On the Beer Wagon:
The past, present and future of Celtic Craft Brewing and its Policies

Abstract

This paper examines the potential of the craft beer sector as a regional development lever. Focusing on three culturally linked but politically distinct small nations, Wales, Scotland and Ireland, it takes a historical journey from the inception of this sector to present day. Discussion focuses on highlighting the complex interactions between brewing, society, policy and economy. We review current policy and sectoral realities for our Celtic context and propose a grounded and holistic vision of regional craft brewing policies, particularly around more circular and zero-waste ecosystems.

Introduction

Craft brewing has increasingly been positioned as an anchor sector, for both urban and rural regional socio-economic development (Bowen and Miller, 2022; Feeney, 2017; Garavaglia and Borgoni, 2022; Mount and Cabras, 2015; Reid, 2018, Reid and Gatrell, 2016). As well as providing a convivial ethos for community development, craft breweries are acknowledged to generate specialist tourism, and wider skills, social employment and community development: "local, independent breweries strengthen local economies, promote sustainable development, and strengthen social history" (Feeney, 2017, pp.1). Brewing, then, authentically comprises a geographically widespread but highly diverse nexus of production, consumption, nutrition, differentiation, wellbeing and social lubricant, over deep time.

Craft brewing's dual appeal lies in it being "simultaneously high-growth and yet with an artisanal folk ethos that is almost archetypal, and consciously so" (Dodd et al., 2021; Dodd et al., 2018). Characteristically the sector is also seen to have benefits for "its role in local economic development, the promotion of local identity, and its innovative approach to business operation based on human connection and community support" (WEALL, Nov 2021). Craft brewing "holds in balance both an innovative high growth ambition, held collectively, and a firm enactment of frugal, circular, local, foundational, pro-social and everyday entrepreneurship" (Dodd et al., 2021).

This is a peer-reviewed, accepted author manuscript of the following article: Wilson, J., Sanchez Rodrigues, V., Mac an Bhaird, C., Lofti, M., Kumar, M., Horgan, D., Drakopoulou Dodd, S., & Danson, M. (Accepted/In press). On the beer wagon: the past, present and future of Celtic Craft Brewing and its policies. Regional Studies, Regional Science.

In both spatial and societal terms, (craft) breweries offer a strong context for transdisciplinary analysis in regional policy making (Argent 2018; Cabras and Regiani, 2010; Cabras et al., 2020; Ellis and Bosworth, 2015; Gattrell et al., 2018; Sjolander-Lindqvist et al., 2020). They are implicated, throughout human settled history, at national, regional and local level, in policy arenas as apparently diverse as food and drink, agriculture, tourism, health and wellbeing, art and culture, environmental sustainability, export marketing, place branding, gender, and craft entrepreneurship (Bowen and Miller, 2022; Garavaglia and Borgoni, 2022; Garavaglia, 2018; Reid and Gatrell, 2017). This may also explain why the sector's intense institutional regulation of brewing has persisted too, for nearly 4 ~~more than 7~~,000 years (Poelmans and Swinnen, 2012); . It could shed light, too, on why this regulation has come to be so siloed in nature, relatively narrow in scope, and centrally conceived (Cabras and Bamforth, 2016; Cabras and Higgins, 2016; Dodd et al, 2018 [1]). And yet brewing remains, as it has been quite literally throughout human history, very heavily circumscribed by centralised and fragmented regulations, institutional constraints, and societal norms (Argent, 2018, Danson et al, 2015; Tremblay et al, 2005; Cabras and Bamforth, 2016; Woolverton and Parcell, 2008).

The craft brewery industry is affected significantly by the current fragility of recovering regions, already bruised by a decade of austerity. This fast-growing and socially significant challenger segment was severely threatened by the existential threat posed by Covid-19. At the height of the UK's Spring 2020 lockdown, the industry estimated its sales to have fallen by 82%. Fully 65% of craft brewers had entirely ceased production, with another 30% significantly cutting output. More than half were struggling to access any government support, and nearly a third predicted job loss (SIBA, 17th April 2020). Dependence on pubs, especially, as well as tourism and catering more widely, meant an immediate cessation of sales. However, 70% had responded with novel distribution channels, though developing new online services, or local delivery services, now offered by 60% of the (SIBA) sample. The widespread destruction of the sector predicted in the pandemic's early stages has not, then, come to pass. Indeed, the sector appears to have become still more celebrated as a potential panacea for regional development.

[1] Population ecologists, for example, consider craft brewing as an inherently peripheral sector, which exploits those resource-scarce spaces overlooked by the centre, and its large-scale generalists (Clemons et al, 2007, 152; Elzinga et al, 2015, 724; Carroll and Swaminathan, 2000; Carroll, 1985; Argent, 2018, 3; Cabras and Bamforth, 2016, 626-628).

Here, we carry out an exploration of the relationship between (craft) brewing and socio-economic development, though time, for three culturally linked (but politically distinct) small nations. Scotland, Ireland and Wales share various complex histories, including their Celtic roots, yet diverge in important ways, as we shall see (not least in terms of their relationship with the UK and the EU). Our aim is to take a holistic overview of craft brewing as a regional development lever of considerable heritage and potential, analysing current policy and sectoral landscapes against their historical backdrops, using the Celtic context as a focus for this study.

Whilst craft brewing has been shown to generate value of various kinds – from employment and innovation, to community-building - there must surely be areas even the finest brew cannot reach, and possible consequences of a less benign nature that require articulation. As well as highlighting what this promising sector can deliver, then, to equitable regional development, this study also strives to rigorously draw attention to the challenges, limitations and drawbacks of jumping blindly on the beer-wagon.

