Water sustainability in the brewing industry: a stakeholder based approach

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This research explores the experiences of companies operating in the brewing industry, a water intensive industry, and in particular the responses to stakeholder pressures which drive actions towards social and environmental responsibility. This paper examines the stakeholder pressures facing brewing companies at a multi-national level, which are compared and contrasted to those felt at a regional and local level across the United Kingdom. The findings reveal that typical pro-environmentally responsible behaviour relating to water is focused around water consumption and the cleaning and sterilisation of equipment but there are increasing regulatory pressures as well as emerging economic and environmental opportunities which are driving a more holistic approach to stakeholder engagement. The findings from a study of 10 brewing firms in the UK and 5 multinational firms demonstrates the stakeholder pressures and organisational incentives which shape sustainability activity and the development of resource capacities at an industrial level, as well as the drivers for firm-level response to water threats.

Water management, corporate disclosure, reporting, stakeholder response, natural resource-based view, sustainability

Nachhaltiger Umgang mit Wasser in der Brauereibranche – ein Stakeholder-fokussierter Ansatz

Diese Studie untersucht die Erfahrungen von Unternehmen, die in der Brauindustrie, einer wasserintensiven Industrie, tätig sind. Insbesondere die Reaktionen auf den Druck von Interessengruppen, die Aktionen in Richtung sozialer und ökologischer Verantwortung vorantreiben, stehen im Fokus. Es wird der Druck von Interessengruppen untersucht, dem die Brauereiunternehmen auf multinationaler Ebene ausgesetzt sind, und mit dem Druck auf regionaler und lokaler Ebene verglichen. Die Ergebnisse zeigen, dass sich typisches umweltverantwortliches Verhalten in Bezug auf Wasser auf den Wasserverbrauch und die Reinigung und Sterilisation der Geräte konzentriert.
Es gibt jedoch einen zunehmenden Regulierungsdruck sowie sich abzeichnende ökonomische und ökologische Chancen, die einen ganzheitlicheren Ansatz für die Einbeziehung von Interessengruppen fördern. Die Ergebnisse dieser Studie mit 10 Brauereiunternehmen im Vereinigten Königreich und 5 multinationalen Unternehmen zeigen den Druck von Interessengruppen und organisatorische Anreize, welche die Nachhaltigkeitsaktivitäten und die Entwicklung von Ressourcenkapazitäten in der Industrie beeinflussen, sowie die Treiber der Reaktionen auf wasserbezogene Bedrohungen.

Wassermanagement, Berichterstattung, Offenlegung, Stakeholderreaktion, Resource-Based View, Nachhaltigkeit

1. Introduction

The pressures of continued economic and population growth is leading to the degradation of the natural environment and resource shortages (*UN 1987; Whiteman et al. 2013*). For businesses, these impacts manifest themselves in supply chain disruptions and price volatility (*KPMG* 2012). Responding to these risks and challenges forms a crucial component of corporate social responsibility (CSR) behaviour, in part responding to internal drivers to improve corporate efficiency and sustainability, but also reacting to growing external pressures from stakeholders (*Brulhart et al. 2019*). Within this context, CSR activities and reporting are focused on topics which respond to legislative drivers and stakeholder pressures and are often concerned with topics such as pollution, CO_2 emissions and social sustainability challenges (*Tate/Bals 2016)*. As a result, challenges that deal with water challenges are not highly prioritised by stakeholders and policymakers, and as a result can get left behind. For example, freshwater comprises just 3 % of total water resources *(Lambooy 2011; Bogardi et al. 2013)*. However, water is a resource on which many industries worldwide are dependent on *(Hogeboom et al. 2018)* and is underrepresented in comparison to other environmental and resource management challenges.

To date there has been a lack of studies on water sustainability from a business perspective published in core management journals *(Whiteman et al. 2013; Schaefer et al. 2019)*. Yet the CDP (formerly known as the Carbon Disclosure Project) state that 24 % of the organizational activities disclosed with them are dependent on a reliable supply of water *(CDP 2016)* which current trends suggest can no longer be guaranteed. As an industry with a water intensive production process and of a significant global reach, the brewing industry can help to identify and explore the stakeholder pressures faced by firms and the resource-based drivers which help to shape water sustainability-based strategies. In order to assess the extent to which strategies are employed throughout the industry, this research conducts a multi-scale approach, drawing on disclosures from CSR and annual reports of the largest brewing companies, along with regional and local breweries. This research brings together two distinct theoretical perspectives whilst examining an industry from the perspective of large multi-national companies as well as the experiences of local and regional players in the United Kingdom (UK).

This paper begins with a review of the literature on the water-related sustainability challenges facing the brewing sector. Focus is given to the ways in which sustainability challenges are presented and responded to, and the types of stakeholders which companies may be responding to. The methodology and case studies are discussed and presented, highlighting the stakeholder management and resource building strategies that influence the type and focus of brewing industry water sustainability challenges that are presented in corporate annual reports and semi-structured interviews with small and medium sized breweries operating in the UK. Finally, the paper concludes with implications, limitations and suggestions for future research.

2. Water Sustainability and its Relevance for the Brewing Industry

Globally the size of the food and drink industry is significant worldwide. The brewing industry fits within this larger industry and the nature of its products have a powerful public impact with regards to health and responsible consumption *(Brulhart et al. 2019)*. For example, beer is the world's most popular alcoholic beverage (and the fifth most consumed

beverage worldwide) (Olajire 2012). Water is a major resource within the operations of the brewing industry and also plays a critical role within its supply chain *(Jones et al. 2016)*. For the brewing industry a crucial dimension is the consideration of the agricultural supply chain and the actors which are engaged with, and are impacted by the actions of the brewing industry. The role of water is not only a prominent primary agreement but is also embedded within the production of raw materials – in crop production, irrigation, and in secondary processes of boiling, cleaning and cooling *(Jones et al. 2016)*. Therefore, there exists a large potential to generate positive water sustainability due to the huge impact that the industry has on freshwater sources. For example, water comprises approximately 90–95 % of the total contents of beer with an average ratio of 7 litres of water consumed for every one litre of beer produced *(Edmonds 2016)*. Further trends within the brewing industry are also emerging, with a growth of smaller and less water efficient breweries. At the peak of this trend in 2015 the UK brewing market comprised of 1,700 active brewers employing 18000 people *(Brewers of Europe 2015)*. Given the water intensity of the industry, the addition of hundreds of potentially less efficient companies in terms of water use can have significant impacts on water resources.

