 2028F | 2029F | 2030F | 2031F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **World** | 11,5% | 12,6% | 12,9% | 13,1% | 13,3% | 13,4% | 13,4% | 13,4% | 13,5% | 13,5% | 13,5% | 13,5% | 13,6% | 13,6% | 13,6% | 13,6% |
| Europe | 33,7% | 33,7% | 34,0% | 34,1% | 34,2% | 34,2% | 34,3% | 34,3% | 34,3% | 34,3% | 34,3% | 34,4% | 34,4% | 34,4% | 34,4% | 34,4% |
| Americas | 10,3% | 13,5% | 14,0% | 14,3% | 14,6% | 14,7% | 14,8% | 14,9% | 14,9% | 15,0% | 15,0% | 15,0% | 15,1% | 15,1% | 15,2% | 15,2% |
| AME | 12,0% | 12,2% | 12,5% | 12,6% | 12,6% | 12,6% | 12,6% | 12,7% | 12,7% | 12,7% | 12,7% | 12,7% | 12,7% | 12,7% | 12,7% | 12,7% |
| Asia Pacific | 3,5% | 3,8% | 4,1% | 4,4% | 4,6% | 4,7% | 4,8% | 4,8% | 4,9% | 4,9% | 4,9% | 5,0% | 5,0% | 5,0% | 5,1% | 5,1% |

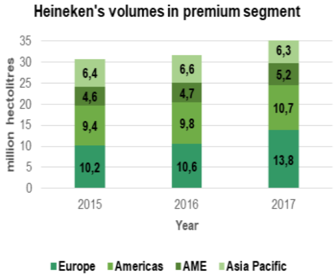


**Fig.97-** Heineken's volumes in premium segment
Source: Company report

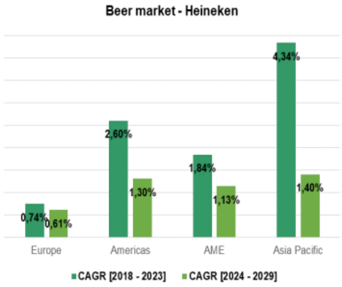


**Fig.99-** Heineken in beer market growth forecast
Source: Euromonitor, Statista, Business Wire, Analyst estimates

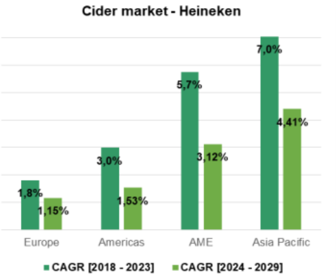


**Fig.100-** Heineken in cider market growth forecast
Source: Euromonitor, Statista, Business Wire, Analyst estimates

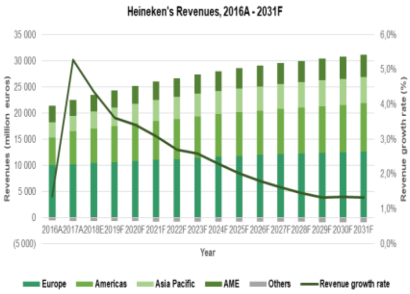


**Fig.101-** Heineken revenues behavior from 2016A until 2031F (ignoring M&A in 2018E)
Source: Company report, Analyst estimates

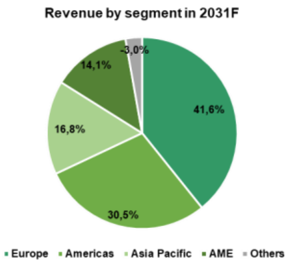


**Fig.102-** Heineken revenues in 2031F by region
Source: Analyst estimates

| Market share - Cider | 2016A | 2017A | 2018E | 2019F | 2020F | 2021F | 2022F | 2023F | 2024F | 2025F | 2026F | 2027F | 2028F | 2029F | 2030F | 2031F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **World** | 17,5% | 18,7% | 19,2% | 19,5% | 19,7% | 19,8% | 19,9% | 19,9% | 19,9% | 19,9% | 19,8% | 19,8% | 19,8% | 19,8% | 19,8% | 19,8% |
| Europe | 26,6% | 27,1% | 27,5% | 27,8% | 28,1% | 28,3% | 28,4% | 28,5% | 28,5% | 28,5% | 28,6% | 28,6% | 28,6% | 28,7% | 28,7% | 28,7% |
| Americas | 6,7% | 7,9% | 8,3% | 8,7% | 8,9% | 9,1% | 9,2% | 9,3% | 9,3% | 9,4% | 9,4% | 9,4% | 9,5% | 9,5% | 9,5% | 9,6% |
| AME | 5,7% | 9,8% | 10,2% | 10,5% | 10,8% | 11,0% | 11,1% | 11,2% | 11,2% | 11,2% | 11,3% | 11,3% | 11,3% | 11,4% | 11,4% | 11,4% |
| Asia Pacific | 13,4% | 15,6% | 16,0% | 16,3% | 16,6% | 16,8% | 16,9% | 17,0% | 17,0% | 17,1% | 17,1% | 17,1% | 17,2% | 17,2% | 17,2% | 17,3% |

**Fig.98-** Heineken market share in beer and cider market by region
Source: Company report, Analyst estimates

Heineken will be able to grow above the market, especially in Americas and Asia Pacific, 2 regions where the company has been concentrating recent efforts. Furthermore, continuing its progress, since 2015, it is expected to grow at higher rates in the cider market than in the beer market.

Apart from year 2018, inorganic growth was forecasted to be 0%. Considering the company's solid financial position, which indicates Heineken could support more debt, it is likely that it could take advantage of a strategic deal, if the opportunity arises. To evaluate the reasonableness of assuming no value-added from acquisitions, the past was analysed. In 2017, Heineken was involved in two major acquisitions: Brasil Kirin, with a transaction cost of € 594 million and Punch A, with a transaction cost of € 331 million. Comparing the transaction amount with the value of the net assets acquired, the Company reported a goodwill of € 656 million, in the case of Brasil Kirin and € 0, in the case of Punch A. To evaluate if these acquisitions generated added-value, a comparison was made between the evolution of ROIC (including goodwill) and ROIC (excluding goodwill). Overall ROIC increased 22.9%, from 2016 to 2017, while ROIC without goodwill increased 22.4%. The value created by the acquisitions is around 0.4%. Even though the value-added by the acquisition is positive, it is close to 0%; therefore, there are evidences to validate the assumption used.

In detriment of expansion in other regions, weight of Europe on total revenues is expected to decrease, similarly to the past; nevertheless, Europe remains as the most important regional market for Heineken, representing, in 2031, 41.6% of total revenues vs 46.6% in 2017. Reinforcing its leading position in Latin America and penetrating North America, revenues by the end of 2031 are expected to represent 30.5% of total vs 28.6% in 2017. Continuing its strategy of expanding to emerging markets, the company will increase the weight on total revenues of AME (14.1% in 2031 vs 14.0% in 2017) and Asia Pacific (16.8% vs 13.7% in 2017), particularly focusing on Asian markets. Heineken's total revenue growth, from 2019 onwards, is below historical levels, as expected, since inorganic growth is considered at 0%. Accompanying the maturity process of beer markets in all regions, reflected on deceleration of increase in total beer consumption, Heineken's revenues increase each year at a progressively lower rate, stabilizing at 1.3% y-o-y growth in 2029. Heineken's total revenue, in 2031, amounts to € 30 309 million, which can be translated in a CAGR, from 2017 to 2031, of revenues at 2.4%; of beer volume sold at 1.6%; and of cider volume sold at 2.3%.

