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Broiler battles: Contested intensive poultry unit developments in a policy void

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Abstract:

Intensive livestock production in the UK is spatially concentrated, proliferating in certain counties where it has triggered increasing controversy over pollution and cumulative impacts. In the first significant UK study of such planning contestations this paper presents data on the rapid growth of the poultry industry in Herefordshire and Shropshire and how this triggered contestation during the 2010s between the agri-industrial sector and increasing numbers of objectors. Farmer motivations are explored and a typology of farming situations suggested, which reveals significant differences from the well-documented issues around Confined Animal Feeding Operations in North America. The paper traces how a new public of objectors mobilised to campaign with some success against intensive livestock developments on multiple environmental, economic, health and quality of life grounds. Planning authorities have struggled to handle the increasing contestation within a policy void and weakened institutional context, under the influence of the longstanding agricultural hegemony which normalises intensive farming. Tracing the relations within and between the groups of actors reveals multiple uncertainties over impacts, particularly cumulative water and air pollution and a lack of trust in technocratic planning processes and politicised decision making. The research suggests the planning process should address uncertainties more openly and take a more open, proactive and strategic approach to locating intensive livestock units.

Key words: Intensive poultry, planning contestation, policy, publics

1. Introduction

Intensive livestock farming tends to remain hidden metaphorically and physically. Most people don't want to know how meat is raised. The moral questions raised tend to be shunted into society's collective unconsciousness (Safran Foer, 2009; Jackson, 2010; Evans and Miele, 2012; Weis, 2013). Meat production facilities have often been '*sequestered*' in '*remote*' areas (Chiles, 2016) partly to conceal the processes so that consumers can continue to avoid thinking about it. It is also in the interests of the intensive livestock industry to keep its presence and impacts low profile. For many people it is only when intensive livestock farming arrives on their doorstep, almost literally, in the form of a planning application that they must face the issue. This is when contestation and controversy often emerge as people realise the negative impacts of the industry and decide to fight it.

During the 2010s, numerous local communities in Herefordshire and Shropshire, two deeply rural English counties, found themselves facing contentious proposals for large intensive poultry units (IPUs). The controversies can be traced in the pages of the local (and occasionally national) newspapers, where over a hundred articles and letters were featured:

Hundreds of objections to Market Drayton poultry units (Shropshire Star 19.5.12)

Protesters mass to fight 'terrible' chicken farm (Hereford Times 11.10.13)

Industrial chicken sheds given OK despite fears over smell (Hereford Times 15.5.14)

Herefordshire's idyllic Golden Valley threatened by plans to build huge broiler chicken sheds (The Independent 22.5.15)

Poultry is not a new industry in the area, so how had IPUs become so controversial and contentious? In Shropshire between 2009-12 there were four planning applications which attracted a total of 579 written objections. In Herefordshire the controversy emerged a

little later. Here eight cases between 2013-15 generated 1,433 objections. And as many IPUs were approved and built (Figure 1) the levels of objection increased.

Figure 1 Recent IPU Neenton, Shropshire

From 2014 onwards most applications in both counties attracted considerable levels of protest.

This article presents the results of research undertaken in Herefordshire and Shropshire between 2016-20, exploring the IPU contestations and how they emerged. The research was inspired by theoretical insights from both Actor Network Theory and Pragmatism and aims to understand how the contested situation has come to be, with a view to also pointing towards what is to be done (Forester, 2012). The relations within the planning contestations reveal the concerns of the multiple actors and the dynamics within the planning arena and government institutions responsible for guiding decision making. The conflict and debate can be helpful in clarifying the issues, identifying what is known and what is uncertain in the situation and considering possibilities for a way forward.

A brief overview of the UK poultry industry sets the research in context and the literature on IPUs is explored, revealing the scarcity of UK research on planning contestations about intensive livestock farming developments. The research adopted a mixed methods approach which is outlined, before the planning application data is presented. The article then explores the motivations behind farmers' decisions to develop IPUs and suggests a typology of IPU farming situations found in this part of the UK. The objectors' perspectives

and their concerns about IPUs are discussed and the polarised relations amongst the actors within the planning arena are considered. The article reflects on what the contested situation reveals and potential for a less contested way forward.

2. Rural controversy and contestation

At a time when the farming sector arguments that there are no alternatives to the continued 'sustainable intensification' of livestock farming are increasingly being challenged by calls for a global reduction in meat eating (RSA, 2018; Willett et al., 2019), it is important to examine the issues around modern systems of raising livestock. Weis (2007, 2013) described negative impacts of intensive livestock units (ILUs) as the '*ecological hoofprint*' of agriculture and identified six categories of impact: land, water, atmosphere, public health, inter-species relations and degradation of work. He accused the World Trade Organisation of entrenching the dislocation between small farmers and the transnational corporations which control agricultural inputs but externalize environmental costs. Weis highlighted the illusions that surround cheap meat, how narrowly problems are often framed, externalities are ignored and how the industry uses technological 'overrides' to address the inherent issues which arise in intensive systems.

Growing contestation and resistance to continued developments can reveal much about the often overlooked externalities of industrial agriculture and the systems which allow it to proliferate. Marsden characterised the situation as one of '*contested sustainabilities';*

> *'the global ecological and economic externalities have come home to roost and as such we are likely to witness a redefinition of the countryside as a contested way of trying to cope and resolve some of these new global challenges.' (Marsden, 2017:21)*

Controversy and contestation open up issues to scrutiny and questioning. Callon et al. (2001) stated that controversy leads to more debate, amongst more people and wider, better consideration of all aspects of a problem. They see controversy as a way of exposing a complicated and hybrid issue to identify what is known and what is not known:

identifying the '*zones of ignorance or uncertainty*': '*controversy allows an inventory to be made of the different dimensions of what is at stake in a project*' (Callon et al., 2001:30).

It may be that planning decision makers think they have all the relevant details, but a controversy is likely to identify new perspectives or information. Controversies also draw a wider range of actors into a situation: people who may have felt side-lined or peripheral to the issues may feel able to have their say. Concerned lay people may bring new knowledge into a situation alongside those with more expertise in the subject. Controversies enable exploration of what Callon et al. call *'overflows'* or unexpected consequences generated by scientific or technological development, such as the environmental pollution and health impacts from IPUs. Callon et al. referred to some problems being identified by people as a monster or '*monstrous phenomenon*' and their involvement in the controversy is a plea to have the problem taken seriously. The mobilisation of local residents and businesses is not simply about the fear of pollution but can also be explained by their relationships with the land, area, history and its elites.

Harvey (2015) stated '*A controversy assembles publics who care*'. The role of a researcher is thus to uncover what all the actors' interests and values are; what they care about and what futures they are looking to. This tallies with Latour's recommendation to focus on '*matters of concern*' rather than '*matters of fact*' (Latour, 2005). He noted that concerns may be highly uncertain and supposed 'facts' may be disputed by the actors. He said a better understanding will be reached by focusing on people's interpretations of the situation and potential risks, how actors are identified into certain groupings and how actions play out in reality. He too suggested '*feeding off controversies*' and watching what happens rather than making assumptions about group interests or individual actions. Puig de la Bellacasa (2011) argued that cares should be added to concerns. She points out the differences between the statements: '*I am concerned*' and '*I care*'.

> *'The first denotes worry and thoughtfulness about an issue as well as the fact of belonging to those 'affected' by it; the second adds a strong*

sense of attachment and commitment to something.' (Puig de la Bellacasa, 2011:89)

To care has stronger ethical and affective qualities. It can also connote worry for others, perhaps those who may be at risk of harm but who are less able to voice their concerns, including non-humans (perhaps local wildlife or the broiler chickens). The struggles over contested narratives of what is at stake reveal the particular distinctive relations of a locality (Murdoch, 2006). Such struggles may include new groups of people coming together to resist and to attempt new ways of doing things (Jones, 2020).

Controversies also enrich democracy by allowing political relations and different framings of the arguments to be investigated, as opposed to closing down discussion and containing issues (Donaldson et al., 2013). Marres (2005) argued that it is precisely the complexity of issues such as impacts of modern technological developments which '*sparks a new public*' into being and motivates concerned people to get involved in the political process. Marres (2007) drew on the pragmatist Dewey's views that as science and technology progressed there should be more public involvement in politics around such issues, especially where no one was addressing public concerns or when issues are likely to transcend procedural settings. She argued that there is a need to democratise the process of framing the issues so that the public's concerns are aired. Researchers need to focus on the effectiveness of procedural processes for participation as well as how issues are defined and articulated.

Established agri-industrial networks act to defend their operations and continue (and expand) business much as usual. The rural political and planning framework struggles to handle such complex issues and the increasing opposition. Resistance has been growing and gaining some purchase. Exploring the relations involved will help understand the competing perspectives, dynamics and rationalities being performed. The areas of uncertainty (e.g. over ecological and health impacts) can be clarified, with a view to informing debates over the future of livestock farming.

3. The UK poultry industry

Chicken and egg consumption has been growing in the UK and globally since the 1950s; as part of the general '*meatification*' of diets (Weis, 2007). UN Food and Agriculture Organisation (FAO) figures for global production of poultry meat show an increase from 9m to 122m tonnes between 1961 and 2017, and an increase in egg production from 15m to 87m tonnes. Technological innovations such as refrigerated transport, frozen chicken and air chill technology facilitated this growth (Dixon, 2002). Chicken became more popular than other meat in most countries around the turn of the century. It is seen as a healthy, easy and cheap option with few cultural taboos. Chicken makes up 42% of meat consumption in the UK where the amount eaten per year has increased from 30kg per head in 2000 to 36kg in 2017. Production has increased by a third since 2000 and reached 1 billion chickens a year in 2017, making the UK 75% self-sufficient (AHDB, 2018). Globally the figure increased from 40 to 68 billion chickens a year between 2000 and 2018 (FAO 2020). Poultry industry publications predict demand will continue growing, at least in the short term. Lymbery (2017) termed these trends the '*chickenisation of the planet*'.