2.1 The Effects of Regulation

Legislative pressures can force companies to implement actions which could boost water sustainability performance, whilst the anticipation of future legislations can also drive companies towards increased sustainability performance (*Clatworthy/Peel 2016)*. For example, the 2006 Companies Act in the UK sets out that companies must report against Greenhouse Gas Emissions alongside a number of social sustainability challenges alongside their financial performance. The practical outcomes of this is a requirement for businesses to document information on their environmental and stakeholder response activities on their business performance *(Hummel/Rötzel 2019)*. This trend towards increasing regulation has been seen across numerous countries and regions introduce directives and disclosure regulations *(Chiu 2017; Hummel/Rötzel 2019)*. For example, the European Union (EU) Directive 2014/95/EU mandates that companies above 500 employees in size must disclose nonfinancial information, including but not limited to environmental matters, social and employee matters, human rights, corruption and bribery, in a consistent and comparable manner *(Official Journal of the European Union 2014)*.

Whilst these directives and legislative changes may influence companies to place water as a higher priority in their operations management, companies may still lack the incentive or drive to monitor, report and measure their water consumption. In this case, other regulations may be bigger drivers for sustainability action. For example, in the UK there has been a policy of liberalisation in the water supply sector since 2017 which enables companies to choose their water suppliers away from regional monopoly suppliers, which may increase the complexity of decision-making required for local and regional based producers (Morris/McGuinness 2019). The impact of this legislation may be to focus the decision-making of companies with high levels of water consumption and incentivise them to implement higher levels of efficiency and sustainability in their water consuming operations. Liberalisation of water utilities may bring the management of water use to the level of utilities such as electricity and gas consumption. These utilities are relatively more developed in the way companies adopt measurement and management systems.

2.2 Incentives for Sustainability

There exists a line of research which suggests that innovation in organisational practices are driven by competitive advantage rather than being explicitly driven by sustainability desires (*Long et al. 2018*). Sustainable resource use can aid companies in achieving economic benefits whilst simultaneously delivering on environmental performance, as initially evident from studies focusing on the environmental performance of the oil industry *(Sharma/Vredenburg 1998; Rodriguez-Melo/Mansouri 2011)*, but there is evidence that sustainability advantages can be realised in other industries and through other resources. The example from a study of a brewery in Singapore by *Schaltegger et al.* (2012) indicated how water demands in the packaging phase can drive water sustainability. The study estimates that 4.80hl of water per hl of beer is required for the production of bottled beer (including cleaning demands), compared to 0.48hl/hl for draught beer. The study identified potential efficiencies in the bottling process, such as utilising cascade systems that draw on 'lightly polluted wastewater' for steam cleaning steps in the bottling process which generate financial and environmental benefits through reduced water consumption *(Schaltegger et al. 2012)*. Greater utilisation of kegs is often not appropriate for smaller breweries, and so the shift towards more efficient bottling techniques would reduce the amount of wastewater discharges from brewing factories *(Pettigrew et al. 2015)* and reduce the burden on local water treatment plants *(Edmonds 2016)*.

2.3 Stakeholder Demands

Like any industry, the brewing industry must respond to the demands placed on them by a number of different stakeholders with diverse interests and powers. These include legislative, reputational and operational challenges and can be exerted on the firm by a range of different actors including investors, potential employees, suppliers, competitors, customers, the state and wider society *(Hueske/Guenther 2015*). There is a growing realisation that the way in which firms respond to stakeholder pressures requires understanding the different interests and influences of such actors and understand how the response can support or threaten the performance of the firm *(Reed et al. 2009)*. Stricter regulations may incentivise a growing awareness of environmental and economic incentives but this can be driven by stakeholder demands *(Pettigrew et al. 2015)*. The power of stakeholder pressures and the methods used to respond to them may vary between large and smaller breweries. Smaller breweries may be more responsive to consumer tastes and preferences than large corporate breweries, who serve the mass-market *(Cabras/Higgins 2016)*. Brewing companies may become dependent on securing low-cost access of water by generating favourable relations with the local community. These variations in stakeholder power and response may lead to variations in the way in which water efficiency measures are developed and promoted by brewers of different sizes.

2.4 Organisational Response

There are internal business opportunities that breweries can take in order to improve their water sustainability performance and utilise this for strategic competitive advantages. The conceptualisation of water as a resource for generating competitive advantage draws together stakeholder and natural resource literature. Water sustainability can be thought of as the more efficient use of water resources and responsible water sourcing *(Olajire 2012)*.

Water sustainability generates competitive advantages through reputational benefits and also through cost savings generated from more efficient water usage. The optimal organisational response would see a more efficient use of water that satisfies stakeholder demands for more sustainable products with lower water footprints whilst generating a product which consumers demand. Other organisational responses can be seen through taking up opportunities to re-process waste products beyond reusing wastewater, for example selling spent grains as livestock food, or utilising anaerobic digestion processes as a method for waste water treatment *(Fillaudeau et al. 2006)*. Further engagement in the supply chain can also be a method for pursuing sustainability performance. The impacts of supply chain management response include the purchase of barley and hops. The latter are sourced from all over the world and driven by consumer tastes but can have a large water footprint in the cultivation and logistical process. These agricultural products can also be sourced from water scarce regions and add an additional complexity to understanding the full water requirements for brewing products which extend beyond the firm boundary. Organisational response to stakeholders including regulators, customers, communities and suppliers are critical for appropriate responses to sustainability challenges.

3. Conceptual Background

To understand how regulatory actions, incentives and stakeholder demands can influence organisational response, this paper views these activities through the lens of resource-based views and stakeholder analysis. The Resource Based View (RBV) assumes that different resource developments and investments in firm capabilities, capacities and resources can contribute to competitive advantage through creating resource combinations that are valuable, rare, inimitable and non-substitutable *(Barney 1991; Backman et al. 2017)*. Linked to this, the Natural Resource Based View goes further to integrate environmental protection as a resource building strategy, highlighting preventing pollution, engaging in product stewardship (through redesigning products to minimise environmental impact) and sustainable development, where companies attempt to build resources to deal with the challenges of today as well as for the future. The research views water as a critical resource that can be utilised for competitive advantage, but the 'rewards' from this utilisation should also be based on the management of stakeholder pressures and demands.