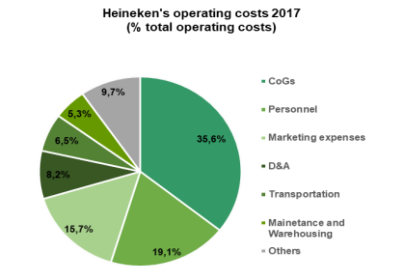


**Fig.103-** Heineken operating costs in 2017
Source: Company report

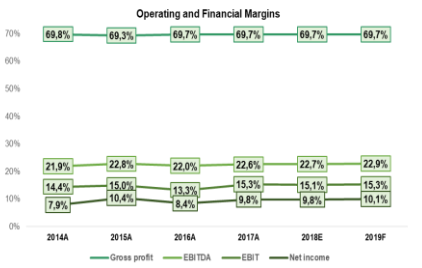


**Fig.104-** Forecast operating and financial margins
Source: Company report, Analyst estimates

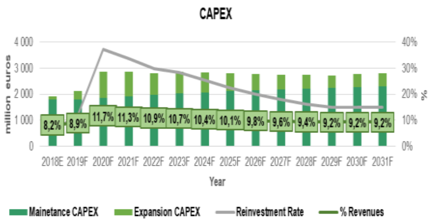


**Fig.105-** Heineken's capital expenditures
Source: Company report, Analyst estimates

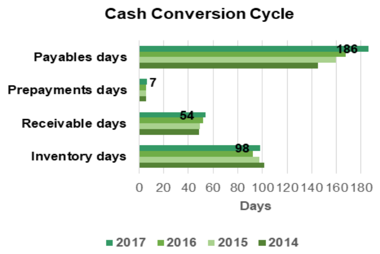


**Fig.106-** Heineken's cash conversion cycle
Source: Company report, Analyst estimates

| NWC | 2017A | 2018E - 2031F |
|---|---|---|
| Inventory turnover | 3,66x | 3,69x |
| Receivables turnover | 6,68x | 6,48x |
| Prepayments turnover | 54,86x | 54,86x |
| Payables turnover | 1,93x | 1,93x |
| Inventory days | 98 | 98 |
| Receivable days | 54 | 56 |
| Prepayments days | 7 | 7 |
| Payables days | 186 | 186 |
| **Operating cycle** | **159** | **160** |
| **Cash conversion cycle** | **-27** | **-27** |

**Fig.107-** Heineken's net working capital forecast
Source: Company report, Analyst estimates

## Operating costs

Heineken's main cost captions are cost of goods sold (30.3% of revenues, in 2017); personnel expenses (16.2% of revenues, in 2017); services costs which include, among others, distribution, maintenance and marketing costs (31.6% of revenues, in 2017); and depreciations and amortizations (7.0% of revenues, in 2017), given the weight of PPE and intangible assets on the company's assets (70.1%, in 2017).

The gross profit margin, which has been fairly constant over the past years, is estimated to remain at 69.7%, since Heineken does not expect to record relevant changes on raw material prices and agreements with suppliers. Moreover, over the past years, Heineken has been working on its operational efficiency to increase its EBITDA margin through reduction of personnel and services costs. Even though Heineken's margins slightly deteriorate last year due to acquisitions, namely of Brazil Kirin, the company has been focused on improving its margins and reducing the gap with the industry, improving its EBITDA margin 0.8% from 2015 to 2016. Additionally, even though Heineken will increase its focus on cider production, the nature of assets is not expected to change, because, first, the company already has established several cider plants and, second, the production process of beer and cider is similar and requires the same steps and machinery. Therefore, it is reasonable to estimate future depreciation and amortization rates to be equal to the average of the past 4 years.

## CAPEX & NWC

Capital expenditures (CAPEX) are associated with strategic acquisitions; opening of new factories and maintenance and/or renovation of machinery. Heineken is not committed with a specific target. Particular high level of capital expenditures, in 2015 and 2017, were due to several M&A deals and expansion ventures in new countries. Maintenance CAPEX, using depreciations and amortizations as proxy, is estimated to represent roughly 80% of total expenditures, while the remainder supports the factories capacity increase to support the growth in beverages production. From estimation assumptions, it follows CAPEX represents around 9% - 10% of revenues. Capital expenditures will increase up until 2023, decreasing afterwards since reinvestment rate and expansion CAPEX are declining, as expected, given the company is reaching a steady state.

Heineken's strict working capital management allows Heineken to free up cash, creating value by increasing balance-sheet flexibility and allowing the Company to take advantage of growth opportunities by reinvesting that cash. This explains, in part, the low levels of debt the company requires to operate. Operating cash was estimated to represent 5% of revenues, according to literature, and inventories, trade receivables and trade payables were estimated on a days-basis, according to the average change in the past 4 years. In 2018, Heineken's operating cycle will be 160 days and cash cycle will be -27 days.

# Valuation

## Enterprise Value

| Implied Multiples from Valuation | Multiples 2019F |
|---|---|
| EV/Sales | 3,0x |
| EV/EBITDA | 12,9x |
| EV/EBIT | 19,3x |
| P/E | 23,3x |

**Fig.108-** Heineken's valuation multiples
Source: Analyst estimates

| | | |
|---|---|---|
| **Target Share Price @Dec2019** | € | 97,52 |
| **Current Share Price @Dec2018** | € | 77,20 |
| Dividends received | € | 1,46 |
| Capital gains yield | | 26,3% |
| Dividend yield | | 1,9% |
| **Return** | | **28,2%** |
| **Re** | | **5,2%** |
| **Recommendation** | | **BUY** |
| **Trigger price to buy/sell** | € | **79,78** |

**Fig.109-** Heineken's target share price 2019F
Source: Analyst estimates

The operating Enterprise Value was determined through the Discounted Cash Flow Model (DCF) at a WACC of 4.57%. The company stabilizes in 2030F-2031F: revenue growth rate stable at 1.3% in 2029F; ROIC stable at 8.1% in 2030F, comparing with 8.2% in 2029F; and growth of unlevered FCF stable at 1.1%. Therefore, from 2031F onwards, a perpetuity was used with a perpetual growth rate of 1.1%, which results from a reinvestment rate (RR) of 14.9% and a return on new invested capital (RONIC) of 7.4% (2.9% above WACC). Total Enterprise Value (EV) is achieved by adjusting for the net value of non-operating assets, namely, derivatives and provisions. The Equity value is determined, by adding the value of net financial liabilities.

The target share price, at end 2019F, is € 97.52, implying the stock is undervalued. The recommendation on Heineken is to “BUY”, given that holding the stock will provide a total return of 28.2.0%: capital gains of 26.3% and dividend gains of 1.9%, which is higher than cost of equity of 5.2%.

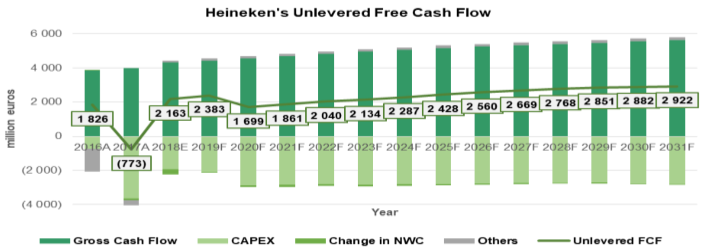


**Fig.110-** Heineken's unlevered free cash flow
Source: Analyst estimates

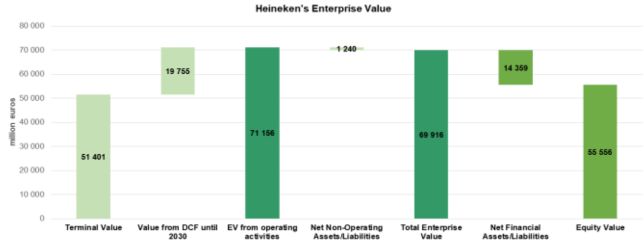


**Fig.111-** Heineken's valuation
Source: Analyst estimates

| | |
|---|---|
| Risk-free rate (Rf) | 1,07% |
| Market Risk Premium (MRP) | 5,50% |
| Cost of Debt (Rd) | 2,55% |
| Yield (YTM) | 2,71% |
| Probability of default (P(d)) | 0,31% |
| Loss given default (LGD) | 52,1% |
| Beta of debt (βd) | 0,269 |
| Income tax rate | 25% |
| Beta of equity levered (βe) | 0,758 |
| Cost of levered equity (Re) | 5,24% |
| Beta unlevered (βu) | 0,660 |
| Unlevered cost of capital (Ru) | 4,70% |
| Debt/Enterprise Value (@market values) | 20% |
| Equity/Enterprise Value (@market values) | 80% |
| Weighted Average Cost of Capital (WACC) | 4,57% |

**Fig.112-** Discount rates
Source: Analyst estimates

- ### Discount rates

The weighted average cost of capital (WACC) resulted from the estimation of each one of its components, namely, the cost of equity (Re), the after-tax cost of debt ((1-t)*Rd) and the target forward-looking Debt-to-Equity ratio (D/E).

The cost of equity was estimated using the capital asset pricing model (CAPM). The rate on German Bond with 30-year maturity was used as proxy for the risk-free rate, as this is the asset with lower default risk and interest rate risk in Europe. The estimation of the market risk premium was based on literature,

| Companies | βu |
|---|---|
| Heineken | 0,488 |
| AB InBev | 0,607 |
| Carlsberg | 0,476 |
| Diageo plc | 0,635 |
| Molson Coors Brewing | 0,852 |
| Boston Beer Company | 0,718 |
| China Resources Enterprise Beer | 0,705 |
| Tsingtao Brewery | 0,801 |
| **Average** | **0,660** |

**Fig.113-** Industry beta of equity unlevered
Source: Bloomberg, Analyst estimates

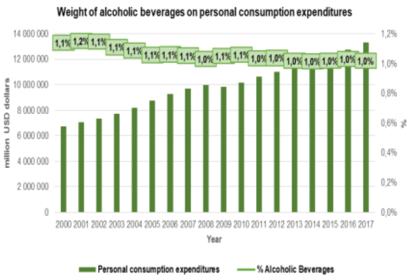


**Fig.114-** Weight of alcoholic beverages on consumption expenses
Source: Economic research from FRED

namely KPMG Research published on November 2018. To get a forward-looking estimate for the beta of equity levered, firstly, an industry average beta of equity unlevered (βu) was obtained and, secondly, βu was relevered assuming Heineken's will maintain a D/E of 25%. The considered industry sample includes 7 companies, in addition to Heineken. The βu for each company was estimated by delivering the βe, obtained by regressing each company on the MSCI World Index, which is the most diversifiable equity index, using weekly data for a period of 2 years. The beta of all companies is below 1, indicating breweries are less cyclical than the economy. The weight of expenditure on alcoholic beverages on total consumption expenses, on global terms, has been fairly constant, stabilizing at 1.0%, from 2011 until 2017.

