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Sparing or sharing? Differing approaches to managing agricultural and environmental spaces in England and Ontario

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Abstract

The ability to balance agricultural production and environmental conservation in the face of increasing demand for food, fuel and fibre poses a major challenge for governments around the world. This challenge is explored in two areas of comparison: Ontario, Canada and England, UK in order to understand how each has balanced agriculture and environment in its land use policies. England and Ontario share similarities that suggest lessons and instruments may be transferrable to achieve similar land use objectives. Through the use of a thematic analysis of policy documentation, from each case study area, themes are identified demonstrating differences in approaches, and underlying policy preferences, associated with balancing agriculture and the environment. Specifically, results suggest that policymakers in Ontario hold a preference for land-sparing and leanings towards the productivist paradigm, whereas the land-sharing approach coupled with evidence of post-productivism is more common in England. The structural similarities of these cases provides insights into less tangible aspects of either context, such as policymaker preferences, where different approaches have emerged from a similar foundation. Moreover, as England transitions out of the EU, it may draw on the experiences of other jurisdictions in the design of a new suite of agri-environmental policies, with Ontario's approach providing one alternative. Overall, this paper contributes to our understanding of the manifestation of land-sparing/sharing and productivism/post-productivism in real world policy contexts and the relationship between both sets of concepts.

Keywords: Comparative policy; Agri-environmental policy; Land use conflict; Land Sparing; Land Sharing; Post-Productivism

Highlights:

- We compare agricultural and environmental land use policy in England and Ontario
- Thematic analysis of land use policy documentation is conducted
- Approach is found to be land-sparing in Ontario and land-sharing in England
- Preference for productivism is found in Ontario and post-productivism in England
- Findings suggest policymaker preferences may explain different approaches

1. Introduction

With a growing global population projected to surpass 9 billion people by 2050, and associated food demand anticipated to increase by between 70 and 100 per cent, food security has emerged as a land use challenge of particular importance (Bridge & Johnson, 2009; Defra, 2008; Evans, 2009; FAO, 2009; Godfray et al., 2010; UN, 2013). Increasing population and food demand, alongside numerous other land use trends, summarised by Smith *et al.* (2010), have created a "*perfect storm*" with various land uses competing for a finite land base (Sayer et al., 2013, p. 8349). From this, two land uses that have emerged as particularly challenging to manage are agricultural production and environmental conservation, which have been described as being on a "*collision course*" (Sayer et al., 2013, p. 8349). These concerns have been reinforced by research findings pertaining to the land needs of a growing population, such as the estimate that as much as 1 billion hectares (ha) of land may need to be cleared globally by 2050 in order to accommodate increasing demand for agricultural production (Tilman, Balzer, Hill, & Befort, 2011).

The challenge of managing agricultural production and environmental conservation will take place at various scales and include a multitude of actors. This paper sets out to analyse the various land use policies that manage agricultural and environmental spaces within two jurisdictions: Ontario, Canada and England, United Kingdom. Ontario and England share many important characteristics such as their government structure, legal system, and culture/history, as well as similar land use planning traditions and associated property rights regimes. Hence, whilst there are notable differences across the two cases, they nevertheless share sufficient commonalities to render them similar enough instances of the same general phenomena to justify comparison, and allow for useful insights into agri-environmental land use policy within the two jurisdictions.

Moreover, there is much that Ontario and England can learn from one another, particularly as they grapple with the same global challenges affecting land allocation. Comparison is particularly, though not exclusively, valuable for Ontario where England has experienced conflicts between urban, agricultural and environmental land uses for much longer than Ontario and thereby provides

a preview of challenges that Ontario may face in the future, as well as potential solutions (Alterman, 1997, p. 220). On the other hand, as England transitions out of the European Union (EU), it may look towards the experiences of countries with similar foundations from which to build a new set of agri-environmental policies. Within the literature, the paper contributes a novel comparison, building from previous comparisons of agri-environmental and/or land use policy, such as between Norway and Australia (Bjørkhaug & Richards, 2008), New York State and England (Bills & Gross, 2005), and between the EU and the United States (Baylis, Peplow, Rausser, & Simon, 2008).

This research found that despite similar planning traditions and property rights regimes, Ontario and England have a very different approach to managing agricultural and environmental spaces. Ontario's approach was more reflective of a land-sparing approach in which agricultural and environmental spaces were separated, whereas policy in England is predominantly aimed at integrating agricultural and environmental spaces (land-sharing). These different land management approaches appear to reflect distinct preferences among policymakers. Policy rhetoric in Ontario is geared towards productivism, i.e. a belief that arable land should be used primarily for production. On the other hand, discourse in England emphasises the multifunctional nature of arable land, a key indicator of a post-productivist agricultural paradigm.

This paper provides a valuable contribution to both the literature and practice of rural land use, by comparing and contrasting the policymaker preferences behind land use policy approaches in two comparable jurisdictions. The article contributes to a gap in the academic literature by grounding the theoretical land-sparing/land-sharing and productivist/post-productivist typologies within 'real-world' policy contexts. While substantial literature has grown around the concepts of land-sharing and land-sparing, there is currently limited understanding of its application within actual land use policy systems, particularly in developed countries. Where this concept has been explored in real-world cases it has mostly been in the developing world including Ghana and India (Phalan, Onial, Balmford, & Green, 2011), Mexico (Gordon, Manson, Sundberg, & Cruz-Angón, 2007),

Indonesia (Clough et al., 2011) and Argentina (Mastrangelo & Gavin, 2012). Research from developed countries, such as Australia (Dorrough, Moll, & Crosthwaite, 2007), the UK (Hodgson, Kunin, Thomas, Benton, & Gabriel, 2010), and the United States (Egan & Mortensen, 2012), to this point have taken a positivist, evaluative approach to assess the benefits of either management option. Instead, this research explored the manifestation of these approaches within land use policies in developed countries.

Our research sheds new insights relating to the relevance of productivist/post-productivist ideological frameworks for shaping the design of land use policies. This is particularly true in the Canadian context, where an empirical study of productivism/post-productivism has not yet been completed, even though it has been applied outside the UK in multiple jurisdictions including Australia (Argent, 2002; Holmes, 2002, 2006), Denmark (Kristensen, 2001; Kristensen, Thenail, & Kristensen, 2004) and Norway (Bjørkhaug & Richards, 2008). Furthermore, Mather, Hill, & Nijnik (2006) describe the linkage of post-productivism with land use as a "*field that is ripe for the further development of theory and especially theory on the fundamental drivers of change,*" yet little has been conducted on this linkage since their article was published in 2006 (Mather, Hill, & Nijnik, 2006, p. 452).

This approach and its findings are novel within the academic literature. The concepts of land-sparing/land-sharing and productivism/post-productivism have rarely been explored in the Canadian context, representing a clear gap in our understanding of the application and wider transferability of these sets of concepts. Moreover, no literature was identified that explicitly notes the interconnection between the concepts of land-sparing/land-sharing and productivism/post-productivism, whilst this paper suggests there may be parallels and overlap between these two independent sets of literature that should be explored further.

Finally, the article has relevance for policy development in both contexts. The study found that different approaches to managing agricultural and environmental spaces have emerged from a

similar government/legal structure in both Ontario and England, at least in part as a result of differing policymaker preferences. These findings support cautious efforts to share lessons and instruments between these jurisdictions, recognising the underlying differences that this research has identified. Similarly, the study supports further research on the transferability of agri-environmental policies between North America and Western Europe.

2. Methods

For the purposes of this paper, 'land use policy' is considered to comprise three sets of public policies with spatial implications for the use of arable land: planning policies, agricultural policies and environmental policies. This research also took a broad view of policy going beyond documents/statements labelled as 'policies' to include additional material listed in Table 1 (e.g. guidance material, legislation) which allowed for improved understanding of each government's policy preferences. Sources were compiled from current policies as of March 2015 and in certain circumstances we also drew on previous versions of policies to provide additional context. The full list of reviewed policies is provided in Table 1 with additional details provided in the Supplemental Materials.

The sources used for the analysis were identified by systematically reviewing government websites, reports and academic publications for mentioned policies, legislation and other related documentation. The original documents were then obtained from official government websites with particular effort to ensure the most recent version was obtained (e.g. not superseded).

The study used an inductive approach incorporating elements of grounded theory, whereby theory was developed through the research findings, rather than the testing of a hypothesis (Charmaz, 2014; Glaser & Strauss, 1967). This process also included a thorough literature review be completed after the initial thematic analysis. This allowed for the consolidation, and interpretation, of themes through the lens of concepts already well developed within the academic literature.

The research used a combination of semantic and latent approaches for analysing documents (Shaw, Elston, & Abbott, 2004). This included the description of overt and explicit information extracted from documents, the review of broader policy documentation including guidance material, and the analysis of ideology/discourse within documents in order to help understand the underlying reasons for documents and decisions (Shaw et al., 2004). The process for analysing the documentation was based upon the six phases of thematic analysis outlined by Braun and Clarke (Braun & Clarke, 2006, p. 87).

Documents were reviewed (read and re-read) and data items, semantic and latent, were identified where they were relevant for the original research objective, using a focused coding strategy (Charmaz, 1996).[1] Through an inductive process, the initial data items, derived directly from policy documents, were described and categorised into data-driven descriptive themes and patterns, such as 'seeking new land for agriculture' or 'discouraging agricultural expansion'. These descriptive themes were then categorised further into organising themes dependent on topics, such as 'Protected Landscapes', 'Planning Policy', and 'Governance Structure', to create the consistency necessary for comparison. The creation of data-driven themes from original data items is depicted in the Supplemental Material. The arrangement and interconnections between descriptive and organising themes is depicted in the Thematic Networks (Figures 2 and 3).

Following the development of these sets of themes, a thorough review of the literature was conducted in order to "*interpret the information and themes in the context of a theory or conceptual framework*" and allow for the grounding of the findings within a broader set of literature (Boyatzis, 1998, p. 11). Through this literature review, the conceptual frameworks of (1) land-sparing/land-

[1] The analysis was conducted by one author with input/critiques from the other authors. From each round of input/critiques, the documents were revisited to ensure consistency in interpretation and to extract new observations that led to new themes or lent weight to existing themes. This allowed for consistency in the analysis and interpretation of findings, however continued involvement and questions from other researchers ensured that the analysis was conducted critically.

sharing, and (2) productivism/post-productivism, were found to be global themes best suited to interpreting the information and drawing meaning from the research findings.

Table 1: Legislation, Policies and Programs/Schemes with Spatial Implications for Arable Land Examined within each jurisdiction

	Ontario	**England**
Planning Policy	• Planning Act, 1990 • Provincial Policy Statement (PPS), 2014 • Greenbelt Plan, 2005 • Oak Ridges Moraine Conservation Plan, 2002 • Niagara Escarpment Plan, 2005 • Minimum Distance Separation (MDS) • Growth Plan for Northern Ontario, 2011 • MMAH Mandate Letter (2014)	• Town and Country Planning Act, 1990 • Planning and Compulsory Purchase Act, 2004 • Planning Act, 2008 • National Planning Policy Framework (NPPF) • Planning Practice Guidance (8) Natural Environment

Agricultural	• Growing Forward 2
	  ○ Production Support: Agri-Stability, AgriInvest, Production Insurance and AgriRecovery
	  ○ Agri-environmental programs
	• The Farming and Food Production Protection Act (FFPPA), 1998
	• Environmental Farm Plan (EFP) program
	• Species at Risk Farm Incentive Program (SARFIP)
	• OMAFRA Mandate Letter (2014)
	• Local Food Act, 2013
		• Common Agricultural Policy (CAP)
		  ○ Pillar 1 (production support) and Pillar 2 (rural development)
		• CAP Cross Compliance:
		  ○ Statutory Management Requirements (SMRs)
		  ○ Good agricultural and environmental condition (GAEC) standards

Environmental	• Natural Heritage Reference Manual (2010) • Provincial Parks and Conservation Reserves Act, 2006 • Endangered Species Act, 2007 • MNRF Mandate Letter (2014)	• Hedgerows Regulations, 1997 • Wildlife and Countryside Act, 1981 • Countryside and Rights of Way Act, 2000 • Natural Environment and Rural Communities Act, 2006 • The Natural Choice: securing the value of nature – Natural Environment White Paper, 2011 • Biodiversity 2020 • English national parks and the broads: UK government vision and circular, 2010 • English Woodland Grant Scheme (EWGS) • Environmental Stewardship Scheme

2.1 Case Selection

Canada and the UK have several characteristics that make them appropriate for comparison in this study. Fundamentally, the UK and Canada have a shared history, remaining from their former colonial relationship, which is still evident in their shared Head of State and Commonwealth membership. Canada has modelled its Westminster parliamentary and common law legal systems from the UK, which has then been replicated in each of its provinces. As well, the people of Canada and the UK remain closely connected, for instance as recently as the *2011 National Household Survey* of Canada 35 per cent of Canadians identified the British Isles as their ethnic origin (Statscan, 2014).

Of particular relevance to this study, the planning systems of the UK and Canada share many resemblances, including similar property rights regimes. While comparisons of land use policy that include Canada tend to focus on the United States, this is complicated by the difference in private property rights and compensation for regulatory takings (Bryant & Russwurm, 1982; Bunce, 1998; Furuseth & Pierce, 1982). The UK and Canada provide a better comparison as neither has entrenched property rights and compensation for regulatory takings is minimal (Purdue, 2010; Schwartz & Bueckert, 2010).

In the UK, responsibility for planning rests with each of the countries (England, Wales, Scotland, and Northern Ireland) that comprise the Union and similarly, in the Canadian distribution of powers, the provincial governments have responsibility for land use planning. For this reason, systems have developed differently at the sub-state level within each jurisdiction. For this article, the province of Ontario and the country of England will be the units of comparison.