3.1 Resource Building Perspectives

Building capabilities to respond effectively to stakeholder pressures can be seen as a strategy to pursue competitive advantage and draws on the Resource-Based View (RBV) framework set out by *Barney* (1991). The RBV illustrates how firms can gain competitive advantages through strategies that help them exploit internal resource strengths in response to opportunities and neutralise external threats through increased resilience. Resources are the 'basic constitutive elements out of which firms transform inputs into outputs, and resources include tangible (physical and financial assets) or intangible (corporate reputation, employee knowledge, experiences and sills, and their commitment/loyalty) *(Branco/Rodrigues 2006; Taussig/Delios 2015)*. The appropriate combinations of resources are likely to generate unique and different innovations *(Aragon-Correa/Leyva-de la Hiz 2016)* based on four key attributes defined by *Barney* (1991) as: valuable – resources act as enablers for firms to consider or implement strategies that help improve their effectiveness or

efficiency; rare – possession of rare resources give firms competitive advantage over their competitors; inimitable – resources are not easily imitated due to historical dependency, lack of knowledge and complex social factors; and un-substitutable. The RBV model suggests that a firm will adopt an increasingly proactive environmental management strategy if it can acquire resources and transform those into competences instrumental to competitive advantage and higher returns (*Backman et al. 2017)*.

The NRBV builds on this view but is argued by *Hart* (1995) that 'one of the most important drivers of new resources and capability development for firms will be the constraints and challenges posed by the natural (biophysical) environment' (p989). Care for the environment, development of sustainability management strategies and greater investment in CSR activities can lead to firm-specific economic benefits for firms and enhance organizational performance. In turn, these activities and resources can enable firms to differentiate itself from competitors and secure access to key resources and creating barriers to entry for potential competitors *(Orlitzky et al. 2011; Frynas/Yamahaki 2016)*. Active engagement in NRBV in water management and sustainability is likely to have ripple effects through supply chains and facilitate innovations with smaller firms *(Winn/Pogutz 2013)*. Developing relational resources by engaging with stakeholders and incorporating stakeholder sustainability concerns into firm decision making can help firms to differentiate themselves and use pro-sustainability actions as a source for competitive advantage.

3.2 Stakeholder Analysis

The use of stakeholder theory and subsequent analysis provides a framework for examining the inter-relationships between managerial processes and performance and the types of ethical behaviour, social responsibility and management practice arising from brewing firms responding to water sustainability challenges *(Freeman 1984; Fassin 2009)*. Stakeholder approaches have grown application in management studies, initially within the domain of strategic management and business ethics studies *(Gibson 2000)* but has increasingly been applied to environmental strategies and resource management *(Vugteveen et al. 2010; Hannaford et al. 2018)*. Drawing on the definition of *Freeman* (1984, 46), a stakeholder is 'any group or individual who can affect, or is affected by the achievement of the organization's objectives'. Examples include company investors, suppliers, customers, competitors, the state and society (Hueske/Guenther 2015). For the brewing industry the identified stakeholders are any actors and parties affected by or effecting the operation of the brewing industry and identify the pressures and forces which guide sustainability innovations towards similarity in business practices *(Tingey-Holyoak 2014; Aragon-Correa/Leyva-de la Hiz 2016)*. An organisation's pro-environmental behaviour can be driven by the close attention paid by customers and consumers, which in turn drives a firm's orientation towards adoption and implementation of organizational practices. However innovative strategies to achieve this can also be resisted (Hueske/Guenther 2015). State actors can develop stricter regulations in order to enforce sustainable practices and this can also formalize voluntary actions taken by individual firms *(Shrivastava/Hart 1995)*, whilst also helping to reorient stakeholder perceptions of sustainability issues *(Saeed/Kersten 2019)*.

3.3 Linking NRBV, Stakeholders and Water Sustainability

A key challenge for firms is to determine how to manage and respond to diverse and often conflicting demands of their stakeholders in order to build resilience against water-related challenges. This can be critical for companies to maintain legitimacy with their stakeholders *(Helfaya/Moussa 2017)*. Responses to stakeholder demands therefore can shape how companies are able to maximise competitive advantages from responding to regulatory pressures, develop responses to non-State actors to maximise economic and environmental performance and to satisfy the demands of community organisations. The response to these pressures can then have an impact on how firms are best able to develop internal capabilities and resources to deal with water-related sustainability challenges and process these challenges through communication strategies. The remainder of this paper therefore proceeds to address the challenge of understanding how brewing firms manage different struggles over the use of water as a resource. In particular, the research considers:

- To what extent are water sustainability strategies driven by regulatory pressures for both corporate and SME brewers?
- How do brewing companies orient themselves to take advantage of economic and environmental opportunities from pursuing water sustainability strategies?
- How do brewing firms address potential resistance from communities that they operate in?
- How does organisational response, as evidenced by the disclosures made by firms in corporate reports and interviews, differ and converge as a result of responses to stakeholder pressures?

In viewing responses to state demands and management of non-state stakeholder relations as exploitable resources, this research advances the connectivity between Resource and Natural Resource Based Views with Stakeholder Theory.

4. Method

The study combines documentary analysis from the corporate reports of the world's 5 largest brewing companies by market share[1] combined with semi-structured interviews from 10 small and medium-sized breweries in the United Kingdom. The documentary analysis included annual reports and supplementary sustainability reports between 2011 and 2015. Semi-structured interviews were carried out between 2015 and 2017 across five different regions in England as well as South Wales. This approach enables identification of stakeholder pressures faced by large multinational corporations and compares and contrasts these against the experiences of regional breweries. This analysis enables comparing the regulatory and stakeholder pressures which shape resource development and organisational response. The natural resource-based view of pollution prevention, product stewardship and sustainable development are also considered when examining the stakeholder engagement.

1 The following companies were included in the study as the five largest breweries in 2015: ABInBEV (the world's largest brewery and based in Belgium); Heineken (a multi -national, Dutch originating company); Carlsberg (founded in Denmark); SAB Miller (since 2016 part of ABInBEV, formally an independent brewery Headquartered in the United Kingdom), CR Snow (a company based in China) (https://www.statista.com/statistics/257677/global-market-share-of-the-leading-beer-companies-based-on-sales).