'Conventional' IPU units produce 96% of UK broiler (meat) chickens. Broilers have been bred to grow larger, mature faster, using less feed (PEW, 2013). Birds are effectively still juveniles when slaughtered at 35-45 days old. In order to supply the increasing demand poultry farms have transformed in nature, size and operation. UK IPU broiler sheds housed an average of 25,000 birds in the 1980s and 90s, 40,000 during the 2000s and now reach capacities of 50-55,000 birds. Some UK farms house 500-750,000 birds at a time and raise eight 'crops' a year. Figures 2 and 3 illustrate the scale of development in before and after satellite images of a site in North Shropshire. The new sheds are 113m long and 25m wide, much larger than the set of old poultry sheds, bottom left, which are believed to still be in operation. The buildings on the left in the new development are a biodigester or Anaerobic Digestion (AD) unit with circular domed digestor and waste tank. The brown rectangular shape on the right is a large attenuation pond for holding dirty water.

Figure 2 Poultry site North Shropshire - Google Earth image from around 2012 (accessed 2017)

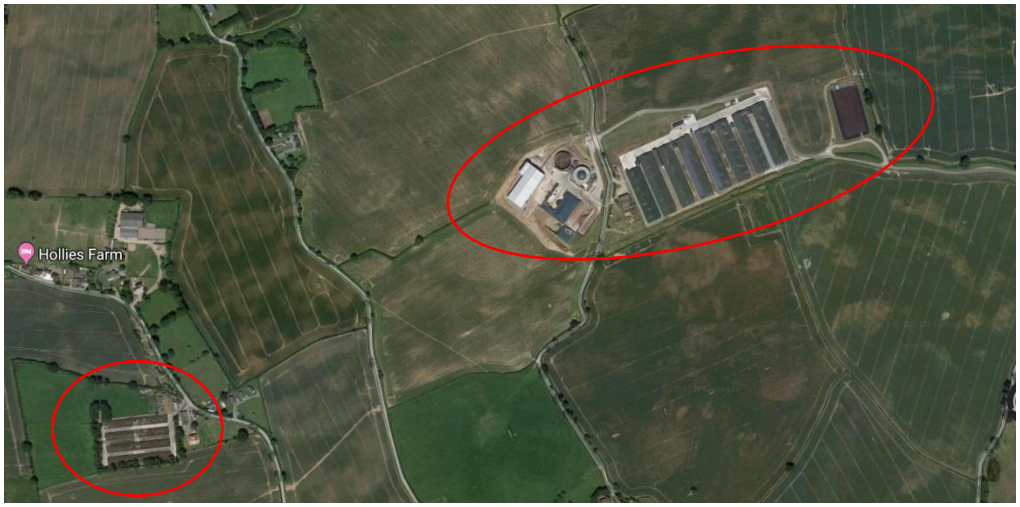

Figure 3 Poultry site North Shropshire - Google Earth 2019

The industry is vertically integrated with the poultry processor company owning hatcheries, some IPUs, the transportation, feed mills, and the slaughter and processing plants which produce shelf-ready products for supermarkets.

> *'From chicken breeding to grocery store packaging, the 21st-century broiler chicken business is possibly the most industrialized sector in livestock agriculture.' (PEW Charitable Trust, 2013:1)*

The larger companies have multiple processing plants and are part of multinational agribusiness companies; what Hendrickson et al. (2017) called '*global behemoths*', which now dominate markets for seeds, feedcrops, pesticides, fertilisers, genetics, livestock,

processing and manufacturing. The processor contracts with farmers to supply chickens but the birds remain in the company's ownership throughout. In the UK there are now three main poultry processing companies; 2Sisters, Moy Park and Avara (formed from the merger of Faccenda and Cargill in 2018), which collectively process 16-17 million chickens a week (Dickinson, 2014; company websites, 2019). Another eight producers collectively produce over 4 million birds a week taking the total to about 20 million a week. This research has focused primarily on broiler (meat) IPUs but similar issues surround the proliferation of egg units, free range or not.

The broiler industry is spatially concentrated as supplier farms normally need to be within an hour's drive of the processing plant. Chickens are transported live and long journeys in lorries increase mortality rates. In 2017 Compassion in World Farming compiled figures from the environmental permits required by poultry farms with over 40,000 birds (Figure 4). Herefordshire and Shropshire were the two top UK counties, with at least 17 and 13 million broilers respectively at any one time. IPU controversies have emerged in these locations with high concentrations of IPUs, while awareness of the situation in the rest of the country remains extremely low.

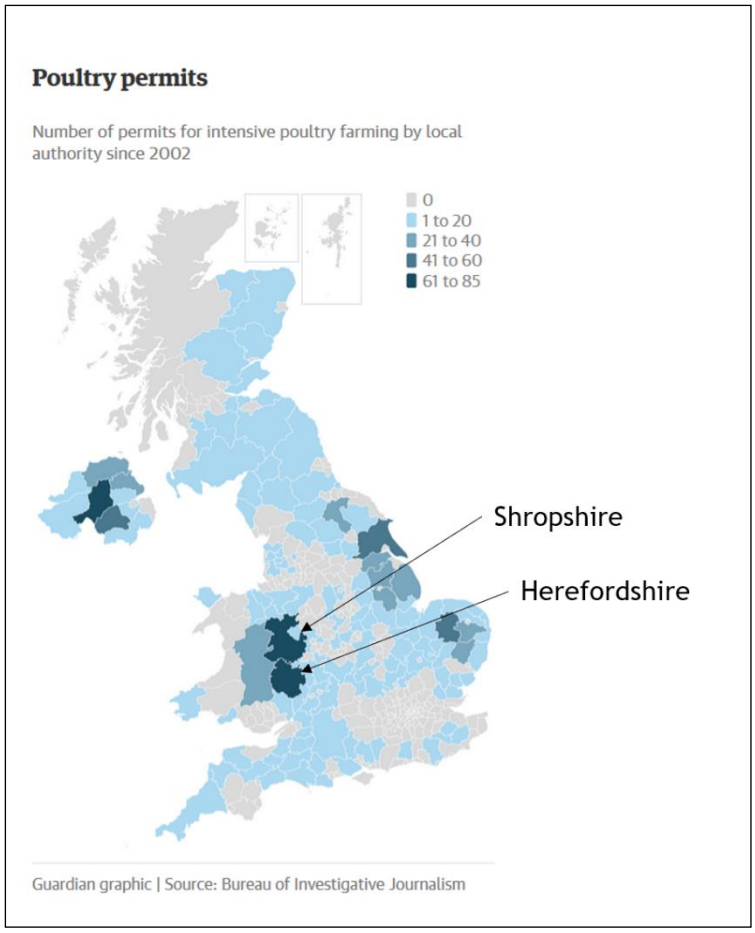

Figure 4 UK poultry unit permits by county (Wasley et al. 2017)[1]

4. Intensive livestock farming contestations

Awareness of the global environmental impacts of livestock agribusiness was raised with the publication of the FAO's 2006 Livestock's Long Shadow report:

> *'The livestock sector emerges as one of the top two or three most significant contributors to the most serious environmental problems, at every scale from local to global. The findings of this report suggest that it should be a major policy focus when dealing with problems of land degradation, climate change and air pollution, water shortage and water pollution and loss of biodiversity.' (Steinfeld et al., 2006:xx)*

Yet despite the landmark FAO report almost no academic research has been carried out into contestations around UK ILU developments in recent years. There are scientific papers examining specific issues such as ammonia emissions (Guthrie et al., 2018; Jones et

[1] Bureau of Investigative Journalism and CIWF data published in The Guardian 17.7.17

al., 2013; Naseem and King, 2018), anti-microbial resistance (Economou and Gousia, 2015; Woolhouse et al., 2015;) or water pollution (Jordan et al., 2012) and agricultural industry research on issues such as the poultry supply chain (e.g. Manning et al., 2007). There has also been work around animal welfare issues and meat consumption (e.g. Buller and Morris, 2003; Miele, 2011; Evans and Miele, 2012; Buller and Roe, 2014). However, contestations around planning and impacts on local communities have not attracted much attention in the geography or planning literature. ILUs and intensive farming are more usually referenced in food, agriculture and rural academic texts such as Morgan et al. (2006); Lang and Heasman (2015); and Marsden (2017) as part of the broader corporately controlled agribusiness system. Their environmental and health impacts are mentioned but without much detail.

One exception is a commentary by Holloway and Bear (2011) which explored a proposed 'superdairy' for 8,000 cows at Nocton in Lincolnshire. The ultimately unsuccessful proposals drew considerable opposition largely around the sheer scale of the proposed development and how the technologies proposed would impact on the cows' natural behaviours and welfare. Objectors viewed such mechanisation as a step too far in the intensification of livestock farming.

Evans (2013) researched planning contestations over intensive strawberry polytunnel developments, particularly in Herefordshire's Wye Valley, and found that the sudden arrival of such '*neo-productivist agricultural technology*' triggered local protests:

> *'Industrialised agricultural ventures are technology-intensive and large in size which, (…) comes as something of a 'culture shock' to those who have constructed a rural idyll.' (Evans, 2013:70).*

Concerns were mainly about the visual impact of tunnels on landscape quality and character: the reflectivity of plastic sheeting, expanses of metal frames, plus additional traffic, dust, pesticides, poor disposal of plastic sheeting and foreign workers. Evans warned:

> *'future disputes over the conduct of neo-productivist agriculture are set to be highly acrimonious. This demands greater attention to the relationships between bundles of issues that researchers tend to treat discretely, such as those between the industrialisation of the food chain and meeting of consumer demands, environmental protection, and the changing demographic composition of the countryside.' (p67)*

It has been journalists and campaigners who have researched intensive livestock farming in the UK and raised concerns (CPRE, no date; Monbiot, 2015; Soil Association, 2015; Compassion in World Farming, 2016; Lawrence, 2013 and 2016; Levitt, 2019; Wasley, 2018; Wasley et al., 2017; Yeoman, 2019). Lymbery and Oakeshott's book '*Farmageddon*' (2015) exposed what they called the '*true cost of cheap meat'* and its associated health and environmental impacts. Lymbery (2017) also argued that although pig and poultry production are not subsidised, the public subsidises feed crops and also the clean-up costs of pollution. He characterised the UK Government's support for 'sustainable intensification' of agriculture as industrial farming continuing 'business as usual' with a little added 'greenwash' (see also Garnett, 2015; Levidow, 2015). He disputed the argument that ILUs are needed to feed the growing global population, arguing that we already grow enough food to feed the world twice over, but much is wasted and much does not reach those most in need.