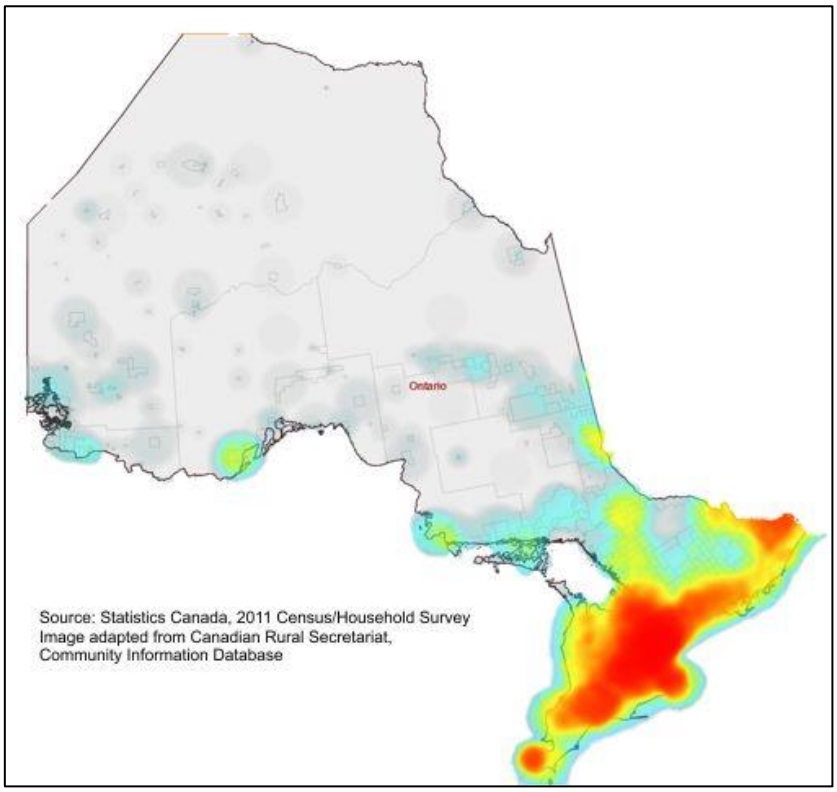
Table 2: Contextual Statistics for England and Ontario			
	England	Southern Ontario	Ontario
Total Population	54,316,600 (2014)	12,076,643 (2011)	12,851,821 (2011)
% of Canada / UK population	84.09%	36.08%	38.39%
Land Area	132,937.69 km^2	105,832.49 km^2	908,607.67 km^2
Population Density (per km^2)	409	114	14
Sources: UK Office for National Statistics, England population mid-year estimate; Statistics Canada, 2011 Census of Population; UK Office of National Statistics, The UK and its countries: facts and figures			

Aside from their similar political, legal and planning systems, England and Ontario appear quite different, having a very different population size, population density, and land area (see Table 2). However, these cases have important relative similarities. Like England, Ontario is the most populated province in Canada and contains a large proportion of Canada's population within a small, and growing, area. Ontario is also sometimes colloquially referred to as being two provinces, with two very different sets of conditions and corresponding challenges. The northern portion of the province is very heavily forested and sparsely populated, where forestry and resource extraction are important industries. In the south of the province, the situation is quite different and is the area in which competition between agriculture and environment is most intense. This region has a large, and growing proportion of the Canadian population living in a relatively small area (see Figure 1), approximately 106 thousand square kilometres in size[2], projected to increase from 12 million in 2011 to 17.4 million by 2036 (MOF, 2013). Most important for this research, southern Ontario contains a large proportion of Canada's highest quality agricultural land, containing 56% of Canada's Class 1 land within a relatively small area (Hofmann, Filoso, & Schofield, 2005). This area also contains a

[2] Southern Ontario is commonly considered to entail the Statistics Canada Census Divisions of Toronto Durham, Halton, Peel, York, Brant, Dufferin, Haldimand-Norfolk, Haliburton, Hamilton, Muskoka, Niagara, Northumberland, Peterborough, Simcoe, Kawartha Lakes, Waterloo, Wellington, Ottawa, Frontenac, Hastings, Lanark, Leeds and Grenville, Lennox and Addington, Prescott and Russell, Prince Edward, Renfrew, Stormont, Dundas and Glengarry, Bruce, Elgin, Essex, Grey, Huron, Chatham-Kent, Lambton, Middlesex, Oxford, Perth. Total area was estimated using the total land area of these Census Divisions obtained from the 2011 Census of Population.

unique, yet heavily converted ecoregion, the Mixedwood Plains, different from the Boreal Forest in the north of the province (Rankin, Austin, & Rice, 2011), as well as the remnants of the almost entirely converted Carolinian Forest 'life zone' (Johnson, 2009). This combination of population growth, high quality agricultural land, within a highly converted ecosystem is unparalleled in Canada. However, the challenges with managing agricultural and environmental objectives within a highly productive, yet already highly converted landscape, holds parallels with the English context.

Figure 1: Population Density for Ontario, 2011



Additional information on the agricultural and agri-food sector in England and Ontario is provided in the Appendix. To summarise, England and Ontario have comparable agricultural areas, though England has more land in permanent pasture and extensive livestock production. In both cases, agriculture and agri-food represents an important industry, though represents a relatively small portion of total GDP. Moreover, a clear trade deficit exists, in both cases, with imports exceeding exports of agri-food products.

Like England, Ontario has experienced an over-exploitation of its land base and has been undergoing a 're-balancing' of agricultural and environmental land uses. While England's land use change has occurred over a very long period of time, in Ontario clearing of land for agriculture by colonists rapidly and dramatically altered the landscape beginning in the late 1700 and early 1800's, and peaking around 1931 where farmland occupied 60.7% of southern Ontario (Smith, 2015, p. 35; Watelet, 2009). From this point farmland began to decline, reaching 35.5% of southern Ontario in 2011, though cropland remained largely stable due to a decline in land in pasture (Smith, 2015). In England, utilised agricultural area has declined but not as markedly as in Ontario. For instance, in 1983 utilised agricultural area in England reached 74% of England's total area, however has declined to 68% as of 2015 (Defra, 2015b). Moreover, presumably at least in part due to differing farmer support mechanisms, pasture for extensive livestock production remains a more important land use in England than in Ontario. This contributes to explaining the considerable difference in the proportion of total area in agriculture, but comparable area in crop production.

2.2 Case Description

2.2.1 Ontario

In Ontario, land use planning is administered by local governments within the direction set by provincial land use policy. The primary legislation governing land use planning in Ontario is the *Planning Act (1990)* which sets the foundation for land use planning in Ontario as well as explaining how land uses may be controlled and by whom. Flowing from this legislation is the *Provincial Policy Statement (PPS)*, the primary land use policy document in Ontario, which sets out the province's objectives and expectations for planning across all municipalities.

Along with the PPS, Ontario also makes use of *provincial plans* with more specific requirements for land use planning in a delineated area of the province. Ontario presently has four provincial plans in the densely populated, and fast-growing area around Toronto referred to as the Greater Golden Horseshoe: the *Greenbelt Plan, the Niagara Escarpment Plan, the Oak Ridges*

Moraine Conservation Plan and the Growth Plan for the Greater Golden Horseshoe. The first three plans deal primarily with the protection of agricultural and natural areas whereas the latter is primarily a growth management plan.

Within the provincial government, planning policy is led by the Ministry of Municipal Affairs and Housing which acts as the 'one-window' for planning in the province. The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) plays an important role in providing guidance on agricultural and rural matters, whereas the Ministry of Natural Resources and Forestry (MNRF) is responsible for natural heritage in Ontario and plays a major role in managing the spatial aspects of the environment (e.g. woodlots, wetlands, Niagara Escarpment). The Federal Government does not play a major role in planning policy, however it does in agricultural policy as Ontario does not have complete control over the major agricultural funding program (*Growing Forward 2*) which is the result of negotiations between the Federal Government and provincial/territorial governments.

2.2.2 England

The planning framework for England is similar to Ontario in that the government prepares a guiding policy, the *National Planning Policy Framework (NPPF)*, which provides high level direction that local governments must comply with. The Secretary of State for the Environment, Food and Rural Affairs and the non-governmental body Natural England, are tasked with providing advice to planning authorities when development is proposed on arable land or other greenfield sites.

Within England, large tracts of land are covered by either National Parks or Areas of Outstanding Natural Beauty (AONB). National Parks are managed by independent National Park authorities who have responsibility for local planning, whereas planning permission in AONBs is the responsibility of local authorities with the assistance of local advisory committees. Natural England also plays an important oversight and advisory role in protected landscapes.

Within the governance structure of England, the Department for Communities and Local Government has responsibility for land use planning, including the NPPF and associated guidance material. The Department for Environment Food & Rural Affairs (Defra) is responsible for both environmental and agricultural policy. However, the role of the supra-national EU is very important in understanding policy development in England. Of particular relevance to this research is the *Common Agricultural Policy (CAP)* and the associated limitations in domestic agricultural policy it places on England.

3. Results

Through the use of thematic analysis of land use policy documentation a series of themes emerged that indicate that Ontario and England share numerous similarities, but also key differences, in their land use policies that affect the management of agricultural production and environmental conservation. Ontario and England have a similar planning system where both utilise development control/planning permission, with policy developed at the provincial/country level and implemented by local governments. Both have made efforts to contain urban development and both have established green belts around their major urban settlements. Policymakers in Ontario and England each clearly value the protection of agricultural and environmental spaces, and both have developed agri-environmental schemes, although their design is quite different. Similarly, both jurisdictions provide considerable financial support to their agricultural industries, but in different ways and for different purposes, and both have created a system of national/provincial parks, though again the design is notably different. Finally, both Ontario and England have considerable influence from a higher order of government, the Government of Canada and the EU, which limit the decision-making and policy development within each context, particularly within agricultural policy.

In what follows we discuss two prevalent differences that emerge from the thematic analysis. First we discuss the different policy approaches taken by each jurisdiction to integrate, or separate, agricultural and environmental spaces. Second we discuss the differing policy preferences pertaining to the use of arable land evident in both jurisdictions. These thematic findings are

summarised in the thematic networks presented in Figures 2 and 3. These networks depict the data-driven themes on the exterior, organising themes and global themes in the interior (Attride-Stirling, 2001).

Figure 2: Thematic Network for Ontario

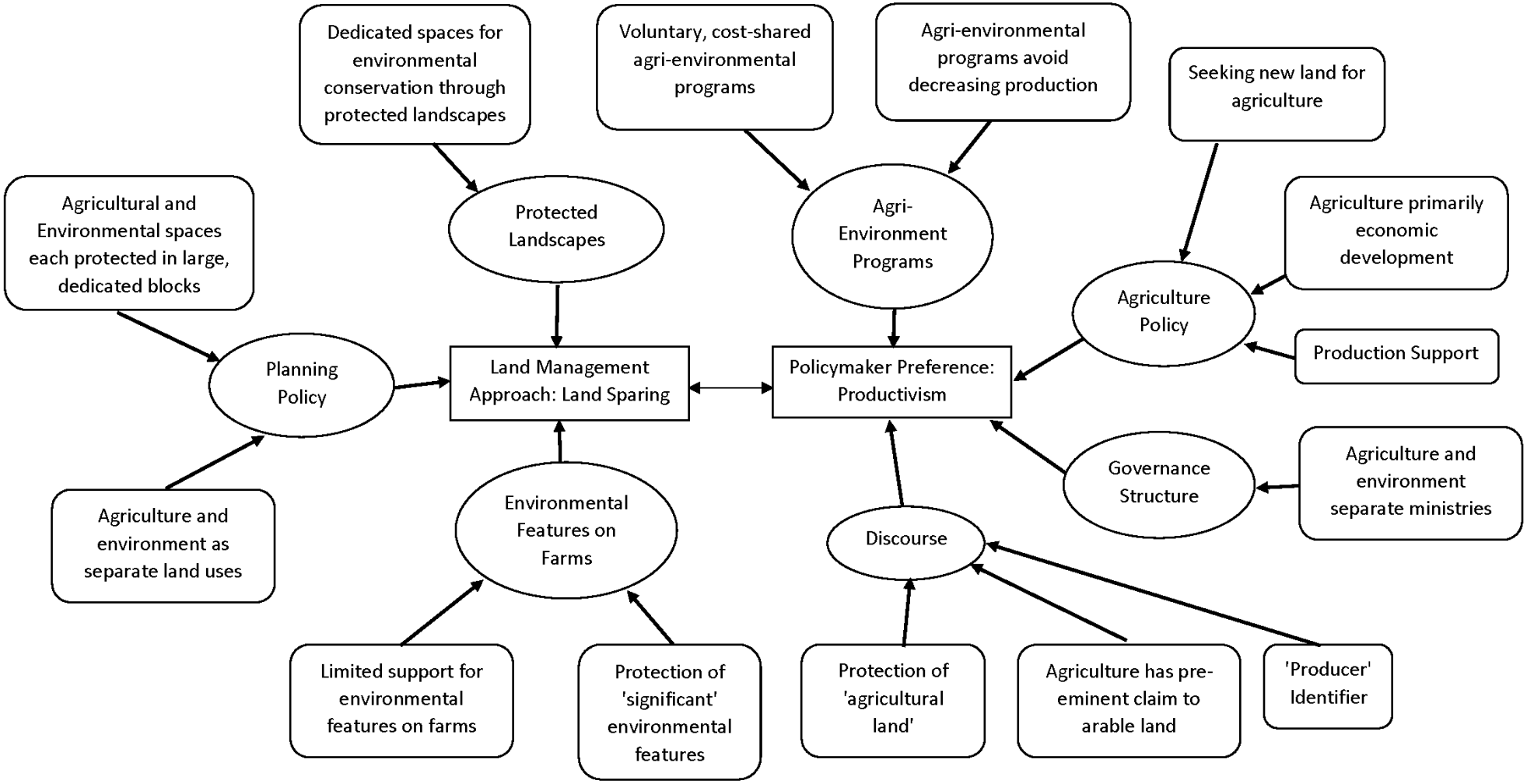
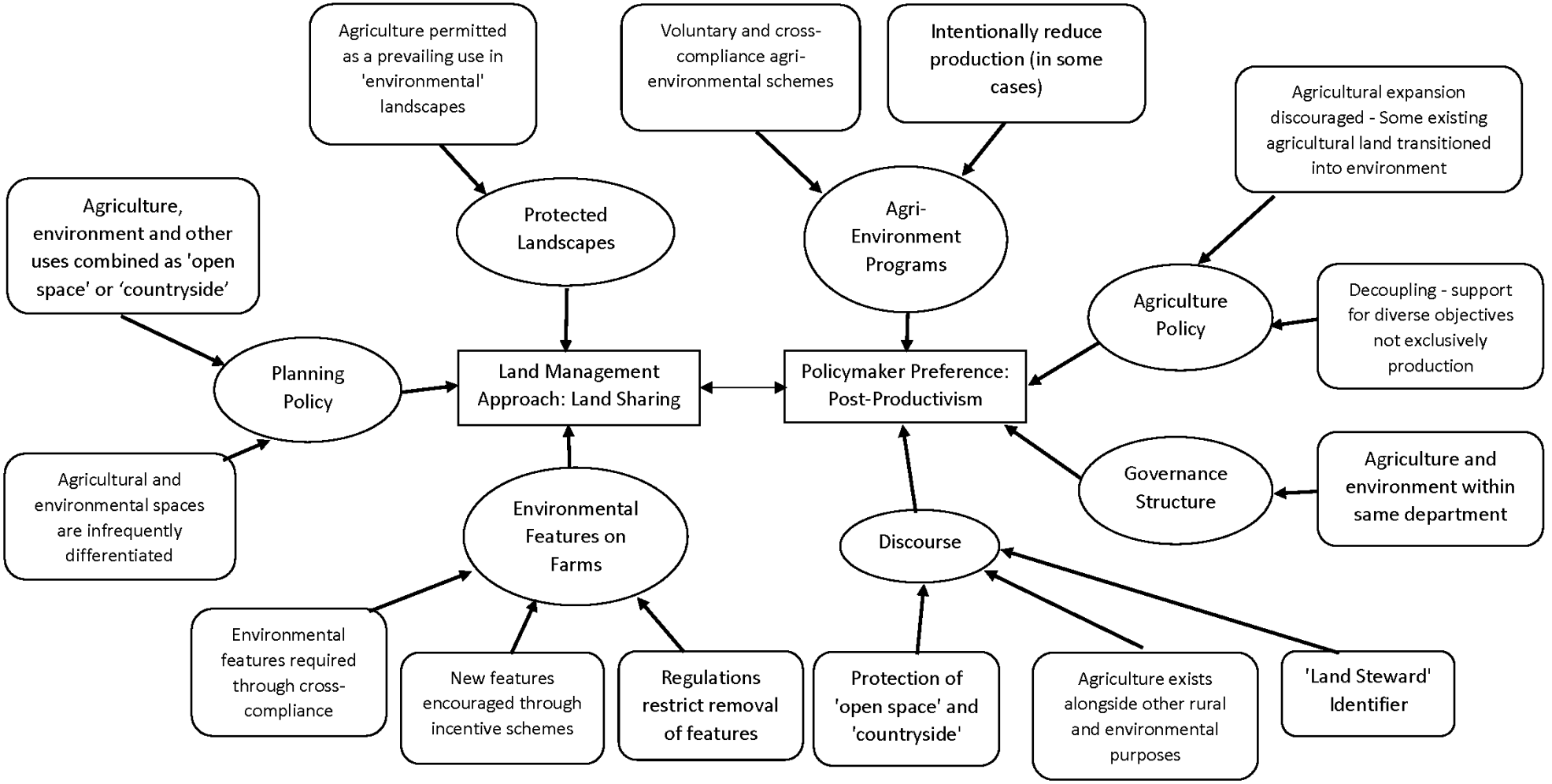


