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Understanding Similarities and Differences in Land Use Visions for Scotland

**A THESIS PRESENTED FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
AT THE
UNIVERSITY OF EDINBURGH**

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**SCHOOL OF GEOSCIENCES
UNIVERSITY OF EDINBURGH**

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“The future belongs to those who believe in the beauty of their dreams.”
(Eleanor Roosevelt)

To my dad, Christian J. Nitsch

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Declaration

I, Christiane Katharina Frederike Valluri-Nitsch, declare that this thesis was composed by myself, that the work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or professional qualification except as specified.

.....
Christiane K.F. Valluri-Nitsch

.....
Date

Abstract / Lay Summary

The successful transition towards a global society that can live within planetary boundaries is one of the greatest challenges for the twenty-first century. Sustainable land use and land management will be essential to ensure the continued delivery of the ecosystem goods and services needed to support a rapidly growing global population. To support the transition towards sustainable development, decision-makers need to better understand how land use change affects people and the environment. However, these insights are of limited use without societal agreement on future land uses. Understanding synergies and differences between land use visions forms a first step in assessing and comparing alternative pathways towards a sustainable future.

This thesis uses a range of methods to understand visions of future land use amongst professional land use stakeholders, society at large, and young people in Scotland. Twenty semi-structured interviews were held with policy experts from the Scottish land use sectors. A nationwide statistically representative web-based survey provided insight into the visions of the Scottish population. And finally, a novel visual interview methodology was used to interview 26 pupils from two high schools in Perthshire. Inductive content analysis and descriptive statistics were used to analyse the results and understand and compare the land use visions of these different groups.

As expected, different groups had different visions of future land use. There was, however, general agreement on certain themes, in particular the desire for a more sustainable lifestyle and the importance of a healthy environment.

The sectoral stakeholders would like to see more partnerships, dialogue and collaboration; a society that is more engaged and aware about land use; resilient local economies; and short-, medium-, and long-term policies that help to achieve these goals. One of the key challenges for these groups will be how to translate

abstract concepts such as 'healthy ecosystem' and 'dialogue and partnerships' into practice. This clearly requires a shared understanding of what a 'healthy ecosystem' means to different stakeholders, as well as appreciation of what true dialogue means and how this can be used to co-create solutions – potentially a radical change from the traditional top-down approaches.

The research also identified divisions in Scottish society between those who want to continue a 'status quo' lifestyle, and those – in particular younger people (who spent time in the natural environment, through either school or home life) and those from a higher socio-economic background – who want a more sustainable lifestyle and to be more connected with the natural environment. These results are important, as policy makers need to be able to identify the factors that have successfully engaged certain groups and to promote these factors. Programmes that provide access to the natural environment (such as the Duke of Edinburgh's Award) need to ensure equal opportunities by targeting disadvantaged groups. Simultaneously, it needs to be explored how to encourage those who would like to continue a 'status quo' lifestyle into a more sustainable one. Past research has shown how preferences can be influenced and how changes can be initiated by incentives and restrictions in order to promote desired behaviours. The power of the media should be leveraged: programmes such as BBC's 'Blue Planet' highlight how our lifestyle choices impact on the natural environment and can provide the motivation for change.

The current issues surrounding Brexit and Climate Change require a national conversation; using methods such as those presented in the thesis to elicit land use visions can help identify the commonalities and differences between stakeholders' views. This can provide a starting point for dialogue and critical reflection on current instruments and objectives, and how they might be adapted to better reflect Scottish preferences and conditions.

Acknowledgements

A heartfelt 'thank you' to my supervisors, Dr Marc Metzger, Professor Martin Price, and Dr Rob McMorran, who have patiently and supportively endured all my maternity breaks and small holding crises and always believed in my multitasking skills and irrational working hours.

I would also like to say a big thank you to my family: my husband Achyut and my daughters Maia, Leena and Anni who kept me sane and provided ample distraction. I genuinely hope that research like this will make a difference to your lives when you grow up to become caring and engaged citizens.

Finally, a wholehearted thanks to my parents Christian and Marianne who have supported me emotionally and financially in my long enduring search to find a career I feel passionate about - I promise that from now on I will pay for flights to Germany myself.

Disclaimer

This thesis consists of a sequence of content chapters that have been prepared for publication in a range of scientific journals. This has meant that there will be some degree of overlap to ensure publishable papers. Author contributions, areas of overlap and specific journals have been specified in Chapter 1.

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List of Abbreviations

| | |
|---------------|--|
| CAP | Common Agricultural Policy |
| CRE | Centre for Rural Economy |
| CRtB | Community Right to Buy |
| DEFRA | Department of the Environment, Fisheries and Rural Affairs |
| EC | European Commission |
| EU | European Union |
| FAI | Fraser of Allander Institute |
| GHC | Global Happiness Council |
| GHG | Greenhouse Gases |
| HIE | Highlands and Islands Enterprise |
| JMT | John Muir Trust |
| LEADER | Links between actions for the development of the rural economy |
| LUS | Land Use Strategy |
| MA | Millennium Assessment |
| NGO | Non-Governmental Organisation |
| NPF | National Planning Framework |
| OECD | Organisation for Economic Cooperation and Development |
| PES | Payments for Ecosystem Services |
| PGI | Protected Geographical Indication |
| RACCE | Rural Affairs, Climate Change and Environment Committee |
| RPC | Rural Policy Centre |
| RSE | Royal Society of Edinburgh |
| RSPB | Royal Society for the Protection of Birds |

| | |
|--------------|---|
| SEG | Socio Economic Group |
| SG | Scottish Government |
| SGI | Sustainable Governance Indicator |
| SNH | Scottish Natural Heritage |
| SRUC | Scotland's Rural College |
| SWT | Scottish Wildlife Trust |
| UNECE | United Nations Economic Commission for Europe |

Publications resulting from this research

My land? Your land? Scotland?—understanding sectoral similarities and differences in Scottish land use visions. (Chapter 3)

Valluri-Nitsch C, Metzger M, McMorran R, Price M, 2018. *Regional Environmental Change* 18: 808-816. <http://dx.doi.org/10.1007/s10113-018-1279-9>

‘Thanks for listening to us!’ - Exploring rural land use visions from young people in Scotland. (Chapter 4)

Valluri-Nitsch C, Metzger M, De Vries-Lentsch A, McMorran R, Price M. *Ecology and Society*. In review.

How does the Scottish public want to live in 2040 and what are the implications of their choices for the Scottish land use sector? (Chapter 5)

Valluri-Nitsch C, Metzger M, Brown C, McMorran R, Price M. *Scottish Geographical Journal*. Draft manuscript.

How do Europeans want to live in 2040? Citizen visions and their consequences for European land use. (Chapter 5)

Metzger MJ, Murray-Rust D, Houtkamp J, Jensen A, Riviere IL, Paterson J, Perez-Soba M, **Valluri-Nitsch C**, 2018. *Regional Environmental Change* 18: 789-8. <http://dx.doi.org/10.1007/s10113-016-1091-3>

CHAPTER 1 - INTRODUCTION

1.1 General Introduction

This research develops a series of rural land use visions for Scotland from a range of perspectives (policy, society and young people) and critically examines the related opportunities and challenges within and across the different groups. To elicit the visions, this research used a range of different techniques including interviews, an online survey, and the recently developed visual interview format STREAMLINE. The thesis concludes with recommendations on how these challenges could be addressed.

This chapter outlines the context of this research.

1.2 Study rationale

The successful transition toward a global society that can live within planetary boundaries (Rockström et al. 2009) is one of the greatest challenges for the 21st century. Sustainable land use and land management is essential to ensure the continued delivery of the ecosystem goods and services needed to support a rapidly growing global population (Millennium Assessment 2005). To support the transition towards sustainable development, science needs to provide better understanding of how land use change affects people and the environment (Rounsevell et al. 2012). However, these insights are of limited use without societal agreement on what future land uses should look like; and societal preferences can have a significant impact on the ways in which land is used. Understanding synergies and differences between land use visions forms a first step in assessing and comparing alternative pathways towards a sustainable future (Brown et al. 2016; Verkerk et al. 2018).

While a range of studies have explored stakeholder, societal, and young people's ideas across a wide range of topics using a range of methods (Lacovidou and Wehrmeyer 2014, Pröbstl-Haider et al., 2016, Nijnik and Mather 2008, Morgan-Davies and Waterhouse 2010, Habron 1998, Perez-Soba et al. 2018, Verkerk et al

2018) , no single study has looked at a single issue (i.e. land use) *across* multiple (Figure 1.4.1) land use sectors, society, and young people in Scotland, a country with historic land use conflicts but with strong ambitions to move to sustainable land use in the future (Scottish Government (SG), 2011).

I therefore argue that this research gap needs to be addressed in order to move towards a sustainable society in the future.

1.3 Objectives and research questions

The thesis addresses three broad objectives, with associated research questions:

Objective 1: To understand professional land use stakeholders' land use visions for 2050

- What are the visions of Scottish land use sectors?
- What are the differences and similarities between sectoral land use visions in Scotland?
- What are the challenges and opportunities between these visions?

Objective 2: To understand societal land use visions for 2040

- What are the visions of Scottish society for rural land use?
- What are the potential implications of these societal visions?
- How do Scottish visions compare to those for the rest of Europe?

Objective 3: To understand young people's land use visions for 2050

- What are the visions of young people?
- What are the implications of their choices?
- What are the challenges and opportunities arising from these?

1.4 Methods used in this research

To manage the reader's expectation it is important to highlight that despite the richness of data obtained through the semi-structured interviews for land use stakeholders and young people, a largely reductionist approach was taken during the analysis focussing on extracting a number of themes and visions. This was due to pragmatic reasons which had been extensively discussed in the supervisory team during the early stages of the PhD.

The overarching reason for a pragmatic approach is the very complex and ambitious scope of the research (i.e. what are the similarities and differences in Scottish land use visions). There were also constraints in time and financial resources (i.e. one person doing a PhD). Finally, the research was part-funded by the European research project VOLANTE, with the aim to compare results with European visions which emerged during the VOLANTE project. These three reasons constrained the methods for the PhD.

The agreed output for this work was a set of 'neat end product' (e.g. 3 sets of land use visions for different stakeholders) that could be compared with some of the Volante visions and then subsequently explored with other methods after the PhD.

However, the interview data is by no means exhausted and will continue to hold valuable insight which could be further explored through discourse analysis and participatory methods to investigate the debates deeper. Options on how this could happen will be discussed in the concluding Chapters 6 and 7.

1.5 Thesis structure

This thesis is comprised of an introduction (Chapter 1), a literature review (Chapter 2), three research chapters (Chapters 3-5), a discussion chapter (Chapter 6) and a concluding chapter (Chapter 7) as illustrated in Figure 1.4.1.

The three research chapters have been written as research papers, each describing the methods, and presenting and discussing the results for a specific research objective. To ensure coherence of the thesis, cross-references are made to other chapters in the thesis where appropriate. Whilst Chapter 3 asks participants for their visions in *2050*, Chapter 4 asks for visions in *2040*. The discrepancy is because the European crowd sourcing experiment (exploring societal visions)

asked for 'your vision in 2040'. It was decided to keep that the same for the Scottish societal visions in order to enable comparison.

Chapter 3 has already been published in the journal *Regional Environmental Change* (Valluri-Nitsch et al. 2018), Chapter 4 will be submitted to the *Scottish Geographical Journal*, and Chapter 5 is under review with the journal of *Ecology and Society*.