The lack of academic scrutiny of UK intensive livestock developments is puzzling. It may be that there is limited funding for such topics or they may be viewed as obscure or unpopular. Woods (2011b) described a '*reticence*' and '*wariness*' amongst rural geographers about returning to topics such as farming, planning and conservation that characterised the early years of the subdiscipline. It may also be that intensive farming in North America has been well studied (Boyd and Watts, 1997; Furuseth, 1997; Novek, 2003; Mackenzie and Krogman, 2005; Imhoff, 2010; Ramsey et al., 2013; Stoddard, 2015). Perhaps UK academics felt that the subject had relatively little extra to offer. The assumption may be that the impacts are less extreme in the UK as the industry is not as extensive as in North America. Possibly there is an (unconscious?) awareness amongst UK rural geographers that studying agri-industrial developments might draw criticism and

attacks on professional credibility from the well-connected farming lobby. But the issues are becoming harder to ignore. Fitzpatrick et al. (2019) drew attention to the hidden external costs to society from the existing UK food system. They estimated these included £10 billion food production health related costs, £37 billion natural capital degradation costs and £7 billion biodiversity and ecosystem services costs. They called for more research into impacts of intensive production systems on human wellbeing, society and culture.

The North American literature on CAFOs (Confined Animals Feeding Operations) documented substantial evidence of detrimental impacts of industrialised livestock farming on communities' quality of life (Lobao and Stofferahn, 2008; Carolan, 2016). There are several national and regional US organisations that campaign about intensive poultry farming (Garcés, 2012; PEW, 2013, 2011) and multiple campaigning books published in the US (e.g. Schlosser, 2002; Midkiff, 2004; Singer and Mason, 2006; Kirby, 2010; and Leonard, 2014). Several of these documented campaigns by individuals or groups against the development of new CAFOs or contestations over pollution caused by existing plants.

Analyses of planning contestations around CAFOs in North America found increasing levels of controversy, especially around water pollution and other environmental risks; lack of transparency and trust in the process; and that CAFO developments do not sit happily in areas with high levels of newer residents or tourists (Constance and Bonnano, 1999; Mackenzie and Krogman, 2005; Novek, 2003; Ramsey et al., 2013; Sharp and Tucker, 2005). Government officials tended to prioritise economic development over local people's quality of life. Mackenzie and Krogman (2005) recommended a more strategic process to identify where CAFOs could be sited, rather than a reactive, case by case permitting system. However in areas where controls were introduced, such as moratoria in parts of Manitoba (Ramsey et al., 2013), production has tended simply to shift to different areas.

A key theme of the North American literature is how contract farmers are trapped in exploitative financial contracts with the processor (Emel and Neo, 2015; HBO, 2015; Neo and Emel, 2017; PEW, 2013). The growers must meet precise standards but also carry all the risk. This issue of relatively poor farmers being caught in an exploitative treadmill system does not emerge so strongly from the (more limited) European literature (e.g. Tamásy, 2013; Van Bueren et al., 2014) or recent research in Australia (Butt and Taylor, 2017; Taylor et al., 2017).

The existing literature identifies increasing multiple impacts and increasing controversy and resistance over further expansion of ILUs. But the UK planning system, actors and landscapes are different; the dynamics and narratives will vary and therefore warrant exploration. Contestation over IPU proposals *'(re)introduces the political'* to planning arenas as it draws in a wider range of issues beyond those normally considered (Butt and Taylor, 2017). Planning is one of the few forums in which opposition to broader rural change can be contested, but the planning system struggles to handle such polarised contestations. Taylor et al. (2017) suggested the competition between intensive agriculture and amenity is not just over land use, but also over representations of rural place and rurality and what sort of future rural landscape is desirable. This research begins to address such questions in a UK context.

5. Methods

The research involved compiling a database of IPUs across Herefordshire and Shropshire from online planning application records held by each county council. Details of older IPUs were sourced from environmental permitting records, supplemented by local knowledge, fragmentary old planning records and from studying online satellite imagery. Levels of controversy were identified from tracing the number of objections to cases and from coverage in local newspapers (Flyvbjerg, 1998; Leino and Laine, 2011). It was possible to

follow the trajectory of how certain cases caught public attention, what concerned people most and how awareness of the more general proliferation of IPUs increased.

A wide range of actors involved in the situation were interviewed including: farmers and farming bodies; local authority staff and decision makers; staff at environmental bodies; planning consultants and land agents; objectors and local campaign groups; residents; businesses and organisations. In total 59 people were interviewed in 48 interviews, including six walking interviews which followed rights of way through IPUs. In addition, 27 meetings and events were observed including planning committees, parish councils, campaign groups, nutrient management boards and environmental seminars/workshops. This article presents the data from the IPU audit and media analysis, supplemented by findings from interviews and observations which will be published in more detail elsewhere.

6. IPU developments in Herefordshire and Shropshire

Herefordshire and Shropshire companies were some of the earliest poultry businesses in the UK. In Shropshire J.P. Wood emerged out of game and poultry dealing families in the nineteenth century and in Herefordshire the Sun Valley co-operative company was established between existing poultry farmers in 1960. Both companies were later acquired and expanded by larger multinationals (Woods by Unilever and Sun Valley by Cargill Meats Europe, part of the Cargill commodity multinational based in Minnesota, the largest private company in the world). In Shropshire the main poultry processing plant was relocated elsewhere in 1990 and poultry farmers now mostly supply processing plants in neighbouring counties. The two Cargill plants in Hereford remain and have been periodically expanded. Cargill now processes 2 million birds a week or 100 million a year. In 2018 Cargill Meats Europe merged with another major processor Faccenda to form a joint venture: Avara. The company was regularly referred to as the biggest private sector employer in Herefordshire, with about 2,000 employees.

The analysis of the local media demonstrated that IPU developments were relatively uncontroversial through the 2000s (Figure 5) but coverage increased significantly from 2012/13.

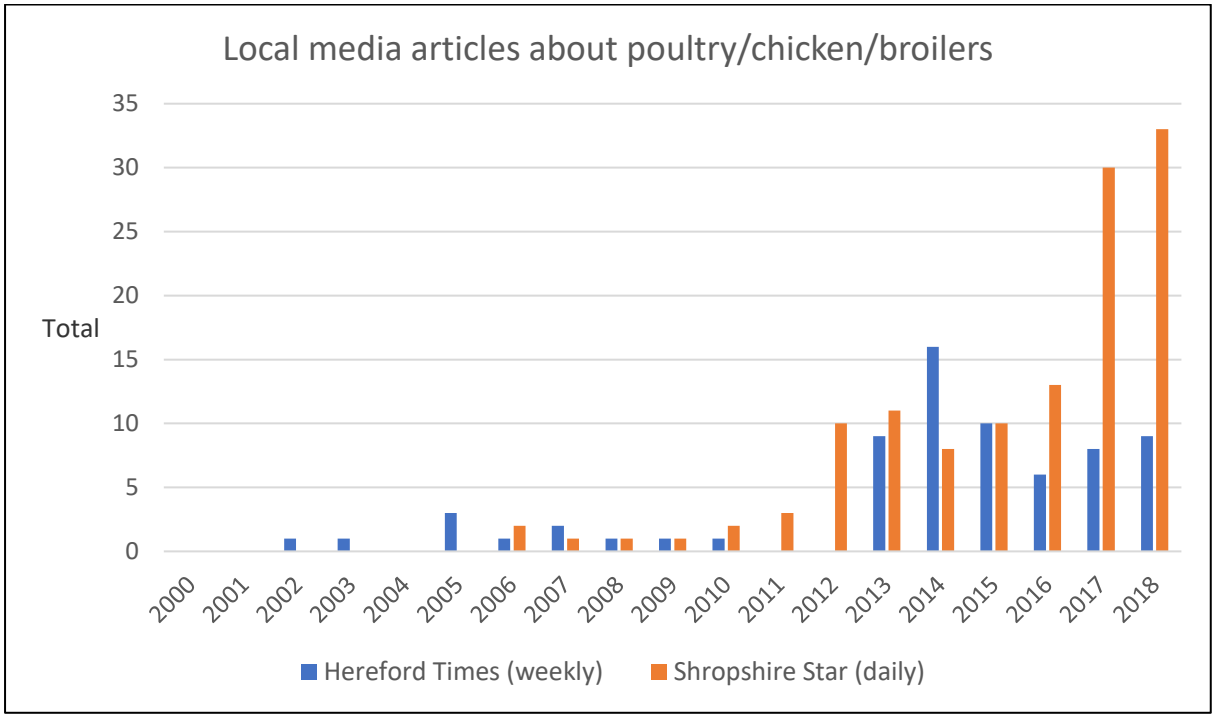

Figure 5 Herefordshire and Shropshire local newspaper coverage about poultry 2000-2018

The analysis of planning application data reveals the rise in planning applications which triggered these news stories. Figures 6 and 7 present annual numbers of planning applications in each county. In Shropshire, online records go back ten years further than in Herefordshire and it is possible to see a surge in applications in the mid 1990s. The vertical bars represent the number of 'sheds' applied for each year, rather than farms. This gives a more detailed picture as some applications are for just one shed whereas others are for four or six.