Figure 3: Thematic Network for England



3.2 Theme 1: Approach to Managing Agricultural and Environmental Spaces

One key difference that emerged from the thematic analysis was the way in which agriculture and environmental features are addressed within land use policies. Within the documentation from Ontario, a theme emerged in which agricultural production and environmental conservation were considered to be separate land uses, whereas in England they were actually encouraged to co-exist in the same space.

One way of characterising these two approaches is through the *land-sparing* and *land-sharing* dichotomy, often associated with the seminal article by Green *et al.* (Green, Cornell, Scharlemann, & Balmford, 2005). Land-sparing and land-sharing represent opposing endpoints on the *Land Allocation Continuum,* and while both see value in ensuring agricultural production and environmental conservation, they disagree as to the means to achieve this objective (Wentworth, 2012). *Land-sparing* can be succinctly described as "*separating land for conservation from land for crops, with high-yield farming facilitating the protection of remaining natural habitats from agricultural expansion*" (Phalan et al., 2011, p. 1289).

Land-sharing, sometimes used interchangeably with the term *wildlife-friendly farming*, can be described as integrating environmental conservation and agricultural production on the same land, the result of which means less land is set aside specifically for either land use (Fischer et al., 2014; Phalan et al., 2011). The land-sharing approach promotes the creation of heterogeneous agricultural landscapes and is thereby associated with the concept of *multifunctionality* (Tscharntke et al., 2012; Wentworth, 2012).

3.2.1 Ontario

The preservation of agricultural land and the conservation of natural spaces are high priorities for land use policy in Ontario. This is exemplified in the *Planning Act (1990)* which identifies both "*the protection of ecological systems, including natural areas, features and functions*" (s. 2(a)) and "*the protection of the agricultural resources of the Province*" (s. 2(b)) as matters of provincial

interest. From this foundation, Ontario's planning policies tend to treat agricultural land and natural spaces as separate land uses. For example, the PPS (2014) includes policies to protect both *prime agricultural land* s.2.3 and *natural heritage* s2.1. Terminology used in the PPS (2014) suggests that protection for these land uses should be implemented independently, such as stating that prime agricultural areas "*shall be protected for long-term use for agriculture*" (s.2.3.1) and that "*development and site alteration shall not be permitted*" in *significant* natural features (s.2.1.5). This is not to say that agriculture is precluded in natural areas, however it does limit the expansion of agriculture into identified significant natural heritage features. Similarly, the policy does not preclude significant natural features from existing on agricultural land and within agricultural operations. Nevertheless, the policy does represent a clear focus on protecting concentrated natural features, demonstrated through the intentional use of the term *significant*, as opposed to protecting natural spaces dispersed across the landscape, particularly if those features occupy a relatively small space. This suggests a view that agricultural and environmental spaces should be 'spared' from one another allowing for both land uses to be protected independently in delineated, large, contiguous blocks dedicated to either use.

The *Greenbelt Plan (2005)* uses similar terminology to the PPS (2014) in protecting the agricultural system (s.3.1) and natural system (s.3.2) within the Greater Toronto Area. Again, under the *Greenbelt Plan* these systems do overlap, however there is a goal of ensuring "*expansive areas*" where either use "*predominates*" (s.3.1.1). The *Niagara Escarpment Plan (NEP)* and the *Oak Ridges Moraine Conservation Plan (ORMCP)* are related to the Greenbelt Plan and cover the same geography in the area around Toronto. Unlike the *Greenbelt Plan*, these two plans are predominantly focussed on environmental conservation, nevertheless both incorporate areas of agricultural land. Again, both the NEP and ORMCP protect environmental areas and agricultural areas separately attempting to ensure both may co-exist, but within different spaces.

Similarly, the *Provincial Parks and Conservation Reserves Act (2006)* can be viewed as an environmental conservation policy utilising a land-sparing approach. The purpose of this act is to permanently protect a system of land for the purposes of natural and cultural heritage, biodiversity and recreation (s.1). Landscape conservation in Ontario has tended to concentrate on conserving pristine environments by restricting uses that may compromise the act's first priority of maintaining *ecological integrity* (s.3.1). While agriculture is not explicitly listed as a prohibited use, farming and private land ownership are much less common when compared to the European context (Hamin, 2002). There are presumably several reasons for this difference, including a lack of 'untouched' landscapes in Europe (Hamin, 2002) as well as the first *Ontario Parks Act (1913)* establishing the province's early protected spaces in areas "*not suited for agriculture*" (Murphy, 2012, p. 338).

While land use policy in Ontario generally resembles a land-sparing approach, there are exceptions. The province does include examples of land-sharing, such as the provincial and federal governments' multiple agri-environmental programs intending to support the uptake of Best Management Practices (BMPs) and the protection or creation of environmental features. Examples include the *Species at Risk Farm Incentive Program (SARFIP), Growing Forward 2*, and the *Environmental Farm Plan (EFP)*. These voluntary programs are based on an application based, cost-sharing model with agreements between public funders and private landowners in order to achieve specific environmental objectives on agricultural land. Examples of projects funded through these programs include reforestation and wetland restoration, as well as a long-list of farming practices with environmental benefits.

Another example of regulation resembling a land sharing model in Ontario is the *Endangered Species Act (2007)* which protects endangered or threatened species and their habitat. While it is unclear how often it occurs, the act could prevent the farming of arable land, or restrict opportunities for expansion of agricultural land, where it risks damaging the habitat of an endangered or threatened species. Nevertheless, there are important exemptions that limit

application of the act on agricultural land, most notably the exemption for the habitat of the Bobolink and Eastern Meadowlark (grassland-nesting bird species) both of which nest in hayfields and pasture. This suggests that in practice, the Act does not always represent a land-sharing approach whereby exemptions have lessened the requirement for some threatened species and their habitat to co-exist with agricultural production.

3.2.2 England

In England, the National Planning Policy Framework (NPPF) emphasises the interdependence between different land uses in sections 7 and 8, which encourage the planning system to contribute to the economy, society and environment while discouraging planning each role in isolation. Within its core principles, the NPPF emphasises the role of planning in contributing to "*conserving and enhancing the natural environment*" including the recognition "*that some open land can perform many functions (such as for wildlife, recreation, flood risk mitigation, carbon storage, or food production)*" (pg. 6). From this position, agricultural and environmental spaces are intertwined throughout the NPPF and agriculture is not addressed in isolation but rather within part 11: *Conserving and enhancing the natural environment*.

Within the policies of the NPPF, agricultural land and environmental conservation are particularly addressed within part 9 (*Protecting Green Belt land*) and part 11 (*Conserving and enhancing the natural environment*). The protection of existing Green Belts throughout England is an important priority within the NPPF which encourages the permanent protection of open space around urban areas for the explicit purpose of growth management (e.g. preventing urban sprawl). The NPPF uses the term *open space* to encapsulate a range of uses that are not development, in fact the discussion surrounding open space in the NPPF seems to centre more on what open space is not (e.g. the built environment) than what it is.

In part 11 of the NPPF (*Conserving and enhancing the natural environment)* there is a clear emphasis on directing development away from areas of wildlife, cultural heritage, and high quality

agricultural land.[3] Within this section, the NPPF does not emphasise a separation of agricultural and environmental land uses, and instead encourages the protection of environmental spaces, particularly biodiversity and habitat, across a wider landscape scale.

Agricultural policies in England strongly encourage a land-sharing approach (environmental conservation on farms) particularly through the agri-environmental schemes of the CAP (Wentworth, 2012). For years the CAP has incorporated *Statutory Management Requirements (SMRs)* and *Good Agricultural and Environmental Conditions (GAECs)* as part of cross-compliance measures which encourage farmers to protect the environment in exchange for financial support. One example on the land-sharing side of the spectrum is the 'greening' requirement introduced as part of the 2014-2020 CAP reform. Greening is a cross-compliance measure representing 30 per cent of the *Basic Payment Scheme (BPS)* and includes the protection of permanent grassland across England, as well as the set-aside of arable land on farms (with more than 15 hectares of arable land) referred to as *Ecological Focus Areas (EFAs)* (Defra, 2014).

A range of voluntary agri-environmental schemes also demonstrate England's preference for land-sharing. These schemes have recently been merged under the *Countryside Stewardship* scheme, however until recently the *Environmental Stewardship (ES)* and the *English Woodland Grant Scheme (EWGS)* represented examples of voluntary agri-environmental schemes encouraging farmers to maintain environmental spaces on their farm through financial agreements. Similarly, the requirement for *Environmental Impact Assessments (EIAs)* in order to make alterations to land, and particularly uncultivated land, represents a regulatory approach to protecting environmental spaces on arable land (Natural England, 2015).

The protection of environmental features on agricultural land is an integral part of England's environmental policy. Regulations restrict the removal of hedgerows, heathland and moorland on

[3] The NPPF defines the *best and most versatile agricultural land* as land in grades 1, 2 and 3a of the Agricultural Land Classification (p. 50).

private land for the purpose of environmental conservation, and particularly for biodiversity protection (Natural England, 2013). Moreover, England has protected environmental landscapes in the form of National Parks and Areas of Outstanding Natural Beauty (AONBs). England has 13 National Parks and 33 AONBs (NAAONB, 2015; UKELA, 2014) covering an estimated quarter of England's total land area (English Heritage, n.d.). In contrast to the case of protected landscapes in Canada or the United States, these protected landscapes often include working farms which are not considered to be incompatible uses and in many cases certain types of agriculture (e.g. conservation grazing) are important for maintaining certain types of biodiversity and cultural landscapes (Hamin, 2002).

3.3 Theme 2: Preferences for the Use of Arable Land

The land-sparing/sharing divide evident in the policy documentation from both case study regions appears to reflect distinct preferences regarding the use of agricultural land. Specifically, policymakers in Ontario hold what can be thought of as more of a productivist viewpoint, whereas the viewpoint of policymakers in the UK can perhaps be best conceptualised within the post-productivist framework. There are numerous indicators of what constitutes a productivist or post-productivist agricultural paradigm, previously summarised by Wilson (2001, p. 80-81). Without attempting to demonstrate adherence to productivism or post-productivism in its entirety, we found the concept to be a useful framework for comparing diverse objectives and preferences that emerged from the results.

Productivism can be conceptualised as an agricultural regime whereby state support for agriculture is based primarily on output, yields and increased productivity (Lowe, Murdoch, Marsden, Munton, & Flynn, 1993, p. 221). A key tenet of productivism is the notion of *agricultural exceptionalism* whereby agriculture is seen as having a "*pre-emptive claim on the use of rural land*" and where a strong belief exists that farmers are the best protectors of the countryside and the greatest threats to the countryside are "*perceived to be urban and industrial development – not*

agriculture itself" (Wilson, 2001, p. 79). This agricultural exceptionalism has important parallels with North American agrarianism and the *agrarian ideal* deeply rooted in the political culture of the United States and Canada (Bunce, 1998, p. 240). Ultimately, the productivist landscape is one in which impediments to agricultural production (e.g. woodlots, hedgerows) would be discouraged.