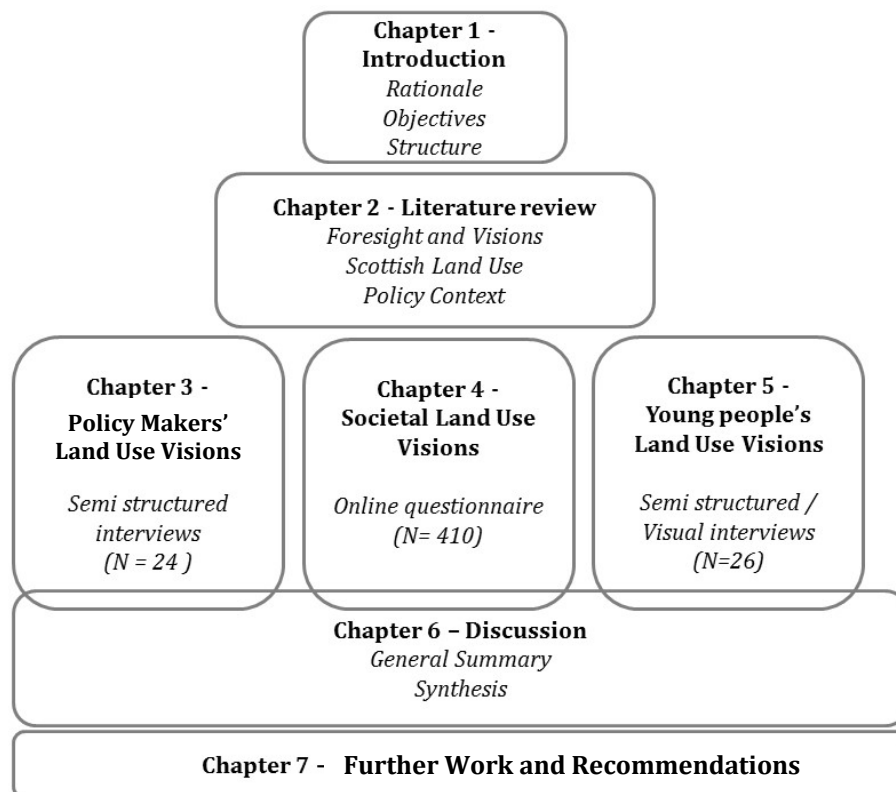


Figure 1.4.1 Thesis outline

Chapter 1 describes the rationale for the study, the objectives and the Thesis structure.

Chapter 2 describes the relevant background literature. Where possible, overlap between the literature review and the content chapters has been avoided and

instead, where possible, the reader is re-directed to the appropriate section for further elaboration of key points.

Chapter 3 describes the visions of representatives from across a range of land use sectors, gathered during a series of semi-structured interviews, and critically examines the resulting challenges and opportunities.

Chapter 4 elicits societal visions of the Scottish population, which were gathered with the aid of an online survey conducted by a marketing company, in order to obtain a representative sample. This chapter also critically examines the perceived potential impacts of these societal preferences and compares the findings to findings from a Europe-wide crowdsourcing experiment.

Chapter 5 focuses on young people's visions, obtained through a series of one-on-one interactive interviews using the visual interview format STREAMLINE.

Chapter 6 synthesises the findings from all previous chapters, and discusses the implications of this research for further work.

The final chapter, Chapter 7, finishes with overall conclusions and a set of recommendations for future work.

1.6 Author contributions

The paper versions of Chapters 3-5 have multiple co-authors. The following list includes a description of the contributions of each author:

- C.K.F. Valluri-Nitsch: Primary author, conducted all data collection and analysis, responsible for paper concepts and write up.
- M.J. Metzger: PhD Main supervisor, provided guidance with regard to theoretical approach for the papers, commented on drafts of all papers / chapters and co-founder of the STREAMLINE methodology.
- M.F. Price: PhD Co-supervisor, provided guidance with regard to theoretical approach for the papers, commented on drafts of all papers / chapters.
- R. McMorran: PhD Co-supervisor, provided guidance with regard to theoretical approach for the papers, commented on drafts of all papers / chapters.
- A. De Vries-Lentsch: Research associate and co-founder of the STREAMLINE methodology, provided training and guidance with the STREAMLINE interview process, commented on an early draft of the paper versions of Chapter 4.
- C. Brown: Researcher in Statistics and Ecology, provided help and guidance with the statistical analysis and commented on various drafts of the paper versions of Chapter 5.

CHAPTER 2 - LITERATURE REVIEW

2.1 Literature Review

This chapter reviews the literature relating to visions and scenarios as well as the key land use drivers and the Scottish Policy context.

The world has changed rapidly over the last decade with regard to the way land is used to support an ever growing (United Nations 2015) and increasingly urban population (Cumming et al. 2014). This will require more space, more food, more timber, clean water and energy – all provided by a finite land resource which is already under stress from climate change (Perez-Soba et al. 2018). The successful transition towards a global society that can live within defined limits is one of the greatest challenges we face today (Ellis 2011; Rockström et al. 2009; Steffen et al. 2015). Furthermore, Europe has entered into a critical decision space and a limited timeframe within which to plan and move towards sustainable land use (Metzger et al. 2018b).

In order to achieve sustainable land use, it is important to improve governance (Adger et al. 2003; European Commission 2011), create supportive policy and planning mechanisms (Hodge 2016; Borrass et al. 2017), work on innovative technologies and business models (Rantala et al. 2018), and ensure development of an active and engaged society which understands and supports the necessary changes (Latour 2017).

2.2 Foresight and Visions

There is wide agreement in the published literature on the importance of visions and scenarios, and they are considered to be important tools in planning and preparing for the future (Porter and Millar 1985; Chandler 1990; Rounsevell and Metzger 2010). Without a clear vision, there cannot be a successful strategy towards a desired outcome. With regard to achieving sustainable land use, this means involving everyone – scientists, policy makers, land managers, rural

communities and wider society (Swales 2009). However, scenarios and visions have also been criticised for being very complex in their creation and implementation (Mercer 1995).

A wide variety of scenario approaches and uses exist, encompassing local, regional, national and international levels, following different approaches (top-down, bottom-up; qualitative or quantitative), and ranging from highly formalised scientific studies (e.g. climate change scenarios) to deliberative and participatory processes to identify “*What is possible?*” and “*What is plausible?*” (Metzger 2018b). However, the question “*What is desirable?*” received little attention in land use research until the recent European VOLANTE Project (Metzger et al. 2018a). This is surprising because normative visions can greatly increase the saliency of land use research – i.e. its relevance to decision makers’ needs (Rounsevell and Metzger 2010).

Plausible, or exploratory, futures begin in the present and explore a range of alternative trends into the future. Predictive methods then often draw conclusions from these trends and highlight what is possible. Desired, or normative, futures differ from plausible futures in that they take into consideration a description of a series of events which lead from the present to the desired state in the future.

Central to the question of “*What is desirable?*” are visions, which have their origins in the business, management, and political contexts. Visions have been defined as a ‘desired state for organising the future’ (Johnson et al. 2008) and as a set of beliefs about how people should behave to realise their ideal future (Strange and Mumford 2005). For the purpose of this research, visions are defined as normative scenarios describing a picture of the future that is achievable through specific actions (Perez-Soba et al. 2018).

Whilst visions concerning individuals or small groups can be very specific and relatively easy to extract, extracting sectoral or societal visions is a very complex

process. Such a process can, however, offer huge potential with regard to legitimacy (i.e. who developed the visions and the diversity of stakeholder opinions taken into account) and credibility (i.e. are the visions scientifically sound?) (Metzger et al. 2018a), and can represent a major step towards achieving a desired future land use through a better understanding of what type of world society would like to live in (Shipley and Michela 2006).

However, in an area as complex as land use, amalgamating visions from a great variety of stakeholders can be difficult because they can have significantly different understandings of nature and landscape (Buijs et al. 2006).

2.3 Rural Land Use in Scotland

2.3.1 General overview

This section presents sectoral overviews of current land use in Scotland and some of the main opportunities and challenges rural Scotland is facing today, including an overview of rural policy. Table 2.3.2.1 provides a sectoral snapshot summary, whilst section 2.3.3 summarises the key land use drivers in Scotland. A deeper review of the policy context for rural land use is provided in section 2.4. It is acknowledged that the categories presented often overlap and are interlinked; however, creating a distinct set of categories facilitated a functional framework for structured interview discussions and subsequent analysis.

2.3.2 Sectors

Land use in rural Scotland is diverse and results from a complex interplay of uncertainties and land use drivers (e.g. Brexit, climate change). This section presents an overview of the Scottish land use sectors; table 2.3.2.1 provides an overview of the current situation and uncertainties for the future.

Table 2.3.2.1 Overview of Scottish land use sectors and the key related future uncertainties (Valluri-Nitsch et al. 2018).

| Sector | State | Issues |
|--------------------|---|--|
| Forestry | <ul style="list-style-type: none"> • 18% woodland coverage of which 79% is coniferous • 34% owned by Government and 66% owned and managed by private land owners, local authorities, communities and NGOs | <ul style="list-style-type: none"> • Cover to be extended to 25% by 2nd half of century to meet climate targets • Dominance of planted coniferous forests • Privatisation versus public ownership • Deer management |
| Agriculture | <ul style="list-style-type: none"> • 80% of the total land area of Scotland mainly comprised of rough grazing • Land Capability Map official classification system as a basis of land valuation • Based on Classification 85% classified as Less Favoured Area | <ul style="list-style-type: none"> • On-going Brexit negotiations • Decreasing livestock numbers and land abandonment • Biodiversity implications associated with reduction in livestock numbers on hills and intensification of suitable agricultural land |
| Crofting | <ul style="list-style-type: none"> • 7 Crofting counties • System of pluri-activity • Constitutes 11% of the | <ul style="list-style-type: none"> • Collective system of community ownership versus individual system of owner-occupiers trading |

| Sector | State | Issues |
|-------------------------------|--|---|
| | population and 10% of households | crofts on the open market |
| Recreation and tourism | <ul style="list-style-type: none"> • Seasonal, but becoming the biggest sector in the majority of rural Scotland • UK is Scotland's biggest market (83%), providing 67% of all tourism expenditure • 'Nature Tourism' becoming significant subset | <ul style="list-style-type: none"> • Potential conflicts over scenery due to developments • New employment opportunities in the face of traditional employment versus seasonality and high rate of business failure |
| Renewables | <ul style="list-style-type: none"> • 50% of heat, transport and electricity needs to be derived from renewable sources in 2030 • Most of this from on- and offshore windfarms • In the first 6 months of 2017, enough renewable energy was created to supply more than all of Scotland's national demand for six days | <ul style="list-style-type: none"> • Need to upgrade current electricity grid • Increasing conflict due to impact on tourism and conservation • Importance of small-scale renewables undervalued |

| Sector | State | Issues |
|--------------------------------------|---|---|
| Sporting | <ul style="list-style-type: none"> • 340 estates cover 50% of privately-owned land • Typical estate size 5000-8000 hectares • Grouse and deer are predominant species for sporting land use | <ul style="list-style-type: none"> • Debates on moral, political and economic legitimacy • Population of red deer has doubled in the last 30 years • Muirburn¹ (Heather burning and shooting) versus carbon storage |
| Biodiversity and conservation | <ul style="list-style-type: none"> • Shift from nature and landscape conservation to integrated approaches viewing the ecosystem as a whole • Due to area covered by agricultural land, agri-environment schemes could offer huge potential for integrated conservation | <ul style="list-style-type: none"> • Preservation versus recreation • 'Hands on' versus 'hands off' • People versus no people • Local versus global |

Forestry

Between 6000 and 4000 years ago, Scotland would have been a heavily wooded country with oak, ash, and elm forests dominating the fertile lowlands and Scots pine, white hazel, rowan, birch and juniper the less productive upland regions (Tipping 1993). Human intervention over the subsequent millennia resulted in less

¹ Muirburn is the practise of using controlled fire on heather moorland with the purpose of bringing mature or old heather from its degenerated phase to a re-growing pioneering phase.

than 10% forest coverage by 1750 and, despite some extensive reforestation, notably by the Duke of Atholl, in the 18th and 19th century, the net loss continued, reducing the proportion of forest to 4.5% by the early 20th century (Smout 2006).