The cost of debt was estimated considering the yield-to-maturity (YTM) on a Heineken's outstanding bond, with 20 years maturity and a face value of € 180 million. Afterwards, to get the cost of debt, the loss given default (LGD) weighted by the probability of default (p (d)) must be deducted from the YTM. Estimation of both figures was based on the Annual Default Study: Corporate Default and Recovery Rates, 1920 – 2017, published in 2018 by Moody's, considering the bond is unsecured and has a rating Baa1. The marginal tax rate considered was the tax rate in the Netherlands, where Heineken's headquarters are located. To obtain an estimate for the target forward-looking Debt-to-Equity ratio, a sample of 28 companies in the alcoholic beverage industry was considered.

- Sensitivity Analysis

| | | Market Risk Premium | | | | |
|---|---|---|---|---|---|---|
| | | **4,3%** | **5,5%** | **5,75%** | **6,0%** | **6,50%** |
| **Rf** | **0,4%** | 184,19 | 127,46 | 119,19 | 111,73 | 98,82 |
| | **0,7%** | 158,77 | 113,17 | 106,28 | 100,01 | 89,04 |
| | **0,8%** | 151,27 | 108,78 | 102,29 | 96,37 | 85,98 |
| | **0,9%** | 141,80 | 103,12 | 97,13 | 91,65 | 81,98 |
| | **1,1%** | 132,65 | 97,52 | 92,01 | 86,94 | 77,97 |

**Fig.115-** Sensitivity analysis on RF and MRP
Source: Analyst estimates

| Estimation Source of βu | βe | |
|---|---|---|
| Lower Bound Industry Median | **0,389** | 212,09 |
| Lower Bound Industry Average | **0,427** | 191,81 |
| Industry Average | **0,758** | 97,52 |
| Industry Median | **0,770** | 95,55 |
| Upper Bound Industry Average | **1,089** | 59,12 |
| Upper Bound Industry Median | **1,118** | 56,77 |

**Fig.116-** Sensitivity analysis on beta levered
Source: Analyst estimates

| Credit Rating | Default Premium | Rd | |
|---|---|---|---|
| A1 | 0,7% | **1,77%** | 102,07 |
| A2 | 0,9% | **1,92%** | 101,17 |
| A3 | 1,2% | **2,27%** | 99,12 |
| Baa1 | 1,6% | **2,67%** | 96,85 |
| Baa2 | 1,9% | **2,97%** | 95,20 |
| Baa3 | 2,2% | **3,27%** | 93,59 |
| Ba1 | 2,5% | **3,57%** | 92,03 |

**Fig.117-** Sensitivity analysis on Rd
Source: Analyst estimates

Given all the assumptions made to compute the WACC and the low discount rates used, it is relevant to perform a sensitivity analysis on the parameters: risk-free rate, market risk premium, beta of equity levered and cost of debt.

Firstly, a sensitivity analysis on the Rf and the MRP was performed to understand the impact of considering as Rf, the rate on a German bond with 10, 15, 20 or 25 years maturity instead of 30 years and considering as MRP previous estimates provided by KPMG Research or the estimate by Elroy Dimson, Paul Marsh, and Mike Staunton on *Triumph of the Optimists*. Even though these are 2 sensitive inputs, the target share price obtained is not lower than the current share price. Secondly, a sensitivity analysis on βe allowed to understand the effect of using the industry median instead of the industry average as proxy of βu. Moreover, since the βu was obtained from regressions which carry an estimation error, it is pertinent to build a 95% confidence interval. The target share price interval is wide due to relatively high standard error of regressions. Thirdly, a sensitivity analysis on the Rd clarified the impact of the company being downgraded or upgraded up to 3 levels. The target share price is not very sensitive to credit risk.

| Perpetual g | |
|---|---|
| 0,68% | 87,31 |
| 0,74% | 88,57 |
| 0,82% | 90,39 |
| 1,10% | 97,45 |
| 1,11% | 97,52 |
| 1,20% | 100,23 |
| 1,21% | 100,34 |
| 1,22% | 100,63 |
| 1,32% | 103,49 |
| 1,33% | 104,04 |
| 1,46% | 108,08 |

**Fig.118-** Sensitivity analysis on g
Source: Analyst estimates

Finally, given that around 70% of the EV comes from the perpetuity, the perpetual growth rate is one of the most sensitive inputs of the valuation. A sensitivity analysis was performed to measure the impact on target share price of considering a reinvestment rate (RR) of previous 4 years and a return on new invested capital (RONIC) equal to the WACC or equal to return on invested capital (ROIC). The target share price is bond by a minimum of € 87. 31, which would still imply a "BUY" recommendation.

- ### Scenario Analysis[1]

| Scenario | Target share price | Probability of scenario |
|---|---|---|
| Base case | € 97,52 | 78,0% |
| RCP2.6 | € 96,19 | 4,0% |
| RCP4.5 | € 78,62 | 3,0% |
| RCP6.0 | € 76,35 | 3,0% |
| RCP8.5 | € 54,43 | 2,0% |
| Cannabis expansion | € 115,65 | 10,0% |

**Fig.119-** Scenario analysis
Source: Analyst estimates

One of Heineken's risk is a disruption in the supply of raw materials, which can be caused by extreme climate changes. NASA's predictions for future climate conditions include warmer winters, more intense hurricanes and droughts which will cause vast shifts in crops, such as barley, one of the main beer ingredients. Relying on a study published on *Nature Plants Journal* on October 2018, "Decreases in global beer supply due to extreme draught and heat", 4 scenarios (RCP2.6, 4.5, 6.0, 8 .5) were built to measure the impact on Heineken's fair value of extreme droughts and heat, caused by increase in surface temperatures. The impacted in puts are the gross profit margin and the beer market size. Furthermore, a trend of the industry relates to the proliferation of interest for cannabis products, derived from recent legalization in Canada and expected future legalization in other regions, such as Europe. Another scenario was constructed to quantify the potential of Heineken investing in this new market, as it would allow the company to expand its revenues and mitigate the effects from disinterest in beer. The weighted average target share price for 2019F of all scenarios is € 97. 22, which still represents a "BUY" recommendation.

| | | |
|---|---|---|
| Target Share Price @Dec2019 | € | 97,22 |
| Current Share Price @Dec2018 | € | 77,20 |
| Dividends received | € | 1,46 |
| Capital gains yield | | 25,9% |
| Dividend yield | | 1,9% |
| Return | | 27,8% |
| Re | | 5,2% |
| Recommendation | | BUY |
| Trigger price to buy/sell | € | 79,78 |

**Fig.120-** Heineken's target share price 2019F
Source: Analyst estimates

## Multiples Valuation

| Companies | EV/Sales | EV/EBITDA | P/E |
|---|---|---|---|
| A-B InBev | 5,3x | 13,6x | 45,9x |
| Carlsberg | 2,2x | 16,3x | 23,6x |
| Diageo plc | 6,0x | 17,8x | 24,1x |
| Molson Coors Brewing | 2,2x | 9,0x | 19,0x |
| Boston Beer Company | 2,0x | 22,4x | 42,0x |
| China Resources Enterprise Beer | 2,6x | 21,1x | 72,0x |
| Tsingtao Brewery | 1,1x | 10,9x | 42,6x |
| **Heineken** | **3,0x** | **12,9x** | **23,3x** |
| **Average** | **2,9x** | **13,4x** | **22,5x** |
| **Median** | **2,4x** | **13,3x** | **23,5x** |
| **Average** | **€ 94,75** | **€ 102,69** | **€ 94,12** |
| **Median** | **€ 75,63** | **€ 100,98** | **€ 98,05** |

**Fig.121-** Industry valuation multiples
Source: Bloomberg, Analyst estimates

As an auxiliary tool for Heineken's valuation, a peer's comparable analysis was performed, considering the Enterprise Value-to-Sales ratio, the Enterprise Value-to-EBITDA ratio and Price-to-Earnings ratio. The industry sample selection relied on the size and region criteria as proxy for growth prospects and risks: companies considered detain a significant proportion of the beer market, as Heineken, and are present in geographical regions, that Heineken is exposed to.