Our paper builds on the extensive and growing scholarly literature on craft brewing, as well as more historical material. It builds on the growing scholarly interest in the importance of this sector in the regional studies field in particular, where there has been ~~particular~~ focus on opportunities presented for local economic development and renewal; the impact on other related industries such as tourism; and development of rural areas in particular (Argent, 2018; Cabras and Regiani, 2010; Cabras et al., 2020; Garavaglia and Borgoni, 2022; Mount and Cabras, 2015; Reid and Gatrell, 2017). It also adds to a growing literature in this sector focused on the social ties of place and community and how craft breweries can be valuable place assets fostering a ‘social terroir’, a social or historical connection to place (Bowen and Miller, 2022; Eades et al., 2017; Gatrell et al., 2018; Hede and Watne, 2013; Melewar and Skinner, 2020; Sjolander-Lindqvist et al., 2020).

It is the outcome of a two-year period of interactions, debate, joint study, and analytic experimentation within (and beyond) a. team of 8 scholars from 3 Celtic countries. As well as a sectoral specialism in craft brewing, we created a transdisciplinary team with very wide-ranging and complementary expertise. The team comprises engaged scholars with applied knowledge from many relevant fields: operations and production management, distribution systems, marketing, rural development, farm diversification, theology of the land, start-up and growth funding models, craft branding, architecture, small firm financing, planning, local enterprise networks, regional economic geography, and, of course, for each of us, policy. This paper is a thought experiment, a critical re-reading of the regional development potential of craft brewing through the lens of the Celtic context.

We begin by journeying through the beer history of Wales, Ireland and Scotland, highlighting the complex interactions between brewing, society, policy and economy. Arriving in the present, we review current policy and sectoral realities for our Celtic context. After setting out the narrative section of the essay, we then consider the implications of these narratives, in a critical and summative synthesis. This synthesis allows us to propose a more grounded and holistic vision of regional craft brewing policies, particularly around more circular and zero-waste ecosystems.

Without better understanding our past, we hamper attempts to build our futures. More importantly still, given the *global* nature of the policy challenges we address here, there are many parts of the world where ancient, artisanal, ritual and subsistence brewing and beer consumption practices remain undisturbed by industrialisation. In the non-vinous world, too, beer remains as implicated in some local religion and ritual as wine is now for the Christian communion; just as in the Celtic past. This paper proceeds by an exploration of the role of beer and brewing in socio-economic, regional and industrial development. We then delve in increasing detail into the specific linked but distinct brewing sectors of Wales, Scotland and Ireland. This also serves to explain the relevance and suitability of the countries for the exploration, setting them into deeper context, and revealing historical challenges and opportunities, as well as regional beer heritage.

Regional Socio-Economic Development and Brewing in Wales, Scotland and Ireland

Beer, Early Society, and History

Beer is a complex drink, with impacts upon human development and wellbeing across a range of interlinked policy and theory arenas: health, religion, employment, consumer protection, inequalities, nutrition, water provision, innovation, tourism, terroir, agriculture, skills development, traditional cultures, and enjoyment. It therefore offers unique potential to policy makers, particularly at the level of small nation state, or of region. To build our case, we turn to history to illustrate the persistently diverse and complex political economy of beer and brewing.

Like other mind-altering foods and beverages, beer "under controlled circumstance…can provide a cultural and social advantage", supporting ritual, religion, rite and social regulation (Katz and Voigt, 1986). We tend, though, to forget that "beer would also have had an enormous *biological* advantage" to the earliest brewing communities, too (our emphasis). As well as purifying water, brewing "enhanced the nutritional quality of an already available food to a level almost comparable to that of meat". These attributes, as well as taste and pleasure, have led some scholars to argue that it was in fact brewing that first led the drive to agriculture, settlement and socio-economic development, rather than baking (Katz and Voigt, 1986; Cabras and Higgins, 2016, pp.611).

The very first "recipe" in archaeological records is for beer, from Sumer, in Mesopotamia, dated to around 6000 BCE (see, for example, O'Gorman, 2009, Nelson, 2005, pp.9). The brewer in this case was the god, Enki, and a second recipe is also found in a hymn to the Sumerian goddess of brewing, Ninkasi (Katz and Voigt, 1986). Grain and beer produced by Mesopotamia's settlers were traded for more exotic and rarer goods, so that excess brewing capacity fostered trade developments too (Poelman and Swinnen, 2016; Rabin and Forget 1998). Beer rations, of about a litre a day, later appear on the first civic "pay checks", cuneiform clay tablets from Uruk, paid to their attached labourers by palaces and temples. Inns, always a special place for beer and brewing, likewise facilitated travel, trade, pilgrimages - what would become tourism - and are gloriously celebrated in Sumerian drinking songs (Katz and Voigt, 1986). Also from (later, Babylonian) Mesopotamia, ~~Hammurababi's~~Hammurabi's legal code - again, the first written evidence of its genre, from about 175~~8~~0 BCE - set the tone for future relations between brewing and the state, with very precise stipulations as to brewers' gender (female) as well as beer quality and purity (Dodd et al., 2018, pp.639). Not surprisingly, given all of these ways in which beer was woven deeply into the fabric of emergent society, its production and consumption also marked social boundaries.