The lack of woodlands was causing concern by the late 19th century, but it was only after World War I that this concern translated into action, with the formation of the Forestry Commission in 1919 (Coppock 1994). After the Second World War, significant emphasis was put on the expansion of forests using plantation forests based on fast-growing conifers, due to the rising costs of timber imports and the important objective of creating a strategic reserve (Mason 2007). The style of forestry which emerged was very much that of large-scale, straight-edged monocultural plantations of introduced conifers.

During the 1950s, the private sector started to play a more important role. This was mostly due to the availability of fiscal incentives, whereby tax bills could be reduced by offsetting forestry expenditure against capital gains from other business interests; this resulted in small-scale, more diverse, and integrated estate-type forest management (Mason 2007).

It was not until the UK became part of the European Economic Community (EEC) in 1973 and the rise of environmental Non-Governmental Organisations (NGOs) that a shift from purely productive to more environmental objectives (e.g. strategic carbon reserves and carbon sequestration in response to climate change) developed, largely driven by the growing concerns over environmental instability (Mather 2001). Since then, increasing areas of forest land have passed into social ownership, which has introduced an innovative and vigorous third sector into forestry (Calvert 2009).

Today, the forestry sector accounts for 25,000 jobs and contributes £1 billion annually to the Scottish economy, despite Scotland having a forest cover of only 18%, compared to an average of 33% in mainland Europe (Skerrat et al. 2016).

Scotland has ambitious forestry targets and, with the recent passage of the Forestry Bill, could play a significant role in changing the rural landscapes (SG 2018a). However, as noted by Burton et al (2018), achieving woodland expansion goals in Scotland is a 'wicked problem' due to the difficulty of implementing these goals in the face of conflicting food and climate change policy goals, low acceptability of woodland planting among Scottish farmers, volatile stakeholder perceptions, and grazing pressure from high deer populations.

Agriculture

Agricultural activity has been an important part of Scotland's past. For most of the last 6000 years, this consisted of subsistence farming based on the Runrig system, (a system of land tenure where individual agricultural tenants were allocated several detached rigs or portions of land on a yearly basis, by lot and rotation) and the Crofting system in the crofting counties from the 18th century onwards (Section 2.3.2.3). Whilst farming is a major land use type in Scotland, 85% of agricultural land is classed as less favoured (compared to 17% in England), putting significant constraints on farmers in relation to their choices of agricultural activity. In terms of agricultural potential, 60% of Scotland's agricultural land is mainly suitable only for rough grazing.

This range of land qualities has resulted in a highly variable agricultural farming system and intensities of production in operation: e.g. intensive horticultural and arable production in the east; intensive beef and dairy systems in the North East, Caithness, Orkney, Borders and South West; and extensive sheep and beef systems in the Highlands and Islands which are also home to 13,000 crofters (Skerratt et al. 2016).

A number of other factors also present Scottish farmers with significant challenges. Many farm businesses are located at a considerable distance from slaughter houses, markets and suppliers, resulting in many businesses making minimal

incomes or losses (Thomson et al. 2016a). In recent decades, the CAP has been a major player supporting farms, but the future post-Brexit remains uncertain. More details on the impacts of policy on the agricultural sector are provided in Section 2.4.

Crofting

Crofting has played an important role in Scotland's rural history since the 18th Century and remains a common practice in parts of the Highlands and Islands. A croft is a small land holding, regulated through the Crofting Acts, situated within one of the former crofting counties (Argyll, Inverness-shire, Ross and Cromarty, Sutherland, Caithness, Orkney and Shetland); crofters constitute around 11% of the population and 10% of households in rural areas (Scottish Crofting Commission, 2016).

Apart from agriculture, crofts also commonly contribute to local economies through fishing, fish farming and tourism. In the light of the increasing emphasis on the social and environmental functions of agriculture, the pluriactivity of the crofting system appears to be more in tune with rural trends than high-intensity agricultural practices (Sutherland et al 2011).

The Crofter Forestry Act in 1992 promoted the trend of pluriactivity by allowing diversification into woodland, renewable energy and tourism, for example (Birnie et al. 2007). The Land Reform (Scotland) Act (2003) provided an opportunity for crofting communities to buy the land on which they lived; whilst this legislative measure was not enacted by many crofting communities, it enabled exertion of at least some control over the future of a valuable local asset (MacLeod 2017).

A key debate about the future of crofting focuses on whether it should be a collective system of community ownership protected from the fluctuation of external markets or whether it should become an individual system of owner-

occupiers in which crofts are private assets which can be traded on the open market (Warren 2009). The latter introduces the risk that crofts in private ownership (bought at reduced rates) could be sold on the private market at full price without any guarantee that the successor would continue crofting.

Furthermore, it is important that, whilst sustainable and modern practices and approaches should be encouraged in crofting communities (e.g. facilitating new entrants, developing new woodland crofts, ensuring affordable croft housing), traditional crofting activities and the associated cultural heritage should not be destroyed.

Recreation and tourism

Tourism and recreation have become the largest economic sector in the majority of rural Scotland, overtaking farming and forestry. In many rural economies, tourism is over-represented compared to the national average (e.g. tourism represents 9% of Scotland's total employment, but 17% of total employment in Argyll and Bute, 14% in Highland, 13% in South Ayrshire, 12% in Orkney)(Visit Scotland 2017). Albeit seasonally, tourism generates around £4 billion per annum to the economy including £1.4 billion from nature tourism (Scottish Natural Heritage (SNH) 2010). From 2014 to 2015, tourism employment increased by 11%, to 217,000 (9% of Scotland's total employment), the highest level of employment in this sector since records began (Visit Scotland 2017).

The UK is Scotland's largest market and accounts for 83% of tourist visitors, who provide 67% of all tourism expenditure in Scotland. Overseas visitors accounted for 17% of trips and 33% of expenditure, staying on average longer (Visit Scotland 2017). In particular, nature tourism (visits related to the natural heritage) has developed rapidly over the last decade, becoming a significant subset of the tourism industry (Higgins 2005).

Although many aspects of tourism are not a land use *per se*, tourism has positive (e.g. income to rural economy) and negative (e.g. litter, footpath erosion) impacts on other land uses and vice versa (e.g. the development of a large windfarm adjacent to a scenic area). The main activities within the nature tourism sector are wildlife watching, enjoying the landscape, walking, adventure activities, and field sports (Bryden et al. 2010). Walking is the most popular nature-based activity for UK residents holidaying in Scotland and constituted 47% of total UK visitor trips in 2016, followed by landscape and scenery related activities (Visit Scotland 2017a).

The food and drink industry also plays a vital role in tourism, as Scotland is world-renowned for its high-quality products, including whisky, salmon, beef and fish and an ever growing number of small-scale, craft and artisan producers, some of which have Protected Geographical Indication (PGI) status (Scotland Food and Drink 2017).

The Scottish tourism sector relies on a diverse, high-quality natural environment but since there are many different stakeholders, working towards a shared vision is a key challenge (Slee 1998). On the one hand, new employment opportunities are welcomed in the face of a decline in traditional employment and as a means of creating a more diverse and resilient rural economy. On the other hand, tourism is commonly seen as a vulnerable component of the rural economy, due to seasonality, low average rates of profit and high rates of business failure (Slee 1998).

Renewables

The UK's 2008 Climate Change Act sets a legally binding target for reducing territorial greenhouse gas emissions by 80% by 2050, relative to 1990 levels (Konadu et al. 2015). Since then the capture, conversion and use of energy has been a major driver in shaping the Scottish landscape since the beginning of the 21st Century (Royal Society of Edinburgh 2008).

Despite much public support for the general principle of renewable energy, conflict often arises when concrete projects emerge at local level (e.g. community of place, community of interest). Impacts of renewables to nature vary considerably from visual intrusion, noise, ecosystem disturbance (Van der Horst 2010). Warren et al 2005 however, found that aesthetic perceptions, both positive and negative, are the strongest single influence on individuals' attitudes towards renewable energy developments.

Discussions have been ongoing for many years on how to reduce both impact and opposition with regards to land use. These include a better planning system, a concentration on small scale locally appropriate projects, and the provision of benefits for local people through either community ownership, employment or compensation schemes. On a more strategic level, the development of clear strategic policies at national level and the use of an open decision making process which enable and encourage public participation have also been on the forefront of many discussions.

Sporting

There are around 340 sporting estates in Scotland; such estates cover some 50% of privately owned land in the Highlands and Islands (over 2 million hectares) and represent over 27% of the total privately-owned land in Scotland (Irvine et al 2009). The typical estate ranges from 5000 to 8000 hectares and they have been the focus of debates regarding their legitimacy from moral, political, economic and social perspectives ever since their establishment in the 19th century, when it was considered to be fashionable by Britain's aristocracy to own a sporting estate in the Scottish Highlands (McKee et al 2013).

Grouse and deer are the predominant quarry species for sporting land uses in the uplands, whilst other game birds such as pheasant and duck are more significant in the lowlands (Game and Wildlife Conservation Trust [GWCT] 2016). Sporting is an

important land use because of the area covered by sporting estates and their impacts on the land through their management. Deer stalking is the dominant game-oriented land use in the Scottish Uplands and represents a significant economic asset for estates in terms of sporting income (Hambrey et al 2010)). Stalking activities supported 2,520 jobs in rural Scotland in 2005 and generated £105 million (SNH 2016).

Moorlands cover some 15% of Scotland, and approximately 39% of that land (3.08 million ha) is managed for grouse shooting (Wightman and Tingay 2015). It is estimated that some 250,000 grouse are shot annually on Scotland's moorlands, supporting around 1,072 full time jobs, whose availability can often be disproportionately important in remoter areas. Grouse shooting contributed £23.3 million to Scottish GDP in 2009 (Dunlop 2010).

However, there has been a long-standing debate over Sporting within the context of sustainable land use, and sporting estates have been subjected to a continuing critique from environmentalists, land reformers, crofting tenants, community interests and politicians (Wightman and Tingay 2015).

For example, the population of red deer in Scotland has doubled over the last 30 years and there is increasing concern among conservationists about the long-term impact of increased grazing on native woodlands and other sensitive nature conservation sites (SNH 2016). Currently, the government relies on a voluntary approach to deer control, but landowners seem unable or unwilling to shoot sufficient numbers to meet cull targets (Holland et al 2017).

Biodiversity and conservation

The early stages of conservation saw the State taking the lead in conservation matters, e.g. through the establishment of Nature Conservancy (1949), which became the Nature Conservancy Council in 1973 and, in Scotland, SNH in 1992,

which designs and manages Natural Nature Reserves; and by the signing of global treaties (e.g. Ramsar Convention (1971), Convention on Biological Diversity (1992)) and European agreements (e.g. Bern Convention (1979), Habitats Directive (1992)). Currently, Non-governmental organisations (e.g. Royal Society for the Protection of Birds (RSPB), John Muir Trust (JMT), Scottish Wildlife Trust (SWT) to name a few) and, to some extent private estates (e.g. Glenfeshie Estate), are taking the lead (Warren 2009).