4.1 Corporate Brewers – Report Analysis

Firms in resource intensive industries, such as brewing, are increasingly being held accountable for social and environmental consequences of their operations *(Porter/Kramer 2006)*, a situation that is more pronounced for larger firms which have higher visibility. Large corporations in resource intensive industries increasingly are communicating their activities to demonstrate the actions to improve environmental sustainability and community well-being *(Porter/Kramer 2006; Bhattacharya et al. 2009)* and how these are presented to external stakeholders. Whilst such public statements do not guarantee that actions are taken, the publication of such statements do give an indication of a firm's understandings of water sustainability challenges, and insights into the extent that these are driven by internal and external drivers. This type of using a firm's CSR reports to identify corporate action has its roots in management research *(Barry 1997*) and are applicable to concepts of organizational activity such as sustainability that are not easily quantifiable in the same way as financial information *(Beattie 2014)*.The top 5 global brewing companies as of 2014 were selected which covered multiple stock exchange listings, therefore providing examples of different regulatory and stakeholder institutional pressures. Information about these companies and their Headquarters are documented in Table 1.
In order to search companies' social and environmental practices, a qualitative data analysis of the firms' formal documents was examined over a five-year time span (2011 to 2015 inclusive). Reports were taken from the official websites of each of the five companies, covering the firms' mandatory annual report, as well as additional reports termed 'sustainability report', 'CSR report' and 'environmental report'. The availability of additional reports varied across each company. In total, 25 annual reports were sourced, alongside an additional 17 CSR/environmental/sustainability reports were obtained to provide a more complete picture of water sustainability challenges facing corporate brewers.

Table 1 Companies studied and location of listing

Company	Listing	Country	Global Market Share
ABInBev	EURONEXT	Belgium/USA	20.8 %
SAB MILLER	FTSE 100	United Kingdom	9.7 %
HEINEKKEN	EURONEXT	Netherlands	9.1 %
CARLSBERG	NASDAQ	Denmark	6.1 %
CR SNOW	SEHK	China/Hong Kong	6.0 %

4.2 UK Breweries – Interviews

Semi-structured interviews were conducted with representatives from 10 brewery representatives taken across 5 regions across England which face differing demographic and climatic settings. These interviews took place between February 2015 and December 2017 during a period which saw institutional changes regarding water provision in the UK following the implementation of the 2014 Water Act, as well as significant political changes following the UK's vote to leave the European Union in the June 2016 referendum and subsequent 2017 general election. The former saw the implementation of the water liberalisation agenda in England, creating a market for retail water companies. The result of

this policy shift gave brewing companies the opportunity to choose their water suppliers and had the potential to serve as a 'focusing event' for water sustainability thinking. The latter raised the possibility for the weakening of environmental standards in the UK.

The conducted interviews were exploratory to gain insights into the capacities and capabilities of brewing firms during this period, and link to the concepts of resource building and stakeholder management in response to water sustainability challenges. Breweries were identified by identifying representatives through listings from Chambers of Commerce, local branches of the Federation of Small Businesses, and Enterprise Partnerships and each participant was asked to nominate breweries from their own networks. Whilst snowball sampling in this manner has limitations regarding representativeness across the general population, this method was appropriate for utilising connections between similar industries across different areas throughout the country *(Hannon/Bolton 2015; Morris et al. 2017)*. 24 brewers were contacted, of which 10 consented to participate in interviews, as displayed in Table 2.

Table 2. Brewing Stakeholder Representatives

Brewery	Region[2]	Sales Market
Brewery A	South West	Local
Brewery B	East	Local
Brewery C	South West	Regional
Brewery D	East	Local
Brewery E	North East	Local
Brewery F	East	Local
Brewery G	South West	Regional
Brewery H	West England and Wales	Local
Brewery I	East	Local
Brewery J	West England and Wales	Local

The semi-structured interviews (see appendix for more details) focused around the themes of i) understanding and engagement of drought risk, water scarcity, water efficiency and water conservation; ii) optimising the production *process* to reduce water consumption for brewing processes; iii) engagement with the supply chain (including customers) to increase resilience in the face of water sustainability challenges; and iv) the role of breweries within their communities and the impacts of brewery water consumption on community stakeholders. Interviews lasted approximately 1 hour and were fully transcribed and coded using a qualitative approach. The main codes followed the codes and themes established from the analysis of CSR reports. Within each code, sub-codes were inductively created as they emerged from the data and analysis then followed with anonymised quotations used to highlight the key points of concern expressed.

2 According to classifications by the Society of Independent Breweries (SIBA) http://www.siba.co.uk/about-siba/.

4.3 Analysis and Comparison of Data

Previous studies on how sustainability becomes integrated into company operations have identified how sustainability initiatives are often initiated in reaction to stakeholder demands, such as public responses to specific issues *(Porter/Kramer 2006)*. Disclosures from reports and interviews were analysed using content analysis against pre-determined and pre-selected criteria *(Krippendorff 1980; Neuendorf 2002)* based on the themes of the Resource-Based and Natural Resource Based Views. Specifically, these criteria included: a) the value of water to the organisation, b) the ability to substitute water within their operations; c) pollution prevention as a motivation to reduce water consumption; d) redesigning production processes to reduce water consumption; and e) the consideration of external stakeholders from the supply chain and local community in the development of water sustainability strategies. These were applied alongside open coding of themes that arise during the interview phase and were related to the primary themes of the study in terms of regulation, maximising economic and environmental performance, stakeholder relationships and organisational response. This analysis of the data enabled a consideration of both the actors driving organisational response (the stakeholders) and the strategic actions taken in response (the resource building perspective).

5. Findings

The greatest challenges identified from CSR disclosures and interviews with brewing representatives are the need to use water resources more efficiently (driven in part by cost pressures as well as environmental awareness), and to ensure disruption to communities that interact directly with business processes and with supply chain activities is minimised, but it is the larger companies which have the greater resources to do this, and to communicate these to their stakeholders. The findings from the analysis of corporate reports and interviews with brewery representatives revealed the main challenges in water sustainability in the industry to be:

- Reducing water consumption for cost reduction purposes
- Building and maintaining good relationships with suppliers of hops and grains
- Balancing consumer demand for new tastes with availability of raw materials
- Ensuring brewing activity does not adversely impact the availability of water for local communities

However, the insights emerging from the study of water sustainability in brewing firms highlight a primary focus on internal operations in the context of organisational response, concerned with water-efficiency measures for cost-saving benefits. However, there are also disclosures aimed at external stakeholders made by corporate brewers relating to wider cultural institutional pressures and resource-building capabilities. These practices are also evident in the responses given by smaller brewing firms. The data presented in the following sections identifies the water sustainability strategies evident at multi-national and SME breweries in relation to regulatory, consumer and community stakeholder pressures, with direct quotations taken from interviewee responses and corporate reports to emphasise the points made.