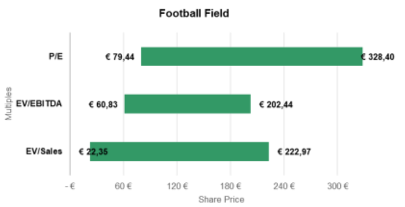


**Fig.122-** Football field
Source: Bloomberg

Disregarding the outliers from the sample used, the multiples analysis yields a result similar to the DCF valuation, supporting the "BUY" recommendation on Heineken, given that capital gains exceed the cost of holding the stock. Relying on the EV-multiples, the target share price, using industry average, is € 98.72.

[1] For more details, please refer to pages 33 to 42

# Appendix

## Financial Statements

### Consolidated Income Statement

(values in million euros)

| | 2016A | 2017A | 2018E | 2019F | 2020F | 2021F | 2022F | 2023F |
|---|---|---|---|---|---|---|---|---|
| Revenues | 20 792 | 21 888 | 23 422 | 23 675 | 24 487 | 25 243 | 25 927 | 26 597 |
| Cost of goods sold | (6 302) | (6 631) | (7 096) | (7 173) | (7 418) | (7 647) | (7 855) | (8 058) |
| **Gross profit** | **14 490** | **15 257** | **16 326** | **16 503** | **17 068** | **17 596** | **18 072** | **18 540** |
| Other Income | 46 | 141 | 27 | 0 | 0 | 0 | 0 | 0 |
| Services | (6 701) | (6 909) | (7 328) | (7 341) | (7 592) | (7 827) | (8 039) | (8 247) |
| Personnel expenses | (3 126) | (3 441) | (3 668) | (3 694) | (3 821) | (3 939) | (4 046) | (4 150) |
| Expenses(income) related to employee benefits | (89) | (62) | 0 | 0 | 0 | 0 | 0 | 0 |
| Contributions to defined contribution plans | (48) | (47) | (46) | (46) | (46) | (46) | (46) | (46) |
| **EBITDA[1]** | **4 572** | **4 939** | **5 311** | **5 422** | **5 609** | **5 784** | **5 942** | **6 096** |
| Depreciations (including impairements) | (1 437) | (1 153) | (1 402) | (1 417) | (1 466) | (1 511) | (1 552) | (1 592) |
| Amortizations (including impairements) | (380) | (369) | (380) | (384) | (397) | (409) | (421) | (431) |
| Recycling of currency translation differences | 0 | (65) | 0 | 0 | 0 | 0 | 0 | 0 |
| **EBIT[2]** | **2 755** | **3 352** | **3 529** | **3 620** | **3 746** | **3 863** | **3 969** | **4 073** |
| Net interest expense | (493) | (519) | (470) | (425) | (387) | (370) | (350) | (323) |
| **Profit before taxes** | **2 262** | **2 833** | **3 059** | **3 195** | **3 359** | **3 493** | **3 619** | **3 749** |
| Income tax expense | (673) | (755) | (907) | (947) | (996) | (1 036) | (1 073) | (1 112) |
| **Net profit of operations** | **1 589** | **2 078** | **2 152** | **2 248** | **2 363** | **2 457** | **2 546** | **2 638** |
| Share of profit of associates and joint ventures | 150 | 75 | 133 | 134 | 139 | 143 | 147 | 151 |
| Minority interests | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Net profit** | **1 739** | **2 153** | **2 284** | **2 382** | **2 502** | **2 600** | **2 693** | **2 788** |

1 Earnings before interests, taxes, depreciations and amortizations
2 Earnings before interests and taxes

### Free Cash Flow Map

(values in million euros)

| | 2016A | 2017A | 2018E | 2019F | 2020F | 2021F | 2022F | 2023F |
|---|---|---|---|---|---|---|---|---|
| + EBIT | 2 755 | 3 352 | 3 529 | 3 620 | 3 746 | 3 863 | 3 969 | 4 073 |
| - Adjustment for non-operating income | (46) | (141) | (27) | 0 | 0 | 0 | 0 | 0 |
| + Adjustment for Employee Benefits Expense | 137 | 109 | 46 | 46 | 46 | 46 | 46 | 46 |
| **= Adjusted EBIT** | **2 846** | **3 320** | **3 548** | **3 666** | **3 792** | **3 909** | **4 015** | **4 119** |
| - Recurrent taxes | (712) | (830) | (887) | (917) | (948) | (977) | (1 004) | (1 030) |
| - Adjustment in taxes | (108) | (47) | (142) | (149) | (156) | (162) | (168) | (174) |
| **= NOPLAT** | **2 027** | **2 443** | **2 519** | **2 601** | **2 688** | **2 769** | **2 843** | **2 915** |
| + Depreciations and amortizations | 1 817 | 1 522 | 1 782 | 1 801 | 1 863 | 1 921 | 1 973 | 2 024 |
| **= Gross Cash Flow** | **3 844** | **3 965** | **4 301** | **4 403** | **4 551** | **4 690** | **4 816** | **4 938** |
| **- CAPEX** | **(738)** | **(3 653)** | **(1 927)** | **(2 115)** | **(2 865)** | **(2 855)** | **(2 817)** | **(2 852)** |
| **- Change in NWC** | **39** | **(99)** | **(309)** | **(38)** | **(120)** | **(112)** | **(101)** | **(99)** |
| - Change in other operating assets on Balance Sheet | (433) | 294 | (357) | (39) | (124) | (115) | (104) | (102) |
| + Change in other operating liabilities on Balance Sheet | (107) | (186) | 324 | 37 | 118 | 110 | 100 | 98 |
| + Share of profit in associates and joint ventures | 150 | 75 | 133 | 134 | 139 | 143 | 147 | 151 |
| + Annulement of operativos from Statement of Comprehen | (929) | (1 169) | 0 | 0 | 0 | 0 | 0 | 0 |
| **= Unlevered Free Cash Flow** | **1 826** | **(773)** | **2 163** | **2 383** | **1 699** | **1 861** | **2 040** | **2 134** |
| **= Non operating Free Cash Flow** | **(72)** | **685** | **329** | **(2)** | **(7)** | **(6)** | **(6)** | **(5)** |
| **= Cash flow available to investors** | **1 754** | **(88)** | **2 492** | **2 381** | **1 693** | **1 855** | **2 034** | **2 128** |
| **+ Tax shields** | **123** | **130** | **118** | **106** | **97** | **93** | **87** | **81** |
| - Interests | (493) | (519) | (470) | (425) | (387) | (370) | (350) | (323) |
| + Change in Net Financial Liabilities | (9) | 1 489 | (1 292) | (1 159) | (456) | (595) | (756) | (835) |
| + Change in equity (cash) | (1 307) | (1 036) | (833) | (868) | (912) | (948) | (982) | (1 016) |
| + Non-operating income from sale of disposals | 46 | 141 | 27 | 0 | 0 | 0 | 0 | 0 |
| - Expense from Employee Benefits contribution plan | (137) | (109) | (46) | (46) | (46) | (46) | (46) | (46) |
| - Taxes | 23 | (8) | 5 | 12 | 12 | 12 | 12 | 12 |
| **= Financing Free Cash Flow** | **(1 754)** | **88** | **(2 492)** | **(2 381)** | **(1 693)** | **(1 855)** | **(2 034)** | **(2 128)** |

## Consolidated Statement of Financial Position

(values in million euros)