On the other hand, a key component of post-productivist land use is characterised by a diverse and multifunctional landscape, comprised of both agricultural production and other environmental or social benefits derived from the land. Within the ecosystem services framework, this can be viewed as expanding the purpose of arable land from a focus on provisioning services to also provide supporting, regulating, and cultural services. Farmers are encouraged to work towards environmental objectives often at the expense of agricultural productivity.

3.3.1 Ontario

The preservation of high quality land[4] for the explicit purpose of agricultural production is a key priority within Ontario's land use policy (s.2.3.1). Similarly, the vision of the *Greenbelt Plan, 2005* states that it intends to "*protect against the loss and fragmentation of the agricultural land base and support agriculture as the predominant land use [emphasis added]*" (s.1.2.1). This set of policies works to protect the potential of land for use by agriculture, but stops short of directing the use of land once it is protected. Nevertheless, we can glean some perspective on policymakers' preferences for the use of arable land from the use of instruments and the discourse found within policy documentation.

Key land use policies for agriculture in Ontario include the PPS (2014), the four provincial plans, and the *Minimum Distance Separation (MDS)* formula. One of the primary instruments used to protect agricultural land within these policies is the direction of development and urban expansion away from prime agricultural areas, and to seek opportunities to utilize lower quality

[4] Under the PPS the term *prime agricultural land* is used to identify the highest quality agricultural land in the province and is defined as "specialty crop areas and/or Canada Land Inventory Class 1, 2, and 3 land" (p. 46).

agricultural lands where development is necessary. From this foundation additional instruments are used to direct land use towards more specific objectives. For instance, under the PPS (2014) permitted uses on prime agricultural land are restricted to those that provide economic benefit or support to the farm operation, either directly related to agricultural production or by providing supplemental income without inhibiting the farming operation from continuing.

Moreover, an important objective of land use policy in Ontario is avoiding fragmentation of the land base, and maintaining large farm sizes in order to ensure parcels remain large enough to be commercially viable (PPS, s.2.3.4). This rests on a clear assumption that farm consolidation and mechanisation of agricultural production is the agricultural model that is expected to persist into the future. Finally, the imposition of the MDS formula is intended to separate livestock facilities from residential, commercial or institutional uses. While intended as a means to avoid nuisance complaints, and ensure flexibility to grow livestock operations without coming into conflict with neighbouring uses, the MDS formula also creates a radius where development will not occur thereby restricting rural non-farm development (OMAFRA, 2015). These policies seem to envision the creation of a contiguous agricultural landscape, with minimal obstacles to agricultural production, in order to maximise efficiency and output predominantly for economic objectives.

The discourse used to describe agricultural land in Ontario provides a useful insight into the value and purpose associated with these spaces. For instance, the term *agricultural land preservation*, or similar terminology, is used commonly throughout North America to describe efforts to ensure viable agricultural land remains available for future generations (Beesley & Ramsey, 2009; Bryant & Russwurm, 1982; Bunce, 1998). In Ontario, this terminology is commonly used in policy such as in the *Mandate Letter of OMAFRA* which describes the *Farms Forever Program* and its objective to "*help preserve the productive capacity of agricultural land close to major urban centres*".[5] The MMAH is the lead ministry for land use planning policy in Ontario and in its own

[5] 'Mandate Letters' are the Premier's instructions to the Minister on priorities for their Ministry.

Mandate Letter emphasises the objective to "*protect prime agricultural lands*" as part of the 10 year review of the four provincial plans surrounding Toronto.

The use of this terminology is important in that it reflects a mind-set indicative of the productivist paradigm. Fundamentally, it proposes that agricultural land is under threat by competing, incompatible land uses thereby necessitating protection of the land for the explicit purpose of agricultural production. Discourse from Ontario regularly emphasises that the main threats to rural areas are urban and industrial development – a key indicator of productivism put forth by Wilson (2001). In a recent example, before the 2014 election where they won a majority government, the Ontario Liberal Party announced their plan to establish a *Farms Forever* program which "*will support #Ontario farmers by protecting prime agricultural land from development*" (OntLiberal, 2014).

Throughout land use policies we also see examples of the belief that farmers are best positioned to protect the countryside from urban encroachment, and that agricultural production should be maintained as the pre-eminent land use, at least in areas of quality farmland. As mentioned earlier, the PPS and *Greenbelt Plan* both identify agriculture as being the pre-eminent land use within *Prime Agricultural Land,* and the *Protected Countryside* around Toronto, representing a deeper conflict around the purpose of the protected space, as described by Cadieux, et al. (2013) in their own research on the Greenbelt Plan (Cadieux, Taylor, & Bunce, 2013).

We also see some examples of the pre-eminence of agriculture in the natural heritage policies in Ontario, for instance s2.1 of the PPS (2014) describes how "*Natural features and areas shall be protected for the long term*" however concludes by stating that "*nothing in policy 2.1 is intended to limit the ability of agricultural uses to continue*" (s.2.1.9). Similarly, the *Natural Heritage Reference Manual,* which supplements the policies found in the PPS, uses careful language to discuss natural heritage features on agricultural land and states that "*farmers will be better able to manage*

their agricultural operations to protect natural heritage resources" through the use of voluntary agri-environmental programs (MNR, 2010, p. 10).

In addition to protecting agricultural lands for the purpose of production, we also see the encouragement of expansion into new areas of the province which may displace natural or semi-natural landscapes. For instance, in the 2014 Mandate Letter for OMAFRA one of the top priorities for the ministry is identified as *Expanding Agriculture in the North*. This priority is echoed in the *Growth Plan for Northern Ontario (2011)* which encourages the expansion of agriculture in the North of the province, particularly as a result of Climate Change and an anticipated longer growing season (s.2.3.3).

Within agricultural policies we see further adherence to productivism in Ontario through policy instruments and discourse. The most important policy representing government support for agriculture is the *Growing Forward 2 (GF2)* agreement between the federal and provincial/territorial governments. GF2 is a comprehensive agreement encompassing a range of programs, however of particular relevance here are the Business Risk Management (BRM) suite of programs intended to help farmers manage risks inherent in agriculture (Agri-Stability, AgriInvest, Production Insurance and AgriRecovery) (AAFC, 2014). In Ontario, the BRM programs are administered through the Crown agency Agricorp. These shared programs are also complemented in Ontario by the Risk Management Program (RMP), a provincial program that also provides protection for farmers against rising input costs and market price volatility (Agricorp, 2015).

Financial support to farmers in Canada is fundamentally different from the CAP in the EU, which provides direct payments decoupled from production. The Canadian programs are founded on the principle of production support and managing business risks and, unlike in the CAP, remain coupled to production outcomes. The principle of production comes through strongly in the documentation associated with the programs. For instance, when discussing eligibility, the *Production Insurance* plan states that "*You are expected to use good farm management practices at*

all times. If you use practices that contribute to a production loss, you may lose some or all of your insurance coverage" (Agricorp, 2014, p. 3). Similarly, in the *Contract of Insurance – Terms and Conditions,* the requirement for farmers to use *good farm management practices* is discussed as an eligibility requirement which includes a concentration on achieving a *reasonable yield* (Agricorp, 2008). It is clear that within the financial support provided to farmers production maximisation is not only a founding principle, but in some cases essentially an eligibility requirement. This reaffirms previous research which found productivism to be the dominant paradigm within Canada's agricultural policy more generally (Skogstad, 2012).

As noted earlier, Ontario's agri-environmental programs also have a productivist slant. These programs, such as the EFP, are not intended to reduce outputs but rather help farmers with readily identifiable environmental practices that have minimal interference with their farming operation (Robinson, 2006a, 2008). EFP documentation also places a clear focus on the economic and production benefits of environmental practices alongside a lesser emphasis on their inherent environmental benefit. In Ontario, most publicly funded agri-environmental programs are delivered by an agricultural organisation, the Ontario Soil and Crop Improvement Association (OSCIA), which holds an interest in pursuing sustainable agriculture, but not sacrificing production for environmental betterment.

Within other agricultural policies in Ontario we see clear emphasis on the productive aspect of agricultural land. For instance, in 2013 the Premier challenged the agri-food industry to double its annual growth rate by 2020 with particular emphasis on import substitution, through local food promotion, and export development (OMAFRA, 2013b). This was supplemented by the *Local Food Act, 2013* which, Premier Kathleen Wynne described as intending to "*increase demand [for] homegrown food, [which] will create jobs and boost the agri-food sector's contributions to our economy*" (OMAFRA, 2013a).

Like with planning policies, the choice of language used in agricultural policies is useful for understanding underlying preferences and objectives associated with the policies. One powerful example is the consistent use of the term *producer*, as opposed to *farmer,* when referring to those who utilise arable land. This terminology of *producer* suggests that the actor's identity is based on outputs (e.g. production of commodities) whereas the term *farmer* refers to an action (e.g. operating the farm). This clearly productivist discourse is used throughout the documentation pertaining to the GF2 program as well as in other policy documentation. Another example of clear productivist discourse comes from the *Farming and Food Production Protection Act (1998)*. The productivist underpinnings of this Act are succinctly described in the first line which states that "*It is desirable to conserve, protect and encourage the development and improvement of agricultural lands for the production of food, fibre and other agricultural or horticultural products*".

Finally, the governance structure of agricultural and land use policy in Ontario demonstrates leanings towards the productivist paradigm. In Ontario, OMAFRA is the lead ministry for agricultural policy while environmental and natural heritage policies are the responsibility of other ministries. OMAFRA can be described as an economic development ministry where the mandate is directed towards growing the agri-food industry, and supporting rural communities, with a focus on economic objectives and less so on social or environmental goals. This is reflected clearly in the *Results-Based Plan 2013-14* which describes the overall mandate for the ministry as promoting "*a more competitive and productive agri-food and agri-product sector*" (OMAFRA, 2013c). In contrast, the mandate of the MNRF is described as being "*to conserve biodiversity and manage our natural resources in an ecologically sustainable way to ensure that they are available for the enjoyment and use of future generations*" (MNR, 2013). This separation of mandates between different aspects of land use in Ontario is reflective of an underlying preference that the purpose of agricultural land is production and other aspects, such as biodiversity, should remain separate.

3.3.2 England

Agricultural policy in England, and across Europe, has been developed through a post-productivist lens. Indeed, Natural England (2013) quite succinctly states that "*Farm support schemes have moved away from production-only based payments to stewardship of the environment and support for other sustainable activities*". This shift is associated with the production surpluses that began in the mid-1980s and subsequent effort to reduce production. The trend, and ongoing post-productivist momentum, is outlined in *Biodiversity 2020* which states that "*successive reforms of the CAP have given it a greater focus on the achievement of public benefits, such as environmental outcomes and we want to see an acceleration of this process*" (Defra, 2011, p. 25). The current design of farmer support no longer focuses on production support but rather on direct payments, partly provided in exchange for adherence to cross-compliance requirements (e.g. environmental, food safety, animal welfare).

Within the current incarnation of the CAP (2014-2020), the BPS represents payments that farmers are entitled to so long as they follow a list of standards of good agricultural and environmental condition (GAECs). Many of these GAECs, such as the newly introduced greening requirements, can be expected to ensure reduced production levels on farms in exchange for meeting a broader set of environmental or social objectives. This shift is definitively post-productivist where farmers have been encouraged, if not required, to take actions intended to reduce their production.

Post-productivism is also evident in the government structure pertaining to agricultural and environmental policy. Unlike Ontario, who retains separate ministries for agriculture and environment, these portfolios were merged in England with the dissolution of the Ministry of Agriculture, Fisheries and Food (MAFF), which was merged with the environment portfolio and reconstituted as the Department for Environment, Food and Rural Affairs (Defra). The combination of agricultural and environmental objectives within the organisation of government aligns well with

the post-productivist paradigm and, at very least, this symbolises a change in agricultural and environmental perspectives in England's institutions (Mather et al., 2006, p. 453).

Within the discourse surrounding agriculture in England we also see examples of post-productivism, such as in the depictions of farmers. For instance, the CAP describes farmers as 'managers of the countryside' such as with the following description "*Farmers manage the countryside for the benefit of us all. They supply public goods – the most important of which [emphasis added] is the good care and maintenance of our soils, our landscapes and our biodiversity*" (EC, 2012, p. 5). Interestingly, this language places the provisioning services of agriculture below other services not directly associated with production. Instead of emphasising the farmer as producer, the farmer is instead described in the CAP as a land steward. However, a recent discourse analysis of the CAP reform (2014-2020) found a more complex picture with the CAP documentation representing multiple discourses simultaneously with a hybrid of productivism, post-productivism and neo-liberalism depending on the section of the document reviewed (Erjavec & Erjavec, 2015). Nevertheless, this discourse analysis acknowledges that the environmental sections of the CAP reform, and particularly the greening component, represent post-productivist discourse.

While post-productivist preferences in England may be partly attributable to influence of the EU, this research also found that this preference is also evident within England's own policies, such as environmental policies, which have sought to protect the environment at the expense of agricultural production. We see this in the government's willingness to regulate spaces, such as hedgerows, moorlands and other environmental features which may interfere with increases in efficiency, productivity and mechanisation of farming operations, creating a landscape that The Economist recently referred to as "*green, pleasant, and inefficient*" (The Economist, 2015). We also see restrictions in the expansion of agricultural land, such as through the Environmental Impact Assessments required to cultivate new land, or even efforts to transition lands from agricultural into environmental purpose through agri-environmental schemes. Mather et al (2006) agree that this is

indicative of post-productivism and go on to argue that a major shift occurred in the mid-1980s from a "*virtual prohibition*" on afforestation of arable land to positive incentives coinciding with agricultural policy reform (Mather et al., 2006, p. 447). Further still, the protected landscapes of England, and associated alterations in farming techniques described earlier, have been associated with the post-productivist paradigm and a means to reduce production (Hamin, 2002, p. 342). It seems clear that policymakers in England have gone beyond the minimum levels imposed by the EU and instead appear to have internal preferences for achieving environmental objectives, even at the expense of agricultural production.