5.1 Regulation

The analysis of corporate reporting revealed that regulatory drivers were not explicitly discussed in corporate reports, and were not fully identified as a key driver from the interviews but there were clear institutional discrepancies between Chinese-based CR Snow and the predominately European based breweries in the scope and depth of reporting on water issues. Immediately it became clear that CR Snow faces less pressure to report on sustainability issues, and where disclosures are made, these are almost exclusively at reducing waste and increasing recycling. These actions are justified in the context of meeting Government targets. Outside of CR Snow, the insights from company reports are explanations of how these companies comply with formal (i.e. legal) requirements, as well as voluntary CSR practices, such as engagement with frameworks such as the Global Reporting Initiative (GRI). There may be evidence of a European culture towards sustainability actions and reporting, inspired by UK and European directives *(Official Journal of the European Union 2014; Hummel/Rötzel 2019)*. At the SME level, water sustainability practices raised regarding future practices might be shaped by the ability to change water suppliers in a water liberalised market. Representatives from Breweries C, G and J all expressed interest in switching their water suppliers 'if there was a cost saving from doing so', with G and J also highlighting how quality factors such as ensuring a constant supply of high quality water from areas associated with optimum water for brewing. The idea that water suppliers could be more sustainable was not discussed, instead Brewery E expressed scepticism of changing water supplies, stating:

> *"If someone knocks on my door and says 'hey we've got better quality water and it's cheaper' then I'd go with it but I doubt that's going to happen any time soon"*

This cynicism of the ability of suppliers to provide economically attractive and high-quality water supplies has implications for the engagement of breweries in a liberalised water market, suggesting that costs might be prioritised over sustainable practices. However, responses were given to suggest that legal requirements or different normative practices would force breweries to change their practices towards higher levels of efficiency. For example, Brewery A highlighted how in Belgium 'they tend to reuse all their bottles so they are a lot more heavy-duty than ours' which ultimately leads to a lower footprint for bottled beer in Belgium. Here regulations on waste management can also be seen to have an impact on productive processes on the brewing production. However, from the analysis of corporate reporting and from semi-structured interviews, the regulatory stakeholders were not considered to be significant in shaping water sustainability practices.

5.2 Maximising Economic and Environmental Opportunities

Taking advantage of cost saving opportunities such as through reducing wastes and improving production processes is seen as a key driver for engaging with water sustainability strategies in brewing firms and is the clearest demonstration of resource capabilities. For example, many disclosures and interview responses focused on recording water consumption. This can be through measuring water consumption at individual production sites and formalising water reporting in company reporting. As an example, ABInBev (Global Citizenship Report, 2015, p8) state:

> *"We faced drought and water scarcity in some of our brewery locations around the world, which has encouraged us to take new and innovative approaches to our water efficiency resulting in savings of over 14 million hectolitres between 2014 and 2015"*

Here the importance of water savings is shown as being driven by internal company pressures in response to water scarcity risks, and little is discussed over the role of external stakeholders in driving this response. For local breweries, water savings and consumption monitoring are often discussed in the context of water meter installation, described as Brewery A as 'a start' towards more sustainable water behaviours. This was also framed as an internal driver to reduce water costs, with a secondary focus on saving water as a resource. If the overall goal is to reduce water consumption, then pursuing a water efficiency strategy may not achieve these aims. Brewery C highlights how their current ratio of 4.5hl/hl of water to beer has been achieved as a result of growth, stating that 'growth in business brings better usage of water'. Here we can see that larger companies benefit from economies of scale and efficiency in their operations, which may not be possible for local breweries to attain.

At a local level, productive efficiency is linked to stakeholder pressure. Brewing practices are shaped by the demands of the dominant stakeholders and examples were given which reveal both internal and external barriers which hinder sustainability developments. From the interviews with local and regional brewers, it became clear that there are several challenges in overcoming inertia at a managerial level in order to implement water efficient technologies and production processes. The representative from Brewery C discussed these challenges, stating:

> *"It's presenting this to senior management and saying "I want to put this metering system in and these are going to be the benefits and this is going to be the return on the investment, and quantifying that is a bit difficult because a metering system is never going to do that"*

This focus of managerial stakeholders on cost is highlighted as an overwhelming driver for the lack of action and shows how companies may not take full advantage of the economic and environmental opportunities which are available. A representative from Brewery I suggests that 'some of these green approaches…do make business sense for saving water' but the challenges for convincing managers at local breweries to invest can prove difficult because 'water is so cheap' (as stated by a representative from Brewery I). Therefore, at a small-scale level there exists a disconnect between current stakeholder demands and the potential future economic and environmental opportunities and threats.

5.3 Response to Stakeholder Demands

Corporate Brewers use their corporate reports to demonstrate their engagement with a wide range of non-state actors. Through the NRBV perspective, resource building capabilities are revealed through a number of strategies employed by the companies surveyed. For example, in building on pollution prevention and production efficiency strategies, ABInBev demonstrate the importance of engaging with wider stakeholder groups, including employees and local community representatives. In the company's 2014 Global Citizenship Report (p14) it is stated that:

"By reclaiming water throughout the brewing process, empowering employees to provide new ideas for reduction and engaging local community partners, the brewery reduced its water use by 9.0 % in 2014 and by 19 % since 2009"

Here the engagement of stakeholders is celebrated as sharing of ideas in order to re-develop and re-define the production process to reduce the water requirements in the brewing process. These actions are not only to satisfy consumers, employees and community partners but also to secure their supply chains. For example, larger companies recognise the need to improve capacities and resilience against risk in their supply chains and help manage relationships with their supply chain partners. For example, Heineken (Sustainability Report 2014, p32) state:

"Ongoing climate change might create additional need for irrigation, particularly in areas of (future) water scarcity…the cost of fertilisers and pesticides are expected to rise further. These trends are likely to negatively affect the profit margins of some of our agricultural suppliers"

This is also evidenced by the disclosures from Carlsberg, for example in the 2013 CSR Report (p5) it is highlighted that working with actors across the value chain to create the 'efficient brewery' has the additional benefit of 'making CSR not only a reputational and risk-mitigating buffer but also a strategic driver for business opportunities and future value creation for the Carlsberg Group and society'.