Unlike the (apparently) egalitarian hunter-gathering lifestyle, "with the spread of agriculture, social differentiation and hereditary inequality eventually became correlated with political and ideological complexity" (Budd et al., 2020). Settlement, then, brings the first context where we find socio-economic inequalities, and the civic administration that can create, perpetuate, entrench, diminish, or uproot these. For our areas of interest, and our wider narrative, this is of crucial importance, since it appears that beer consumption was an early indicator of status. The roots of European settlement and farming were also the beginnings of food inequality, which is predicated upon wider socio-economic divisions, and perpetuates these through generations. New evidence makes clear that "food production factors drove such very early evidence of socio-economic and dietary inequality", (Budd et al., 2020, pp.932).

Beer, that is, was always also a class marker, with both production and consumption differentiated by status, and acting to reinforce these differentiations. Elite management of beer and brewing has arguably long been a mechanism for the othering of the non-elite, also. In contemporary times, in the modern West, beer is seen as a drink for the masses, and much craft brewing growth centres around a rhetoric of "winification", to directly address this. We note here that the class and cultural role of beer and brewing has always been an integral element in its use as a policy tool, albeit implicitly, and draw attention to these persistent examples from the historical record.

The Early Celtic Context

The Celtic edge of Europe is geographic, and geological, as well as cultural. Its coastlines have long been famed for their gold (Ireland and Wales); silver (West Iberia), and the otherwise elusive tin (Galicia, Brittany, Cornwall; Cunliffe, 2017, pp.53). The gulf stream made the Atlantic coasts a rich fishing resource, too, and shellfish were an early and abundant seasonal food source. With the setting sun as a western beacon over the sea, and cyclical experiences of tidal patterns, a deep appreciation of time, seasonality, and the natural elements is evident in such archaeological evidence as remains, from as early as the period between 5000 and 2000 BC (when Stonehenge was created: Cunliffe, 2017, pp.21). The sea, and voyaging, were to remain a crucial an element of Celtic life, and provide the context within which Celtic beer and brewing were first set. Feasting played a large role in the socialization of communities around a hero-king figure (Nelson, 2005, pp.10-13). From 3000 BC there is evidence of brewing in Scotland, with local flavourings (some frankly dangerous) like, "from around 2000 BC … mashed cereal straw, cereal-type pollen, meadowsweet, types of heather (including ling), and royal fern" (Nelson, 2005, pp. 11-13). Other findings from Celtic and Pictish lands confirm heather beverages were being brewed by the inhabitants of both Scotland and Ireland prior to and after the arrival of the Romans in Britain (Scottish Brewing, no date). In Wales, the retreating Celtic tribes were already well known for their brewing skills, and this reputation persevered. Saxon records from the 7th century onward, for example, mention "Welsh ale" (or bragawd/bragot), a heavy brew laced with spices. It was as highly prized as another Celtic drink, mead, made from fermented honey (Wales: craft beer and brewing, no date).

From these early beginnings, brewing became dominated by first monasteries, then by women within the domestic context, until commercial success led to women being pushed out of the trade by 1700. The following century experienced large expansion and then consolidation with urban breweries overwhelming rural enterprises. Lost too were local varieties and flavours as railways, oligopoly powers and large city market demands advantaged the urban breweries.

Nineteenth and Twentieth Century: The Industrialisation of Brewing

We have shown thus far that beer has been a very important element in humanity's socio-economic and cultural development, since its earliest origins. We have also highlighted ancient Celtic and Pictish brewing practices, highly localised brews of importance for celebration, socialisation, identity and nutrition. With the coming of modernity, however, these cultural and localised meaning-systems for beer and brewing were subjected to institutional forces which would raise a range of new challenges (and opportunities), many of which pertain to this day.

Consider, for example, the impact of Victorian religious conservatism on the internationally celebrated Welsh beer industry. Similar temperance patterns were also important in Scotland, ironically enough often in the Western Isles, home to the 4000 year old brew described by Nelson (above). Although today beer is still the national drink in Wales, the beer industry has had to make its way into a society far more hostile to alcoholic drinks than neighbouring England. In the late 19th century, Wales' dominant non-conformist chapels were appalled by public displays of drunkenness. The powerful anti-alcohol movement succeeded in establishing the Welsh Sunday Closing Act in 1881, shutting pubs on Sundays; members of the movement also pressed for prohibition.

The country's leading brewing centre, Wrexham, in northeast Wales—once known for its strong ales—was largely shut down, though its pioneering lager brewery, Wrexham Lager, continued producing until 2000. When founded in 1883, it had promoted its lager as a temperance drink. Those that survived concentrated on brewing relatively low-alcohol beers. Wales' leading brewer today, Brains of Cardiff, chiefly brewed a mild, dark ale. "Dark" accounted for the bulk of its production until the 1980s. Stronger pale ales mainly came from England, notably from Bass and Whitbread, which later took over many Welsh breweries.

Thus we can see how socio-cultural movements opposing the consumption of alcohol served to facilitate deep changes in Wales' brewing landscape, making space for larger English competitors, and focusing on product ranges of lower alcohol beers.

Alongside Brains, only the small brewery of Felinfoel survived this collapse in local Welsh brewing (Wales: craft beer and brewing, no date). From the 18th century until the early 20th century, Wales dominated world tinplate production, peaking in the early 1890s when 80% of world's tinplate was produced in South Wales, (BBC: A history of the world, no date). In 1931 this very specific local resource, and canning knowledge associated with it, allowed the small brewery at Felinfoel to become the first outside the USA to commercially can beer. Prior to this time, beer was only available in barrels or glass bottles. From this time, lightweight tin cans could be used without compromising on the taste or quality. Felinfoel Brewery was a major supplier to British armed forces abroad in the Second World War. Such an advantage enabled Felinfoel Brewery to source cans locally and grew considerably by pioneering canning of beer in the UK.