While examples of the post-productivist paradigm appear throughout England's spatial, agricultural and environmental policies, there is also some evidence of a resurgence of productivism described by some authors as *neo-productivism* (Burton & Wilson, 2012; N. J. Evans, 2013; Wilson & Burton, 2015). This is particularly evident in discussions of food security which is "*at the forefront of the domestic policy agenda in the UK to an extent unprecedented since the 1950s*" (Lobley & Winter, 2009, p. 1). Indeed, in recent years the challenge of re-balancing food production and environmental conservation has been the focus of high profile projects including the *Future of Food and Farming* (2011) project from the Government Office for Science and the *Green Food Project* (2012) organised by Defra. This context is quite unlike that of the previous few decades which focused on over production and surpluses (Lobley & Winter, 2009).

Neo-productivist discourse is also evident in some policy related documents and government releases, particularly from politicians. For instance, in two recent speeches from the Rt. Hon. Elizabeth Truss, Secretary of State for Environment, Food and Rural Affairs, the agriculture industry was described as "*a core part of our long-term economic plan*" as well as emphasising the challenge of food security and the opportunities provided by export development and import substitution (local food) (Truss, 2015a, 2015b). These speeches also expressed opposition to regulation ('red-tape'), including environmental regulations, while describing one key element of the

new greening component of the CAP reform as "*bureaucratic nonsense*" instead stating that she wants "*farmers growing what the market demands, not what Brussels instructs*" (Truss, 2015a).

Nevertheless, at this point it does not appear that this discourse has yet translated into neo-productivist policies and post-productivist preferences clearly prevail in England's formal policies and schemes. The degree to which this can be explained by the limited autonomy that England has over agricultural policy is unclear. Indeed, the UK expressed a vocal opposition to the EU's further greening efforts during the recent CAP reform (Defra, 2013; HoC EFRA Committee, 2012). However, as this article has shown, England has created its own policies and schemes outside of those imposed through the CAP, which suggests that post-productivist leanings are not exclusively the result of EU membership.

4. Discussion

The documentary analysis used for this research identified two major themes representing differences between the land use policies of Ontario and England in the way that agricultural production and environmental conservation are balanced. The first theme suggests that Ontario's approach to balancing agriculture and environmental spaces can be characterised as leaning towards a land-sparing approach, whereas England has taken a land-sharing approach. Ontario seems hesitant to intervene at the farm level and risk the possibility of interfering with farmers' management of their land. Instead, an approach is taken to protect both agricultural land and environmental features independent of one-another with limited overlap. The exceptions to this are found in application based, voluntary, cost-shared programs which rely on either environmentally conscientious farmers and/or anticipation that environmental practices will lead to increased production or profitability. In these cases, farmers are trusted to self-identify projects and practices that do not interfere with their primary business – production. Farmers are also expected to help finance a large share of the projects, assuming their application is successful. This form of 'bottom-up' agri-environmental program design has been described as "*the antithesis of the state regulation*

approach to obtaining environmental benefits from agriculture as promoted in most of the EU's agri-environment schemes" (Robinson, 2006b, p. 870).

In England, the approach is quite different where agricultural and environmental spaces are rarely separated and are rather spatially integrated as open space or countryside. Beyond merely a lack of separation, we also see a conscious effort to integrate agricultural and environmental uses in the same space. For instance, voluntary agri-environmental schemes, as well as cross-compliance measures embedded in the CAP, provide considerable financial incentive to farmers in exchange for maintaining environmental features on farms. Coinciding with this incentive based approach are regulatory efforts to protect environmental features (e.g. hedgerows, moorland) in farming landscapes, something Ontario has been reluctant to do, instead relying "*overwhelmingly on using carrots (fiscal incentives and voluntary measures) rather than regulatory sticks*" (Skogstad, 2011, p. 10). Within protected environmental landscapes, namely National Parks and AONBs, we also see agriculture coexisting with environmental conservation.

Whilst the analysis suggests that, broadly speaking, England leans towards a land-sharing approach, and Ontario towards a land-sparing approach, it also supports previous literature on the limits of thinking in such binary terms (Fischer et al., 2014; Fischer et al., 2008; Tscharntke et al., 2012). Instead, this research found that neither case fit perfectly within either the land-sparing or land-sharing approach and, instead, both Ontario and England demonstrated some elements of each approach. This suggests that the concept of land-sparing/land-sharing is a useful heuristic device for comparing approaches to land use policy, however, instead of representing a dichotomy, is actually better positioned as a spectrum.

A second major theme that emerged from the analysis was a difference in policymaker preferences for the use of arable land, exemplified in both the choice of policy instruments and discourse. In England, regulatory requirements such as EIAs, incentive based agri-environmental schemes, and cross-compliance measures such as greening, suggest adherence to a post-productivist

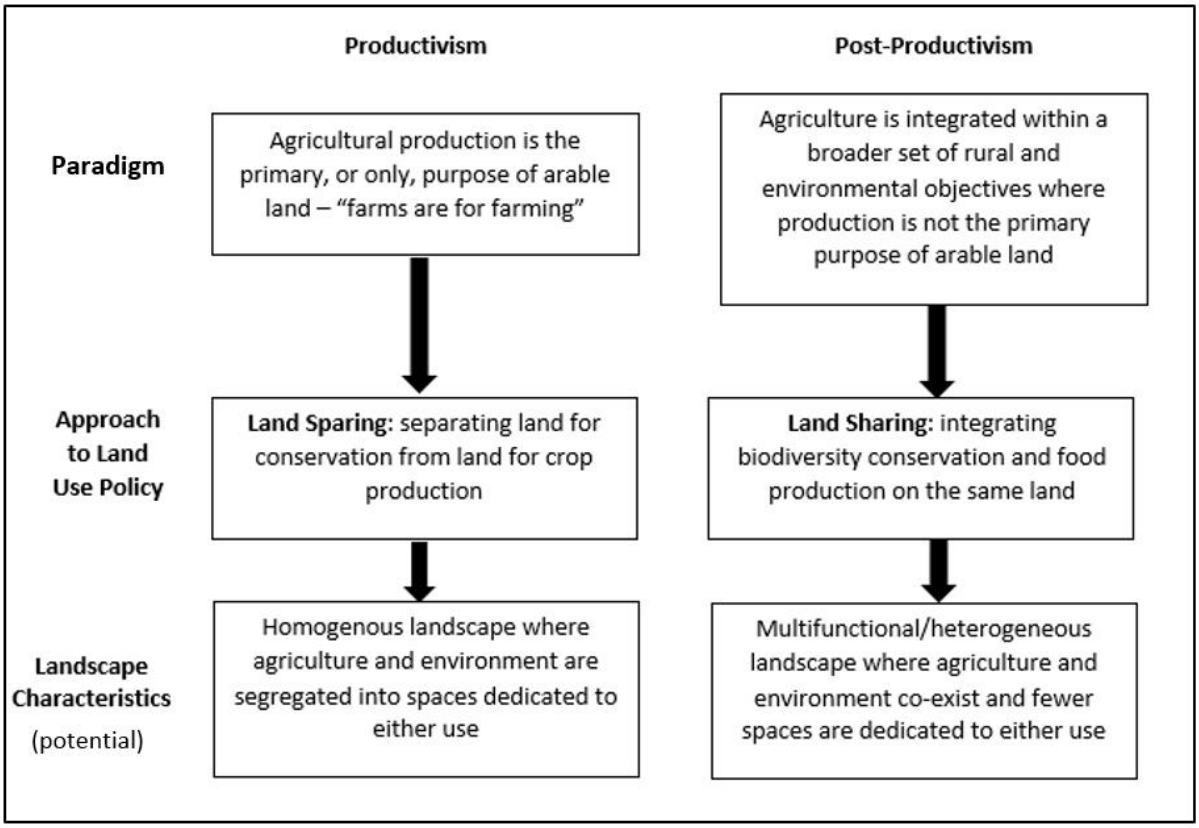
paradigm, where agricultural expansion has not only been halted but existing cultivated land is being actively transferred to environmental conservation. This is completely contrary to the context of Ontario where agriculture maintains a *pre-emptive claim* on the use of arable land. Further still, in Ontario new agricultural lands are being sought and expansion of agriculture into new areas of the province, at the expense of natural or semi-natural landscapes, like in Northern Ontario, are actively being encouraged by the provincial government.

Similar to land-sparing/land-sharing, criticism has been expressed in regard to productivism and post-productivism in that they are not necessarily dichotomous, that they do not necessarily represent a transition, or that it is not relevant outside the European experience (Bjørkhaug & Richards, 2008; N. J. Evans, Morris, & Winter, 2002; Walford, 2003; Wilson, 2001). Doubt as to the transitory element of productivism to post-productivism has particularly arisen with the potential resurgence of *neo-productivism* in the UK context. Again, this research demonstrates that regardless of whether productivism/post-productivism truly represents a transition, it does present a useful heuristic device for organising differing views/preferences as to the use of arable land and what objectives policymakers are seeking to achieve.

Overall, the findings of this study suggest that productivism/post-productivism and land-sparing/sharing are linked whereby different underlying preferences for the use of arable land have manifested in a different integration/separation of agricultural and environmental spaces. For instance, Ontario's approach is to separate these spaces and where they are not separated it often frames the protection, or creation of, environmental features on agricultural land from a productivist perspective, emphasising the benefits to production anticipated from such features as wind breaks (e.g. reduced soil erosion, higher yields). In England, environmental conservation on farms appears to be more commonly framed in terms of its intrinsic environmental value (e.g. biodiversity), or even efforts to reduce production. While it is outside the scope of this article, and more research would be needed, there is potential that these differing paradigms and corresponding

approaches to land use policy have also resulted in differing landscape characteristics within the two areas. A graphical depiction of this potential relationship is presented in Figure 4.

Figure 4: Potential Relationship between Productivist/Post-productivist and Land-sparing/Land-sharing



5. Conclusion

This paper set out to compare the land use policies of Ontario and England in order to understand how each has managed agricultural and environmental land uses in the face of similar land use challenges. Through the use of a thematic analysis of policy documentation, the study found that Ontario's land use policies appear indicative of a land-sparing approach to separating agricultural and environmental spaces, whereas England has adopted a land-sharing approach to integrate these land uses. Similarly, the analysis identified a productivist preference in Ontario and post-productivist leanings in England. Overall, the study provides a novel comparison in order to understand why each jurisdiction has taken different approaches to overcoming similar land use challenges. The study also grounds the concepts of land-sparing/sharing and productivism/post-productivism in real world land use policies, including in Ontario where literature incorporating

these concepts is lacking. Finally, the research identified a potential linkage between the concepts of productivism/post-productivism and land sharing/sparing – a novel observation that will contribute to the theoretical development of both sets of concepts.

While this research has demonstrated a potential relationship between productivism/post-productivism and land-sharing/land-sparing it does not attempt to attribute the spatial separation/integration of agriculture and the environment entirely to policymaker preferences. We instead view it as one component of multiple drivers of policy outcomes, including the influence of contextual differences such as agricultural histories, development patterns, and availability of 'undisturbed' landscapes in which to spare. The degree to which these contextual differences are the result, or cause, of differing preferences is outside the scope of this paper and may be an opportunity for future research. Nevertheless, the findings of this paper contribute to our understanding of why these comparable jurisdictions have taken such different approaches to managing agricultural and environmental spaces.

The findings also support careful efforts to share lessons and instruments between these jurisdictions, recognising the underlying differences that this research has identified. While this research identified a potential difference in policymaker preferences, it cannot speak to the depth of these different preferences within policymakers or the wider stakeholder community. From these particular findings, it would appear that, at the present time, policies are not easily transferrable as they would be opposed to seemingly deeply held preferences in either case. However, preferences and power dynamics change, and policies from either case may become appropriate, or popular in time. For instance, environmental stakeholders in Ontario may look to the English model as more palatable, and in-line with their own post-productivist objectives, whereas agricultural stakeholders in England may look to the Ontario model as furthering their own production objectives. Similarly, policymakers may derive lessons from either case to align with their own objectives or changing realities. Interestingly, this may be particularly current, where England has recently revised its core

agri-environmental scheme, Countryside Stewardship, in a way that resembles the Ontario approach, such as by adopting the principle of competitiveness in agreements and shifting from a 'broad and shallow' to a 'deep and narrow' approach to driving on-farm stewardship. Similarly, as the UK transitions out of the EU, and England develops a new suite of agri-environmental schemes, it may draw lessons from Ontario's experience.

Future research should explore the role of higher level governments (e.g. EU, Federal Government) in influencing the land use policies of England and Ontario in order to understand the autonomy of policymakers in these cases, and where apparent preferences are the result of external influences. This is particularly important where preferences between levels of government are opposed, as seems to be the case in the UK around the greening portion of the CAP. As the UK transitions out of the EU it will need to develop a new agricultural policy framework, and suite of agri-environmental schemes, providing an opportunity for further research to delineate UK and EU policy preferences. Similarly, the role of party politics was beyond the scope of this article, however this may be another area for research in policy preferences surrounding the use of arable land.

Finally, as a result of a potentially re-emerging neo-productivism, evident within the discourse of decision makers, we may actually witness a closer alignment between the land use policies of Ontario and England in the near future. While it is not yet evident in the formal planning, agricultural or environmental policies of England, the positioning of agriculture within political discourse appears to be moving away from the realm of environment, into the realm of economic development, where it is viewed predominantly as an opportunity for economic growth; a view already held in the Ontario context. It will also be important to continue to observe this potential re-emergence, and whether this will influence the design of England's land use policies in the future, particularly as it transitions out of the EU and develops its own agri-environmental policies. Similarly, it will be important to observe either confirmation or diversion from the land-sparing approach and productivist paradigm within Ontario's upcoming review of the four provincial land use plans.

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Appendix

Agricultural and Agri-food Sector Information for England and Ontario

There is additional agricultural information that is important to consider in order to frame this comparison, though it is also important to note that due to differing definitions and collection methods, these figures are not directly comparable between cases. In terms of total agricultural area, England has a total *Utilised Agricultural area* of 8.9 million hectares and a *Croppable area* of 4.8 million hectares (Defra, 2015a). Ontario's total farm area is 5.13 million hectares with a total cropland of 3.6 million hectares (Kulasekera, 2012). Main crops by area in England are wheat, barley, and oilseed rape, whereas in Ontario main crops by area are soybeans, hay and fodder crops, grain corn, and wheat (Defra, 2015a; Kulasekera, 2012). While specific crops differ, we see a similar focus on grains and oilseeds suitable to a temperate climate.