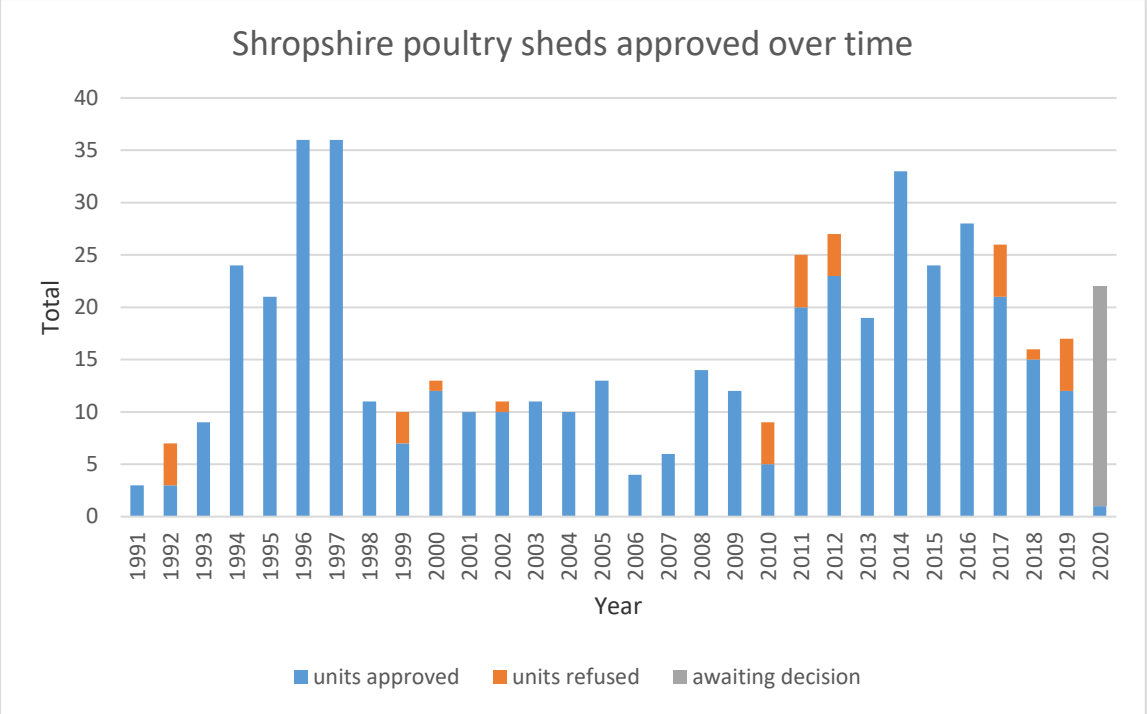

Figure 6 Poultry sheds approved in Shropshire 1991-2020

The 2000s was a period of slow but steady poultry developments of around 8-10 a year, mostly for one or two sheds, in both counties, with few refused (those refused were often later resubmitted and approved, sometimes for fewer sheds in several applications). Both graphs show the increase in applications in the early 2010s, peaking in 2014. They also demonstrate the recent slow down in approvals as many applications in both counties remained undetermined for several years.

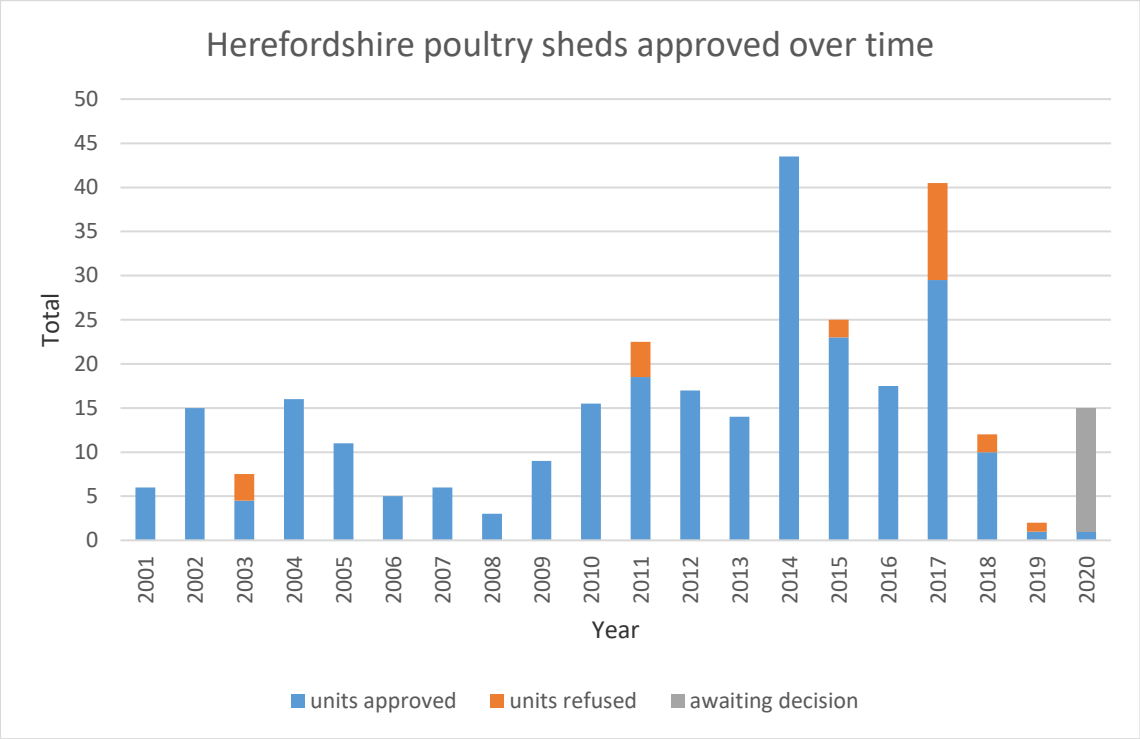

Figure 7 Poultry sheds approved in Herefordshire 2000-2020

Figure 8 shows the cumulative trends in sheds built across the two counties and the slow and steady increases of the 2000s accelerating into a steeper curve in the period 2010-2014. In the twenty years since 1999 the number of sheds has increased in Herefordshire by 75% and in Shropshire by 115%. If Herefordshire had around 200 sheds in 1990 the collective increase will have been from around 300 sheds in 1990 to 1150 today a nearly fourfold increase. Importantly, all the newer sheds are also much larger than the older ones (Figure 3) so the growth in numbers of birds will have been significantly more; increasing from 7-8 million in 1990 to approximately 38 million in 2020.

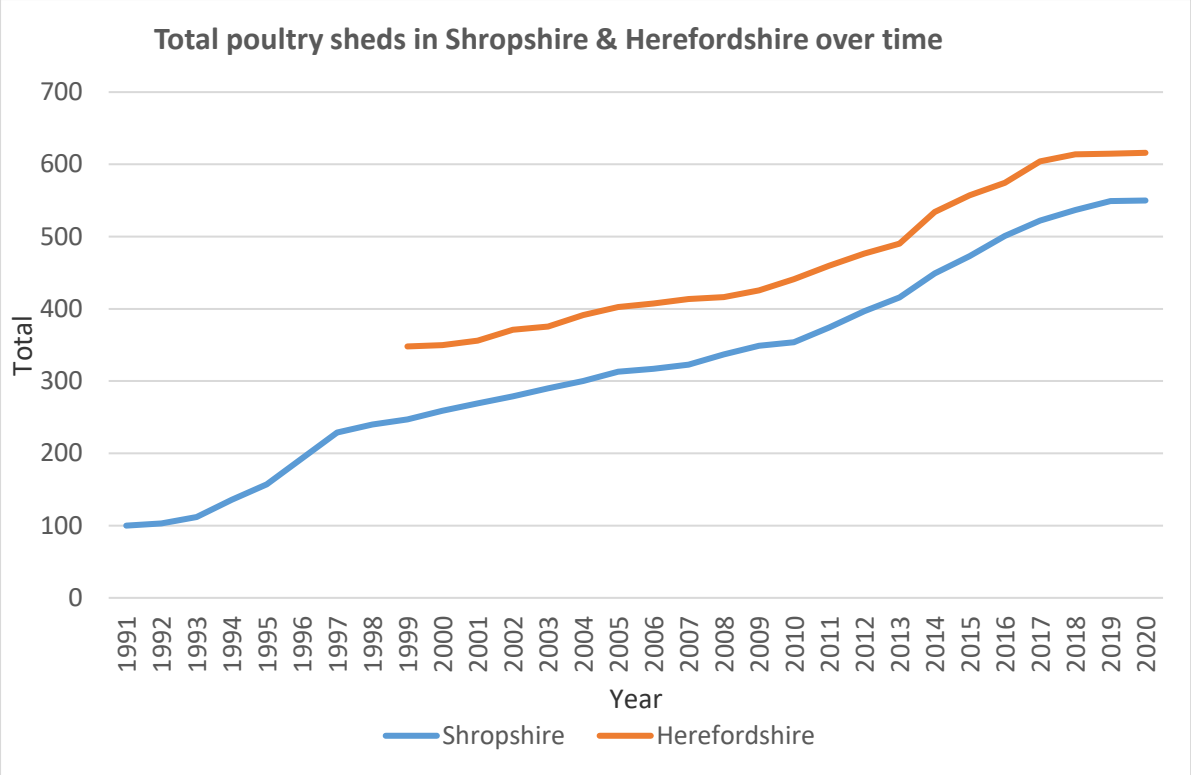

Figure 8 Total poultry units in Shropshire and Herefordshire over time

The Herefordshire peak in 2014 was almost certainly caused by a £35 million development increasing capacity at the Cargill plant in Hereford (The Poultry Site, 2013). It appears that the way this was implemented and the speed at which new farms were recruited lies at the root of much of the controversy and contestation. The company required 90 additional IPU sheds within a few years to fulfil a new contract with Tescos supermarket. The processor reported that there was intense interest from local farmers to become suppliers and build new IPUs or additional sheds which resulted in a relatively sudden increase in the number of planning applications being submitted. One land agent felt it was this surge in applications to fulfil the new contract which '*created a monster*' and triggered such levels of controversy within a short time frame. Another agent who dealt with a number of the applications reflected:

> *'there was just far too many and it wasn't managed properly; what they (Cargill) agreed to do for Tescos created a bit of a PR disaster (…) I think all the problems we've got in this part of the world were all created by*

putting far too many in at the same time, rather than gradually... (…) It was as soon as they did that hit of wanting a million birds a week in two years – to get a million birds a week you need 7 million on the ground and it caused a PR disaster really.'

Figures 9 and 10 show the planning application data mapped to demonstrate the proliferation and intensification of IPUs between 2000 and 2017. The different colours represent the different types of poultry production and the size of the 'blobs' represents how many sheds there are in each location. In both counties applications were predominantly for broiler production. Only occasional egg, turkey or breeding units were proposed, although there has been an increasing trend for free-range egg units in recent years, mirrored in neighbouring Powys where there have been 300 successful applications for free-range egg units in the upland landscape of Mid Wales in the last 10 years. There has been significant growth in both north and south Shropshire, despite the Area of Outstanding Natural Beauty (AONB) designation which covers most of the south of the county and the many Sites of Special Scientific Interest (SSSIs) around the Meres and Mosses in north Shropshire.