A similar story of consolidation, urbanisation and oligopolization of the brewing sector occurred in Scotland during the nineteenth and twentieth centuries. At its peak, in 1840 there were 280 breweries in Scotland; mergers, acquisitions and closures precipitated decline so that by 1900 brewing was primarily concentrated in large firms in Edinburgh, Glasgow and Alloa.

As traditional Scottish styles of beers became less fashionable, these trends were exacerbated so that by 1910 there were only 92 breweries reducing to 63 in 1920. Unlike in Wales, sales were significant in home and international markets based on high quality and diverse types of beers and ales, so that Edinburgh was recognised as "the world capital of ale-brewing" in the nineteenth century (McLean, 2013), while Tennents of Glasgow was the largest exporter of bottled beers in the world, for instance (Scottish Brewing Archive, no date).

If a handful of major industrial brewers were to dominate Scotland's modern brewing scene, in Ireland, of course, there could be only one. Like Wales and Scotland, at the beginning of the 19th century, there were over 200 breweries in Ireland. There was considerable consolidation during the 1800's, with the emergence of one brewer that was to come to predominate the Irish brewing scene, Guinness. Like Scotland, export was a very important element in the production of major brewing firms. Consumption trends are also notable: "The output of the Irish brewing industry trebled between the 1850s and 1914, over 40% of which was exported, and that was largely due to Guinness which at that time was the largest brewery in the world" (Ferriter, 2015: p. 4). Domestic consumption was also quite high and Ireland boasted over one and a half times as many licensed premises per head of population than England and over two and a half times as many pubs per capita as Scotland (ibid) – the sobering hand of temperance, and the importation of "refined" modern tastes, did not reach across the Irish Sea. Beer drinking in pubs remained at the nation's cultural heart, even if production had become massified in Dublin's Guinness, at the expense of smaller, regional and rural breweries.

At the turn of the 20th century, to be specific, there were approximately 36 breweries in Ireland. The economic stagnation that followed independence resulted in many of the remaining smaller breweries closing. Thus by 1920, the number of breweries had shrunk to 24, and by 1960 this had decreased further to approximately 8[2] breweries in the Republic of Ireland (European beer guide, no date). Let us reiterate that, as a clear indication of the consolidating trend which impacted all three countries: in 1800, there were more than 200 breweries in Ireland. By 1960, there were eight.

Thus it remained for the greater part of 40 years, and of the eight breweries in existence in 1960, most were eventually owned by three large breweries, dominated predominantly by Guinness, which became the largest brewery in the world. The number of breweries remained at approximately seven or eight up until the mid-nineties when the number of independent microbreweries started to grow significantly. Although lagging the craft movements of the US, the UK and other more developed markets, there was a very significant growth in the craft brewing sector from the mid-1990s onwards. Exporting continued to be important for the Irish brewing industry, following an established pattern. Yet domestic consumption was equally significant, reflected in a high level of alcoholism by 1971 over 11% of total consumer spending was accounted for by alcoholic drink. Between 1986 and 2000, there was an increase

[2] These included the large breweries Beamish and Crawford (Scottish & Newcastle since 1995), Guinness (Diageo), Murphys (Heineken since 1983), Great Northern (Harp, Diageo since 1959), Macardles (Diageo since 2003), Smithwicks (Diageo since 1965), Waterford brewery (Acquired by Guinness in 1952, ceased brewing in 1954),

of 48% in the amount of alcohol consumed per head of population in Ireland. In particular, the early years of the Celtic Tiger in the mid-1990s saw a large increase in consumption. Here, the increase in beer sales were not viewed as de facto positive, given the correlation with worsening alcohol abuse and illness during the same period, which may also explain a rise in temperance or abstinence in 1970s Ireland, too.

In Scotland, complementing earlier forces of concentration and consolidation, WW1 restrictions and the Temperance Movement were also each instrumental in further changes so that the sector declined to just 36 breweries by 1940. Against supply side developments, while the Temperance Movement had impacted on consumption, post WW2 improving standards of living in the 1950s saw an increase in beer demand.

Not unconnected, increases in monopoly powers reduced these numbers further to 26 in 1960 through an "amalgamation rush" (Craft beer and brewing, no date) and then to only 11 by 1970, with continuing takeovers and closures in these latter decades also being driven by the loss of colonial markets. By 1980, ownership was dominated by a few non-Scottish drinks conglomerates who dominated the domestic and export markets, and so 'the virtual disappearance of the Scottish independent brewers' (Craft beer and brewing, no date). By the end of the 1990's this trend was reversed with the revival of Scottish beer production in the form of small microbreweries.

The 200 years from 1800 – 2000 saw, then, similar patterns emerging in all three Celtic countries in our study. Although playing out in differing timescales and localised contexts, we can see the dramatic reduction in all three countries from several hundred brewers, to quite literally less than a handful. Industrial consolidation in urban centres of mass production affected many formerly domestic crafts, of course, as did WWI and the Great Depression. However, brewing was particularly impacted by changing attitudes and practices around alcohol consumption – such as temperance and taste – as well as the expansion and contraction of imperial markets.

The resurgence in Celtic craft brewing in the past few decades has been nothing short of remarkable. Once again, breweries number in the 100s, and are becoming more distributed within the rural, as well as in areas of urban deprivation. Whilst austerity and Covid-19, as well as perhaps over rapid sector growth, have slowed and sometimes reversed this trend, nevertheless, it is very significant to note that craft brewing sectors in all three countries studied have, in such a short space of time, returned to near pre-modernity levels. Our next section tells this story, highlighting key challenges and opportunities faced by contemporary Celtic craft brewing contexts, through the last few decades.