| | 2016A | 2017A | 2018E | 2019F | 2020F | 2021F | 2022F | 2023F |
|---|---|---|---|---|---|---|---|---|
| **Operating Assets:** | | | | | | | | |
| Property, Plant & Equipment | 9 232 | 11 117 | 10 952 | 11 070 | 11 450 | 11 803 | 12 123 | 12 436 |
| Intangible Assets | 17 424 | 17 670 | 17 981 | 18 175 | 18 798 | 19 379 | 19 904 | 20 418 |
| Operating cash | 1 040 | 1 094 | 1 171 | 1 184 | 1 224 | 1 262 | 1 296 | 1 330 |
| Inventoires | 1 618 | 1 814 | 1 923 | 1 944 | 2 011 | 2 073 | 2 129 | 2 184 |
| Trade receivables | 3 004 | 3 277 | 3 613 | 3 652 | 3 777 | 3 894 | 3 999 | 4 103 |
| Prepayments and accured income | 328 | 399 | 427 | 432 | 446 | 460 | 473 | 485 |
| Advances to customers | 274 | 277 | 304 | 308 | 318 | 328 | 337 | 346 |
| Other investments and receivables | 838 | 1 092 | 1 293 | 1 307 | 1 352 | 1 393 | 1 431 | 1 468 |
| Investments in associates and joint ventures | 2 166 | 1 841 | 1 970 | 1 991 | 2 060 | 2 123 | 2 181 | 2 237 |
| Tax assets | 1 058 | 832 | 832 | 832 | 832 | 832 | 832 | 832 |
| **Total Operating Assets** | **36 982** | **39 413** | **40 466** | **40 895** | **42 268** | **43 548** | **44 705** | **45 839** |
| **Operating Liabilities:** | | | | | | | | |
| Trade payables | 2 934 | 3 430 | 3 670 | 3 710 | 3 837 | 3 956 | 4 063 | 4 168 |
| Tax liabilities | 2 027 | 1 805 | 1 805 | 1 805 | 1 805 | 1 805 | 1 805 | 1 805 |
| Other payables | 3 056 | 3 092 | 3 416 | 3 453 | 3 571 | 3 681 | 3 781 | 3 879 |
| **Total Operating Liabilities** | **8 017** | **8 327** | **8 891** | **8 968** | **9 213** | **9 442** | **9 649** | **9 852** |
| **Net Operating Assets** | **28 965** | **31 086** | **31 575** | **31 927** | **33 054** | **34 106** | **35 056** | **35 987** |
| **Non-operating Assets:** | | | | | | | | |
| Derivatives | 302 | 255 | 294 | 297 | 307 | 317 | 325 | 334 |
| **Total Non-operating Assets:** | **302** | **255** | **294** | **297** | **307** | **317** | **325** | **334** |
| **Non-operating Liabilities:** | | | | | | | | |
| Derivatives | 75 | 21 | 104 | 105 | 109 | 112 | 115 | 118 |
| Provisions | 456 | 1 148 | 1 432 | 1 432 | 1 432 | 1 432 | 1 432 | 1 432 |
| **Total Non-operating Liabilities:** | **531** | **1 169** | **1 536** | **1 537** | **1 541** | **1 544** | **1 547** | **1 550** |
| **Net Non-operating Assets** | **(229)** | **(914)** | **(1 243)** | **(1 240)** | **(1 234)** | **(1 228)** | **(1 222)** | **(1 217)** |
| **Financial Assets:** | | | | | | | | |
| Excess cash | 1 995 | 1 348 | 2 401 | 2 078 | 2 265 | 3 528 | 4 881 | 6 269 |
| Assets classified as held for sale | 57 | 33 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other investments | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total Financial Assets** | **2 052** | **1 381** | **2 401** | **2 078** | **2 265** | **3 528** | **4 881** | **6 269** |
| **Financial Liabilities:** | | | | | | | | |
| Loans and Borrowings | 14 604 | 15 513 | 15 194 | 13 714 | 13 407 | 14 034 | 14 596 | 15 116 |
| Other debt securities | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Interest payables | 129 | 168 | 138 | 125 | 114 | 109 | 103 | 95 |
| Dividends payables | 30 | 45 | 38 | 40 | 42 | 44 | 45 | 47 |
| Employee benefits (reteirement related liabilities) | 1 420 | 1 289 | 1 374 | 1 384 | 1 431 | 1 476 | 1 516 | 1 555 |
| Liabilities classified as held for sale | 17 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total Financial Liabilities** | **16 215** | **17 032** | **16 760** | **15 278** | **15 009** | **15 677** | **16 274** | **16 827** |
| **Net Financial Assets** | **(14 163)** | **(15 651)** | **(14 359)** | **(13 200)** | **(12 744)** | **(12 149)** | **(11 393)** | **(10 558)** |
| **Total Equity** | **14 573** | **14 521** | **15 973** | **17 486** | **19 076** | **20 729** | **22 440** | **24 212** |

# Revenues

**Revenues**

| | 2014A | 2015A | 2016A | 2017A | 2018E | 2019F | 2020F | 2021F | 2022F | 2023F | 2024F | 2025F | 2026F | 2027F | 2028F | 2029F | 2030F | 2031F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Europe** | | | | | | | | | | | | | | | | | | |
| Total Volume (mhl)[1] | 91,8 | 95,2 | 97,5 | 97,9 | 99,1 | 100,0 | 100,9 | 101,6 | 102,4 | 103,0 | 103,7 | 104,3 | 105,0 | 105,6 | 106,3 | 107,0 | 107,7 | 108,3 |
| Revenue per hectoliter (€/hl)[2] | 99 | 100 | 97 | 98 | 99 | 99 | 100 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 108 | 109 | 109 | 109 |
| **Revenue (m€)** | **9 761** | **10 227** | **10 112** | **10 207** | **10 396** | **10 578** | **10 776** | **10 980** | **11 192** | **11 413** | **11 613** | **11 794** | **11 956** | **12 102** | **12 234** | **12 352** | **12 474** | **12 595** |
| *% Total* | *50,7%* | *49,9%* | *48,6%* | *46,6%* | *44,4%* | *44,7%* | *44,0%* | *43,5%* | *43,2%* | *42,9%* | *42,7%* | *42,5%* | *42,3%* | *42,2%* | *42,0%* | *41,8%* | *41,7%* | *41,6%* |
| **Americas** | | | | | | | | | | | | | | | | | | |
| Total Volume (mhl)[1] | 54,6 | 57,5 | 60,0 | 79,0 | 83,0 | 86,0 | 88,7 | 91,0 | 92,8 | 94,4 | 95,9 | 97,2 | 98,5 | 99,8 | 101,0 | 102,3 | 103,5 | 104,8 |
| Revenue per hectoliter (€/hl)[2] | 85 | 90 | 87 | 79 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 86 | 87 | 87 | 87 | 88 | 88 |
| **Revenue (m€)** | **4 631** | **5 159** | **5 203** | **6 258** | **6 616** | **6 910** | **7 198** | **7 466** | **7 707** | **7 941** | **8 154** | **8 347** | **8 520** | **8 683** | **8 831** | **8 969** | **9 110** | **9 253** |
| *% Total* | *24,0%* | *25,2%* | *25,0%* | *28,6%* | *28,2%* | *29,2%* | *29,4%* | *29,6%* | *29,7%* | *29,9%* | *30,0%* | *30,1%* | *30,2%* | *30,2%* | *30,3%* | *30,4%* | *30,5%* | *30,5%* |
| **AME** | | | | | | | | | | | | | | | | | | |
| Total Volume (mhl)[1] | 43,2 | 43,0 | 45,4 | 47,0 | 49,0 | 50,0 | 51,0 | 52,1 | 53,0 | 53,8 | 54,6 | 55,3 | 56,0 | 56,6 | 57,2 | 57,8 | 58,5 | 59,1 |
| Revenue per hectoliter (€/hl)[2] | 74 | 76 | 71 | 65 | 65 | 66 | 67 | 67 | 68 | 69 | 70 | 70 | 71 | 71 | 72 | 72 | 72 | 72 |
| **Revenue (m€)** | **3 189** | **3 263** | **3 203** | **3 059** | **3 207** | **3 298** | **3 400** | **3 507** | **3 608** | **3 714** | **3 809** | **3 895** | **3 970** | **4 037** | **4 099** | **4 158** | **4 218** | **4 278** |
| *% Total* | *16,6%* | *15,9%* | *15,4%* | *14,0%* | *13,7%* | *13,9%* | *13,9%* | *13,9%* | *13,9%* | *14,0%* | *14,0%* | *14,0%* | *14,1%* | *14,1%* | *14,1%* | *14,1%* | *14,1%* | *14,1%* |
| **Asia Pacific** | | | | | | | | | | | | | | | | | | |
| Total Volume (mhl)[1] | 18,7 | 20,3 | 24,9 | 27,7 | 30,3 | 32,7 | 34,6 | 36,0 | 36,9 | 37,5 | 38,1 | 38,7 | 39,3 | 39,8 | 40,4 | 41,0 | 41,5 | 42,1 |
| Revenue per hectoliter (€/hl)[2] | 112 | 122 | 116 | 108 | 109 | 110 | 111 | 112 | 113 | 115 | 116 | 117 | 118 | 119 | 119 | 119 | 120 | 120 |
| **Revenue (m€)** | **2 088** | **2 483** | **2 894** | **3 005** | **3 308** | **3 595** | **3 842** | **4 042** | **4 192** | **4 321** | **4 441** | **4 551** | **4 652** | **4 745** | **4 832** | **4 916** | **5 000** | **5 086** |
| *% Total* | *10,8%* | *12,1%* | *13,9%* | *13,7%* | *14,1%* | *15,2%* | *15,7%* | *16,0%* | *16,2%* | *16,2%* | *16,3%* | *16,4%* | *16,5%* | *16,5%* | *16,6%* | *16,7%* | *16,7%* | *16,8%* |
| **Head Office & Other/Eliminations** | | | | | | | | | | | | | | | | | | |
| **Revenue (m€)** | **(412)** | **(621)** | **(620)** | **(641)** | **(681)** | **(705)** | **(730)** | **(752)** | **(772)** | **(792)** | **(811)** | **(827)** | **(842)** | **(855)** | **(868)** | **(879)** | **(891)** | **(903)** |
| *% Total* | *-2,1%* | *-3,0%* | *-3,0%* | *-2,9%* | *-2,9%* | *-3,0%* | *-3,0%* | *-3,0%* | *-3,0%* | *-3,0%* | *-3,0%* | *-3,0%* | *-3,0%* | *-3,0%* | *-3,0%* | *-3,0%* | *-3,0%* | *-3,0%* |
| **Total Revenues (m€)** | **19 257** | **20 511** | **20 792** | **21 888** | **23 422** | **23 675** | **24 487** | **25 243** | **25 927** | **26 597** | **27 207** | **27 759** | **28 257** | **28 711** | **29 128** | **29 516** | **29 911** | **30 309** |

1 Total volume in million hectoliters was estimated by forecasting for the beer and cider/perry market the total amount consumed and Heineken's market share.
2 Revenue per hectoliter in each region was considered to change according to local inflation, adjusted for the currency translation effect to have revenues in euros (currency of Heineken's headquarters).