Table A.1: Agricultural Statistics for England and Ontario

	England	**Ontario**
Total agricultural area	8.9 million ha	5.13 million ha
Total cropland	4.8 million ha	3.6 million ha
Primary crops by land area	wheat, barley, oilseed rape	soybeans, hay and fodder crops, grain corn, wheat
Number of farms	102,893	51,950
Average farm size	87.8 ha	98.7 ha

Sources: Defra, Farming Statistics: Final Land Use, Livestock Populations and Agricultural Workforce - England; Numbers of commercial holdings and land areas / livestock numbers by size group: England at 1 June 2015; OMAFRA, Ontario Farm Data, Census of Agriculture, 1996, 2001, 2006 and 2011

In terms of economic contribution from agriculture, total income from farming in England was £4,197 million in 2014, accounting for 78% of the value of total income from farming in the UK (Office for National Statistics, 2015). In Ontario, primary crop and animal production contributed $4,163 million, in chained 2007 Canadian dollars (approx. £2,236 million), to the provincial GDP as of 2013 (Staciwa, 2015). While important industries, neither contributes a large proportion to the total GDP of either jurisdiction. In terms of imports and exports, the UK (England specific figures not available) imported £39,555 million in food, drink and animal feed in 2014 and exported £18,881

million worth (Office for National Statistics, 2015). In 2013, Ontario exported $4.05 billion CDN (approx. £2.18 billion) and imported $5.39 billion CDN (approx. £2.9 billion) in primary agricultural products as well as importing $21.12 billion CDN (approx. £11.35 billion) and exporting $11.86 billion CDN (approx. £6.37 billion) in total agri-food trade (Industry Canada, 2013; OMAFRA, 2014). A clear trade deficit exists in both cases with imports exceeding exports of agri-food products.

Sparing or Sharing? Differing Approaches to Managing Agricultural and Environmental Spaces in England and Ontario, Canada

Supplementary Material

The following table provides notes from the thematic analysis of land us policy documentation from Ontario, Canada and England in the United Kingdom. The initial findings, including major excerpts directly from the texts, are provided in the *Findings (Data Items)* column and the themes that emerged from these findings are provided in the *Findings (Themes)* column.

Documentation from Ontario and Emergent Themes

Document	Description/Purpose	Findings (Data Items)	Findings (Themes)
Planning Policy			
Planning Act, 1990	Sets out the ground rules for land use planning in Ontario and describes how land uses may be controlled, and who may control them.	S.2(a) sets out matters of provincial interest including: • Protection of ecological systems, including natural areas, features and functions • Protection of the agricultural resources of the Province	• Value of both agricultural and environmental spaces • Agriculture and environment as separate land uses
Provincial Policy Statement (PPS), 2014	The primary land use policy document in Ontario, which sets out the province's objectives and expectations for planning across all municipalities.	• Includes policies to protect both *prime agricultural land* s.2.3 and *natural heritage* s2.1 • s.2.3.1 prime agricultural areas "*shall be protected for long-term use for agriculture*" • s.2.1.5 "*development and site alteration shall not be permitted*" in *significant* natural features • s.2.1.9 "*nothing in policy 2.1 is intended to limit the ability of agricultural uses to continue*" • Use of term *significant* when describing the protection of natural features • Permitted uses on prime agricultural land are restricted to those that provide economic benefit or	• Value of both agricultural and environmental spaces • Threat of development and urbanisation • Agriculture and environment as separate land uses • Protection of 'significant' environmental features • Protection of 'agricultural land'

		support to the farm operation, either directly related to agricultural production or by providing supplemental income without inhibiting the farming operation from continuing • Different policies apply in different *Ecoregions* and different classes of agricultural land (more protection of agricultural land and environmental features in south of province where most prime agricultural land is located and where conversion pressure is high) • Some derivation of the word *agriculture* is used 90 times in 50 pages	• Agriculture viewed from an economic lens • Recognition of vast, diverse geography
Greenbelt Plan, 2005	The Greenbelt Plan identifies where urbanization should not occur within the Golden Horseshoe area of central Ontario in order to provide permanent protection to the agricultural land base and the ecological features and functions occurring on this landscape.	• s.1.2.1 vision of the Greenbelt Plan, 2005 states that it intends to "*protect against the loss and fragmentation of the agricultural land base and support agriculture as the predominant land use"* • Protects the agricultural system (s.3.1) and natural system (s.3.2) within the Greater Toronto Area • Goal of ensuring "*expansive areas*" where either agriculture or natural areas "*predominate*" (s.3.1.1) • s.3.2.2.1 "*existing and new agricultural, agricultural-related and secondary uses and normal farm practices are permitted*" in the *natural heritage system* • s.3.2.2.2 New buildings or structures for agriculture, agricultural-related and secondary uses are not subject to all Natural Heritage System policies	• Value of both agricultural and environmental spaces • Threat of development and urbanisation • Agriculture and environment as separate land uses • Each protected in large, dedicated blocks • Limited support for environmental features on farms • Protection of 'significant' environmental features • Agriculture viewed from an economic lens • Agriculture has pre-eminent claim to arable land • Protection of 'agricultural land'

Oak Ridges Moraine Conservation Plan, 2002	The Oak Ridges Moraine Conservation Plan is an ecologically based plan established by the Government of Ontario to provide land use and resource management direction for the 190,000 hectares of land and water within the Moraine (north of Toronto).	• Predominantly an environmental conservation plan – notably protection from urban expansion and development – with the overall objective to "*maintain, and where possible improve or restore, the ecological integrity of the Plan Area*" • Protection of "*ecological and hydrological integrity*" of the area and particularly the protection of *Key natural heritage features* • Attempts to limit agriculture in the *Natural Core Areas* restricting it to the *Countryside Areas* (where agricultural land is protected)	• Value of both agricultural and environmental spaces • Threat of development and urbanisation • Agriculture and environment as separate land uses • Protection of 'significant' environmental features • Protection of 'agricultural land' • Agriculture permitted but deterred from some environmental spaces
Niagara Escarpment Plan, 2005	The Niagara Escarpment is a significant, 725 kilometre long landform in southern Ontario that was designated an UNESCO World Biosphere Reserve in 1990. The Niagara Escarpment Plan provides direction on the use or management of land within the *Plan Area* as well as criteria for development of permitted uses.	• Intended to protect a major landform, and its vicinity, explicitly for the purpose of natural environment conservation, recreation and scenery - *Compatible farming* is permitted • *S. 1.3 Escarpment Natural Area*s are intended to maintain natural features in relatively undisturbed areas – existing agricultural operations are permitted but new agriculture deterred • Environmental and agricultural spaces may co-exist in some designations where significant landscape modification has already taken place (e.g. s.1.4 *Escarpment Protection Area,* s.1.5 *Escarpment Rural Area*) • Additional provisions for the protection of specific features: s.2.6 New Development Affecting Water Resources, s.2.7 New Development Within Wooded Areas, s.2.8 Wildlife Habitat	• Value of both agricultural and environmental spaces • Threat of development and urbanisation • Agriculture and environment as separate land uses (may co-exist in some designations yet are discussed separately) • Protection of 'significant' environmental features • Protection of 'agricultural land' • Agriculture has pre-eminent claim to arable land (prime agricultural

		• S.10 Agriculture: "*The objective is to encourage agricultural uses in agricultural areas, especially in prime agricultural and specialty crop areas, to protect such areas, to permit uses that are compatible with farming and to encourage accessory uses that directly support continued agricultural use*." • S.10 includes limitations on building new structures for agricultural uses • Part 3 The Niagara Escarpment Parks and Open Space System: opportunities for public access and recreation – use of Parks and Reserves	land and speciality crop areas) • Agriculture permitted but deterred from some environmental spaces
Minimum Distance Separation (MDS)	The Minimum Distance Separation (MDS) Formulae is a land use planning tool that determines a recommended separation distance between a livestock barn or manure storage and another land use. The objective of MDS is to prevent land use conflicts and minimize nuisance complaints from odour.	• Indirectly protects land from development by creating a radius around livestock facilities within which development is not permitted	• Threat of development and urbanisation • Protection of large, contiguous blocks where agriculture predominates
Growth Plan for Northern Ontario, 2011	The Growth Plan for Northern Ontario, 2011 is a high-level document intended to guide provincial decision-making and investment. The overall aim is to strengthen the economy of Northern Ontario.	• 2.2.2 Agriculture is listed as a sector in which to focus economic development • 2.3.3 The Provincial government will make efforts to expand agricultural production in the north • 6.1 "*Climate change will also result in new economic opportunities, such as longer growing seasons for agricultural producers"*	• Seeking new agricultural land • Agriculture viewed from an economic lens
MMAH Mandate Letter (2014)	Mandate letters are written by the Premier to each Cabinet Minister, outlining the key priorities for their ministry. This letter pertains to the	• Protect the environment and agricultural lands is listed as an overall priority for the Ministry	• Agriculture and environment as separate land uses

	Ministry of Municipal Affairs and Housing (MMAH).	• Working to protect prime agricultural lands is listed as one priority for the Ministry's mandate – particularly as part of the review of the four provincial plans	• Protection of 'agricultural land'
Agricultural Policy			
Growing Forward 2	Growing Forward 2 (GF2) is a five-year (2013-2018) policy framework for Canada's agricultural and agri-food sector. GF2 is a $3 billion dollar investment by federal, provincial and territorial (FPT) governments and the foundation for government agricultural programs and services. Due to the size and nature of the policy framework a wide range of materials fall under this heading. Reviewed materials include: • Webpages from the Federal and Ontario governments as well as Ontario's delivery partner (Agricorp). • The original FPT framework agreement - Growing Forward 2: A Federal - Provincial –Territorial Framework Agreement On Agriculture, Agri-Food And Agri-Based Products Policy • Program documentation from Agricorp • Information from the Ontario Soil and Crop Improvement	• *"GF2 programs will focus on innovation, competitiveness and market development to ensure Canadian producers and processors have the tools and resources they need to continue to innovate and capitalize on emerging market opportunities."* Source: Growing Forward 2 webpage • Use of term *producer* throughout materials • Use of application based, cost-shared programs to achieve agri-environmental objectives • FPT Agreement pg. 15, Operational Principles, including: "*programs shall be in conformity with Canada's international trading obligations and should minimize countervail risk*" and "*will not distort production or other business decisions that would otherwise be based on market considerations*" • Interest in reducing barriers to international trade • Production Insurance plan from Agricorp "*You are expected to use good farm management practices at all times. If you use practices that contribute to a production loss, you may lose some or all of your insurance coverage*" • Clear emphasis on increasing production levels throughout documentation – such as the *good farm management practices* and *reasonable yields* described in Agricorp's *Contract of Insurance – Terms and Conditions*	• Production Support • Voluntary, cost-sharing agri-environmental programs • Agri-environmental programs should not decrease production • Recognition of trading agreements and export development interests • Agriculture viewed from an economic lens • Discourse: 'Producer' Identifier

	Association (OSCIA) on the Canada-Ontario Environmental Farm Plan and the Canada-Ontario Farm Stewardship Program (COFSP)		
The Farming and Food Production Protection Act (FFPPA), 1998	The Farming and Food Production Protection Act (FFPPA), 1998 provides protections to farmers by limiting nuisance complaints and liability arising from nuisance complaints. The Act also limits the ability of municipal by-laws to restrict normal farm practices.	• "*It is desirable to conserve, protect and encourage the development and improvement of agricultural lands for the production of food, fibre and other agricultural or horticultural products*." • Protection of *Normal Farm Practices* – but does not provide an outright exemption from environmental legislation	• Importance of agricultural protection • Agriculture directly, and exclusively, linked to production • Protection of 'agricultural land'
Environmental Farm Plan (EFP) program	Environmental Farm Plans (EFP) are assessments voluntarily prepared by farm families to increase their environmental awareness in up to 23 different areas on their farm. Through the EFP local workshop process, farmers will highlight their farm's environmental strengths identify areas of environmental concern, and set realistic action plans with time tables to improve environmental conditions. Environmental cost-share programs are available to assist in implementing projects. The Ontario Soil and Crop Improvement Association (OSCIA) delvers the EFP program on the behalf of the government. The program includes 23 infosheets on	Actions resulting from EFPs are at the discretion of farmers. Therefore it relies on environmentally conscientious farmers or actions that are expected to result in increased profits. This seems to be in part driven by efforts to allow farmers to select projects that do not interfere with their operations. Infosheet #22: • Guidance on natural buffer strips between wetlands and croplands • Encourages landowners to leave forested wetlands undisturbed – use appropriate harvesting practices • Avoid contamination and excessive water takings • Tone is a mix of environmental and monetary benefits to establishing buffers (e.g. *"Lowlands (treed swamps) offer potential for timber, fuel wood, income in-kind, as well as important environmental and wildlife benefits."*) Infosheet #23:	• On-farm environmental features are encouraged, but limited regulation and incentives provided • Voluntary, cost-sharing agri-environmental programs • Agri-environmental programs not looking to decrease production • Stay within the realm of farming and less into environmental stewardship

	the areas eligible for implementation support. This research concentrated on Infosheet #22 (Wetlands and Wildlife Ponds) and Infosheet #23 (Woodlands and Wildlife) as these deal with environmental features.	• Encourages landowners to develop a forest management plan • Minimize the impact of harvesting and livestock access • Monitor invasive species • Implement buffers and shelterbelts • Tone is a mix of environmental and monetary benefits to establishing buffers	
Species at Risk Farm Incentive Program (SARFIP)	The Species at Risk Farm Incentive Program (SARFIP) supports farm businesses interested in completing habitat creation and production based projects on the agricultural landscape. Using Best Management Practices (BMPs) identified through the Environmental Farm Plan (EFP) workbook, farmers can implement practices that are beneficial for species listed as at-risk in Ontario. Cost-share funding is available at four levels (40%, 50%, 60% and 80%) to implement BMPs	• Provides application based, cost-shared funding to support 18 best management practices in four categories (Forest, Grassland, Wildlife, and Water) • Includes a mix of environmental features (e.g. reforestation, buffer strips) and practices (e.g. rotational grazing) • Funding is cost-shared to a maximum of CDN$20,000 for a 'Level 4' project • Increased funding support in southern portion of province when compared to northern portion	• Importance of environmental conservation • Recognition of vast, diverse geography • Voluntary, cost-sharing agri-environmental programs
OMAFRA Mandate Letter (2014)	Mandate letters are written by the Premier to each Cabinet Minister, outlining the key priorities for their ministry. This letter pertains to the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA).	• "*I ask that you support the Premier's Agri-Food Challenge, which calls on the province's agri-food industry to double its growth rate and create 120,000 jobs by the year 2020*." • "*Creating and implementing the new Farms Forever Program. The program will help preserve the productive capacity of agricultural land close to major urban centres*"	• Threat of urbanisation and development • Seeking new agricultural land • Agriculture primarily economic development • Protection of 'agricultural land'