Contemporary Celtic Craft Brewing Contexts

Brewdog, founded in 2007 in Ellon, Aberdeenshire, whilst not the first, is widely regarded as the catalyst for the growth of the Scottish craft beer sector (Cabras and Bamforth, 2016; Carol, Frederico and Thomas, 2015; Cunningham and Barclay, 2020 [3]). Growth in small, independent breweries was particularly strong in Scotland from 2010-2018 and current estimates are of 115 breweries, most microbreweries, employing less than nine people (Scottish Government, 2018).

Currently, there are 141 active breweries in Wales, and in the last ten years, there has been a rapid growth in the craft sector with the number of small and micro beer producers continually increasing [4] (The Telegraph, 2014).

From approximately 12 breweries in Ireland in 1997, Feeney (2018) estimates that by mid-2018 there were 125 microbrewing companies in the Republic of Ireland, of which 75 were independent production breweries (Feeney, 2018: p.16). Beer production by independent microbreweries was 157,000 hectolitres (2017) out of a total of 8 million hectolitres, accounting for less than 2% of total beer production in Ireland.

Scotland has a higher than proportionate rise in the number of new breweries growing from 35 to 105 from 2010-2017, with a particular increase in small scale micro-breweries (SRUC, 2018). Recent research by TBAS shows that the majority of Scottish brewers are producing

[3] Now considered to have broken almost all the tacit rules governing craft beer culture, Brewdog may be cast out from the craft fold, but they remain Scotland's third "Unicorn" enterprise, a high profile focus for all things "artisan" and "punk".

[4] In Wales, this rise could be due to an increase in popularity of craft beer influenced by changing customer preferences and their willingness to pay more for good quality craft beer (SIBA British Craft Beer Report 2019). This is encouraging sign for the sector across the UK and Wales in particular where average consumption of alcoholic drinks per person per week from 2014-17 in Wales is lower than rest of the UK, i.e. 679 ml in Wales followed by 680 in Scotland, 683 in England and 747 in Northern Ireland (DEFRA, Family Food Statistics, 2017).

less than 500hl and employing less than 6 people (TBAS members survey 2016, Scottish Enterprise). Between 2013 and 2017 there had been a fivefold rise in micro-breweries across Scotland, and the Highlands and Islands showed substantial growth with 105 micro-breweries established, followed by Eastern Scotland (mainly Edinburgh city) with 50, the South-West with 15 (mainly Glasgow) and 10 in the North East. Despite the limited local markets available to many micro and small breweries in many localities in Scotland where much of this growth has taken place, they have become established, survived and evolved through localised growth followed by connection into a wider supply chain.

There are some estimates of the local impacts of the Scottish 'beer and pub sector' in terms of jobs, incomes, multiplier effects within and compared with English regions, and Wales available from a study by Oxford Economics in a report for the British Beer and Pub Association (Oxford Economics, 2010), based on 2009/10 data so somewhat out of date given the expansion in the microbrewery sector since). In a report to the Scottish Government SRUC have pointed out that "brewing in remote and rural regions would provide an additional social value through diversification of opportunities for employment, consumption and rural sector growth" (SRUC, 2018).

Yet all is not rosy in our post-modern hop garden. In Ireland, the growth in new entrants has slowed somewhat in recent years, deterred perhaps by a small number of failures and significant overcapacity in the sector. Feeney (2018) contends that there is significant unused capacity in the sector, with a utilisation rate of less than 50%. Unlike other markets, most craft brewers do not operate licensed premises or tied pubs. Instead, their main sales outlets are supermarkets or taps in local licensed premises. Craft brewers are experiencing reduced output, a number of failures, difficulties in accessing distribution channels, and underdeveloped export markets, all of which is exacerbated by the Covid pandemic.

In Wales, 61 micro-breweries closed between 2000-2020 (Wales Breweries: RateBeer, no date). The closing of micro businesses is no surprise and well documented in entrepreneurship or small business literature. The reason for the closure of 61 breweries in two decades could be attributed to factors such as different legislations and policies such as Agriculture and Rural Affairs Policy (for example, Glastir), Health Policy (for example, Minimum Pricing of Alcohol) and tax policies.

For instance, Minimum Pricing of Alcohol has a two-folded effect: on one side, it has been claimed that it saves the NHS £6.5m a year and boosts the Welsh economy by £44m a year by reducing workplace absence and crime (BBC News, 2019). On the contrary, it could possibly push drinkers to switch over from one addiction to other cheaper and harmful substances.

Likewise, alcohol tax duty rules and regulations are pitting larger, longer-established brewers against newer, smaller microbreweries. Small breweries pay duty on what they produce. The Small Brewers Relief (SBR) scheme reduces the amount breweries pay, depending on how much they produce. It is a sliding scale and breweries producing under 5,000hl (or 880,000 pints) a year pay 50% of the standard rate - which is the biggest tax break available through the scheme. However, some larger breweries do not think it is fair and have set up the Small Brewers Duty Reform Coalition (SBDRC) with the main goal being to scrap the SBR. They are putting pressure on, for example, the Welsh Government for review and reform of the SBR, as they see it as an exaggerated tax loop that now acts as a disincentive to grow because small breweries are reluctant to lose the duty relief by upping their capacity (Wales online, 2018). The unintended consequences of the SBR scheme could lead to increasing tension between micro and small breweries in Wales, and elsewhere, having a direct impact on cooperation and collaboration activities between micro and small breweries.