# Disclosures and Disclaimers

## Report Recommendations

| | |
|---|---|
| **Buy** | Expected total return (including expected capital gains and expected dividend yield) of more than 5.2% over a 12-month period. |
| **Hold** | Expected total return (including expected capital gains and expected dividend yield) between 0% and 5.2% over a 12-month period. |
| **Sell** | Expected negative total return (including expected capital gains and expected dividend yield) over a 12-month period. |

This report was prepared by Carolina Cabral Massa and Luísa Margarida Pedro Gaspar, Master in Finance students of Nova School of Business and Economics ("Nova SBE"), within the context of the Field Lab – Equity Research.

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This report was supervised by a Nova SBE faculty member, acting merely in an academic capacity, who revised the valuation methodology and the financial model.

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**Climates changes threat barley production, impacting beer market**

(By Carolina Massa)

NASA's predictions for future climate conditions include warmer winters, more intense hurricanes and droughts which will cause vast shifts in crops, forcing to better rationalize disposable resources. Beer supply, which vastly depends on water and production of malted barley, hops and yeast, will suffer with these severe climate changes.

Water, in addition to be used in almost every step of the production process, is an essential ingredient, accounting for up to 95% of beer's content. Similarly, barley is one of the main beer ingredients. Before it is used for brewing, the barley grain is malted, which determines the beer color and influences the taste and aroma. Barley is also used for livestock feed, human consumption, bio-fuels production and reducing algae in ponds and waterways. Secondary ingredients include yeast and hops. Yeast is added during the fermentation process to convert sugars from cereal grains into alcohol and hops are a natural preservative. Both act as beer flavor-makers. Yeast is also used for bread fermentation and hops can be used in herbal medicine as a treatment for anxiety, restlessness and insomnia. Abrupt climate changes represent a challenge to brewers especially through impact on barley production, since yeast is a resilient crop and there are alternatives for hops. Brewers can use gruit which is a mix of herbs (including mug wort, horehound, juniper berries, ginger…) as beer flavor-maker and artificial or chemical bondservants. In addition to be a sensitive crop, the use of barley to feed livestock will be prioritized over its use for beer production, in times of scarcity.

As pressure on resources grows, sustainable sourcing is one of Heineken's main concerns to ensure access to a long-term and sustainable supply of raw materials. To that end, Heineken incentivizes reduction of water consumption in breweries; reduction of emission of pollutant gases such as $CO_2$; and sourcing of raw materials from sustainable sources. To reduce water consumption, especially in water-stressed areas, the company is investing in technology for recycling water in the production process. In 2017, Heineken the average water consumption in breweries was 3.6 hectoliters per hectoliter of beer produced, achieving the target for 2018. To lower emissions in production, the company is investing in eco-friendly technology to reduce emissions from production, distribution and fridges and is opting for renewable sources of energy. In 2017, Heineken reduced its $CO_2$ emissions to 6.1 kg $CO_2$-eq/hl, from 6.5, in the previous year. Furthermore, 29% of total electrical energy comes from renewable sources. Since 2009, the company has saved € 83.3 through energy efficiency. Some examples of Heineken's efforts are its brewery in Massafra, Italy, which is one of the largest solar breweries in the world with 3.3MW capacity and its brewery in Göss, Austria, which is carbon neutral. Moreover, in 2017, the company installed a new biomass boiler in Brazil, reducing $CO_2$ emissions of Brazilian breweries by 11.5% and resulted into a 50% cost saving (comparing to use of natural gas). This year, Heineken signed agreements with three windfarms which will supply 65% of total electricity for the next years, in Mexico. To promote sustainable sourcing, the company joined the Sustainable Agriculture Initiative Platform (SAI), the primary global food and drink value chain initiative for sustainable agriculture. Furthermore, currently, Heineken is sourcing locally in 13 operating companies across 28 different value chains. In 2017, 28% of the company's main raw materials came from sustainable sources, compared to 17%, in 2016. Specifically, Heineken supports farmer livelihoods, helping them increase production capacity, in Africa. In 2017, over 50% of raw materials were sourced locally and target for 2020 is set at 60%. Moreover, it launched, at end of last year, a partnership to support a local sourcing project for broken rice (which is not used as food) and ensure production is sufficient to be used in beer production, in Ivory Coast. This venture demonstrates that barley can be substitute by other grains, such as, sorghum, rice or maize.

Nevertheless, those efforts may not prove sufficient. On October 2018, the *Nature Plants Journal* published a study “Decreases in global beer supply due to extreme draught and heat”[1], which alerted for the implication on beer production of extreme climate events. The research article used climate models (Decision Support System for Agro technology Transfer - DSSAT) to examine the impact of extreme weather on barley production and yields and, afterwards, it recurred to economic models (Global Trade Analysis Project model - GTAP) to estimate the impact on beer consumption and prices worldwide of a range of several future climate scenarios. According to the publication, in the worst case scenario, with the most severe climate changes, barley crop yields might drop up to 17% and global beer consumption would fall by 16%. In less extreme conditions, barley crop yields would still decrease 3% and global beer consumption would reduce by 4%. This will impact Heineken’s gross profit margin, as costs with raw materials increase and cause decrease in revenues driven by supply and demand side: on one hand, production of beer decreases with higher raw materials costs and scarcity of resources and in the other hand, global beer demand decreases.

The authors of the study started by establishing future climate scenarios and determining the number of extreme events in each setting. They arrived at four different representative concentration pathways (RCP), depending on evolution of global surface temperatures and prevalence and magnitude of concurrent extreme droughts and heat. According to each scenario, they were able to identify the average annual likelihood of extreme events over the first half of the 21st century and the average global barley yield change. As expected, the probability of extreme events and yield losses increase with the rise in global surface temperatures. It was, also, determined that the bigger drops in barley yields occur in tropical

[1] **Wei Xie, Wei Xiong, Jie Pan, Tariq Ali, Qi Cui, Dabo Guan, Jing Meng, Nathaniel D. Mueller, Erda Lin & Steven J. Davis.** 2018. “Decreases in global beer supply due to extreme draught and heat”, *Nature Plants*, October 15. https://www.nature.com/articles/s41477-018-0263-1
This study was supported by the UK Economic and Social Research Council (ESRC), the Natural Environment Research Council (NERC), the British Academy and Philip Leverhulme Prize.

areas, namely, Central and South America and Central Africa, while Europe, northern parts of the United States and Northwest Asia were the less affected regions, with yields decreasing moderately or even increasing. Changes in the amount consumed of beer in a country relates to consumers' preferences and ability and willingness to pay more for beer. Countries where beer consumption is higher, and beer is currently most expensive are not necessarily where beer consumption will decrease the most. The results of the study ignore that, in the long-term, adaptation efforts might offset damages to barley production from climate change through changes in agronomic practices and also assumes population and economic conditions are held constant, which may lead to overestimation of decreases in beer consumption.

| RCP | Description | Number of extreme events* | Annual likelihood of extreme events* | Average global yield change |
|---|---|---|---|---|
| **RCP2.6** | temperatures increase ≤ 3ºC | 17 | 3,8% | -3% |
| **RCP4.5** | temperatures increase 4 -5 ºC | 77 | 17,1% | -9% |
| **RCP6.0** | temperatures increase 4 -5 ºC | 80 | 17,8% | -10% |
| **RCP8.5** | temperatures increase >5 ºC | 139 | 30,9% | -17% |