Conservation in terms of governance was initially divided into nature conservation and landscape conservation (Reynolds, 1998) but this has now shifted to a more integrated approach which views and values ecosystems holistically (Whitefield and Fielding 2017).

In contrast to forestry, agriculture and renewables, which are more explicit as land uses in spatial terms, nature conservation links to many other land use types and, depending on management practices, will be more or less significant (Laurila-Pant et al. 2015). There are a number of issues for land managers associated with conservation and biodiversity management (e.g. 'hands on' versus 'hands off' / 'wilderness'), in particular on land use types other than those that are managed explicitly for these criteria.

Recently, the 'status quo' conservation approach has moved to a new consideration of 'non-equilibrium' ecology within restoration ecology (e.g. woodland and river restoration, reintroduction of native species) (Warren 2009). Taylor (2005) argues that, whilst the motivations behind these complex and controversial undertakings are diverse (ecological, social, economic, and aesthetic), they underpin the basic belief that we, as the agents of change, hold an ethical responsibility to put things right.

One of the concepts of restoration ecology, which is highly debated in Scotland, is that of re-wilding. Whilst the quality of wilderness is far from easy to define by

common consent and official policy, wild places are special and valuable (McMorran et al. 2008). There are a number of ambitious examples of large-scale ecosystem restoration or ‘rewilding’ evident in Scotland, such as the introduction of large carnivores at Alladale, the regeneration of Caledonian pinewoods at Mar Lodge Estate and the RSPB’s Abernethy Reserve in the Cairngorms, and ‘whole ecosystem regeneration’ at Glen Affric (Taylor 2005).

On a more national scale, it is important to note that the environment is not currently a major priority in the Brexit negotiations, although leaving the UK could have a major impact on a wide range of environmental concerns for Scotland (Bird 2017). A range of environmental issues will need to be addressed at the UK level, including air pollution, achieving good ecological condition of waterbodies, ensuring biosecurity associated with plant and animal imports, and maintaining and enhancing biodiversity in protected sites – to name a few.

2.3.3 Key Land Use Drivers

Land uses are dictated by a range of drivers, and understanding the causes and drivers of land use requires an understanding of both the decision-making process and its context (Miller et al. 2009). It is also important to understand that a broad variety of environmental and social factors, across a range of spatial, temporal and organisational scales, are responsible for making and influencing land use decisions. This can be at household level, where decisions influence local land use practices, or at a local authority level where policies and economic forces can alter land use regionally (Lambin et al. 2001).

The STEEP (Societal, Technology, Economic, Environmental, and Policy and Governance) classification after Erdogan et al. (2009) is adopted here as the basis for the main overview of drivers of rural land use, with a specific subsection (2.4) devoted to Policy and Governance in Scotland due to its complexity.

Most of Scotland’s rural land use drivers interact with each other, with synergies and tensions in terms of scale, intensity and timeframe: for example, the ambitions of climate change mitigation targets, which represent a major driver: the restoration of 250,000 ha of degraded peatland by 2032; increasing woodland cover to 21% by 2032; and obtaining half of all Scotland’s national requirements for heat energy, transport energy and wider electricity usage from renewables by 2030 (Thomson 2006). Often, mitigating for one issue can result in trade-offs for another. It is therefore important to understand the trade-offs associated with land management practices or land use change and to have the flexibility for place based approaches.

Whilst some of these interactions can be predicted (e.g. payment schemes for renewable energy will lead to an increase in windfarm development), many may result from previously unforeseen links (e.g. the loss in tourism for the rural economy due to the outbreak of diseases such as foot and mouth) (Miller et al. 2009) or personal choices of land managers. Table 2.3.3.1 below gives an overview of the current key land use drivers in Scotland.

Table 2.3.3.1 Major land use change drivers in Scotland (Valluri-Nitsch et al. 2018)

| Category | Driver | Explanation |
|---------------|---|---|
| Societal | <ul style="list-style-type: none"> • Shift towards participative land use decision-making. | <ul style="list-style-type: none"> • Incorporating local communities is increasingly recognised e.g. in the 2015 Community Empowerment (Scotland) Act and could fundamentally change land use decisions. |
| | <ul style="list-style-type: none"> • Land reform | <ul style="list-style-type: none"> • Scotland has the most concentrated land use ownership in Europe, but the recent political shift towards land reform, e.g. the 2016 Land Reform (Scotland) Act, could impact land use. |
| Technological | <ul style="list-style-type: none"> • Infrastructure | <ul style="list-style-type: none"> • Rural vitality and land use are |

| Category | Driver | Explanation |
|-----------------------|--|--|
| | improvements | heavily influenced by accessibility, and high-speed broadband is integral to the social and economic development of rural areas. |
| Economic | <ul style="list-style-type: none"> • Brexit | <ul style="list-style-type: none"> • Brexit poses significant challenges for rural Scotland's agriculture and land-based businesses, but also provides an opportunity to reflect and reassess objectives and policies. |
| Environmental | <ul style="list-style-type: none"> • Climate change | <ul style="list-style-type: none"> • Projections indicate an increase in flooding, and changes in crop productivity, species distribution, and pests and diseases, which will interact with other drivers and impact land use (Holman et al. 2016). |
| Policy and Governance | <ul style="list-style-type: none"> • Ambition for joined up land use policy | <ul style="list-style-type: none"> • The Land Use Strategy sets out a vision for more integrative land use policy, relating to the economy, environment and communities, which could lead to significant land use change, e.g. woodland expansion. |

Societal

Social justice and increased participative approach – Article 6 of the United Nations Economic Commission for Europe (UNECE) Aarhus Convention focuses on empowerment and public/community participation in, and awareness of, land management processes. Combining local and expert knowledge is increasingly recognized as an important step in land use decision-making; stakeholder engagement is usually now an intrinsic part of the process (Reed et al. 2009). As an example, the Community Empowerment (Scotland) Act 2015 gives community bodies the possibility to have more control over land and buildings, and strengthens their voices in decisions about public services (SG 2016).

Land ownership and land use challenges – In contrast to many other countries, Scotland has no restrictions on who can buy land or on the quantity of land purchased (Glass et al. 2018), and has the most concentrated pattern of private landownership in Europe due to historic factors such as feudalism, succession laws, fiscal policies, and agricultural support (Lorimer 2000; Cahill 2001; Wightman 2001). It is estimated that 432 landowners account for 50% of the privately-owned land in Scotland (Wightman, 2013). The land reform agenda has progressed considerably in Scotland in recent years, with the passage of the 2003 and 2016 Land Reform (Scotland) Acts, which place an increasing emphasis on all landowners to enable local development and deliver a wider range of public benefits.

While private landownership continues to dominate Scotland, a gradual diversification of land ownership and management patterns has occurred, driven in the first half of the 20th century by state acquisitions of land and, from the 1970s and 1980s, by conservation NGOs and community bodies acquiring land (McMorran 2016). Community landownership has experienced particular growth since 2000, including some major purchases or ‘buyouts’ of private estates, sometimes jointly with environmental organisations (Thomson et al. 2016).

Such purchases have often occurred where there have been conflicts between local communities and landowners relating to development and land management (e.g. landowners perceived as restricting local development or access to land for housing, woodland recreation versus maintaining high deer numbers for sporting purposes), or the level of community involvement in land-use decision making (Wightman 2013). The debate about land use and property rights remains uniquely charged, both politically and socially (Reid 2015; Land Reform Review Group 2014).

Demographic change – As in many other OECD countries, Scotland’s rural population is ageing, which brings challenges in terms of increased demand on

health and social care services and the diversity and sustainability of rural communities. Whilst many of the most remote areas are continuing to experience overall population decline, more accessible rural areas are experiencing growth through in-migration, which often leads to an increase in house prices, making it challenging for locals to acquire housing (Skerratt et al. 2016).

Technological

The geography of Scotland means that that connectivity is a critical issue. Improvement of existing roads and new transport projects, such as rail networks, bus and ferry links, as well as the delivery of onshore and offshore grid connections, will have impacts on land use (e.g. impact of actual construction) as well as providing opportunities and links for rural areas (e.g. living standards and sustainable rural economies) (Skerratt et al. 2016). In particular, high-speed broadband is integral to the social and economic development of rural areas (SG 2012). However, whilst connectivity in urban parts of Scotland is continually increasing in speed (Townsend et al. 2017), much of rural Scotland still suffers from broadband and mobile ‘twilight zones’, hampering the efforts of businesses to survive and grow and preventing tourists from being well connected when they visit. Furthermore, as more and more services are available online (including health and other public services), the lives of local residents are negatively affected if they do not have access to these.

Economic

It is widely acknowledged that the EU has had a profound effect upon UK environmental policy, both through the Single Market and environmental regulation, and policies in areas such as agriculture, climate change, energy and fisheries (Burns et al. 2016). Whilst Brexit poses significant challenges for rural Scotland’s agriculture and land-based businesses (e.g. uncertainties over post Brexit funding mechanisms or trade arrangements), it also provides an opportunity to reflect and reassess objectives and instruments in order to redesign them to better reflect Scottish preferences and conditions (Bird 2017). However,

this requires proactive thinking to indicate the preferred level of direction when the time comes.

Furthermore, whilst land-based businesses are undoubtedly important for rural Scotland, there is also a great range of other activities and, whilst they may not be generating a huge amount of employment, they often provide vital services for local communities or supply a unique product to the global market. For example, the vibrant food and drink industry contributes £14 billion per year to the Scottish economy (Scotland Food and Drink 2017). There is a growing number of small-scale, craft and artisan producers, many of which operate in rural regions. Scottish Whisky and Salmon have Protected Geographical Indication (PGI) status, but may be overlooked in UK trade negotiations as they only present a small proportion of the UK's total trade.

Environmental

Climate Change - Scotland is rich in natural resources and associated ecosystem services, but potentially sensitive to both the adverse and beneficial impacts of climate change. For example, the current climate of many parts of the country is marginal for agriculture (Brown et al. 2011) and important components of Scotland's biodiversity are at the margins of their climatic suitability (Trivedi et al. 2008). Recent scenario studies for 2050 in Scotland predict that flooding will increase in all regions due to an increase in temperature; that climate change will lead to a more homogenous landscape and an increase in intensive farming; that forests will be replaced by agriculture; and that certain species will migrate either further north or to higher altitudes as the climate becomes wetter and warmer (Holman et al. 2016).

Policy and Governance

Due to its complexity, this driver has its own section below (2.4)

2.4 Policy and Governance

2.4.1 The development of rural policy over time and wider influences

Post World War II

Following World War II, the UK government mainly saw the function of rural areas as relating to the provision of food. This resulted in rural policies being predominantly focussed on production, particularly through input subsidies and price guarantees (Baldock et al. 2001). In-migration to some rural areas, in combination with increasing emphasis on tourism in many rural areas, also led to changes (e.g. pressure on existing services and infrastructure, increase in housing prices) in rural society (Stockdale et al. 2000).

In the meantime, the post-war focus on rebuilding the nation and the increase in land use intensity led to an increased desire to preserve parts of the countryside (which subsequently led to the establishment of a wider conservation movement (Eigenbrod et al 2016)), which was perhaps one of the earliest visions for land use.