5.4 Organisational Response towards Sustainable Development

The differences between water stewardship and sustainable development are highlighted by the longer-term and more in-depth approaches taken by companies in responding to water-based sustainability challenges. These strategies are aimed at not only providing employment opportunities for local communities, but ensure that a range of social, economic and political stakeholders benefit from the operations of the breweries. This is highlighted by SAB Miller, who state in their Sustainable Development Report (2012, p2):

"Beer is a local business and the success of SAB Miller is inextricably linked to the well-being of the communities in which we operate…we seek to generate 'inclusive growth', in other words build value chains that drive economic growth and stimulate social development while using scarce natural resources efficiently"

Sustainable development strategies, where multiple and diverse stakeholder demands are considered and responded to, are not as prevalent in the discussions from brewing firms and appear to be the focus of larger companies as part of actions taken for legitimacy building. Heineken previously discussed their supplier engagement in their 2012 Sustainability Report (p24) where they stated:

"One of the key initiatives within… [our scheme] is Mutual Recognition, where all member companies, using a common standard for social audits, use audited suppliers. This initiative sends a unified message to suppliers regarding the expectations of the industry's largest players and significantly reduces the auditing burden for suppliers".

This focus on developing strong and close relationships with suppliers is also seen in smaller companies. For example, the treatment of agricultural suppliers as a key stake-

holder was a common response from SME breweries, who see agricultural actors as critical to the success of their business, which supports the perspectives of the NRBV and stakeholder theory. A clear example of this is the use of relationships with environmental stakeholders to generate valuable resources *(Shrivastava/Hart 1995; Hueske/Guenther 2015; Brulhart et al. 2019)*. SMEs also value the relationships with their local communities as a valuable resource. Brewery G highlight their community working to ensure a 'good relationship with the local councils, the local community' adding 'we provide a lot of employment that you wouldn't see down here'. This also links to the ideas of sustainable development and the addressing of stakeholders on a wider scale.

5.5. Further Discussions

In addressing potential resistance from communities that breweries operate in, we see how large breweries undertake efficiency measures in order to provide benefits to stakeholders whilst also delivering cost savings for themselves. The strategies undertaken by multinational breweries highlights how maintaining community relationships is a vital resource for these companies and actions are taken in response to stakeholder experiences in order to maintain the functioning of the business. From a natural resource-based perspective there is evidence of firms reacting to, and pre-empting community demands in order to gain access to key strategic resources, taken at corporate level but also evidenced by the sustainability concerns of local and regional brewing companies. The challenge in the brewing industry is to understand the extent to which organizational practices can be managed within the context of balancing consumer demands for 'exotic' flavours against the community, regulatory and industry pressures to reduce water consumption and invest in water infrastructures in local areas, and to engage in water sustainable operations. For breweries, there is a sense that larger breweries are conscious of their impact on the wider societal and environmental context, but for smaller companies the focus is towards differentiating themselves from competitors through product offerings, which is likely to be at the expense of water sustainability. These indicate that water resource capacity building goes beyond the legislative and regulative requirements. The actions taken to improve water are also seen as economically driven, but also highlight resource development strategies at a corporate level regarding demonstrating job creation and infrastructure provision, fitting with the research of *Ojalire* (2012) and contributing to theoretical perspectives drawn from the resource based and natural resource based view of the firm *(Barney 1991; Branco/Rodrigues 2006; Tate/Bals 2016)*.

6. Conclusions

Despite a growing body of literature dealing with the need for greater consideration of sustainable water practices at a business level and in particular an increased focus on water management processes, there remains a lack of in-depth research on how water sustainability practices are influenced by stakeholder demands and pressures, and how these pressures guide corporate social responsibility practices. The importance of water to brewing operations cannot be overstated and the growing pressures of economic growth and development on water resources are limiting the ability for some firms to operate. While there is evidence the annual and CSR reports of large-scale companies do converge around the key features of reducing pollution in water resources, the stewardship of water resources in the brewing

process, and attempts to demonstrate community engagement and sustainability in operating locations, the same responses to stakeholder pressures are not always acknowledged by small breweries. From the engagements, all the brewers surveyed highlighted their desires to reduce water and expressed personal sustainability beliefs, but this does not necessarily translate into actions taken beyond industrially accepted operations on water efficiency. Here the key stakeholders addressed by the smaller breweries are customers and regulators, whilst some regional breweries consider themselves to be key parts of the communities within which they operate in. This is also evidenced in the reporting of the corporate brewers.

Moving forward, fully assessing the effects of internationalisation on stakeholder experiences beyond highlighting differences in the quality and quantity of disclosures between CR Snow and European based breweries opens avenues for cross-country comparisons in stakeholder response and resource building strategies with regards to sustainability performance. In addition, bringing in further engagement with a diverse range of SME brewers can add to the growing body of research which seeks to overcome the limitations of relying on corporate reporting disclosure. Further engagement with breweries and their stakeholders (such as their community groups, local government and supply chain actors) is essential to open up a dialogue that can affirm or challenge the dominant CSR disclosures presented by corporate brewers. This research highlights that SME and global breweries are responding to divergent stakeholder challenges, and dealing at different scales, but there is a commonality in responses that is underpinned by a need to bring together policymakers, wholesalers, retailers, consumer groups and community organisations. The findings from this research highlight that support is required for SMEs who lack the resources and access to networks which corporate brewers may have but are often key members of their communities and can have substantial impacts on local water suppliers. Therefore, continued dialogue between local stakeholders and brewing firms is essential to ensure the long-term sustainability of the industry and of the water resources available to them and to the communities within which they operate. Regulatory responses should consider how effective the corporate response to them will impact on the management of critical resources such as water.

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References

Aragon-Correa, J./Leyva-de la Hiz, D. (2016): The Influence of Technology Differences on Corporate Environmental Patents: A Resource-Based Versus an Institutional View of Green Innovations. In: Business Strategy and the Environment, 25 (6): 421–434. Online unter: doi:10.1002/bse.1885 (Abfrage 06.12.2016).