Today's renewed craft brewing sector also faces geographic challenges, being often peripherally positioned in marginal places. In Wales, the majority of the breweries are spread in the outskirts. There are significant challenges linked to access to infrastructure, raw material, recruitment of skilled staff and logistics, and stimulate breweries to collaborate with local universities or other relevant government bodies. At the same time, they face the challenge of skill shortage to recruit or retain trained brewing expert (SIBA, 2019, pg.6). These challenges required breweries to take innovative cluster approach that includes other breweries. Informal and formal clusters of beer producers also include wider stakeholders, such as non-for-profit consultancies, government and universities.

In recent times, Covid has brought considerable challenges to the craft beer sector in all three countries. In Wales, few breweries had access to grocery retail and online shopping market channels, and many needed to temporary close in April 2020. However, with financial support from Welsh Government, sectoral advice and guidance, and innovative ways of accessing the B2C market, many Welsh breweries managed to weather the storm during the pandemic.

Brexit too has been experienced as a major challenge, on both sides of the Irish Sea, given the strong international connections, procurement, and sales of craft brewing. The Welsh beer industry expects to encounter challenges and changes including access to restricted raw materials, new regulations, currency exchange fluctuations, which can affect cash flow and financial health of breweries (Food manufacture, 2019). Micro and small craft beer producers are particularly vulnerable to those challenges.

Indeed, on one hand, the industry has been pushed to try for export and new markets to confront the overcapacity risks, and on the other hand, the possible imposition of tariffs may cause customers from the EU to look elsewhere. Nevertheless, the potential trade barriers caused by Brexit might encourage ~~for~~ domestic supplies of high volume products such as wine and beer. This could lead to new opportunities to expand production in these sectors.

Increased domestic production of beer has the potential to drive agriculture and horticulture. In rural Wales, for example, this would result in more horticulture specifically in the South and North East border areas where there is already a culture and infrastructure for these products and more dairying in the low land areas of North, South and West Wales. Barley and hops could become a more important element for South Wales farming. Having local malters and hops in Wales could make Welsh craft beer more premium and provenant. Hence, Brexit could actually generate growth within the beer and spirits sectors and bring prosperity to rural Wales (Dwyer, 2018).

Peripherality and rurality, however, also offer opportunities, particularly around tourism. Visit Scotland actively highlights the craft beer sector through its website with reference to brewery tours, pubs, beer festivals, locality-based real ale tours and other events. The opportunity is taken to make explicit links to Scotland's other national drinks (whisky and boutique gin, especially), traditional Scottish food, and to restaurants through the themed '2015- Year of Food and Drink.' These are all a means of adding value, strengthening the supply chain and generating synergies across and between sectors.

Yet the full benefits of potential here have also to be realised equally across the three countries. As the tourism offer has developed in Ireland, destination marketing has built up around whisky distilleries in particular (Foley, 2013; Jovicic, 2019). While Dublin's Guinness Storehouse is noted to be Ireland's most visited attraction, the contribution~~failure~~ of the Guinness Campus to ~~contribute to~~ wider placemaking and regeneration of the Liberties area has been minimal, and often focused on speculative development with little return on investment to the local community (Kelly, 2007). Ambitious developments such as the Digital Hub have not been delivered upon, while rampant neoliberal gentrification takes root, allowing centuries of co-production around the Guinness brewery to evaporate (van Winden and Carvalho, 2016; Cardullo et al., 2018). Similarly, the landmark Murphy's and Beamish and Crawford in Cork have been ~~similarly~~ neglected as sites of socio-cultural importance, betraying their contribution to the identity of that city. As these brands were incorporated into the Heineken International group their ties to place have loosened, with notable negative consequences to their neighbourhoods. Given the purchase of the Franciscan Well craft brand by Molson Coors in 2013, it remains to be seen if that organisation will be cognisant of its rich social heritage and its impact on place and identity (Lenihan, 2010).

Scotland's rural development programme is designed to build on the strengths of rural Scotland and it particularly highlights the key growth sectors of Tourism and Food & Drink; resourceful and resilient businesses and communities; natural capital - including large quantities of good quality water; cultural, historical and natural capital and assets; and, research institutes which offer good provision for training and learning. However, in many areas outwith the Central Belt there is a narrow economic base and lack of growth opportunities, with particular issues of access to finance for rural businesses, low wages, and problems of co-ordination across sectors and agencies.

There are clear opportunities to build on 'Scotland the brand' through further strengthening the performance of Scotland's growth sectors; and such interventions should create and maintain vibrant rural communities by utilising Scotland's natural environment and heritage to increase employment opportunities and improve rural and national economic growth. Specific strategies are needed to better integrate training/skills across land-based sectors and tourism, to target support for knowledge transfer with stronger linkages to research and technology, and to support greater collaboration across sectors for added value.

These economic and environmental dimensions underpinning the development of rural Scotland create the context and rationale for assessing the role for the craft beer sector to contribute to sustainable growth across the country. Microbreweries are characteristically embedded into the local economy and offer the potential to realise many of the benefits of the rural development programme. Critically there is an identified need for different and varied interests to join up their thinking, understanding, cooperation and support to achieve these aspirations.

Critical Summative Synopsis

What is the current policy landscape for deploying craft breweries as a potential tool in regional development, when these narratives are considered as a whole? What are the major themes emerging from this review of contemporary brewing policy in the three Celtic countries? We found that some market changes, and, especially, the promise of collaboration, provided support and opportunities within the wider institutional environment (Table 1). Supportive policy frames and practices included examples of funding being provided to help with the development of skills, and export marketing, as well as the provision of expertise and projects around innovation, Brexit, and production efficiencies and collaborations. Some positive fiscal regimes were also noted, such as excise relief for small brewers.