Britain joins the European Union until devolution (1973-1997)

From the 1960s onwards, largely due to reforms at UK and European levels, a more strategic government-led approach to supporting rural development began to be developed, including through support for the establishment of large industries in rural regions as 'growth poles', such as the Dounreay nuclear power plant (McCarthy 2005). In 1965, the Highlands and Islands Development Board (which became Highlands and Islands Enterprise (HIE) in 1991), advocated rural development through the provision of capital and expertise to reverse depopulation and create employment (HIE 2015). However, due to the top-down approach to decision making and lack of input of the local population, the growth poles approach failed to deliver enduring rural development (Lowe et al. 1995).

In parallel with the strategic investment approach to rural development, Scottish agriculture became increasingly mechanised, and outputs increased in response to higher prices, placing increasing pressure on the environment (Robinson and Sutherland 2002). This resulted in the emergence of an environmental lobby from the 1970s and 1980s, which increasingly challenged the central role of agriculture in rural areas (Cameron 2005). The NGO-led environmental agenda was strengthened through key policy measures such as the EU Habitats Directive (1992). The need for consideration of wider rural development issues in Scotland, such as housing and tourism, was to some extent addressed through the establishment of the cross-sectoral Rural Forum. However, due to increasing debt and loss of credibility this alliance ceased to operate in 1999 (MacAskill 2009).

The EU's Common Agricultural Policy (CAP) has played a critical role in shaping rural Scotland in recent decades. Historically, it was very much sectoral, focussed on agriculture and production, and failed to deliver wider rural development (Cameron 2005). However, it evolved through a set of multiple major reforms, beginning in the 1990s, which aimed to break the link between subsidies and production, diversify the rural economy, and respond to consumer demands for safe food, as well as high standards of animal welfare and environmental protection (Baldock et al. 2001).

In parallel, reforms of European structural policy in 1989 and 1993 led to a gradual shift towards a more place-based and integrated approach to rural regions, with a strong focus on partnerships and working across multiple levels of governance (EC 1998). In response to concerns around the ineffectiveness of top-down investment approaches (growth poles) and criticism of the CAP for its sectoral (agriculture-oriented) approach to rural development, the LEADER (Links between actions for the development of the rural economy) programme was established in 1991. It was aimed at supporting bottom-up, integrated and innovative approaches to rural development at community level (Brown 2010).

In Scotland, the need for a more coherent and partnership-based approach was further recognised in the Rural White Paper (Bryden and Mather 2008), which proposed Local Rural Partnerships, Scottish National Rural Partnerships and a Scottish Rural Partnership Fund. It also identified the need for community involvement in rural areas on a partnership level, but was criticised for lacking a vision for landscape and the environment, failing to recognise the role of European policy, tensions between sectoral policies, and a perceived gap between policy aims and delivery mechanisms (UK Government 2005; Lowe 1996).

Post Devolution (1997 – today)

Despite the establishment of the Scottish Parliament in 1999 and the Scottish Government's ambition for a more prosperous, vibrant and diverse countryside with community partnerships (as laid out in *Rural Scotland – a new approach*, SG 2011b), the governance of rural policy actually became more centralised at a national level in combination with high-level sectoral consultations. This was due to the requirement of regional development plans which essentially shifted rural development away from regional policy towards agricultural policy, leading a move away from place-based approaches and resulting in less rural diversity (OECD 2008). A comprehensive review by the OECD in 2007-2008 concluded that, whilst Scotland's approach to rural policy was innovative, it suffered from a sector-by-sector focus and a segmented delivery system. Furthermore, the high spatial variability was recognised as requiring a flexible approach to address the rural challenges and assets of different areas (OECD 2008).

Whilst the key recommendations of the 2008 OECD report were focussed around investment into rural territories to enhance their capabilities and empower communities to increase their overall competitiveness, the change to a Scottish National Party (SNP) Government in 2007 led to a further shift away from that vision, to an emphasis on delivering targets set out in the *National Performance Framework (NPF)* (SG 2008). The aim of the NPF is to improve the overall

economic performance of Scotland. Nevertheless, some measures implemented by the SNP Government reflect the recommendations laid out in the OECD report, e.g. increased focus on building active and confident rural communities which are well connected; creating competitive enterprises; and fostering world-rated natural and built environments.

The government's response represented a statement of priorities as opposed to a comprehensive rural strategy (*'Our Rural Future'*, SG 2011b). Since then there has been a wider focus on community empowerment through the Community Empowerment Act Scotland (2015), the measures within the Scottish Land Use Strategy (2011 and 2016a) and the second Land Reform Act Scotland (2016), with the aim of strengthening the community planning process and community input into land use decision making. It is hoped that this place-based approach will give communities in rural areas the opportunities to address inequalities and area-specific challenges (McMorran 2016).

2.4.2 Key current overarching policy drivers

Having reviewed the history of rural policy, this section will outline key current policy drivers impacting on rural Scotland. At present, Scotland does not have an overarching rural policy or vision, despite the Government's current approach of 'mainstreaming' rural into all Scottish policies (Atterton 2018). There are a number of key policy themes that strongly relate to rural development, such as place-based community engagement; Land Reform; National Planning Framework; and Scotland's Economic Strategy. These drivers are also supported in key pieces of national and rural policy and legislation. Among the wide range of policies, strategies and plans, some of the more influential ones for rural Scotland are briefly outlined in the following sections.

Policies

A place based approach / Community empowerment - The place-based approach directly links in with Scotland's Economic Strategy (SG 2015b), taking into account that opportunities and benefits should be distributed fairly (e.g. access to transport and broadband, health and wellbeing services, education and training). It emphasises the need for 'local plans for local places' whether city regions or rural areas (MacLeod 2017).

Furthermore, the Community Empowerment (Scotland) Act (2015) aims to ensure that people's voices are heard in public sector decisions (e.g. allocation of resources, design and delivery of services and use and ownership of assets). It raises the profile of Community Planning and strengthens the rights of communities to purchase land and buildings.

Land Reform - Land reform (rural and urban) has been on the rural agenda for some time but re-emerged when the Land Reform (Scotland) Act was passed in 2003. This introduced the statutory right of access, the community right to buy (CRtB), and the 'crofting community right to buy' eligible land and other assets.

The CRtB was designed to help communities to acquire land when a landowner wishes to sell, through a 'pre-emptive' right to purchase the land or asset. However, the uptake of the CRtB was initially somewhat disappointing and lost momentum (Macleod 2017).

Nevertheless, since 2007 the CRtB has experienced a resurgence, with the change to the SNP government and the formation of the Land Reform Review Group (LRRG 2014), which ultimately led to the second Land Reform Act in 2016. This established a number of additional key measures, including a requirement for the development of a Land Rights and Responsibility Statement; the establishment of the Scottish Land Commission (which successfully launched in 2017); and an absolute community right to buy where sustainable development is being inhibited.

National Planning Framework (NPF) - The NPF brings together all strands of Scottish Government policy, with a series of 16 key national outcomes and underpinning Indicators. It is currently under revision and due to be updated during 2018. The Community Empowerment (Scotland) Act (2015) puts it on a statutory footing, increasing the duty of all public bodies to demonstrate delivery to the National Outcomes (NPF Outcome 16: 'Our public services are high quality, continually improving, efficient and responsive to local people's needs.', SG 2008).

Sustainable Economic Growth - Delivering sustainable economic growth is a key driver underpinning all policy in Scotland and is firmly set within the Scottish Government's Economic Strategy 2015. A core aim of the strategy is to create a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth (SG 2015b).

HIE provides regional leadership and works towards securing sustainable economic growth and supporting a diverse and resilient economy across the Highlands and Islands. Key to achieving this are collaborative approaches,

promoting leadership as a driver of growth, addressing the jobs challenge, and addressing challenges in specific sectors (e.g. tourism, food and construction) (HIE 2015).

Legislation

Over the last few years the process of establishing new legislation has been very dynamic in Scotland. Below are the key pieces of legislation that are having or could have a significant impact in the future of Scottish land use.

Crown Estate Bill - The Smith Commission (SG 2014b) recommended that assets of the Crown Estates in Scotland should be devolved. As a result, Crown Estate Scotland was established in 1961, and is responsible for managing a range of rural, coastal and marine assets and leasing land to 2000 individuals and businesses. It influences rural land use by supporting aquaculture, farming, forestry, tourism and offshore renewables through research. As part of this, asset transfer schemes are currently being piloted in order to empower communities and give local people more say in decisions that impact the land, coastline and sea near where they live (Crown Estate 2017).

Planning Bill – This sets out aspirations for a shift from reacting to development proposals to proactively supporting investment and place-making. It also strengthens participation rights; has a strong focus on delivering the development that communities need; empowering communities to become more involved and have a real influence over future development; and reducing the complexity of the planning system. It has, however, been criticised for its balance of power and an inequality in appeal rights (Scottish Environment Link 2018).

Climate Change Bill – A key component of this bill is to mitigate climate change whilst still creating a growing, sustainable and inclusive economy. It sets the ambitious target of reducing Greenhouse Gas Emissions (GHG) by 42% by 2020 and 80% by 2050 (SG 2017) and has significant potential in changing land use through, for example, woodland expansion (which is likely to be strengthened

through the new Forest and Land Management Bill (see below)), peatland restoration, changes in farming systems (e.g. buffer strips), and appropriately placed renewable energy developments (i.e. not on peatlands).

Islands (Scotland) Act 2018 - This is an important piece of legislation as it is place-based, with the aim of meeting the needs of the island communities now and in the future through encouraging place-based approaches. It seeks to ensure that island communities are not disadvantaged due to their location and therefore any new or revised legislation, policies or strategies must be assessed with that in mind and readjusted if needs be.

Forestry and Land Management (Scotland) Act 2018 – The bill passed through parliament in March 2018. It will now transfer the powers and duties of the Forestry Commissioners to Scottish ministers in order to provide them with the duty to promote sustainable forest management through a new forest strategy. It could potentially have significant impact on land use as it will widen the provisions which are currently available for management of forestry land as well as setting out provisions for compulsory purchase and the delegation of management functions to community bodies (and therefore also supporting the asset-based community development approach).

Land Reform (Scotland) Act 2016 - The Scottish Land Commission, which was established through the Act, sets out four key priority areas covering rural and urban land: Land for housing and development (i.e. making more land available for developing in the public interest); Land ownership (i.e. impacts of scale and concentration of land ownership and the effectiveness of the community right to buy mechanisms); Land Use Decision Making (i.e. how to improve the quality and accountability of decision making); and Agricultural Holdings (i.e. more opportunities for new farm entrants and better relationships between land owners and tenant farmers).

Community Empowerment (Scotland) Act 2015 - This has already led to a series of shifts directly relating to rural Scotland such as: the rise of 'status' of community land ownership; the change in arrangements for Community Planning Partnerships from Councils being lead partners to third sector partners; and a statutory requirement for an update of the National Performance Framework Outcomes with implications for speed and delivery. Asset-based approaches are encouraged as an integral part of community development, in the sense that they are concerned with facilitating people and communities coming together to achieve positive change using their own knowledge, skills, and lived experience of the issues they encounter in their own lives.

Impact on rural land use of policy

These drivers and legislative measures are translated through, and referred to in, a series of frameworks, schemes and strategies which are particularly relevant to land use and should be mutually supportive. However, at present there is no clear framework within which they are located or which shows the linkages between them.

Land Use Strategy - It appears that the Scottish Land Use Strategy will not be considered in the same ranks as the National Marine Plan and the National Planning Framework unless it receives statutory status. It has, however, great potential to develop land use choices which enable adaptation to either the positive or negative aspects of climate change (Scottish Environment Link, 2010).