Backman, C./Verbeke, A./Schulz, A. (2017): The Drivers of Corporate Climate Change Strategies and Public Policy: A New Resource-Based View Perspective. In: Business & Society, 56 (4): 545–575. Online unter: doi:10.1177/0007650315578450.

Barney, J. (1991): Firm resources and sustained competitive advantage. In: Journal of management, 17 (1): 99–120.

Barry, D. (1997): Telling changes: From narrative family therapy to organizational change and development. In: Journal of Organizational Change Management, 10 (1): 30–46.

Beattie, V. (2014): Accounting narratives and the narrative turn in accounting research: Issues, theory, methodology, methods and a research framework. In: The British Accounting Review, 46 (2): 111–134.

Bhattacharya, C./Korschun, D./Sen, S. (2009): Strengthening Stakeholder–Company Relationships Through Mutually Beneficial Corporate Social Responsibility Initiatives. In: Journal of Business Ethics, 85 (2): 257–272. Online unter: doi:10.1007/s10551-008-9730-3 (Abfrage 06.12.2016).

Bogardi, J./Fekete, B./Vörösmarty, C. (2013): Planetary boundaries revisited: a view through the 'water lens'. In: Current Opinion in Environmental Sustainability, 5 (6): 581–589. Online unter: doi:10.1016/j.cosust.2013.10.006.

Branco, M./Rodrigues, L. (2006): Corporate Social Responsibility and Resource-Based Perspectives. In: Journal of Business Ethics, 69 (2): 111–132. Online unter: doi:10.1007/s10551-006-9071-z (Abfrage 16.11.2016).

Brewers of Europe (2015): Beer statistics 2015 edition. Brussels, Belgium.

Brulhart, F./Gherra, S./Quelin, V. (2019): Do Stakeholder Orientation and Environmental Proactivity Impact Firm Profitability? In: Journal of Business Ethics, 158 (1): 25–46. Online unter: doi:10.1007/s10551-017-3732-y.

Cabras, I./Higgins, D. (2016): Beer, brewing, and business history. In: Business History, 58 (5): 609–624. Online unter: doi:10.1080/00076791.2015.1122713 (Abfrage 06.12.2016).

CDP (2016): Thirsty business: Why water is vital to climate action 2016 Annual Report of Corporate Water Disclosure. CDP. Online unter: https://b8f65cb373b1b7b15feb-c70d8ead6ced550b4d987d7c03fcdd1d.ssl.cf3.rackcdn.com/cms/reports/documents/000/001/306/original/CDP-Global-Water-Report-2016.pdf?1479747926 (Abfrage 06.12.2016).

Chiu, H. (2017): Unpacking the Reforms in Europe and UK Relating to Mandatory Disclosure in Corporate Social Responsibility: Instituting a Hybrid Governance Model to Change Corporate Behaviour? In: European Company Law, 14 (5). Online unter: http://www.kluwerlawonline.com/toc.php?pubcode=EUCL (Abfrage 02.04.2020).

Clatworthy, M./Peel, M. (2016): The timeliness of UK private company financial reporting: Regulatory and economic influences. In: The British Accounting Review, 48 (3): 297–315. Online unter: doi:10.1016/j.bar.2016.05.001.

Edmonds, D. (2016): Before the Tap Runs Dry: Incentivizing Water Sustainability in America's Craft Breweries Note. In: George Washington Journal of Energy and Environmental Law, 7: 164–176.

Fassin, Y. (2009): The Stakeholder Model Refined. In: Journal of Business Ethics, 84 (1): 113–135. Online unter: doi:10.1007/s10551-008-9677-4.

Fillaudeau, L./Blanpain-Avet, P./Daufin, G. (2006): Water, wastewater and waste management in brewing industries. In: Journal of Cleaner Production, 14 (5): 463–471. Online unter: doi:10.1016/j.jclepro.2005.01.002.

Freeman, E. (1984): Stakeholder management: framework and philosophy. In: Pitman, Mansfield, MA.

Frynas, J./Yamahaki, C. (2016): Corporate social responsibility: review and roadmap of theoretical perspectives. In: Business Ethics: A European Review, 25 (3): 258–285. Online unter: doi:10.1111/beer.12115 (Abfrage 06.12.2016).

Gibson, K. (2000): The Moral Basis of Stakeholder Theory. In: Journal of Business Ethics, 26 (3): 245–257. Online unter: doi:10.1023/A:1006110106408.

Hannaford, J./Collins, K./Haines, S.L. et al. (2018): Enhancing drought monitoring and early warning for the UK through stakeholder co-enquiries. In: Weather, Climate, and Society, 11 (1). Online unter: https://ora.ox.ac.uk/objects/uuid:0699c48d-364c-4660-9b28-193f722db074 (Abfrage 03.04.2019).

Hannon, M./Bolton, R. (2015): UK Local Authority engagement with the Energy Service Company (ESCo) model: Key characteristics, benefits, limitations and considerations. In: Energy Policy, 78: 198–212.

Hart, S. (1995): A Natural-Resource-Based View of the Firm. In: Academy of Management Review, 20 (4): 986–1014. Online unter: doi:10.5465/AMR.1995.9512280033.

Hogeboom, R./Kamphuis, I./Hoekstra, A. (2018): Water sustainability of investors: Development and application of an assessment framework. In: Journal of Cleaner Production, 202: 642–648. Online unter: doi:10.1016/j.jclepro.2018.08.142.

Hueske, A./Guenther, E. (2015): What hampers innovation? External stakeholders, the organization, groups and individuals: a systematic review of empirical barrier research. In: Management Review Quarterly, 65 (2): 113–148. Online unter: doi:10.1007/s11301-014-0109-5.

Hummel, K./Rötzel, P. (2019): Mandating the Sustainability Disclosure in Annual Reports—Evidence from the United Kingdom. In: Schmalenbach Business Review, 71 (2): 205–247. Online unter: doi:10.1007/s41464-019-00069-8.

Jones, P./Comfort, D./Hillier, D. (2016): Water stewardship and North America's food and beverage companies: a case study in corporate sustainability. In: International Journal of Corporate Strategy and Social Responsibility, 1 (1): 26–43. Online unter: doi:10.1504/IJCSSR.2016.077546.

KPMG (2012): Expect the Unexpected: Building Business Value in a Changing World. KPMG INTERNATIONAL. Online unter: http://www.kpmg.com/dutchcaribbean/en/Documents/KPMG%20Expect_the_Unexpected_Ex ctveSmmry_FINAL_WebAccessible.pdf (Abfrage 05.12.2016).