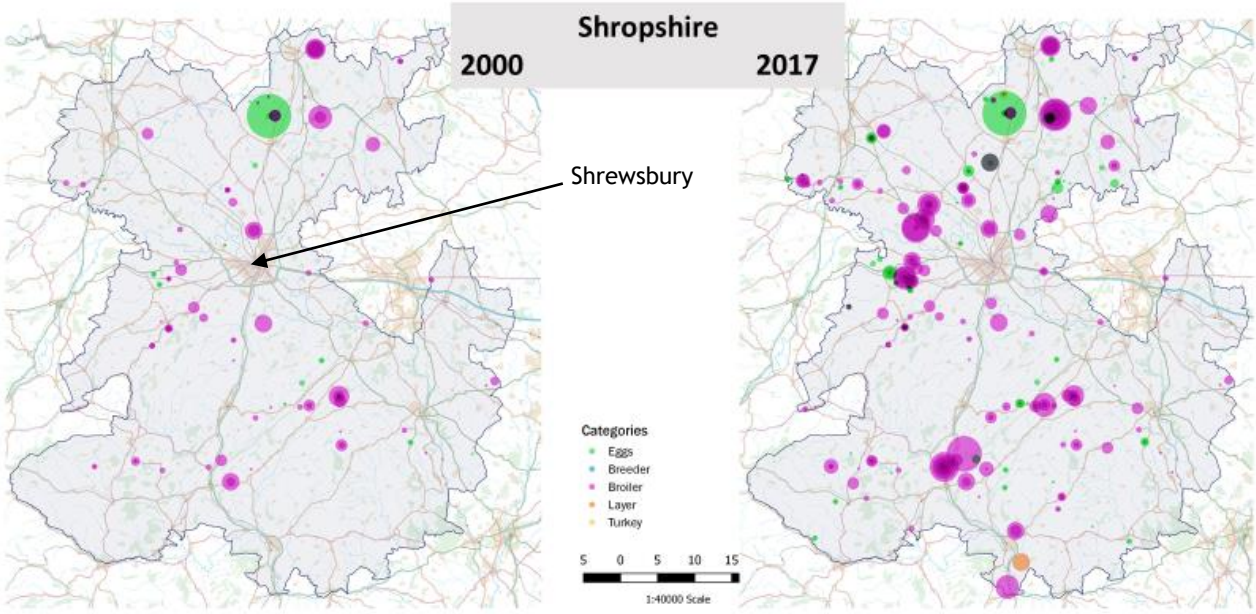

Figure 9 Distribution of poultry units across Shropshire 2000 and 2017

In Herefordshire the only area unaffected to date is the Golden Valley, along the border with Wales and the Brecon Beacons National Park, although there was one controversial application there which was refused three times. There are major clusters in NW Herefordshire between Leominster and the Welsh border and also south of Hereford, close to the Cargill Feed Mill at Allensmore.

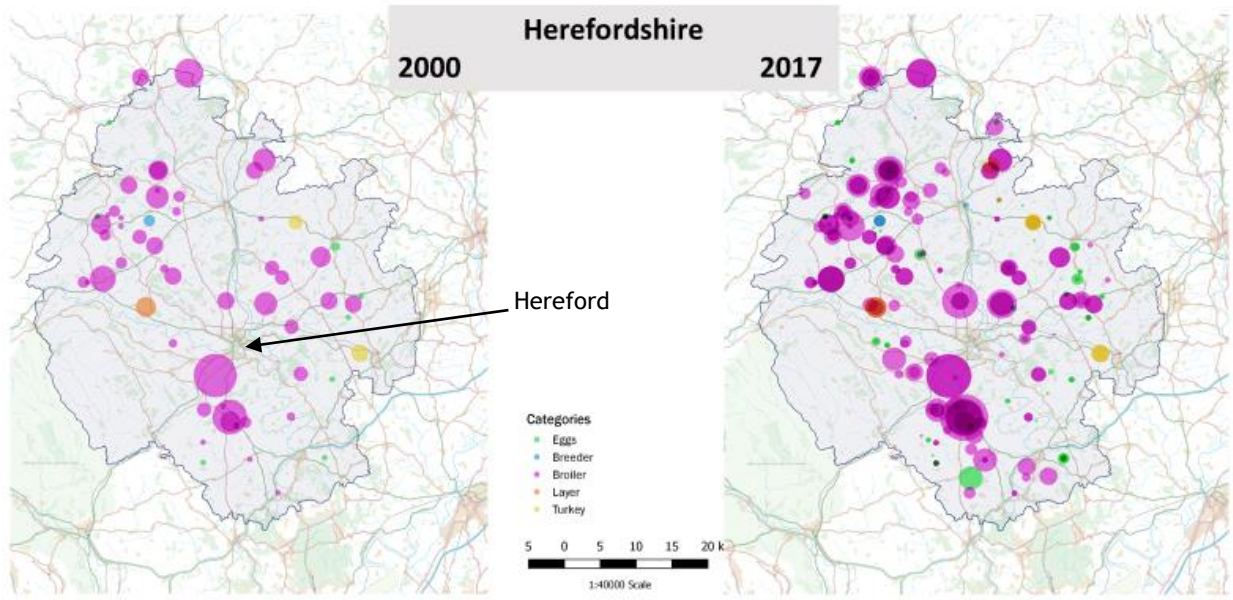

Figure10 Distribution of poultry units across Herefordshire 2000 and 2017

7. Farming perspectives

The research explored the actor networks involved in the planning contestations, their motivations and values. This section explores why farmers decide to move into or expand poultry operations and how their motivations are framed in the arguments which then emerge. 14 farming sector actors were interviewed and all the contentious planning applications analysed. Every planning application is unique because each locality is different, as are the applicants, their background, financial position and objectives, but some common themes can be identified. A typology of poultry farm situations is suggested, illustrating the variability.

Developing a broiler IPU is a major investment. Even acquiring planning permission is expensive; costing £50—75,000. There are application fees, environmental permit fees (for sites over 40,000 birds), costs of the agent required to co-ordinate the whole process and fees for individual reports to support the application such as architect's drawings, drainage plans, landscape, odour, noise, ammonia, ecology and traffic impact reports.

> *'Broilers there's a big capital entry cost. There's a very big planning application fee which will put the vast majority of people off. If you've got to write a cheque to Herefordshire Council for 50 thousand quid then that's...and that's just gambling – are we gonna get it, are we not?..And then you've got all your assessments on top. So planning applications for broilers could cost 75 thousand just to put it in. So most of the broiler customers are bigger farming businesses, or we get a lot of big estates.'*
> *(Farming sector interviewee)*

The building costs were estimated by interviewees to be in the region of £2.5 million for a four shed broiler unit or £1.1 million for a 32,000 free-range egg unit. If the planning application meets resistance, then there will be costs for additional reports and work by their agent, particularly if they take a refusal to appeal. So what motivates farmers and landowners to make such an investment?

Poultry has proved to be the most profitable UK farming operation in recent years. Figures 11 and 12 show UK government figures for farm business income, demonstrating average income from poultry above £100,000 a year. Figure 11 demonstrates how poultry is more profitable and less dependent on subsidy than other farm types. Poultry business income often includes renewable energy schemes such as biomass boilers and solar panels to heat the sheds and AD biodigestors using the poultry manure, all of which receive public subsidies through the UK Government's Renewable Heat Incentive scheme.

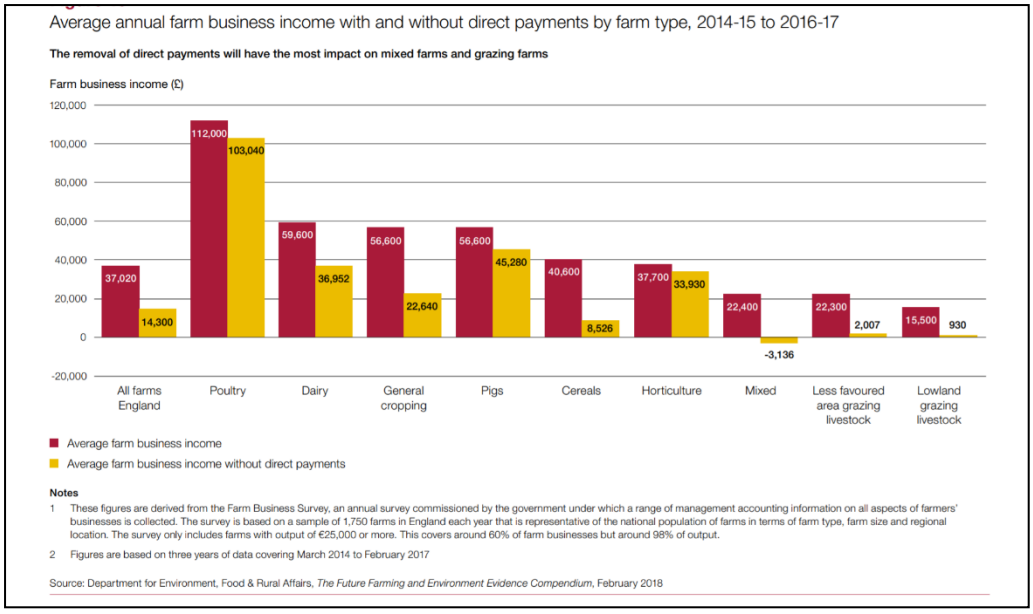

Figure 11 UK Farm Business Income by type 2014/15-2016/17 (National Audit Office, 2019)

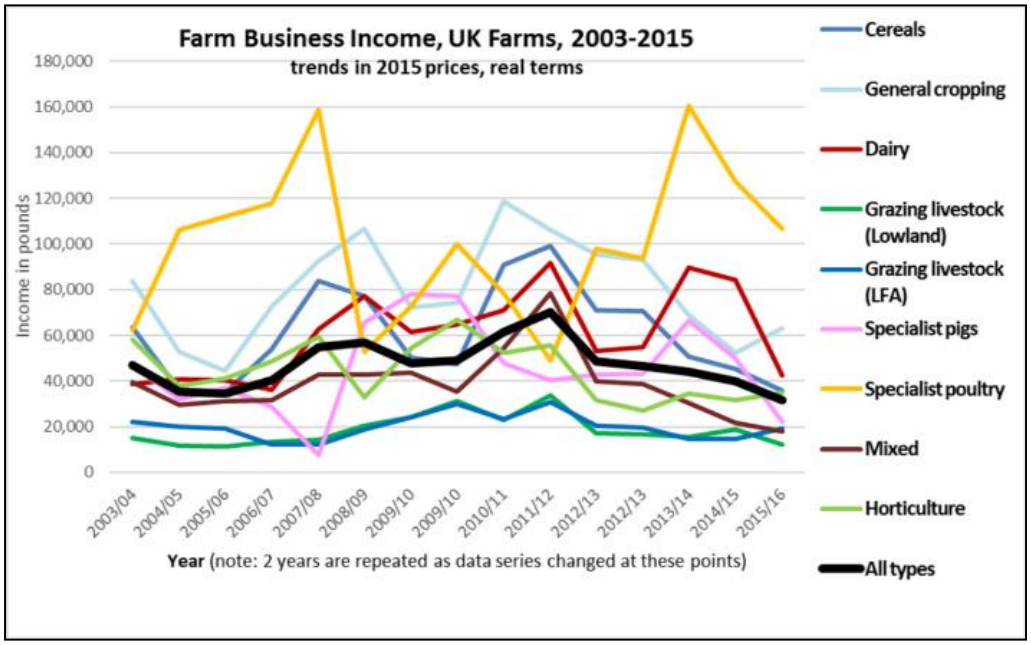

Figure 12 Trends in UK Farm Business Income 2003-15 (Dwyer, 2018)

Figure 12 shows that poultry profits have varied, but between 2003 and 2015 poultry income was only below average in one year. Research sources suggested that larger IPUs generate profits of around one million pounds annually.