Ambition 2030: A growth strategy for farming, fishing, food and drink - This is an industry-led strategy which will very much depend on the commitment of the partnerships between industry, government and its agencies to succeed. At its core are people and skills, the relationships along the supply chain and innovation.

Scottish Rural Development Programme (2014-2020) - A European programme which sits under Pillar 2 of the Common Agricultural Policy and focusses on funding economic, environmental and social measures for the benefit of rural Scotland in order to achieve sustainable economic growth in Scotland's rural areas. It is currently unsure what its – if any - post Brexit replacement will be.

2.4.3 Brexit and the future of Rural Scotland

Despite the wide range of policies and strategies aiming to strengthen rural Scotland, in 2018 the criticisms of the OECD (2008) still stand. Whilst there has been a shift towards place-based and community-driven approaches, there have been concerns about potential inequalities – e.g. the questions of what is a community (place or interest?) and whether all voices are being heard? A new approach to counteract this is the approach of '*networked rural development*', which acknowledges the key role of wider external partners and networks, with the State as enabler as opposed to being outwith the development process (Shucksmith 2012).

The development of the Scottish Rural Network as a forum for knowledge exchange and engagement reflects the '*networked rural development*' model in a Scottish context. Furthermore, the establishment of the Rural Parliament in 2015 presents a further mechanism for rural voices to be heard and concerns expressed for rural areas, although it is unclear how it should interact with the Scottish Parliament to directly influence outcomes (Rural Affairs, Climate Change and Environment Committee (RACCE) 2016).

Crucially, it has been argued that the Government's current approach of 'mainstreaming' rural into all Scottish policies has resulted in a lack of any single clear and coherent vision for rural areas. Furthermore, the continuing dominance of land management and environmental issues within rural policy domains results,

in practice, in significantly less funding being available for rural communities and business development (Skerratt et al. 2016).

Whilst Brexit presents a time of great uncertainty, it also presents an opportunity for Scotland (and the UK more generally) to consider a more tailored approach to rural development and agricultural policy. Land use sectors have developed visions and voiced concerns – e.g. subsidies and labour being the main concern for agriculture, the need for a countryside policy rather than farm policy from the forestry sector (Confor 2017), or DEFRA's vision for public payment for public goods (DEFRA, 2018). This leads to a range of questions which will need addressing, such as securing public goods; time and spatial scale of policies; centralisation versus local; role of taxation in a devolved Government; digital and physical connectivity; or how to compensate rural communities who have previously been highly dependent on EU funding.

CHAPTER 3 – PROFESSIONAL LAND USE STAKEHOLDER VISIONS

My land? Your land? Scotland?—understanding sectoral similarities and differences in Scottish land use visions. (Chapter 3)

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3.1 Introduction

The aim of this Chapter is to provide insights into the contrasts and synergies in land use visions for Scotland as outlined in Chapter 1.

The reader is reminded of the sectoral overview of current land use in Scotland and uncertainties for the future (Table 2.3.2.1), and major drivers of future change presented in Table 2.3.3.1. These have also been extensively described in Sections 2.3 and 2.4 of the literature review, as has the importance of Visions and Scenarios (Section 2.2).

It is acknowledged that the land use and land use driver categories presented often overlap and are interlinked; however, creating a distinct set of categories facilitated a functional framework for structured interview discussions and subsequent analysis.

The analysis has largely taken a reductionist approach for reasons explained in Section 1.4. However, it is acknowledged that this part of the research in particular, provided such a depth and breadth of data which could have sustained a full thesis in itself. If this had been the case a range of other methods such as for example Q- or Delphi methodology, participatory methods or discourse analysis could have been more suitable for design and analysis. Section 6.3.5 and 7.2 will discuss this in more detail.

3.2 Methods

3.2.1 Stage 1: Stakeholder selection

Following an extensive literature review, seven land use sectors were identified that either cover large areas, are under major pressure of change, or have considerable policy relevance in Scotland: agriculture; crofting²; forestry; renewable energy; sporting (or 'hunting' as it might be better known outside the United Kingdom); biodiversity and conservation; and tourism and recreation. In addition, given the unique pattern of land ownership mentioned above, the attitudes and aspirations of land managers and land owners can have significant impacts on the way land is used now and in the future. Consequently, an eighth 'cross-cutting' land use sector was added to the list, to represent those who consistently work across different sectors on their land.

For each sector, one individual was selected to represent private (P), non-governmental (NGO), or public (PU) stakeholders, as follows. First, a shortlist of key stakeholders in the sector was created. Then, interviewees were selected based on their level of involvement in land use, land use policy or strategic planning within their organisation. If the candidate was unable to participate, s/he was asked to suggest an alternative contact.

3.2.2 Stage 2: Interview design

The focal questions and spatial boundaries for interviews were defined by the study aim: to understand land use visions for rural Scotland in 2050. The STEEP classification (Section 2.3.3) was used to structure the interview questions.

² A croft is a small agricultural unit (1/2 ha to more than 50 ha), rented and farmed by the crofter typical for northern and western Scotland (Scottish Crofting Federation 2016). At present, there are 20,566 crofts 14,898 tenanted crofts and 5,668 owned.

Even though the STEEP analysis is a tool commonly used in marketing to evaluate different external factors which impact an organization (Szigeti et al. 2011), it has also been suggested as a useful frame for constructing qualitative scenario storylines for environmental change assessment (Rounsevell and Metzger, 2010). STEEP was adopted here because it considers some critical external forces impacting on the land use sector and which can have an impact on the decision that are being made. It is also often used to get a detailed overview (which was the aim of the first phase) on what external factors impacting on the company / sector(s) in particular. It is however acknowledged that this is a pragmatic, somewhat reductionist approach but because one of the planned outputs for this research project was a list of recommendations and further work it was thought to be a constructive way to gather the critical points. This was also the reason why it was decided against working with scenarios such as for example used in the Millennium Ecosystem Assessment (Alcamo et al. 2005).

Participants were specifically asked to outline their preferred or 'ideal' future – as opposed to the 2050 which they thought would realistically happen – although it is recognized that there was often overlap between the two futures of Rural Scotland (cf Metzger et al. 2016). They were asked the following questions:

*What is **Society** / **Technology** / **Economy** / **Environment** / **Policy** like in 2050?*

Within each question, participants were encouraged to talk about a range of land use drivers such as:

Society - Demographics of the rural society, affordable housing, jobs, transport, services and amenities; and the concerns and preferences of wider society such as equality, ethics and community spirit.

Technology - Transport and infrastructure, smart technologies, broadband and mobile phone coverage, high-precision farming, and renewable energy supplies.

Economy - Timber and agricultural prices, transport infrastructure, housing and tourism.

Environment - Climate change-related adaptation and mitigation, ecosystem health.

Policy and Governance - Shifts from sectoral to integrated policies to multi-functionality, partnerships and community involvement.

Interviews were recorded. At the end of the interview, participants were asked to fill out a short table, identifying their three most important vision characteristics for each STEEP category, as well as the three main barriers to achieving their overall vision. It should be noted that the interviews were conducted in January 2015, before the referendum that led to Brexit in June 2016.

3.2.3 Stage 3: Transcribing and coding interviews and analysing visions

Each interview was fully transcribed and sent back to the interviewee to check whether he/she agreed with the record, which was the case for all interviewees. The material was then imported into NVivo to carry out the primary analysis: deductive coding of the transcribed text to identify specific vision elements across the sectors. Complimentary methods, such as discourse analysis, were not considered at this stage as this would have pushed the project outwith given timescale of doing three different studies as part of the PhD (i.e. land use stakeholders, young people and society) rather than one group in depth. It is however acknowledge as a possible next step for further work in Chapter 7.

Three stages of analysis were undertaken. Firstly, questions were grouped by STEEP category and responses inductively coded for similar vision elements (i.e. themes). Secondly, these vision elements were compared to key vision aspects that interviewees had written down at the end of the interview. Finally, each interview was read in its entirety to identify any vision elements that were expressed across

the STEEP categories, but were not picked up when reviewed within the separate categories.

3.2.4 Stage 4: Comparison and analysis of visions

The vision elements (codes) were extracted from NVivo 12 qualitative data analysis software and exported into Excel where they formed the basis for a synergy table. In this table vision elements were grouped into the relevant STEEP categories (rows) and sectoral interviewees were listed along the top (columns). Cells in the table were checked when a vision element was discussed by a specific stakeholder. An overall vision summary was written for each sector. Finally, an attempt was made to aggregate the vision elements into a limited set of cross-sectoral visions, like the process described by Perez-Soba et al. (2015) to create three consolidated land use visions for Europe.

3.3 Results

3.3.1 Step 1 and 2: Stakeholders and interviews

It was not possible to find private stakeholder representatives within the conservation sector and NGO stakeholder representatives were also absent from the crofting sector, resulting in 21 interviewees (full transcripts of these are provided in the electronic appendix). Furthermore, the public stakeholder interviewee from the cross-cutting sector had to withdraw due an internal policy change, and it was not possible to find a suitable replacement. The public interviewee from the tourism sector was not involved in any policy-related work within the organization, resulting in the topics and themes of this interview deviating slightly from those who worked in policy.

The resulting gaps in the dataset are important to highlight. Interview dates were specifically planned to not coincide with important seasonal commitments (e.g. lambing, holidays) to ensure that those stakeholders working in the sector could

make time for the interview. The lack of interest from the tourism sector was surprising since this industry heavily relies on the way Scotland 'looks' and changes to this (e.g. wind farms, large scale tree harvesting) could have a major impact on the visitor numbers choosing to come to visit these areas. Perhaps they feel that they do not have any influence as they are not land owners but users.

In hindsight private land owners particularly engaged in conservation such as Anders Povlsen who owns Wildland Ltd. could have been approached. He is now the largest landowner in Scotland, owning (Macaskill 2018) and whose 200 year vision is to focus on conservation, protection and sustainable development in those regions.

Finally, the withdrawal of the public sector interview was very disappointing as this provided some deep insights into a range of factors from a non-sectoral policy perspective.

Interviews lasted on average 45 minutes, with the longest lasting 64 minutes and the shortest 35 minutes. All interviews were face-to-face, apart from one conducted over the phone for logistical reasons. Most interviewees engaged very well with the rather abstract topic, although some struggled to keep their thoughts in the future and kept being drawn back to a range of possible trajectories in the here and now. Nonetheless, all interviewees engaged passionately during some parts of the interviews, particularly when talking about the issues of concern to them. They felt that they had been given a safe platform to speak about their visions and to voice their concerns, in contrast to being part of a wider stakeholder workshop or focus group.

3.3.2 Similarities and differences between sectoral vision elements

The vision elements were analysed using qualitative content analysis (Bryman 2012) and are summarized in Table 3.3.2.1. They distinguish 35 vision elements, between 3 and 13 per STEEP category. This overview depicts which elements were

mentioned by each interviewee. Together with the sectoral summary visions discussed in Section 3.4, this formed the basis for presenting the results. There were also two concepts which many interviewees referred to, as defined below:

- 1) *Coherent policies* - The logical promotion of mutually reinforcing policy actions across government departments and agencies to achieve the agreed aims (OECD, 2016).