		• "*Working with other ministers and partners to explore opportunities to develop the agricultural sector in the North*."	• Agriculture and environment separate ministries
Local Food Act, 2013	The Local Food Act, 2013 is intended to promote the purchase of local food in Ontario as well as allowing for targets to be set for local food purchasing in public institutions. This review included the original bill along with the News Release.	• Discusses local food predominantly in economic terms (e.g. market development) • Tone of bill/news release suggests that local food should be part of an absolute increase in production, not a shift from export oriented production • First line of act: "*Ontario has…a highly productive agricultural land base*" • News Release: "*build Ontario's economy by making more local food available in markets, schools, cafeterias, grocery stores and restaurants. This will create jobs and expand the province's agri-food sector*." • News Release: "*If we increase demand to homegrown food, we will create jobs and boost the agri-food sector's contributions to our economy*"	• Agriculture primarily economic development • Promoting the increase of agricultural production
Environmental Policy			
Natural Heritage Reference Manual (2010)	The Natural Heritage Reference Manual provide technical guidance for implementing the natural heritage policies of the Provincial Policy Statement. The most relevant section of the manual for this research is S.2.3.2 Agricultural Uses. At the time of this research the manual had not yet been updated for	• Pg. 10 *"Prime agriculture designations limit non-agricultural uses and thus benefit natural heritage protection and other interests. Protecting prime agricultural areas not only supports agriculture and farming (food, fibre and fuel), but also enables Ontario's farms to contribute societal benefits such as clean air, clean water, groundwater recharge, wildlife and wildlife habitats."* • Pg. 10: *"Farmers acting as stewards of the land understand the benefits of natural heritage features and areas as demonstrated by initiatives such as*	• Value of both agricultural and environmental spaces • Agriculture and environment as separate land uses • Protection of 'significant' environmental features • Protection of 'agricultural land'

	the PPS, 2014. However, it is not anticipated that the reviewed section will change dramatically given the minimal changes in the agriculture-environment relationship between PPS 2005 and PPS 2014.	*implementing environmental farm plans and best management practices."* • Pg. 10: *"Farmers' voluntary stewardship efforts are supported by technical assistance and cost-share funding provided by groups such as stewardship councils; conservation authorities; Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA); Agriculture and Agri-Food Canada; and other agencies;. As a result, farmers will be better able to manage their agricultural operations to protect natural heritage resources."* • Pg 10: *"Planning for agricultural areas and uses does not preclude the need to plan for the long-term protection of natural features and areas."* • Pg 11: *"Wetland evaluation and identification are not meant to limit existing agricultural uses."* • Tone: careful not to interfere with farming operations. Very positive tone when discussing the stewardship interests of farmers and appears willing to trust that farmers will maintain environmental features based on altruism or cost-shared programs	• On-farm environmental features are encouraged, but limited regulation and incentives provided • Voluntary, cost-sharing agri-environmental programs are sufficient • Avoid interference with agricultural operations • Agriculture has pre-eminent claim to arable land
Provincial Parks and Conservation Reserves Act, 2006	The purpose of the act is stated as follows: "The purpose of this Act is to permanently protect a system of provincial parks and conservation reserves that includes ecosystems that are representative of all of Ontario's natural regions, protects provincially significant elements of Ontario's natural and cultural heritage, maintains biodiversity and provides opportunities for	• Focus of the act is protecting spaces for the purpose of maintaining ecological integrity: s.3.1 "*Maintenance of ecological integrity shall be the first priority and the restoration of ecological integrity shall be considered*" • Includes other objectives including recreation/ economic development, public education and scientific research • Appropriate land uses are considered to be those that are ecologically sustainable, including "*traditional outdoor heritage activities and associated economic benefits*" (s.2.2)	• Value of spaces explicitly for environmental conservation • Dedicated spaces for environmental conservation • Agriculture and environment as separate land uses: Each protected in large, dedicated blocks

	compatible, ecologically sustainable recreation."	• S.5.2: "*Ecological integrity refers to a condition in which biotic and abiotic components of ecosystems and the composition and abundance of native species and biological communities are characteristic of their natural regions and rates of change and ecosystem processes are unimpeded*." • S.16 deals with prohibited uses. Agriculture is not explicitly named as a prohibited use though other sections suggest that it would not be an appropriate land use in Provincial Parks and Conservation Reserves • Agriculture/farming is never addressed in the Act	
Endangered Species Act, 2007	The Endangered Species Act, 2007 provides for a science based assessment of species status and protection of those species determined to be threatened. The act protects both species and their habitats. Ontario Regulation 242/08 provides important exemptions applicable to specific species. Most notably for this research, it provides exemptions for agriculture with regard to the Bobolink and Eastern Meadowlark (grassland birds).	• S.9.1.a "*No person shall kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species*" • S.10.1.a "*No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario List as an endangered or threatened species*" ONTARIO REGULATION 242/08 • 4.1 (1) Clause 9 (1) (a) of the Act does not apply to a person who kills, harms or harasses a bobolink or an eastern meadowlark while carrying out an agricultural operation. • (3) Subsection 10 (1) of the Act does not apply to a person who damages or destroys the habitat of a bobolink or an eastern meadowlark while carrying out an agricultural operation if the area of habitat damaged or destroyed remains suitable for an agricultural operation.	• Protection of environmental features and wildlife based on presence, not based on predetermined 'significance' • Agriculture has pre-eminent claim to arable land (within Reg. 242/08)

MNRF Mandate Letter (2014)	Mandate letters are written by the Premier to each Cabinet Minister, outlining the key priorities for their ministry. This letter pertains to the Minister of Natural Resources and Forestry (MNRF).	• "*You will continue to work with other ministers and partners to advance measures aimed at further strengthening and protecting Ontario's biodiversity*." • "*Working with other ministers, municipalities and partners to conduct a review of Ontario's broader wetland strategy. Your goal is to strengthen wetland policies and stop the net loss of wetlands*." • "*Implementing the Endangered Species Act. I ask that you continue to implement the act in a way that protects and promotes the recovery of species at risk in Ontario*." • Overall, mostly vague requests with the exception of no net loss of wetlands.	• Protection of 'significant' environmental features • Agricultural and environmental spaces under different ministry mandates • Some priorities at odds with OMAFRA priorities (e.g. protect wetlands, implement endangered species legislation, yet increase production)

Documentation from England and Emergent Themes

Document	Description/Purpose	Findings (Data Items)	Findings (Themes)
Planning Policy[1]			
Town and Country Planning Act, 1990	Consolidated previous planning legislation and gets out the regulation of development.	• s. 55.2(b) – agriculture and the use of buildings for agricultural purposes are not considered to be development	None identified
Planning and Compulsory Purchase Act, 2004	Addresses development control, compulsory purchase and the application of the Planning Acts to Crown land.	• s.99.3(1A) – "*But a local authority must not exercise the power under paragraph (a) of subsection (1) unless they think that the development, redevelopment improvement is likely to contribute to the achievement of any one or more of the following objects— (c) the promotion or improvement of the environmental well-being of their area*."	None identified
Planning Act, 2008	Sets out the framework for the planning process for nationally significant infrastructure projects and provides for the community infrastructure levy.	Important background material but no specific agricultural or environmental themes identified	None identified
National Planning Policy Framework (NPPF)	The National Planning Policy Framework (NPPF) sets out the government's planning policies for England and how these are expected to be applied by local planning authorities.	• Value of the natural environment – but not agriculture – emphasised in Ministerial foreword: "*Our natural environment is essential to our wellbeing, and it can be better looked after than it has been. Habitats that have been degraded can be restored. Species that have been isolated can be reconnected. Green Belt land that has been depleted of*	• Agriculture and environment are rarely differentiated • Agriculture, environment and other uses combined as 'open space' • Agriculture exists equally, or even less so, alongside

[1] The following resource provides a useful summary of the planning system in England: Cave, S., Rehfisch, A., Smith, L., & Winter, G. (2013). Comparison of the planning systems in the four UK countries: Inter-Parliamentary Research and Information Network (IPRIN).

		diversity can be refilled by nature – and opened to people to experience it, to the benefit of body and soul." • S.7 "*There are three dimensions to sustainable development: economic, social and environmental*." • S.8 "*These roles should not be undertaken in isolation, because they are mutually dependent. Economic growth can secure higher social and environmental standards, and well-designed buildings and places can improve the lives of people and communities. Therefore, to achieve sustainable development, economic, social and environmental gains should be sought jointly and simultaneously through the planning system. The planning system should play an active role in guiding development to sustainable solutions*." - Unclear under which dimension agriculture would fit • S.9 "*Pursuing sustainable development involves seeking positive improvements in the quality of the built, natural and historic environment, as well as in people's quality of life, including (but not limited to): moving from a net loss of bio-diversity to achieving net gains for nature*" • Core planning principles, S.17: "*contribute to conserving and enhancing the natural environment and reducing pollution. Allocations of land for development should prefer land of lesser environmental value,*	other rural and environmental purposes • Protection of 'open space' and 'countryside • Within the balance of agriculture and environment, leaning seems to be towards environmental conservation • Urban containment (through Green Belts)

		where consistent with other policies in this Framework"; "promote mixed use developments, and encourage multiple benefits from the use of land in urban and rural areas, recognising that some open land can perform many functions (such as for wildlife, recreation, flood risk mitigation, carbon storage, or food production)" • S.28: "*Planning policies should support economic growth in rural areas in order to create jobs and prosperity by taking a positive approach to sustainable new development. To promote a strong rural economy, local and neighbourhood plans should: promote the development and diversification of agricultural and other land-based rural businesses*" • Part 9: *Protecting Green Belt Land* – s.79: "*The Government attaches great importance to Green Belts. The fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the essential characteristics of Green Belts are their openness and their permanence*." • Researcher observation: Part 9 deals less with what land uses should exist in Green Belts and rather focuses on what land uses should not exist (e.g. development) • Part 11: *Conserving and enhancing the natural environment* – addresses	

		agricultural land and the natural environment • S.109 includes protection for quality soils and valued environmental features – also includes recognition of the wider benefits of ecosystem services • S.112: "*Local planning authorities should take into account the economic and other benefits of the best and most versatile agricultural land. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality*." • S.115: "*Great weight should be given to conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty. The conservation of wildlife and cultural heritage are important considerations in all these areas, and should be given great weight in National Parks and the Broads*." – protection of cultural and scenic landscapes aside from production or intrinsic environmental value • S.117 - specifically addresses the need to ensure biodiversity is protected at a landscape-scale	

		• Researcher observation: agricultural land and environmental conservation are rarely separated in the NPPF. • Terminology: *open space* is used to capture a range of uses that are not development; any variation of the term *agriculture* is only used 6 times in the 49 pages prior to the glossary • S.143: agricultural land should be restored following mineral extraction	
Planning Practice Guidance (8) Natural Environment	Provides guidance on the application of planning policy within the theme area of natural environment	• Paragraph 001: "*One of the core principles in the National Planning Policy Framework is that planning should recognise the intrinsic character and beauty of the countryside*." • Paragraph 007: "*The National Planning Policy Framework is clear that pursuing sustainable development includes moving from a net loss of biodiversity to achieving net gains for nature, and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution.*" • Paragraph 8: Local Planning Authorities "*should consider the opportunities that individual development proposals may provide to enhance biodiversity and contribute to wildlife and habitat connectivity in the wider area*" – agriculture is not considered development under the Town and Country Planning Act	• Agriculture exists alongside other rural and environmental purposes – promotion of a range of ecosystem services • Value of landscape beyond production, biodiversity or other tangible benefits (e.g. cultural landscape and aesthetics) • Planning should not only minimise harm to nature but actively work to enhance the natural environment – biodiversity embedded across decision-making • Agriculture and environment are rarely addressed separately

		• Paragraph 26: "*The National Planning Policy Framework expects local planning authorities to take into account the economic and other benefits of the best and most versatile agricultural land*." – High quality agricultural land should be protected from development – does not address competition with natural spaces – notes economic value of agriculture but not exclusively • There is no separate guidance document dedicated to agricultural land	
Agricultural Policy			
Common Agricultural Policy (CAP) • Pillar 1 (direct support payments) and Pillar 2 (rural development)	The Common Agricultural Policy (CAP) is the main agricultural policy of the European Union and is the framework for implementing a variety of subsidies and other financial program. The current iteration of the CAP is the 2014-2020 program. The CAP is fundamentally separated into two *Pillars*, Pillar 1 being direct support payments to farmers and Pillar 2 being more broad rural development. A range of documents pertain to the CAP within the EU and UK. Key sources include: • UK Government, Common Agricultural Policy Reform website, Link • European Commission, Agriculture and Rural Development website, Link	• Decoupling: Pillar 1 of the CAP provides payment to farmers, through the Basic Payment Scheme (BPS), so long as they follow standards of good agricultural and environmental condition (GAECs) – financial support is not linked to increased production • Depicts farmers as 'managers of the countryside' or stewards rather than as producers: *"Farmers manage the countryside for the benefit of us all. They supply public goods – the most important of which is the good care and maintenance of our soils, our landscapes and our biodiversity*" Source • Increased production is not encouraged as part of direct payments to farmers – instead farmers are paid to provide a	• Decoupling - support for diverse objectives not exclusively production • Direct payments not linked to increased production