* Extreme events defined as concurrent extreme droughts and heat

**Fig. 1** Extreme events scenarios according with the four different Representative Concentration Pathways
Source: Nature Plants Journal, "Decreases in global beer supply due to extreme draught and heat" (2018)

| Region | Average beer consumption change | | | |
|---|---|---|---|---|
| | RCP2.6 | RCP4.5 | RCP6.0 | RCP8.5 |
| **Europe** | -2,2% | -9,6% | -10,6% | -17,9% |
| **Americas** | -0,6% | -3,0% | -4,5% | -6,2% |
| **Asia Pacific** | -0,4% | -3,7% | -4,3% | -8,0% |
| **AME** | -1,9% | -5,1% | -3,7% | -8,9% |

**Fig. 2** Average beer consumption change by region according to the four different Representative Concentration Pathway
Source: Nature Plants Journal, "Decreases in global beer supply due to extreme draught and heat" (2018) and Analyst estimates

To measure the impact of these four frameworks on Heineken's value, four scenarios were build, respectively, where, cetirus paribus, the gross profit margin and total beer consumption by region suffered alterations. The gross profit margin will be impacted negatively by the rise in barley prices weighted by the probability of extreme events. For each region, the relative change in total beer consumption will suffer negatively, reflecting the estimated decrease in consumption in case of extreme events weighted by its probability. The change in beer consumption due to extreme events was computed in such a way to mitigate the shortfall of the study estimates of ignoring changes in social and economic circumstances. Heineken is particularly sensitive to changes in the size of the beer market, as it impacts revenues' growth, one of its main value drivers. Heineken's fair value is not very sensitive to increases in global surface temperatures up to 3ºC, with target share price only dropping 1.4%, in relation to base case; however, higher rises cause a significant drop in the company's value, as the total beer market shrinks. In the RCP2.6 scenario, the gross profit margin remains at 69.7% and the beer market is still expanding every year, although at slightly lower rates than in the base case scenario. Revenues behave in a similar fashion, with revenues in 2031F only 0.7% lower than in the base case (€ 30 101 million vs € 30 309 million). The ROIC remains at 8.1%, above the cost of capital (4.57%). In the RCP4.5 scenario, the gross profit margin drops to 69.2% and the impact on beer market size is more drastic. The European beer market is the one that suffers the most, presenting negative growth rates. Revenues grow every year, but at significantly lower rates and from 2025F onwards at rates lower than 1.0%. The ROIC falls to 7.8%, yet still above the cost of capital. In the RCP6.0 scenario, the impact is similar to the previous scenario; however, the global beer market begins to shrink from 2027F onwards. Nevertheless, revenues continue to present positive growth rates motivated by market shares gains in beer market and growth in the cider/perry market. In the most drastic scenario, RCP8.5, the gross profit margin falls to 68.1% and the beer market is severally penalized, shrinking at a significant pace, which is reflected on negative growth rates on revenues. The ROIC decreases significantly to 7.1%.

| Scenario | Target share price | % Change | Probability of scenario |
|---|---|---|---|
| Base case | € 97,52 | 0,0% | 88,0% |
| RCP2.6 | € 96,19 | -1,4% | 4,0% |
| RCP4.5 | € 78,62 | -19,4% | 3,0% |
| RCP6.0 | € 76,35 | -21,7% | 3,0% |
| RCP8.5 | € 54,43 | -44,2% | 2,0% |

**Fig. 3** Impact of each scenario on target share price 2019F
Source: Analyst estimates

According to NASA's specialists, the average global temperature has increased around 0.8ºC, since 1880. Even though, there has been an acceleration of rises in temperature (two-thirds of temperatures increases occurred since 1975, at a rate of 0.15ºC – 0.20ºC per decade), annual increases of 3ºC and above seem to be extreme; therefore, it was attributed a low probability to these scenarios. The average target share price for 2019F is € 95.40, which still represents a "BUY" recommendation, with a capital gain of 23.6% and a dividend yield of 1.9%.

## Cannabis Market Expansion – Threat or opportunity for brewers?

(By Luísa Gaspar)

The fast pace of shifting in consumer preferences increases the treat of substitute products; thus, there is a constant need of innovation and adaptation to new market trends and consumer needs; otherwise companies can easily get out of the market. The recent rise in cannabis popularity, owing to recent legalization in Canada and prospects of legalization in other regions, raised concerns in the alcoholic beverages industry. However, this can also be an opportunity to develop cannabis-related beverages, enjoying the momentum of the market.

Some analysts expect cannabis to be totally commoditized by 2030, potentiated by massive production which can lead cannabis to become one of the most prominent and crucial commodities in financial markets. The North America Marijuana Index, compiled by Marijuana International Corporation, over the past year, delivered 45% in returns (Figure 1), motivated by the political reforms and regulation laxation.

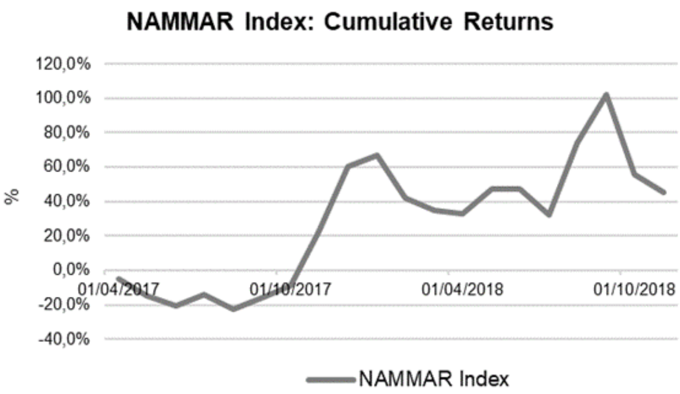


**Fig. 1** North American Marijuana Index (NAMMAR Index)
Source: Bloomberg

Until 2017, more conservative players in the industry, namely from Brown Forman and Sam Adams, pronounced negative comments relating to impact on alcohol sales of the expansion of the cannabis industry. However, recent reports on cannabis-based products present attractive growth prospects as it is expected to impact 18 industries, being worth € 57.0 billion, by 2027[2]. There is a shift in the market sentiment, embracing a symbiotic rather than incompatible approach between cannabis and alcoholic beverages.

In the particular case of beer, cannabis beers can be infused using two different extracts – tetrahydrocannabinol (THC) or cannabidiol (CBD), while withdrawing the alcohol. Both have the same chemical elements, but its different arrangement makes THC able to produce psychoactive effects, whereas CBD does not. This difference highly roots the controversy around its use in the production of beverages, but recent findings show that the inclusion of THC below 5 mg in related products would not produce psychoactive effects on the human body. The trend towards legalization of cannabis also brings a new technique into the beer industry, since it permits brewing with the cannabis plant, not only through infusion from THC and CBD oils.

The introduction of cannabis-based products will certainly be easier in some regions, namely, North America, given the current changes in legislations and in consumers' mindsets. As a matter of fact, cannabis, for recreational use, is already legal in nine states in the US and became legal in Canada on 17th October 2018, with supply exhausting after only two days. In Canada, there will be an excise tax of CAD $ 1 per gram or 10% of the retail price. Moreover, according to a study conducted by Deloitte, Canadians expect to increase their overall consumption by up to 35%, now that recreational cannabis was legalized. Countries as Netherlands and Czech Republic, in Europe, are already quite advanced on this topic, but overall the potential arising from Europe in quite limited given the controversial public opinion about this product and several legal constraints in most of European countries. Surprisingly, South Africa seems to be

[2] "The State of Legal Marijuana Markets", Arciew Market Research and BDS Analytics, 6th Edition

in the front line concerning these trends and in October, the Constitutional Court legitimated the private personal use of marijuana.

According to market research reports[3] on the global cannabis-based alcoholic beverages market, total expenditure on legal cannabis worldwide is expected to increase substantial, with CAGR of 16.92%, during the period 2018-2022, of 16.35% during the period 2023-2027, and of 14.45% during the period 2028-2032, starting to stabilize by this time. The global market size is estimated to be around €1 218.1 million, in 2019, reaching € 7 122.6 million by 2031. The global cannabis-based beer market represents 77.5% of the total alcoholic beverages.

| Global Cannabis-based Beer (EUR million) | 2019F | 2020F | 2021F | 2022F | 2023F | 2024F | 2025F | 2026F | 2027F | 2028F | 2029F | 2030F | 2031F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **World** | 979.8 | 1,162.5 | 1,378.2 | 1,631.6 | 1,942.9 | 2,296.9 | 2,705.2 | 3,191.4 | 3,742.0 | 4,386.5 | 5,139.3 | 5,840.1 | 6,626.2 |
| Europe | 137.2 | 162.7 | 192.9 | 228.4 | 272.0 | 321.6 | 432.8 | 510.6 | 598.7 | 701.8 | 950.8 | 1,080.4 | 1,225.8 |
| Americas | 578.1 | 685.9 | 813.1 | 962.6 | 1,146.3 | 1,355.2 | 1,487.9 | 1,755.3 | 2,058.1 | 2,412.6 | 2,621.1 | 2,978.4 | 3,379.4 |
| Africa, Middle East & Eastern Europe | 210.7 | 249.9 | 296.3 | 350.8 | 417.7 | 493.8 | 608.7 | 718.1 | 841.9 | 987.0 | 1,207.7 | 1,372.4 | 1,557.2 |
| Asia Pacific | 53.9 | 63.9 | 75.8 | 89.7 | 106.9 | 126.3 | 175.8 | 207.4 | 243.2 | 285.1 | 359.8 | 408.8 | 463.8 |

| Weights | Until 2028 | Until 2032 |
|---|---|---|
| Europe | 16.00% | 18.50% |
| Americas | 55.00% | 51.00% |
| Africa, Middle Easte and Eastern Europe | 22.50% | 23.50% |
| Asia Pacific | 6.50% | 7.00% |