'My interpretation of the current government is that they tend to avoid any real forward thinking, and any controversial decision is pushed to another group. So there is no coherent vision which is determining policy. Policy decisions are just being made on the basis of what will work politically at that moment. And that means there's no big forward look. If we want to see real progress then this needs to happen.' (Cross-Cutting, Private)

'I think we need more coherent policies - maybe the land use strategy should pull together all these standalone policies and act as the overarching framework for land use? So then everyone (farmers, foresters, land owners) will have to work together rather than different groups pursuing their own goals' (Renewables, Public)

- 2) *Strong communities and resilient local economies* – Attractive places where people want to come to live and work; where they have access to education, health care, shops, good transport links, internet and mobile phone coverage and access to the countryside (Berkes and Ross 2013).

'My belief is that people are happy in smaller communities where they have that feeling of connection in the way that people do in their family, and then you have that kind of slightly tribal connection with the community you're from, and we don't live like that and does it make us happier?' (Tourism and Recreation, NGO)

'There are different ways of doing it (boosting the rural economy). You can just give people cash. Or you can try and create a sort of spirit of entrepreneurialism, so your start-up businesses and people setting up new initiatives that are then durable. That way you are actually making it an attractive place to be and people want to come and live there.' (Sporting, Private)

Table 3.3.2.1 Vision elements per land use sector

(P=Private, Pu=Public, N=NGO)

| | Vision Elements / Sectors | Agriculture | | | Crofting | | Forestry | | | Renewables | | | Sporting | | | Biodiv. & Conservation | | Tourism & Recr. | | Cross-Cutting | |
|--|---|-------------|----|---|----------|----|----------|----|---|------------|----|---|----------|----|----|------------------------|-----|-----------------|---|---------------|----|
| | | Pu | Pr | N | Pu | Pr | Pu | Pr | N | Pu | Pr | N | Pu | Pr | N | Pu | N | Pu | N | Pr | N |
| | | | | | | | | | | | | | | | | | | | | | |
| Society | Less conflict | | X | | | | X | | X | | X | | X | X | X | | | | X | | |
| | Dialogue, Collaboration and Partnerships <i>between Estates / Regions (PR)</i> | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| | Society has a better understanding about how the land is managed and about the benefits good land management brings but has only limited involvement in decision making | | X | | | | | | | | | | | X | | | | | | X | |
| | Society has a better understanding about how the land is managed and about the benefits good land management brings through increased dialogue, collaboration and partnerships | | | X | X | X | X | X | X | X | X | X | X | | X | X | X | | X | | X |
| | Society has a better understanding about how land is managed and about the benefits that good land management brings and what impact their choices make | X | | | | | | | | | | | | | | | | | | | |
| | Strong, engaged, inclusive, empowered communities / Localism and equal voices | | | X | X | X | X | | X | X | X | X | | | | X | X | | X | | X |
| | Diverse culture with strong links to natural heritage | | | | | | | | | | | | | | | | | X | | | |
| | More Egalitarian form of land ownership | | | X | | X | | | X | | X | X | | | | | | | | | |
| It is not about land ownership but land management | | | | X | | | | | | | | | | X | | X | | X | | X | |
| Technology | Energy efficiency | | | | | | | | | | X | | | | | | | | X | | |
| | Improvement in the decentralised energy network through small scale renewables (*combination of small and large scale) | | | | X* | X | X | X | X | | X* | X | | | | X | | X | X | X | |
| | Better quality data and data sharing (leading to better decision making tools) | | | X | | | X | | | X | | | X | | X | X | | | | | X |
| Economy | Resilient and diverse local economies fostered by investment in rural development (e.g. investment, IT and community services) | | X | X | X | X | X | X | X | X | | | | | X | X | X | X | X | X | X |
| | More investment in land based businesses | | X | X | X | X | X | X | | | | | X | | | | X | X | X | X | |
| | Strong profitable sector | | | | | | X | | | X | | | X | | | | | X | | X | |
| | True Cost Accounting (*Global) | | | X | | | X | | X | | | X | | | | X | | X | | | X* |
| | Sector specific improvements | X | X | | X | X | | X | X | | X | | X | | | | | | | X | |
| | Payments for Ecosystems (* instead of subsidies, ** on agreed objectives, *** for particular species) | X* | | | | | | | | | | | | X* | X* | | X** | X* | | | X* |

| | Vision Elements / Sectors | Agriculture | | | Crofting | | Forestry | | | Renewables | | | Sporting | | | Biodiv. & Conservation | | Tourism & Recr. | | Cross-Cutting | |
|---|---|-------------|----|---|----------|----|----------|----|---|------------|----|---|----------|----|---|------------------------|---|-----------------|---|---------------|----|
| | | Pu | Pr | N | Pu | Pr | Pu | Pr | N | Pu | Pr | N | Pu | Pr | N | Pu | N | Pu | N | Pr | N |
| | | | | | | | | | | | | | | | | | | | | | |
| Environment | Landscapes are places where people live and work as well as places for recreation. Scotland has a diverse and multifunctional landscape | | X | X | X | X | X | X | X | | X | X | | X | X | X | X | X | X | X | X |
| | Environment underpins everything | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| | Improved Ecosystem health | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| | Scotland is on track of meeting it's climate change targets | X | | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | X | | X |
| Policy & Governance | Political will and open discussion about trade-offs | | | X | | | X | | X | | | X | X | X | | | | | | X | |
| | Less political intervention | | | | | | | | | | | | X | | X | X | | | | X | |
| | Clarity on management objectives (e.g. function or composition) | | | | | | | | | | | | | | X | | | | | | |
| | Clarity over Scotland's position in the wider global political landscape (e.g. independence, EU membership) | | X | | X | | X | | X | | X | | | | | | | | | | |
| | Coherent policies and payment mechanisms which consider short and long term management decisions | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| | LUS is the key document for land use and its coherent policies and payment mechanisms which has led to better decision making tools (* including advisory service) | | | X | X | | *X | X | X | *X | X | X | X | | | | | | | | |
| | Efficient and restructured local more independent authorities | | | | X | | X | | | X | | | | | | | | | X | | X |
| | Efficient and restructured local and public authorities into geographical regions (e.g. catchment) | | | | | | | | | | | | | X | X | | | | | | |
| | Better environmental legislation (* if free markets) | | | | | | X | | | | | | | X | | | X | | | | X* |
| | Advisory approach | | | | | | X | | | X | | | | X | | | | | | | |
| | More rule making powers | X | | | | | X | | | | | | | | | | | | | | |
| | Restructuring of CAP in favour of the environment | | | | | X | X | | | X | | | | | | | X | | | | |
| Abolishment of CAP and free for all markets | X | | | | | | | | | | | | | | | | | | | X | |

Seven vision elements were mentioned by at least 15 or more interviewees:

- The environment underpins everything; Ecosystem health will be improved (20/20)
- There will be coherent long- and short-term policies and payment mechanisms (19/20)
- More dialogue, collaboration and partnerships between regions and estates (18/20)
- Meeting the climate change targets (17/20)
- A diverse multifunctional landscape (17/20)
- Scotland's society is more aware and appreciative of land use and land use decision making (15/20)
- Diverse and resilient local economies (15/20)

There were also significant differences in visions, predominantly when talking about society and policies in 2050. Interviewees often discussed ownership and societal involvement in decision-making in their visions, which ranged from increased public ownership and involvement in decision-making to no change in land ownership and only limited involvement in decision-making. A few (notably NGO) stakeholders were indifferent about land ownership, but emphasised sustainable land management.

The other principal area of divergence concerned policy instruments and payment mechanisms. Payments for ecosystem services (PES) (Huxham et al. 2014) was very popular with private and public sector stakeholders, while interviewees from the NGO sector highlighted the importance of true cost accounting - a method tracing direct costs and allocating indirect costs by collecting and presenting information about the possible environmental, social and economic costs and benefits or advantages - rather than PES, emphasising that sound environmental land management should be the default and not a reward. There were also differences within the private and public sectors: some favoured a restructured subsidy system rewarding good environmental practices (e.g. PES),

whilst others would like less market intervention, to allow rural businesses to reinvent themselves based on their strengths and innovation.

3.3.3 Visions of stakeholder groups (Private, Public, NGO)

As mentioned above, the three stakeholder groups shared similar visions for an improved environment, a diverse and multifunctional rural landscape with strong rural communities at its heart, and coherent policies and support mechanisms for short- and long-term management decisions. There was also a shared wish that society will have a better understanding about land management and the public benefits of good land management. Figure 3.3.3.1 summarizes the vision elements per stakeholder group (Private, Public, NGO). The differences between the groups are detailed below.

Vision Elements by Stakeholder types (Public, Private and Non-Governmental)

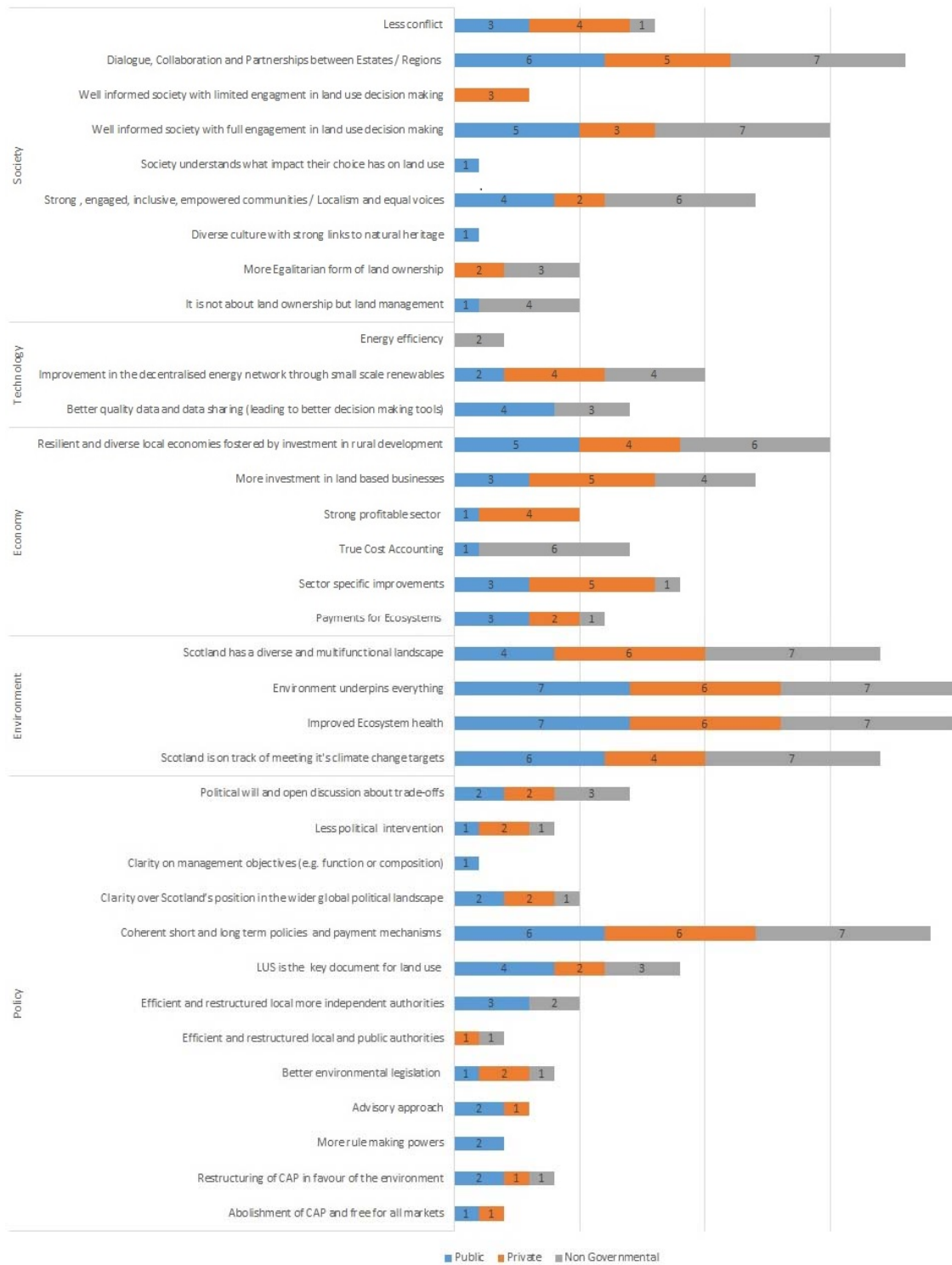


Figure 3.3.3.1 Vision elements mentioned in the interviews, grouped for public, private and non-governmental stakeholders.