> *'Several people went into broilers 15 or 20 years ago and then in about the last eight years it just took off. There were grants available from*

some of the processors, incentives and some people looking ahead at potential changes in subsidy, volatility in other farming enterprise, thought, "Well, broilers looks fabulous. Let's get into it!" I've never spoken to anybody that's gone into poultry and regretted it.'(Farming sector interviewee)

Several people said most farmers would be able to pay off their initial investment in 10-15 years; more quickly if they had renewable energy facilities alongside. Interviewees perceived it would provide a good return on investment if you could afford the upfront costs. There were frequent references to the long term viability and sustainability of the farm or resilience of the business. One farmer explained:

'because there's no money in Hereford cattle, there's no money in traditional sheep. … horticulture and poultry are the two unsubsidised sectors. They have been enormously taken up in Herefordshire specifically, which is why we have polytunnels and why we have chicken houses.'

These two sectors, which have both generated local controversy (Evans, 2013), are seen as the only two profitable enterprises.

The income from poultry is predictable with a set contract and regular payments per crop cycle. One agent stressed that this gave the farmers more '*certainty*'.

'The poultry farms, because they do pay and they're consistent, they've saved a lot of family farms, absolutely saved them without a doubt. You got 100-acre farms, 150-acre small farms, struggle, struggle with beef and sheep, but they put two or three chicken houses on that farm and you've suddenly got a viable farm' (Farmer)

In most cases it is an additional enterprise on the farm, sometimes for the next generation of the family to manage. Often poultry generated enough income to support several families, rather than just one; in effect a business expansion, not merely survival. Several conversations suggested that younger farming generations have higher income expectations that their parents and investing in poultry was one of the few options which would enable them to keep the farm while making a 'decent' income. Another suggestion was that poultry was a good option for arable enterprises with soil fertility problems and declining yields as the manure would help improve soil structure. Others suggested that

poultry farms were easier to manage than traditional farming. One interviewee discussing upland free-range egg operations commented:

> *'One of those units on a sheep farm, that's £100,000 a year straight off. And no more chasing up the bloody slopes for some stupid woolly animal that won't come down!' (Environmental sector interviewee)*

There were references to being able to run the highly automated poultry operations from an office, checking on the birds via web-cam and computerised monitoring systems linked to mobile phones. Certainly, with broilers the catching, cleaning and re-stocking is all handled either by the processor or a contractor and the heating, food and water supplies are automated. IPUs do not generate many new jobs on the farm; a four shed unit is commonly said to support about 1.5 jobs.

In contrast, one farming sector interviewee, when asked what the motivation was for farmers to go into poultry, said simply '*Desperation!*'. They explained this was with reference to free-range egg units in upland areas where beef and sheep had become increasingly financially unviable. The egg businesses helped subsidise the other livestock, whereas:

> *'with broilers it is just a business investment; (…) you don't get 200 acre sheep farmers investing in broilers. Broilers is big investment, big returns.'*

Many free-range egg units (such as most of those in Powys; Bound, 2019) are supporting possibly otherwise unviable marginal farms, whereas broiler farms are significant financial enterprises.

The research has demonstrated that farms go into poultry seeking a predictable, stable and substantial income. However, they vary considerably in terms of location, size, landscape, family situation and objectives. A typology of poultry farms is proposed (Table 1), which has yet to be tested in other areas.

	Types of poultry operation

1.	Older, large, well-established broiler operations
2.	Upland hill farms seeking to diversify, usually into free-range egg units
3.	Large mixed farms diversifying into poultry to help support other farm enterprises
4.	Large estates developing poultry as a new venture
5.	Speculative land purchases for new poultry operations

Table 1 Different types of poultry operation identified in study area

Type 1 operations include those owned and run by processor companies and other large and intensive units, including major conventional egg producing companies. Some of these units have very limited land holdings for other types of farming. Figure 13 shows a 10 shed unit, housing over 300,000 birds on a farm with reportedly just 50 acres.

Figure 13 Site in North Herefordshire (MAGIC maps)

Many of these IPUs appear more factory than farm, with limited complementary agricultural activities. This type of IPU is not popular with local people: they may be in older sheds, with less effective technology and were often described as ‘smelly’. However they have generated less recent contestation, being long standing. Any planning applications have been for extra or replacement sheds, increasing capacity and are

unlikely to be rejected by the planning authority. This category could potentially be further sub-divided if ownership, holding size and other agricultural activities were identified.

Type 2 are upland farms with smaller IPUs, normally for free range eggs. Such units have proliferated in neighbouring Powys and there have been numerous similar proposals on the English side of the border. Here there is often some sympathy for the farmer's motivations as there may be few viable agricultural options currently: the desperation factor. However, by their nature upland landscapes are more sensitive in landscape terms, may have tiny rural lanes for access and are likely to cause concern in terms of water supply (boreholes), water pollution (run-off from hen ranging areas into streams) and tourism impacts. In these cases, even if the application is for a relatively small number of birds, the proposals can be heavily contested.

The type 3 developments were the most common planning applications in the 2010s; large farms setting up a 4-8 shed IPU as a diversification investment. Here the level of contestation generated depends on a number of factors including locality and scale but also the farmer's motivations, actions and how well integrated they are into the local community. Some such applications were approved without much objection, particularly before 2013, others have caused major contestation:

> *'One applicant was on the parish council, was a volunteer fireman, and was a governor on the school. He didn't do those to try and get any brownie points he was a genuinely decent bloke. … And when the application went in there wasn't a single objection. … It went to committee and it was an absolute breeze.' (Farming sector interviewee)*

One farmer who had had few objections commented: *'I think some people tend to just try to steamroller it through. It's the worst thing you can do.'* Some put objections down to jealousy about the profit farmers and landowners may make from multiple developments, agricultural and housing, on their land. One agent said the farmer's track record was important:

'If they're cavalier people that build stuff and make a mess, and don't show any respect to the local people and the roads, etc. They're going to get a bumpier ride. Certain people seem to attract... resistance.'

Trust, motivations, tactics and reputation may all play a part in levels of contestation, as well as the make-up and dynamics of the local community.

Type 4 IPUs are similar to type 3 but on large estates which have decided to invest in a poultry operation. Here dynamics among actor networks are different. The IPU is likely to be a business investment, run by a tenant, well away from the estate owner's own residence and parkland. This sort of landed estate situation may generate only limited contestation as many local people may not be in a position to object, being tenants and/or workers on the estate, or in some way obligated to the landowners:

'a lot of the properties are still tenanted and there's people who work on the estate (…) they own 90 houses. So anybody who lives in a house or has any connection to the estate in any way wouldn't object or say anything' (Objector)

The research also identified a fifth type in several recent planning applications, where the applicants have bought relatively small parcels of land speculatively, aiming to set up a new poultry unit. One individual had built new IPUs in multiple locations across at least four counties. This, or a further, category might also include land owned and operated by land management companies as large-scale agricultural businesses. No specific operation of this type has yet been identified in the two counties but this is a common trend in some UK farming sectors. As such proposals are perceived as primarily one individual or company making significant financial gain at the expense of local people and environments, such proposals generated considerable opposition, particularly if the applicant had few links to the area.

Objectors have recently speculated that in several cases farmers are investing in broiler units less to make money from selling the chickens for meat but in order to use the manure in their AD units which are more profitable than the poultry itself. One written

objection to a long running planning application said *'The biodigester is the elephant in the room*'. Another local business said:

> *'Our whole understanding of it is they've got the chicken farm to create chicken poo to go in the biodigester. (…) I just feel like they're doing it as a money generating thing. It's not about the chickens, it's about this biodigester and it just doesn't feel quite right to me.'*

Environmental permit data reveals there are about 30 AD units across the two counties, plus over ten licensed 'mobile spreading units'. AD units generate digestate which, like the poultry manure itself, can be a valuable fertiliser but is more concentrated and potentially toxic. There are also contestations about energy crops such as maize grown to mix with the manure in the AD units. Maize causes more soil runoff than other crops and hence more sediment and phosphate pollution in the rivers. In addition, food crops are displaced. Figure 14 illustrates this where a new five shed IPU in North Herefordshire, with tall biomass boiler building and an AD unit, just seen on the right, is surrounded by manure heaps and maize crops.

Figure 14 IPU in North Herefordshire

The situations for which planning applications are submitted have been shown to vary considerably. One trend is for the sheds to be built at a distance from the farmhouse and original farm buildings, in some cases in a location some miles away. In these situations, a

planning application for a poultry manager's house on site has often followed a year or two later. Planning discourses around the units tend to emphasise the need for food security, the diversification and survival of family farms and the economic benefits to the local economy. However, financial profit lies beneath all the motivations. As one farming sector interviewee said: *'the golden goose is broilers'*.

8. Objector perspectives

The research also explored the multiple concerns raised by people who lodged objections to planning applications for IPUs. Written objections to applications were analysed and 14 objectors (including several planning consultants) interviewed to identify how the IPUs had become so controversial. Near neighbours often focused on smell, noise, light pollution and whether their views were affected; while those living a little further away were more likely to worry about traffic impacts and safety, water and air pollution and views from local rights of way. Members of campaign groups often each researched a specific topic to harness data for their objections. Once people explored the details of the application further they became aware of a much wider range of issues and often their sense of outrage grew. The issues vary from one case to another depending on the location, nature of the landscape, road access etc. Table 2 presents an analysis of objections to three proposed IPUs, totalling 290 written submissions. The percentages show how most objections raised multiple issues; the top five at each site are highlighted in red.