Krippendorff, K. (1980): Validity in content analysis.

Lambooy, T. (2011): Corporate social responsibility: sustainable water use. In: Journal of Cleaner Production, 19 (8): 852–866. Online unter: doi:10.1016/j.jclepro.2010.09.009.

Long, T./Looijen, A./Blok, V. (2018): Critical success factors for the transition to business models for sustainability in the food and beverage industry in the Netherlands. In: Journal of Cleaner Production, 175: 82–95. Online unter: doi:10.1016/j.jclepro.2017.11.067.

Morris, J./Harrison, J./Genovese, A. et al. (2017): Energy policy under austerity localism: what role for local authorities? In: Local Government Studies, 43 (6): 882–902. Online unter: doi:10.1080/03003930.2017.1359164.

Neuendorf, K. (2002): The content analysis guidebook. Sage.

Official Journal of the European Union (2014): Directive 2014/95/EU of the European Parliament and of the Council of 22nd October 2014. In: L 330/1/2014. Online unter: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32014L0095&from=EN (Abfrage 01.04.2020).

Olajire, A (2012): The brewing industry and environmental challenges. Online unter: doi:10.1016/j.jclepro.2012.03.003.

Orlitzky, M./Siegel, D./Waldman, D.. (2011): Strategic Corporate Social Responsibility and Environmental Sustainability. In: Business & Society, 50 (1): 6–27. Online unter: doi:10.1177/0007650310394323 (Abfrage 29.11.2016).

Pettigrew, L./Blomenhofer, V./Hubert, S. et al. (2015): Optimisation of water usage in a brewery clean-in-place system using reference nets. In: Journal of Cleaner Production, 87 (1): 583–593. Online unter: doi:10.1016/j.jclepro.2014.10.072.

Porter, M./Kramer, M. (2006): Strategy and Society: The Link Between Competitive Advantage and Corporate Social Responsibility. Harvard Business Review. Online unter: https://hbr.org/2006/12/strategy-and-society-the-link-between-competitive-advantage-and-corporate-social-responsibility (Abfrage 06.12.2016).

Rodriguez-Melo, A./Mansouri, A. (2011): Stakeholder engagement: Defining strategic advantage for sustainable construction. In: Business Strategy and the Environment, 20 (8): 539–552.

Saeed, M./Kersten, W. (2019): Drivers of Sustainable Supply Chain Management: Identification and Classification. In: Sustainability, 11 (4): 1137. Online unter: doi:10.3390/su11041137.

Schaefer, T./Udenio, M./Quinn, S. et al. (2019): Water risk assessment in supply chains. In: Journal of Cleaner Production, 208: 636–648. Online unter: doi:10.1016/j.jclepro.2018.09.262.

Sharma, S./Vredenburg, H. (1998): Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities. In: Strategic Management Journal, 19 (8): 729–753. Online unter: doi:10.1002/(SICI)1097-0266(199808)19:8<729::AID-SMJ967>3.0.CO;2-4.

Shrivastava, P.l/Hart, S. (1995): Creating sustainable corporations. In: Business Strategy and the Environment, 4 (3): 154–165. Online unter: doi:10.1002/bse.3280040307.

Tate, W./Bals, L. (2016): Achieving Shared Triple Bottom Line (TBL) Value Creation: Toward a Social Resource-Based View (SRBV) of the Firm. In: Journal of Business Ethics: 1–24. Online unter: doi:10.1007/s10551-016-3344-y.

Taussig, M./Delios, A. (2015): Unbundling the effects of institutions on firm resources: The contingent value of being local in emerging economy private equity. In: Strategic Management Journal, 36 (12): 1845–1865. Online unter: doi:10.1002/smj.2312 (Abfrage 06.12.2016).

Tingey-Holyoak, J. (2014): Sustainable water storage by agricultural businesses: Strategic responses to institutional pressures. In: Journal of Business Research, 67 (12): 2590–2602. Online unter: doi:10.1016/j.jbusres.2014.03.018.

UN (1987): Our Common Future, Chapter 4: Population and Human Resources – A/42/427 Annex, Chapter 4 – UN Documents: Gathering a body of global agreements. United Nations. Online unter: http://www.un-documents.net/ocf-04.htm (Abfrage 06.12.2016).

Vugteveen, P./Lenders, R./Devilee, J. et al. (2010): Stakeholder Value Orientations in Water Management. In: Society & Natural Resources, 23 (9): 805–821. Online unter: doi:10.1080/08941920903496952.

Whiteman, G./Walker, B./Perego, P. (2013): Planetary Boundaries: Ecological Foundations for Corporate Sustainability. In: Journal of Management Studies, 50 (2): 307–336. Online unter: doi:10.1111/j.1467-6486.2012.01073.x (Abfrage 29.11.2016).

Winn, M./Pogutz, S. (2013): Business, Ecosystems, and Biodiversity New Horizons for Management Research. In: Organization & Environment, 26 (2): 203–229. Online unter: doi:10.1177/1086026613490173 (Abfrage 06.12.2016).

Appendix

Appendix 1 – Interview Schedule

1. Are there any water resources issues in your area that you are aware of?
2. Where have you seen/heard information about water resource issues?
3. How confident are you that there are sufficient water resources available in the future locally and more widely?

4. What perceptions do you have of water scarcity and drought risk?
    a. To company operations
    b. For the wider community (suppliers, customers)
5. How might professionals in this sector plan for drought?
6. Is water consumption a growing concern in the sector?
7. Do you have monitoring strategies do you have for your level of water consumption?
8. Are there targets in place to reduce or improve the efficiency of water consumption?
9. How does your company/industry deal with issues of water quality?
10. To what extent are water concerns driven by legislation?
11. Are you aware of the 2014 Water Act and the forthcoming changes to the water market?
    a. How would these changes impact on your water usage?
    b. Would you consider changing water supplier?
    c. Have you been approached to change your supplier?
12. Is there an 'industry standard' regarding the usage, measuring, and reporting of water?
13. How does the measuring and monitoring of water consumption relate to practices involving energy consumption and other utilities?
14. What sort of mechanism would someone in this sector use in order to communicate water challenges to stakeholders? E.g. to:
    a. Shareholders
    b. Regulators
    c. Suppliers
    d. Customers

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