**Fig. 2** Global cannabis-based beer market by region
Source: Statista, Business Wire and Analyst Estimates

Given the upside potential driven by the growing demand for cannabis-based products, several brewers, Heineken included, are evaluating a possible penetration in the cannabis-based beer market. Large firms are moving cautiously given all the uncertainties and dogmas around cannabis beer, leaving smaller firms to make most of the running. Breweries are entering the cannabis market, essentially in North America, as it seems to be the market more open to these new patterns (Figure 3). Most of companies are establishing partnerships with cannabis labs, who hold the license to produce, extract and infuse cannabis. Constellation Brands, in October 2017, invested € 3.5 billion to acquire 10% of Canopy Growth, a Canadian cannabis producer, that was gathering investors' attention in the last months, and it already reinforced its

[3] **Spiros Malandrakis.** 2017. "Cannabis and the Alcohol Industry: Weed or Fertilizer", Euromonitor International, September. 2018. "Global Cannabis-based Alcoholic Beverages Market", TechNavio, September

investment this year.  Ceria Beverages, based, in Denver, is expected to launch a line of non-alcoholic cannabis craft beer with THC by the end of the current year. Blue Moon Brewing, one of the most relevant companies in North America, announced on March 2018, a partnership with Ebbu, the cannabis lab responsible for the development of Ceria Beverages. On August 2018, Molson Coors Canada announced a partnership with Hydropothecary, a Canadian cannabis company, to develop non-alcoholic and cannabis-infused beverages for the Canadian market. Still on August 2018, a startup company Cananbiniers launched a non-alcoholic THC-infused beer brand called Two Roots, in Nevada. In South Africa, Poison City Brewing is also starting to take its first steps into this market, and two prototypes are being tested – the Cannabis Indian Pale Ale, a liquor infused with cannabis and the Durban Poison Cannabis lager.

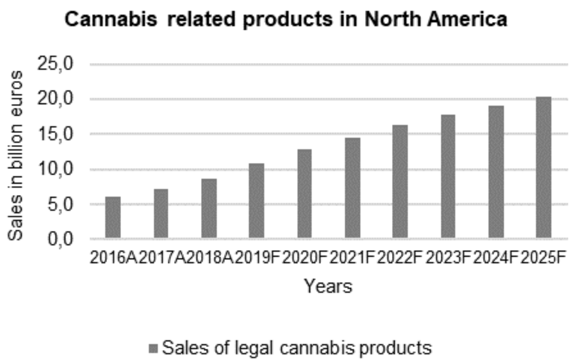


**Fig. 3** Sales in billion euros of cannabis related products in North America
Source: Statista

Heineken has already started to take these trends into accounts and has been investing in some experiments. Lagunitas, totally owned by Heineken, since 2017, has already brewed Super Critical Ale infused with cannabis terpenes and the Waldos' Special Ale, but it was banned by the federal government at the time. In June 2018, Lagunitas, in partnership with the cannabis-extract manufacturer, CannaCraft, launched a THC-infused sparkling water named Hi-Fi Hops, which is available in California, one of the markets with higher acceptance levels towards these products. It is expected to start being traded on July 2019, at $8 a can, being included in the high value segment. Heineken expects to develop an infused beer and distribute it under the branding Hi-Fi Hops, mainly in North America next year. If it proves successfully and regulation would permit, Heineken, by 2021, expects to introduce it in Europe and Africa, Middle East & Eastern Europe and, by 2023, in Asia Pacific.

Heineken can benefit from strategic investments in cannabis-based products, expanding its activity to regions where is has not a strong presence, such as North America, and mitigating the effects from a potential interest decline in beer, simultaneously. To include the possibility that Heineken invests in cannabis-base beer, a scenario was built to include potential revenues from this new market. Those revenues were estimated using a top-down forecast procedure, by sizing the market and estimating Heineken's market shares by region. Following the same market reports previously mentioned, the market is expected to be fairly concentrated with few players, it is expected that Heineken could hold between 31% and 32% of the market, expanding at an average percentage point per year, until the market starts to stabilize, around 2030.

| Heineken Revenues (EUR million) | 2019F | 2020F | 2021F | 2022F | 2023F | 2024F | 2025F | 2026F | 2027F | 2028F | 2029F | 2030F | 2031F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **World** | 177.8 | 213.0 | 412.5 | 492.9 | 626.0 | 747.0 | 888.0 | 1,057.3 | 1,251.1 | 1,480.1 | 1,749.7 | 1,996.2 | 2,271.9 |
| Europe | 0.0 | 0.0 | 61.7 | 73.5 | 87.9 | 104.5 | 141.3 | 167.5 | 197.4 | 232.6 | 316.6 | 361.6 | 410.3 |
| Americas | 177.8 | 213.0 | 255.1 | 305.0 | 366.8 | 438.0 | 485.7 | 578.7 | 685.3 | 811.4 | 890.3 | 1,011.7 | 1,147.9 |
| Africa, Middle Easte and Eastern Europe | 0.0 | 0.0 | 95.7 | 114.4 | 137.6 | 164.3 | 204.6 | 243.8 | 288.7 | 341.8 | 422.4 | 484.8 | 555.6 |
| Asia Pacific | 0.0 | 0.0 | 0.0 | 0.0 | 33.7 | 40.2 | 56.5 | 67.3 | 79.7 | 94.4 | 120.3 | 138.1 | 158.2 |

**Fig. 4** Heineken's market share in cannabis-based beer market by region (%)
Source: Statista, Business Wire and Analyst Estimates

| Heineken Revenues (EUR million) | 2019F | 2020F | 2021F | 2022F | 2023F | 2024F | 2025F | 2026F | 2027F | 2028F | 2029F | 2030F | 2031F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **World** | 177.8 | 213.0 | 412.5 | 492.9 | 626.0 | 747.0 | 888.0 | 1,057.3 | 1,251.1 | 1,480.1 | 1,749.7 | 1,996.2 | 2,271.9 |
| Europe | 0.0 | 0.0 | 61.7 | 73.5 | 87.9 | 104.5 | 141.3 | 167.5 | 197.4 | 232.6 | 316.6 | 361.6 | 410.3 |
| Americas | 177.8 | 213.0 | 255.1 | 305.0 | 366.8 | 438.0 | 485.7 | 578.7 | 685.3 | 811.4 | 890.3 | 1,011.7 | 1,147.9 |
| Africa, Middle Easte and Eastern Europe | 0.0 | 0.0 | 95.7 | 114.4 | 137.6 | 164.3 | 204.6 | 243.8 | 288.7 | 341.8 | 422.4 | 484.8 | 555.6 |
| Asia Pacific | 0.0 | 0.0 | 0.0 | 0.0 | 33.7 | 40.2 | 56.5 | 67.3 | 79.7 | 94.4 | 120.3 | 138.1 | 158.2 |

**Fig. 5** Heineken's revenues in cannabis-based beer market by region (€ million)
Source: Statista, Business Wire and Analyst Estimates

| Heineken Revenues (EUR million) | 2018E | 2019F | 2020F | 2021F | 2022F | 2023F | 2024F | 2025F | 2026F | 2027F | 2028F | 2029F | 2030F | 2031F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Revenues Base Case | 23 422 | 23 675 | 24 487 | 25 243 | 25 927 | 26 597 | 27 207 | 27 759 | 28 257 | 28 711 | 29 128 | 29 516 | 29 911 | 30 309 |
| Total Revenues from cannabis market | 0 | 171 | 202 | 386 | 456 | 566 | 664 | 780 | 916 | 1 076 | 1 242 | 1 435 | 1 649 | 1 893 |
| Total Revenues | 23 422 | 23 847 | 24 689 | 25 629 | 26 383 | 27 163 | 27 871 | 28 539 | 29 173 | 29 787 | 30 370 | 30 950 | 31 560 | 32 202 |

**Fig. 6** Heineken's total revenues (€ million)
Source: Analyst Estimates

The target share price for 2019F is € 115.60, 18.6% higher than in the base case scenario, reinforcing the "BUY" recommendation, with a capital gain of 49.7% and a dividend yield of 1.9%.