	Site A		**Site B**		**Site C**	
Objection topic	**No.**	**%**	**No.**	**%**	**No.**	**%**
Smell/odour impacts	57	68%	54	41%	37	58%
Traffic impacts – volume, noise and safety	50	59%	67	50%	43	67%
Visual impacts on the landscape and views	36	43%	41	31%	21	33%
Water, drainage, pollution of local rivers	30	36%	25	19%	25	39%

Impacts on the local tourism economy	22	26%	56	42%	34	53%
Noise impacts	17	20%	69	52%	13	20%
Proximity to residential properties	14	17%	4	3%	4	6%
Proliferation of intensive poultry units	12	14%	16	12%	6	9%
Air pollution, dust and ammonia impacts	10	12%	17	13%	20	31%
Impacts on property values	10	12%	3	2%	6	9%
Animal welfare concerns	7	8%	5	4%	5	8%
The scale of the development	5	6%	32	24%	12	19%
The financial gain of one individual farmer	2	2%	16	12%	14	22%
Light pollution	2	2%	17	13%	7	11%
Lack of jobs created	2	2%	21	16%	18	28%
Location away from farmstead			18	14%	14	22%
Negative social impacts for locals			22	17%	20	31%
Waste and manure management			17	13%	12	19%
Visual impacts from rights of way, footpaths etc			18	14%	7	11%
Biodiversity			42	32%	13	20%
Impacts on heritage assets/setting			1	1%	12	19%
Impacts on Area of Outstanding Natural Beauty (AONB)					36	56%
Total objections	**84**		**133**		**64**	

Table 2 Objection issues for three IPU planning applications

The comparison demonstrates the wide range of concerns and how smell, traffic, visual impacts, pollution and negative impacts on tourism were common concerns. There may have been a widening of concerns about potential impacts between the Site A application

in 2014 and the other two applications in 2017/18, but details of the sites influence the concerns. For example, Site B is close to a river designated a Special Area of Conservation where there is a declining population of rare freshwater pearl mussels which is why biodiversity became a key concern. This location is also on smaller, quieter roads which may be why noise was more of an issue. Site C is right on the boundary of the Shropshire Hills AONB so many objections mentioned this and there was also a particular concern about the impact on the 40-50 listed heritage buildings in the parish. Air pollution was often linked to health concerns and impacts for people with respiratory conditions. There were also occasional mentions of concerns about disease risks or the spread of antimicrobial resistance from the IPUs. Animal welfare concerns are not a material planning issue, although objectors sometimes put a single sentence into their objection to register that they were against industrial farming in principle.

Some communities had been fighting a proposed IPU over 4-5 years and felt emotionally battered by the process. They critiqued the applicants' claim that the UK 'needs' more chicken supplies, argued that the proposals were unsustainable in many ways (including the use of imported soy in feed) and that few additional local jobs would be created. Some objectors said they wouldn't be against such intensive farming units if they were located in more 'appropriate' or 'industrial' locations.

Objectors also often complained about the planning process, including faulty procedures, inaccurate documentation and concerns about how planning conditions would be monitored in future. There were accusations that planning officers or politicians had been unduly influenced or bribed. Objectors felt a sense of injustice and frustration that the development was permitted without compensation to the community. There is no community payback with industrial agriculture applications; unlike wind farms, solar farms or electricity pylons where sometimes there's a community fund established, or housing developments where Section 106 or Community Infrastructure Levy payments fund community facilities. Also as agricultural installations, no business rates are paid on IPUs.

In summary, individuals had multiple concerns; for themselves, their family, their health and their finances, but also for the community, other people and local businesses, plus concerns about procedures, democracy and justice.

Objectors often widened their networks to enrol more objectors, organisations and professional planning expertise to assemble their case. The levels of objection necessitated more detailed and better quality planning application documentation. Planning authorities were improving their processes and scrutiny of evidence, for example more frequently bringing in outside expertise to assess specialist reports such as on odour or noise impacts. Environmental organisations and government ecologists raised concern over cumulative impacts of ammonia laden air pollution and excess nutrients in river water. In several cases objectors commissioned or researched their own reports to challenge the applicant's construction of knowledge about the likely impacts in the locality. On occasion campaign groups and individuals challenged the way planning decisions were made through the judicial review process. There is no third party right of appeal in the UK; only the planning process can be challenged. The fact that there have been at least nine judicial reviews across the area since 2014 demonstrates how contestations escalated into legal cases. The fact that objectors won several of the cases, or the Council ceded the case before it was heard, is evidence of the increasing knowledge, skills, financial resources and persistence of the objectors. One farming sector interviewee with UK wide experience called Herefordshire and Shropshire the '*problem zones*';

> *'Because this is where all the issues are. (…) Out of the schemes that we do, the ones that have problems are in this part of the world. They're in Herefordshire or Shropshire. All the applications I've had go to judicial review have all been in Shropshire or Herefordshire. No other county in the UK.'*

Campaign groups focused on individual IPU applications, but over time there was more collaboration between groups, sharing information, contacts and advice. In 2019 campaigners joined up across the English-Wales border to produce detailed maps of IPUs

across three counties, co-ordinated by the Campaign to Protect Rural Wales (Figure 15). The maps were seen as a way to make the issue more visible, highlight the cumulative impacts across a wide area and to step up lobbying activities

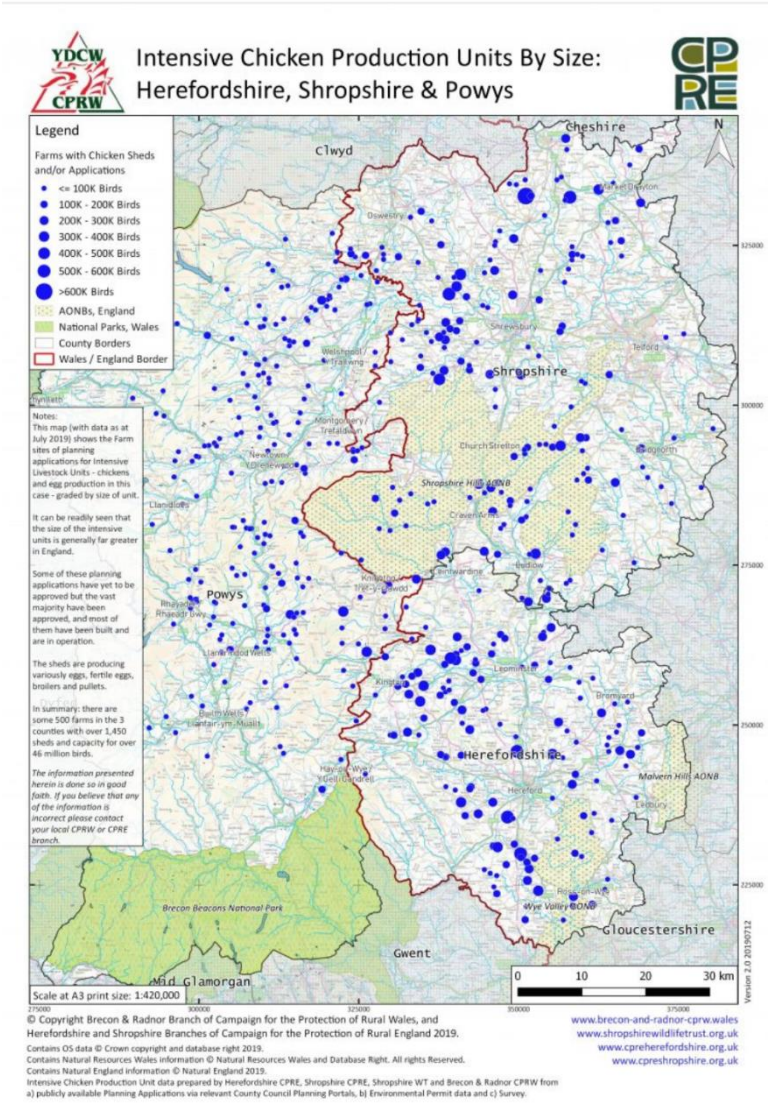

Figure 15 IPUs across Herefordshire, Shropshire and Powys, CPRW Brecon and Radnorshire (www.brecon-and-radnor-cprw.wales/?page_id=1513)

9. Networks and relations

The research explored relationships within and between actor networks involved in the planning contestations. The farming and landowning sector is strong and well networked. Poultry is a specialised sub-sector but tends to be viewed as part of the mainstream

farming culture which is supported by supplier companies, business bodies and a powerful farming lobby led by the National Farmers Union (NFU) and Country Landowners Association (CLA) which both have a strong presence in the area and are embedded in local governance systems. There is effectively an agricultural hegemony which acts to facilitate agricultural interests and to discourage or neutralise voices of challenge. The attitude that '*farming is what these counties are all about'* is strongly felt throughout much of the rural community.

Intensive farming is normalised by farming networks. Common narratives implied that there is no alternative for farmers but to choose intensive methods in order to provide the cheap, healthy and locally grown protein the UK's increasing population needs. The farming lobby insisted any pollution from IPUs would be controlled via the environmental permitting process. They labelled objectors incomers and NIMBYs (Not In My Back Yard) who were ignorant of the countryside and how it worked (Devine-Wright, 2009; Wolsink, 2006). In recent years farmers have often encouraged their networks to mobilise in support of their planning applications. In a few cases letters of support outnumbered objections. Not all farmers support intensive poultry farming; some don't consider IPUs farming at all. However, few are willing to disrupt relations within the farming community and go on the record against a development.

The processor plays a significant role in the farming sector networks. Perceptions were heavily influenced by Cargill's external relation activities: its charitable work, sponsorship of community activities and sports, regularly covered in the Hereford Times (referred to colloquially by some locals as the Cargill Times): *'The thing behind all of this, you've got to think of the money, and the economics and the power of Cargill*.'(Objector). Many people described how the company had 'shifted gear' in the last ten years and how this might be one reason for the increased levels of contestation. Cargill were perceived to now have a global reach and to have expanded their strategy from their Sun Valley days when it was seen as a local company '*tootling on for decade*s' as one interviewee put it.

'I think maybe there's a change of perception that it has become an industry, rather than farmers down the road with their chicken sheds. (…) but it suddenly has become something other maybe.' (Government Economic Development interviewee)

The increased contestation levels may partly reflect this sense of a shift from a generally tolerated farming operation into this '*something other'* that local communities were not willing to put up with any longer. In the past there had been limited challenge to the agricultural hegemony and the impacts of increasingly intensive farming. Several interviewees puzzled about how little criticism there is of farming locally, how its needs are prioritised and how other important sectors such as tourism were treated very differently and often ignored.