Table 1 – Craft Brewing Policy in the Celtic Periphery

	Institutional Environment	**Policy Frame and Practice**
Support and Opportunities	Consumers' taste and drinking habits are transitioning to craft beer Collaborative strategies address multiple needs, as with Food and Drink Collaboration Strong peer and local networks provide support	Funding is available to: develop brewing skills and quality; to support export marketing Support is available for: Innovation; planning for Brexit Government support for the food and drink industry can provide a focus for supportive policies Projects are available to optimise resource efficiency; to optimise use of co-products Excise relief for small brewers, below certain thresholds Investment Tax Breaks can facilitate brewery launch and growth There are a growing number of local agency Case Studies of Craft Brewers in Video Form, to showcase skills & opportunities
Challenges and Threats	Environmental challenges around climate change	Government support for the tourist industry, and the food and drink sector, is often routed through industry

	There are gaps in the business admin skills of many craft brewers Lack of resource and skills to apply for support and funding Recruiting and retaining staff is a problem for all, but especially for rural and island breweries. Access to infrastructure impeds the growth of rural and island breweries, especially Poor rural wifi access for customers and community Overcapacity and dropping demand in the wider beer market Small scale of craft brewing inhibits establishing or joining large scale distribution networks Challenges entering mainstream distribution channels Turbulence, structural barriers, and licensing in the public house sector Barriers of entry to the public house market Access to support is needed for the craft and artisan (food) sector Access is needed to dedicated rural development support	organisations and targeted at larger firms Pricing of licenses, planning, etc crowds out smaller brewers Possible restrictions on alcohol marketing and sponsorship The ability to sell beers on site, for drinking & retail, may be inhibited by law "Cliff-edge" structure of SBDR / SBR (excise relief) discourages growth, and increases Tensions with medium-sized brewers. Brexit means key policies around farming, exporting and importing are very uncertain, and replacements for essential policy agencies lost through Brexit are unclear Brexit may cut craft brewers off from their international knowledge and resource networks The impact of business rates on the hospitality sector, a key route to market for beer. Visa rules and Brexit may worsen skills gaps Complexity of retailing structures and licensing laws Outdated arrangements for collecting excise duty on beer. Competition policy has done little to tackle brewing oligopolies of production and distribution

Skills gaps, geographic isolation, distribution, internet and other infrastructure barriers remain significant inhibitors of business development for rural craft brewers in the Celtic fringe. Market turbulence, a shrinking beer market, complex and oligopolistic distribution and retailing systems also threaten these potential anchor ventures. Government support for rural development was seen to be often routed through other sectors, like tourism, and through their industry bodies, or larger companies, so excluding small artisan brewers from the support ecosystem. Licensing, excise duty, the structures of these, and a perceived failure of competition law continue to be the main challenges visited on craft breweries on the margins. Brexit is seen as a particular threat, in all three nations, especially the uncertainty which it brings. In parallel with its deep local embeddedness, craft brewing is a very internationally connected sector. Brexit challenges the continued success of knowledge, resource, contact and sales networks upon which this depends.

In summary, then, this is a sector facing considerable challenges, even before the Covid-19 pandemic threw craft breweries and their communities into crisis. We note that the major barriers to policy development relate to access to knowledge, skills, influence, infrastructure, and fairer fiscal and licensing regimes. All of these are directly or indirectly related to these Celtic internal colonies', and their regions, distance from resource-intensive centres, and the much greater power of the beer oligopoly within those centres. Positive foundations upon which flourishing futures might be built were much scanter than challenges and barriers, but focused on collaboration, skills development, and a re-conceptualisation of international activities.

Reflecting on these findings, we note that as a policy and practice community, there is now a deepened appreciation of grassroots challenges, and a much broader, more innovative and focused set of solutions to many of these. Zero Waste Scotland, for example, collaborates with 173 breweries to preserve and enhance the local value of their waste. At local level, craft breweries can form the heart of community hubs, sustaining – and being sustained by – other artisans, makers, artists, neighbourhoods, traders and, of course, their place itself (Ellis and Bosworth, 2015; Sjolander-Lindqvist et al., 2020). This may be particularly so in rural SME economies, where interwoven communities of small firms provide the entire fabric of the local economy, and where craft beer tourism can help make and shape tourism markets (Cabras et al., 2020; Ellis et al., 2018; McLaughlin et al., 2016).

What seems to be special about craft brewing? Which of its features drive this move away from formal, linear supply chains, and towards sustaining community hubs? Deep trust embedded in place is crucial, as is the encapsulation of this ethos, and its place, in local recipes, imagery, discourse and connections (Ellis and Bosworth, 2015). Collaborative practices from craft brewing also transfer well across sectors, as does its shared mindset which focuses on the development and flourishing of communities, and not individual business growth (Dodd et al, 2018; Dodd et al, 2021). The sector's adaptability has been shown too in its innovative responses to the challenges of both Brexit and Covid-19, often through enhanced local interaction. Heritage, culture, connectivity and adaptability help craft brewing to close some loops at community level, too (Garavaglia and Borgoni, 2022; Mount and Cabras, 2015).

Regionality of itself asks questions as to what local means, and for craft brewing in particular, finding the scale which provides scope for sustainability has been complex. The closest small scale bottling plants, and the nearest malting facility for home-grow barley, are both across the Scottish border with England, for example. Brewers in the Highlands and Islands have been supported by grants for in-house bottling lines, which has been a well-received response to this structural bottle neck.