	Note: during the time this research was being completed the CAP was being reformed and transitioned to a new program. This review focused on the 2014-2020 CAP reform while drawing on previous documentation only when it was felt to be contextually useful.	range of ecosystems services – in some ways the CAP pays farmers to reduce production levels for such benefits as environmental stewardship	
CAP Cross Compliance: • Statutory Management Requirements (SMRs) • Good agricultural and environmental condition (GAEC) standards	In order to receive direct payments, farmers/landowners must comply with a range of cross-compliance requirements. Cross compliance is made up of 'Statutory Management Requirements' (SMRs) and 'Good Agricultural and Environmental Conditions' (GAECs). Primary documents include: • "The guide to cross compliance in England" • "The new Common Agricultural Policy schemes in England: August 2014 update Including 'Greening: how it works in practice'"	• 'Statutory Management Requirements' (SMRs) and 'Good Agricultural and Environmental Conditions' – long list that include several requirements that will limit, or reduce, production levels (e.g. GAEC 7a: protection of boundary features, SMR2 Wild birds protection, SMR3 habitat and species protection) • *Greening* is a new cross-compliance mechanism introduced in the CAP reform. Greening includes rules on permanent grassland, crop diversification and Ecological Focus Areas (EFAs). • EFAs are of particular relevance for this research. If a farmer has more than 15 hectares of arable land, they will need 'Ecological Focus Areas' on their arable land. • "*EFAs need to be equivalent to at least 5% of the total arable land declared on the BPS application.*" Pg. 28 - August Update 2014 • EFAs will include land intentionally left, or in other cases transitioned, for environmental purposes	• Environmental features required through cross-compliance • Priority of environmental stewardship – acceptance, if not intentionally, decrease production • Some existing agricultural land transitioned into environmental stewardship

Environmental Policy			
Hedgerows Regulations, 1997	The Hedgerows Regulations, 1997, protects important hedgerows in England and Wales through the planning process.	• The regulation prevents the removal of hedgerows on agricultural land, without proper approval from the local planning authority • Schedule 1: Hedgerows are valued for Archaeology and history as well as wildlife and landscape	• Regulations restrict removal of environmental features on agricultural land
Wildlife and Countryside Act, 1981	The Wildlife and Countryside Act, 1981 is the principal legislation for the protection of wildlife in England.	• The act provides protection to wild birds, their nests, and their eggs – some exceptions are provided for agriculture such as 4.1(a), 4.3(c), 5.4A • The act provides protection to (certain) wild animals (prevention of killing, injuring or taking wild animals) – some exceptions are provided for agriculture such as 10.1(a), 10.4, and 11.6 • The act provides protection to certain wild plans and restricts introduction of new species • S.28 permits Natural England to designate Sites of special scientific interest • S.42 (2) restricts agricultural operations in National Parks including restricting the conversion of moor or heath into agricultural land	• Protection of wildlife on-farms • Agricultural expansion discouraged (in some areas)
Countryside and Rights of Way Act, 2000	The Countryside and Rights of Way Act 2000, provides for public access on foot to certain types of land, amends the law relating to public rights of way, increases measures for	• S.74 – duty of Government departments to have regard for conserving biological diversity and publish a list of organisms	• Protection of wildlife and environmental features across a wide landscape (including on-farms)

	the management and protection for Sites of Special Scientific Interest (SSSI) and strengthens wildlife enforcement legislation, and provides for better management of Areas of Outstanding Natural Beauty (AONB). Part 3: Nature Conservation and Wildlife Protection and Part 4: Areas of Outstanding Natural Beauty are most relevant to this research.	and habitat that are of principal importance • S.77 – clarification on the protection of Ramsar sites / wetlands • S.82,83 – clarification on the designation of AONB's • Schedule 9: Sites of special scientific interest – added powers for the protection of Sites of special scientific interest which protect areas with significant flora, fauna, or geological or physiographical features • Schedule 12: Amendments to the Wildlife and Countryside Act, 1981 – strengthens the protection of wildlife under the act with particular protections for threatened species	• Establish recreational trails on private land – may limit or inconvenience agricultural operations
Natural Environment and Rural Communities Act, 2006	The Natural Environment and Rural Communities Act, 2006 addresses a range of issues relating to the natural environment including biodiversity, pesticides, the protection of birds and invasive species.	• S. 40.1: Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity. • S.43: limits the use of pesticides harmful to wildlife • S.99: land used for agriculture may be considered an area of natural beauty	• Protection of wildlife and environmental features across a wide landscape • Limits the use of pesticides for the purpose of environmental protection – may sacrifice production levels to protect the environment • Agriculture permitted as a prevailing use in 'environmental' landscapes
The Natural Choice: securing the value	*The Natural Choice: securing the value of nature* is a whitepaper published in 2011 which outlines the government's vision for	• Includes the intrinsic value of environment as well as the ecosystem services it provides to humans	• Agriculture and environment are addressed together

of nature – Natural Environment White Paper, 2011	the natural environment. The paper places an emphasis on a systems approach to achieving a range of ecosystem services. It also emphasis that a landscape-scale approach should be taken rather than addressing land use objectives on an individual basis. The document includes numerous commitments that have since been built into other policies/legislation.	• Farmed land is included within the definition of the *natural environment* • "*In England our natural environment is the result of thousands of years of interaction between people and nature*." Pg. 7 – geographic/contextual difference where agriculture and nature are difficult to differentiate • S.1.10: "*Society expects the environment to provide multiple benefits. A growing global population, for example, increases pressure on food production. But food increases must be achieved sustainably in order to protect the ecosystem services (such as pollination and the water cycle) on which food production relies. An increase in the production of energy crops is also necessary to address dangerous climate change; more woodland cover is required for carbon storage and climate regulation*." • S2.11 "*Making Space for Nature emphasised the need to restore natural networks across the country, working at a range of geographical scales from local networks of small urban parks and green spaces, to major schemes operating over thousands of hectares. There is a growing consensus among conservationists and land managers that integrated action at a 'landscape scale' is often the best way to achieve multiple benefits*."	• Recognition of geographic/historic differences • Decoupling - support for diverse objectives not exclusively production • Some existing agricultural land transitioned into environmental spaces (e.g. afforestation) • Agri-environment programs include both voluntary and cross-compliance measures • New features encouraged through incentive schemes • Agriculture exists alongside other rural and environmental purposes • Agriculture should provide environmental benefits, even if it reduces production levels • Integration of agriculture and environment at a wide, landscape scale

		• S.2.45-2.52 addresses agricultural land – "*Food security is a long-term challenge; farming needs to be supported in building capacity for sustainable production both in the UK and globally. However, the food chain has major impacts on climate change, biodiversity and the wider environment, which require management*" • S.2.46: "*One of the major continuing challenges is to increase food production while improving environmental outcomes… We need a flourishing natural environment and a competitive, resilient farming and food industry to contribute to global food security. We acknowledge that potential tensions exist between improving the environment and increasing food production, and this requires all interested parties to work together*" – clear emphasis on improving environmental performance on farms • S.2.48: "*Land managers are often best-placed to identify their own local environmental priorities. The Government is supporting the industry-led Campaign for the Farmed Environment and the Greenhouse Gas Action Plan. Should the goals of the campaign not be achieved, or if progress on the action plan is insufficient, government intervention will be considered instead*." – mix of voluntary and regulatory measures	

		• S.2.53-2.56 addresses afforestation of previously deforested landscape, including those used for agriculture • S4.2 emphasises the educational value of farms • S.5.19 "*Our priorities for influencing the EU include: achieving competitive agriculture, fisheries and food sectors which use and protect natural resources in a sustainable way and meet the needs of consumers*" • S.5.20 – expresses a view that CAP funding should be shifted away from direct payments towards achieving 'environmental public goods' under Pillar 2	
Biodiversity 2020	Biodiversity 2020 provides a comprehensive picture of how England will implementing its international and EU commitments. The strategy builds on the Natural Environment White Paper sets out the strategic direction for biodiversity policy until 2020 on land (including rivers and lakes) and at sea.	• S.14: "*Effectively establishing coherent and resilient ecological networks on land and at sea requires a shift in emphasis, away from piecemeal conservation actions and towards a more effective, more integrated, landscape-scale approach*." – emphasis on integrating conservation with other land uses • S.20: "*Agriculture – We will improve the delivery of environmental outcomes from agricultural land management practices, whilst increasing food production by, for example, reviewing how we use advice and incentives, and how we use agri-environment schemes*." • Pg. 13: "*Ecological networks are considered to be an effective means to conserve ecosystems and wildlife in environments, such as England, that have*	• Protection of wildlife and habitat across a wide landscape (including on farms) • Integration of agriculture and environment at a wide, landscape scale • Some existing agricultural land transitioned into environmental spaces (e.g. habitat restoration) • Recognition of geographic/historic context

		become fragmented by human activities. Some work on ecological restoration is already underway, but we need to extend this approach much more widely" – recognition of a long history of human impact on the environment as well as an emphasis on restoration • Pg. 19: encourage new, and larger, priority habitats • Pg.25: "*Over 70% of England is farmed and therefore agricultural land management practices are one of the most important influences on our biodiversity and ecosystem services*." • Pg.25: "*Farmers and land managers play a vital role, not only as food suppliers, but also as the stewards of our countryside*." • Pg. 25 "*Expenditure in a significantly smaller CAP Budget should tackle the key objectives of encouraging a competitive, sustainable EU agriculture sector, reducing reliance on subsidies and focusing resources on the provision of environmental public goods*." - CAP funding should be shifted away from direct payments towards achieving 'environmental public goods' under Pillar 2	
English national parks and the broads: UK government vision and circular, 2010	The purpose of this circular is to provide updated policy guidance on the English National Parks and the Broads ('the Parks'). It sets out a vision for the English National Parks and the Broads for 2030.	• S.2.6: "*The 1949 Act defines the National Park purposes as being to conserve and enhance natural beauty, wildlife and cultural heritage and to promote opportunities for the understanding and*	• Agriculture permitted as a prevailing use in 'environmental' landscapes • Recognition of geographic/historic context

	The circular also provides guidance on the National Parks and Access to the Countryside Act 1949 – therefore, this legislation was not reviewed separately.	*enjoyment of the special qualities of the National Parks by the public*" • The vision contained within the circular includes the following statement: "*By 2030 English National Parks and the Broads will be places where: There are thriving, living, working landscapes notable for their natural beauty and cultural heritage. They inspire visitors and local communities to live within environmental limits and to tackle climate change. The wide-range of services they provide (from clean water to sustainable food) are in good condition and valued by society.*" – this emphasises that farming is an important component of the National Parks in England • S.4.1A(20) "*The Government continues to regard National Park designation (together with that for Areas of Outstanding Natural Beauty ('AONBs')) as conferring the highest status of protection as far as landscape and natural beauty is concerned. The Parks represent an important contribution to the cultural and natural heritage of the nation. The Parks are living and working landscapes and over the centuries their natural beauty has been influenced by human activity such as farming and land management activities*." • S.4.3(56-57) recognise the value of agriculture within the Parks and encourages sustainable increases in resilience and productivity – also	– farming not necessarily separate from nature

		encourages participation in agri-environmental schemes	
English Woodland Grant Scheme (EWGS)	The English Woodland Grant Scheme (EWGS) is a funding program which offers grants to farmers and other rural landowners to increase benefits from existing woodlands and invests in creating new woodlands. The scheme is composed of a series of grants including: Woodland Planning Grant, Woodland Assessment Grant, Woodland Regeneration Grant, Woodland Improvement Grant, Woodland Management Grant as well as the Woodland Creation Grant. Note: The EWGS has recently been replaced with the Countryside Stewardship scheme as part of the CAP reform. While the details have changed, the basic premise of the EWGS has been transitioned to the new program.	• The EWGS is comprised of a series of payments that aim to maintain, improve, regenerate and create woodlands – notably on farms • The Woodland Creation Grant provides financial incentive for the creation of new woodlands. • According to the EWGS summary: "*Payment rates are £1800/ha Broadleaf, £1200/ha Conifer and £700/ha Special Broadleaves. An Additional Contribution of £2000 will be paid for all applications that meet national or regional priorities. Farm Woodland Payments (FWP) can be paid on top of WCG to compensate for the loss of agricultural income as a result of creating woodland on agricultural land. They are payable for up to 15 years and farmers can continue to claim Single Farm Payments as well.*"	• New environmental features encouraged through incentive schemes • Some existing agricultural land transitioned into environmental spaces (e.g. afforestation)
Environmental Stewardship Scheme	Environmental Stewardship is a land management scheme that provides funding to farmers and other land managers in England to deliver effective environmental management on your land. There are 3 levels to the scheme: • Entry Level Stewardship (ELS) – includes Uplands ELS (UELS): simple and effective land management agreements with priority options	• The Environmental Stewardship Scheme provides financial incentives for farmers to improve or conserve the natural environment on their farms • The scheme includes a multitude of options for achieving environmental objectives on farm, depending on the level. For instance, under Entry Level Stewardship options include hedgerow management, protection of in-field trees, and planting wild bird mixture.	• Voluntary agri-environment scheme – high proportion of costs • Priority of environmental stewardship – acceptance, if not intentionally, decrease production • Farmers framed as land stewards – encouraged to go well beyond the realm of farming

	• Organic Entry Level Stewardship (OELS) – includes Uplands OELS: organic and organic/conventional mixed farming agreements • Higher Level Stewardship (HLS): more complex types of management and agreements tailored to local circumstances Key documents include: • Look after your land with Environmental Stewardship (NE290) • Environmental Stewardship: funding to farmers for environmental land management Note: The Environmental Stewardship Scheme has recently been replaced with the Countryside Stewardship scheme as part of the CAP reform. While the details have changed, the basic premise of the Environmental Stewardship Scheme has been transitioned to the new program.	• Under the Higher Level Stewardship option a very wide range of options are funded, often at 100% of cost. Examples include stonewall restoration, fencing, planting fruit trees, wildlife boxes, and gates. • Of particular note is that many of the options are unrelated to increases in production, such as windbreaks that reduce soil erosion, and instead actively remove arable land from agriculture. This emphasises that the ELS scheme is focused on the intrinsic value of the environment, even where it reduces production. • Moreover, many of the funding options go beyond the realm of agriculture and into environmental stewardship – such as wildlife boxes, badger gates, otter holts. These go well beyond encouraging farmers to avoid harm to the environment through farming practices/land management decisions but actually encourage them to become stewards themselves.	• New environmental features encouraged through incentive schemes