Groups of objectors have emerged as 'new publics' contesting these complex situations (Marres 2005). They have wide ranging matters of concern especially around the uncertain externalities or 'overflows' which IPUs generate. Many individuals experience a broadening of their concerns from the particular locality to wider national or global issues around climate change or loss of species (Beebeejaun, 2019). Local residents are often alarmed at the proposed rapid and dramatic change; they may feel anxious, '*exposed*' and vulnerable (Alaimo, 2016). Beck (1986) described how citizens can suffer a double shock of both hearing news about a particular risk, such as an IPU, but also not having control over how the dangers it entails may be assessed. Alaimo sees the resistance of objectors as an entanglement of ethics and politics with both a personal and a public dimension. A key question objectors are asking is 'what is good and for whom?'. Objectors are concerned about how the IPUs will affect them personally and affect things, places, humans and non-humans they care about (Puig de la Bellacasa, 2011), but also about who benefits and how is it decided.

Many people speculated that there must have had been discussions between Herefordshire Council and Cargill about the implications of expanding the Hereford processing plant and the requirement for an additional 90 or more poultry sheds to supply it. Several sources

confirmed Herefordshire Council senior officers and politicians had given tacit approval and would be fully aware of the large number of planning applications which would inevitably follow. Several people pointed out that the planning application fees paid by farmers are an important income stream for the council.

It may be that politicians and officers deliberately facilitated applications by omitting any policies on intensive livestock farming in the county development plans. These 'Core Strategies' are the primary policy guiding planning decisions (Herefordshire Council, 2015; Shropshire Council, 2011). There is just one reference to poultry units in the Shropshire plan and none in Herefordshire. Farming is not linked to any potential negative impacts such as air quality, traffic generation, heritage impacts etc. other than water quality which is given one brief reference, despite two thirds of nutrient pollution in local rivers coming from agriculture (Environment Agency and Natural England, 2020). Many interviewees mentioned the policy vacuum:

> *'we have a specific planning vacuum in our own policies, for cumulative impact, impact on the natural environment, as well as the road infrastructure. We have to rely on what words there are in the Core Strategy which are pretty loose and pretty positive around diversification or employment and economic growth and rural economy.' (Local councillor)*

In this sort of situation a local authority may choose to develop supplementary planning guidance (SPG) to fill the vacuum and give officers and councillors (and applicants) more advice about what would be acceptable where. Herefordshire Council did exactly that when faced with similar contestation over polytunnel developments (Evans, 2013). There had been discussions about producing a SPG for poultry or ILUs generally and there were several examples from other counties on which a local version could be modelled. However no policy has yet been produced despite numerous actors, including planning officers and agents for farmers, saying it would bring clarity to the process. Several opposition group politicians had actively pursued this route, but delaying tactics from Conservative politicians had enabled the current tranche of applications to go through the

planning process before the policy vacuum might be filled. Resource issues may have been part of the issue; Government figures suggested that planning and development departments in local authorities had experienced cuts of 53% between 2010 and 2017 (National Audit Office, 2018).

National planning policy reinforces this policy vacuum. Complex intensive development proposals are assessed against the vague concepts of 'localism' and 'sustainable development' contained in the hugely slimmed down 2018 National Planning Policy Framework (Allmendinger, 2016). Many actors thought the definition of intensive livestock rearing as agriculture was the underlying problem. They viewed IPUs as industrial but because the definition of agriculture has not been amended since the 1947 and 1990 Planning Acts, the policies which control industrial developments cannot be applied to IPUs, other than through the environmental permitting process. This is despite the scale of such developments and the type of technology used having changed radically. One councillor explained:

> *'the industrial policies are very strict and wouldn't allow any of this development. If these sheds were producing spring coils or something, … they wouldn't be allowed. They'd be encouraged to go to enterprise zones and business parks and locate themselves sustainably, but because this is, in policy terms, deemed to be agriculture that's a real problem.'*

A few communities have recently included IPU policies in Neighbourhood Development Plans which form part of the statutory planning framework once adopted. One objector had been involved in drafting an NDP and was hopeful it would make a difference:

> *'I've had to go quite carefully, because the local farming people in the neighbourhood of course don't like being told what they can't do. So we've got two policies, one about encouraging small scale developments and another one about large-scale developments would be supported provided they comply with this, that and the other, and it will be very difficult for most chicken units to comply with what we've said they've got to comply with.'*

However, it appears that Cargill/Avara were successful in recruiting their required additional suppliers. Applications in Herefordshire have slowed somewhat in the last few years although several heavily contested cases remain undetermined after 2-3 years. From

2018 Avara has been seeking new suppliers in the Northamptonshire area to supply the former Faccenda processing plant there. Applications in Shropshire continue, reflecting additional demand from several other processing companies.

10. Conclusions

The massive growth in the UK poultry industry over the last 50 years, driven by the enormous increases in chicken consumption and the global reach of the multinational corporations that control the industry lie behind the local controversies. In Herefordshire and Shropshire periodic expansions at processor companies, particularly Cargill in Hereford, have required increased production on farms. The planning and media data demonstrate the increasingly contested growth.

The motivations which prompt farmers to make the significant decision to invest in a new poultry venture are largely financial as there are substantial profits to be made from the poultry business and the subsidised linked investments in renewable energy, perhaps prompted by succession planning. Each situation and planning application is different, but in all cases poultry provides farmers with a more certain and resilient income. This is substantially at variance with the North American situation of farmers caught in exploitative and punitive contracts, struggling to make a living (Emel and Neo, 2015; PEW, 2013). In the UK, poultry has been a profitable form of farm diversification, alongside subsidised investments in renewable energy. No interviewees questioned that it was a good, if expensive, investment. A comparative study would help determine the reasons for the difference, but in the UK poultry is usually a side venture, established to boost the overall income of a larger farm holding. It may also be related to the historically strong lobbying power of farming bodies in the UK and the different nature of power relations.

The planning arena is inherently contentious but the situation in Herefordshire and Shropshire around IPUs has revealed the considerable difficulties local authorities have had handling cases where there are multiple issues of concern and interested actors. The

technocratic planning process struggles with such complexity. It is entrenched in topographical, two dimensional perspectives (Murdoch, 2006). Planning's rigid framework does not easily accommodate both social and natural entities and the dynamic sets of heterogeneous relations that are involved in the IPU contestations. Planning officers must handle the huge volumes of evidence required for poultry planning applications within a policy vacuum and politically charged environment. Local authorities have chosen not to develop supplementary planning guidance which might have helped all parties. Planning managers and politicians must have thought they could '*manage the outrage',* as one planning officer described it, and continue to approve most applications. This combination of a difficult task undertaken in a poorly resourced context, along with networks of vested interests trying to influence decisions, means that applications are often not processed effectively and fairly.

Allmendinger (2016) suggested that planners are no longer able to address distributional or ethical issues or the wider political questions about what planning should be trying to achieve. There is a presumption in favour of development and the onus is on the local authority or objectors to say why it should not proceed. Planners are supposed to be deciding in the public interest but the public interest has been scaled up to refer to national food security and regional jobs rather than local residents' quality of life (Lennon and Scott, 2015). Local authorities have failed to address IPU proliferation and cumulative impacts. They focus on individual cases and deliberately fail to take a more strategic view or seek information about wider, cumulative impacts such as on the health of local environments and populations.

It may be that there is not just a policy vacuum but an '*institutional void*' as well where a weakened state cannot address such complex problems (Hajer, 2003). The farming actor network has been exploiting the policy vacuum and partially colonised the institutional void. Local people concerned about the unknown consequences of so many IPUs have lost trust in the planning process. Hajer suggested that in order to make sound policy and

decisions it is important to identify areas of ignorance and uncertainty as well as scientific knowledge: *'The recognition of certain uncertainty could be the basis for a different approach.'* (Hajer, 2003:186).

He suggested the need to mix scientific and social knowledge in a more interactive and '*deliberative*' way, including a better understanding of the multiple ways actors perceive the problem being addressed. Hajer urged involving more stakeholders early on in the process, drawing on their local knowledge and building trust. The policies agreed should then also be monitored and adjusted as necessary as new knowledge becomes available. These proposals are similar to the dialogic democracy and hybrid forums Callon et al. (2001) proposed to deal with controversies over uncertain impacts of new technological developments. As Gomart and Hajer (2003) identified, the levels of contestation suggest a need to amend processes for assessing situations and decision making.

A new public has been identified, mobilising to contest proliferating IPUs. This resistance has become more effective over time, opening up the situation to greater scrutiny. A complex set of cares and concerns has been revealed through studying IPU contestations. They encompass a wider range of factors than Weis's '*ecological hoofprint*' (2013), including multiple dimensions of quality of life, impacts on other economic sectors such as tourism and innumerable 'cares' of local people.

The UK may now be at a similar point that the US was in the late 1990s where some states shifted their policies to restrict CAFO development when objector groups became more effective (Constance and Bonnano, 1999). Opposition is mobilising and local authorities are having to consider whether to act to prevent further escalation of ILUs. The local councils in Herefordshire and Shropshire are now having to handle the consequences of their tacit support for the poultry industry. In Herefordshire this includes sustained illegal levels of river pollution which have recently triggered a complete planning moratorium across the River Lugg catchment (Herefordshire Council, 2019). Shropshire Council has incurred high legal bills when ceding several judicial reviews. However, while poultry

remains such a profitable investment and the policy vacuum remains unaddressed, the contestations are set to continue and spread.

Weis argued there has been a *'systemic disarticulation of agriculture from ecosystems, communities and even the authority of nation states'* (Weis, 2007:161). He characterised the situation as '*the battle for the future of farming*'. This research demonstrates how these battles have emerged in two rural counties and how intensive livestock agriculture has become dislocated from local ecologies, communities and weak regulatory regimes. It no longer carries the unquestioning support of local residents and the authorities now need to decide how to deal with the industry's continued expansion. For example, should IPUs continue to be classified as agriculture in future (Butt, 2019). The cumulative impacts of ammonia on habitats and nitrates and phosphates in rivers are now clearer. The negative impacts on health, quality of life and other local economies such as tourism need further research. But all actors need to work together to consider what rural futures are desirable.

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