What still somewhat eludes our grasp, fully, are some of the other the bits in the middle, in-between the local challenges and the national or regional policy initiatives which respond to these. Brewers are now in abundant supply, thanks to a growth in degree programmes, but specialists in other key tasks – like maintaining brewing plant – are not, forcing small scale breweries to purchase help from larger firms. It may thus be larger scale systemic change which is needed, to bridge these various in-between disconnects.

Conclusions

Our historical review showed the wide-ranging, diverse, complex and interwoven institutional and policy practices around brewing's history. Far more holistic and broader socio-economic themes were identified than have been shown to prevail even in the growing modern Celtic brewing contexts. Are we missing a trick? Is it time to move back to the future of regional brewing economies, with localised and circular supply chains, as the recent WEALL report has proposed:

"Over the last years, the craft brewing sector has expanded significantly in Scotland and around the world, demonstrating a business model which is based on collaboration and driven by a thriving entrepreneurial community. Craft brewing is often considered an example of 'success', not only because of the increasing number of craft breweries being established across Scotland, but also due to its role in local economic development, the promotion of local identity, and its innovative approach to business operation based on human connection and community support. These key attributes could be seen as lessons for other industries and could provide an illustration of what a Wellbeing Economy entails in practice." (WeAll, 2021, p.9).

Indeed, such broadening of interest and support for craft breweries resonates with a number of the existing paradigm-shifting agendas which have come to the foreground in combatting

Covid-19 and in building resilience more generally. Significant progress has been made in understanding and identifying the barriers and constraints to communities and regions being able to sustain activities through challenges such as a global pandemic, climate change (Fazey et al., 2018), loss of competitiveness, subsequent limited market size and depopulation (Dressler, 2016; Danson, 2015). This accords with recent work within regional studies that argues that the focus of research post Covid-19 should be to more equitable and sustainable regional outcomes to "'build forward better', to a new regime of economic and social development (Martin, 2021, pp. 145).

Recently, under the conditions of the Covid-19 lockdowns and regulations, governments at large and in Scotland in particular have established commissions and advisory groups to recommend the means to build a better recovery than the market or 'business as usual' could deliver; examples include Just Transition Commission's Reports (2020a, b), Advisory Group on Economic Recovery (2020), CERG (2020) while more local initiatives are being promoted in the concept of Community Wealth Building (North Ayrshire, 2020) and the 20 minute neighbourhood (Wallace, 2020). Common across many of these is their consistent endorsement of the related frames of the foundational economy (Foundational Economy Collective, 2018), circular economy (Ellen MacArthur Foundation, 2019), and a Green Recovery where localism (Blume, 2011), production and consumption is encouraged at the community or sub-regional level (Gibbs, 2018; Trebeck and Williams, 2019).

What might extending craft beer policy and initiatives look like on the ground? Which specific and new regional policies are we proposing here? Community gardening projects aim to tackle food poverty, and to enact locally circular economies, as well as building social resilience and self-sustaining skillsets. The creation of community hop groves could thus build on these established partnership models. Localising supply chains, even in part, would also be a significant step in smoothing craft brewers' resourcing uncertainties and inefficiencies (both environmental and commercial). Communal hop production, processing and selling might also provide a platform for the collective generation of other brewing resources, like water, or energy. Indeed, since the Celtic edges are particularly abundant in wind, tidal and water (energy) resources, building physical plant, as well as natural, on a local collective fashion may also be particularly feasible.

In terms of food poverty, the nutritional benefits of beer are too often overlooked, given an over-riding anti-alcohol agenda within health and social policy. If a focus away from binge consumption of mass-produced, strong, undifferentiated alcohol is sought, then perhaps a more mature alternative is enabling people to better appreciate hand crafting their own alcohol. Water is ever more contested, and access to nutritious locally produced food harder to come by. Yet these benefits of beer have become overshadowed by modern taboos around even low levels of alcohol. It is time to remember that brewing purifies water, and converts grain into a food valuable "to a level almost comparable to that of meat"[5] (Katz and Voigt, 1986, p 34). The health benefits of beer are considerable, and must surely be recognised in policy making?

Partnering with agriculturalists expert in (locally-viable) hop and flavouring variants might similarly take an established form, that of distributed citizen science. Viewed as a living lab, collaborative horticultural research projects in the peripheral rural would also provide hands-on, embedded STEM learning in areas of denuded human capital. Community, civic, or distributed gardening for beer production provides a space for re-building, shaping and accrediting locally-relevant but globally transferable horticultural and agricultural competences.

Additionally, beer gardening also provides a focus for the re-discovery of locally specific brewing recipes and practices, which link people to their places' culture, cuisine, deep history and traditions. Local knowledges, especially at the edges of Europe, have often been displaced by the mainstream, and this is, indeed, a major narrative within craft brewing. Brewing offers an engaging collective vehicle for the rediscovery of locally-fit recipes and domestic sustainability. Brew-days to share local skills and knowledge would provide similar results, and help build embedded communities of knowledge. The inherent conviviality of the brewing world would also tackle some modern social ills, such as isolation, loneliness and lack of agency. Connecting with educational, cultural, historical and tourism bodies, partners could also create and "curate" shared exhibitions of this collective endeavour. Podcasts tours; video overviews; online visitor guides; and continuing education classes might all be appropriate outcomes pulling together local craft histories and geographies, around brewing.

[5] These attributes, as well as taste and pleasure, have led some scholars to argue that it was in fact brewing that first led the drive to agriculture, settlement and socio-economic development, rather than baking (Katz and Voigt, 1986; Cabras and Higgins, 2016, p611).

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