Private Stakeholders

Despite the diverse range of private stakeholders, the key themes across the sectors were similar. Overall, their vision was that, by 2050, the private sector will be strong and profitable, with good investment in land-based businesses and entrepreneurship. Sector-specific improvements and their anticipated benefits featured in all visions, as did the emphasis on a more decentralised energy network (except from the sporting and agricultural sector).

All interviewees, apart from those from the forestry and crofting sector, expressed their wish for less conflict around the subject of land use in 2050. Except for the interviewee from the agricultural sector who did not mention this, all would like to see more dialogue and partnerships either between estates and regions (Sporting and Cross cutting sectors) or between society, sectors and the government (Crofting, Forestry, Renewables sectors).

Whilst the interviewees from the renewable and crofting sectors highlighted the importance of a more egalitarian model of ownership in 2050, those from the sporting and cross-cutting sectors argued that it should be more about land management rather than ownership.

Although the interviewees from the sporting and cross-cutting sectors would like to see less political *intervention*, they would like to see more political *will* and open discussion about trade-offs and a potential strengthening of environmental legislation in case of a free market for all scenario. The introduction of PES was also a strong element in their vision.

'I mean I think that there needs to be a mechanism for payment for ecosystem services and then that would align the landowner's interests directly with the public interest.' (Cross-Cutting, Private)

Some of the interviewees spoke about their wish for the introduction of PES instead of a subsidy regime, but none mentioned the principle of true cost accounting, which was a dominant theme in the visions of the NGO stakeholders.

Public Stakeholders

The overall vision from this group was that, by 2050, Scotland's ecosystem health will have improved and Scotland will have met its climate change targets.

Everyone, except the interviewee from the tourism sector, spoke about their wish for a society that better understands how land is managed and the benefits that good land management brings. There was also wide agreement (crofting, forestry, renewables, sporting, and biodiversity sectors) about the need for improved dialogue and collaboration between sectors and the government (see 4.2). This closely tied in with those wanting improved access to, and sharing of, data.

A more equal, engaged and empowered society was an important vision element from the interviewees from the crofting, forestry, renewables and biodiversity sectors. The interviewees from the crofting, forestry, renewables and tourism sectors spoke about their wish for resilient and diverse local economies in 2050. Improved broadband internet and phone reception were important to the interviewees of the crofting, forestry, biodiversity and tourism sectors, who also spoke about the importance in seeing the countryside as a working living landscape.

'I would like to see a change in understanding and a change in awareness of the value of land. I want people to recognise that it is not just the place where you go hiking or mountain biking on the weekend but where people actually try to make a living.'
(Biodiversity, Public)

A fit-for-purpose Land Use Strategy and efficient, restructured authorities were essential vision elements from the interviewees from the crofting, forestry, renewables and sporting sectors. Those from the forestry, sporting and biodiversity sectors expressed the hope for less conflict around issues such as controlling deer numbers, woodland creation, and conservation, combined with improved political will for open discussion of these bottlenecks to discuss solutions and trade-offs.

The agricultural, sporting and biodiversity sector interviewees would like to have PES instead of subsidies in 2050. A restructuring of the EU's Common Agricultural Policy in favour of the environment and an improved advisory approach were important to the interviewees of the forestry and renewables sectors.

Whilst no interviewees spoke about a wish for less political intervention, they did wish for improved environmental legislation and more rule making power. For the interviewee from the agricultural sector, the abolishment of the CAP and free for all market rules was a dominant vision element.

NGO Stakeholders

NGO interviewees were the most homogeneous about their vision elements. In 2050, they hope that Scotland will be meeting its climate change targets and will have observed a steady increase in ecosystem health. However, apart from recreational benefits, the rural landscape is also a workspace producing vital goods and services on which the wider society relies. There was also agreement about the need for improved dialogue and collaboration between sectors, geographical regions and the government.

A more equal, engaged and empowered society, a focus on localism, and resilient, strong local and diverse communities with equal voices were key vision elements for the NGO interviewees.

The concept of true cost accounting was also firmly embedded in the interviewees' visions, with one interviewee stating that global true cost accounting is required to achieve effective outcomes.

"It (True cost accounting) would work I think for some land uses but for others again you're back to this kind of transnational issue that if you can't do it here maybe you can do it in China... So the externality globally is still going to be the same, but all you're doing is displacing it or pushing it somewhere else." (Cross-Cutting, NGO)

Land reform was mentioned by all NGO interviewees, but there was a notable split in responses as to whether this related to *how the land is owned* (agriculture, forestry and renewables sectors) or *how the land is managed* (sporting, biodiversity, recreation, cross-cutting sectors).

The interviewees from the agricultural, forestry, renewable and biodiversity sectors would like to see more political will and open discussion about trade-offs in the future. Better decision-making tools were an important vision element for the interviewees from the agricultural, sporting and cross-cutting sectors; more investment in land-based business stood out in the responses from the agriculture, biodiversity and tourism sector interviewees.

As with the Public and Private sector interviewees, NGO interviewees from the sporting and forestry sector expressed the wish for less conflict. A restructuring of the CAP in favour of the environment and species-specific payments for ecosystems and better environmental legislation were important elements from the interviewee from the biodiversity sector.

3.3.4 Sectoral Visions

As well as highlighting the similarities and differences between stakeholder groups, the qualitative analysis of the data allowed the development of sectoral visions which are presented below. Extended versions can be found in appendix D.

Agriculture

The agricultural sector was particularly heterogeneous, with the public and NGO sector interviewees calling for removal of subsidies and true cost accounting, while the private sector interviewee did not want to see any *“huge, radical, changes”*. Competitiveness within the European market, investment in land-based businesses, technological development, and continuation of European subsidies were important for the private sector interviewee. The public-sector interviewee

highlighted the importance of farmers needing to reinvent themselves as businesses receiving PES, and for society to be aware of the impacts of consumer choices on land management. The NGO sector interviewee focused on true cost accounting, strong communities, resilient local economies and a more egalitarian model of land ownership.

Biodiversity and Conservation

The public-sector interviewee predominantly discussed the difficulty of developing a feasible vision in the light of uncertainty, stressing the importance of developing resilience options through open discussion, in order to take difficult decisions and agree on management objectives. The vision from the NGO sector interviewee focused on strong communities, resilient local economies and the importance of true cost accounting – and that land ownership is a less critical driver than land management.

Crofting

Coherent policies, strong communities, resilient local economies and access to capital were key themes in the visions of both the public and private sector regarding crofting.

Cross-Cutting

The vision of the private sector interviewee is dominated by investment in rural development and a free for all market approach. It incorporates a strong wish for less conflict and increased understanding of why land is managed the way it is. Land use sectors are working in the same direction and the silo mentality has disappeared. In contrast, the vision of the NGO sector interviewee focuses on impacts and consequences of climate change and biodiversity loss through global changes and how Scotland could develop resilience. Data quantity, quality and

management are also of concern as is a more non-career politician government structure.

Forestry

The forestry sector was very homogeneous; its vision very closely resembles that of the Scottish Government's Forestry Strategy. Scotland is a much more wooded country, and its healthy sustainable forests deliver a wide range of public goods and services such as timber, biodiversity and spaces for recreation and outdoor learning. Concerns about future timber shortages (due to peaks and troughs in projected timber outputs) have been recognized in 2016 and suitable areas across Scotland were planted with new forests, so that the predicted wood shortage did not have a significant impact.

Renewables

Despite differences on how to achieve climate change targets (i.e. focussing on energy efficiency rather than the creation of more solar, hydro and wind farms), the interviewees from the renewables sector had rather homogeneous visions, beginning with the firm embedding of the land use strategy in land use management, resulting in a fairer, equal and sustainable country with a strong community spirit and resilient local economies. Renewables are mitigating the worst effects of climate change and thus, together with more energy efficient housing and a shifting social consciousness on how energy is used, Scotland is meeting its carbon emission targets.

Sporting

The vision from the sporting sector is very like today's picture, largely because upland management is dictated by soil type, climate and elevation. However, key changes are improved collaboration on deer management, and that society

understands and values the sporting sector and the benefits that the associated land management brings.

Tourism and Recreation

The interviewee from the NGO sector would like to see strong communities and a thriving rural, resilient economy with state of the art IT services. People will be engaged in governance, and the interviewees from both the NGO and public sector agreed that tourism and recreational activities will still play a vital role in connecting people with the land.

3.3.5 Consolidated visions

From the interviews, it was possible to extract three broad visions for the future land use of Scotland (Figure 3.3.5.1). These visions were developed by sorting vision elements into those with wide agreement (e.g. importance of environment), some agreement (e.g. investment in land-based business), and disagreement (e.g. societal involvement in decision-making).

It is acknowledged that there are a range of other issues and debates amongst stakeholder (e.g. long term policy planning) other than 'land ownership' and conflict around this. However, it had been perceived as the key barrier of 'making things happen' during the interviews. Whether this is actually the case or an overstatement based on history would need to be further investigated in follow on work.

Therefore, main contrast around land ownership and governance formed the basis for the somewhat contrasting visions of MY LAND, which has increased community land ownership at its heart, and YOUR LAND, which is like the status quo, with a larger proportion of the land being owned by few individuals.

SCOTLAND on the other hand, is based on a combination of the vision elements which were shared by all interviewees, without specifying a preference for future change in land governance. Whilst ignoring the current land reform debate, it paints a picture of collaboration between the land use sector and society to deliver the best products and services, thereby ensuring vibrant rural communities and a healthy environment.



Figure 3.3.5.1 Consolidated land use visions for rural Scotland in 2050.

3.4 Discussion

3.4.1 Similarities as the basis for collaboration

Scottish land use and management have been the topic of heated and polarised debates for decades (Warren, 2009). However, the systematic analysis presented here highlights significant agreement between diverse interviewees about the desired future of land use in Scotland. Nevertheless, there are also important differences, mainly related to land governance. The three consolidated visions (Figure 3.3.5.1) summarise these points, and can form a basis for further facilitated discussions in the land use debate, emphasising common ground and exploring how differences can be overcome.

Open dialogue, partnerships and collaboration stood out as a key theme, and examples of good practice were identified (e.g. the catchment-based Tweed Forum and the regional Deer Management Groups). However, the historic and longstanding conflicts over certain aspects of land management and use (Section 2.3), mean that careful facilitation and mediation are required to move forward more widely.

'My vision would be that all the different people in the rural sector are actually working in the same direction. At the moment the rural sector is so fractured with everyone fighting each other that actually we just hold ourselves back.'

(Cross-Cutting Private)

There was widespread agreement that such examples should become commonplace, as called for in the Land Use Strategy. Building social capital will be a key factor in achieving participatory governance and collaborative working (McMorran and Scott 2013). Lee et al. (2005) argue that social capital is strongly linked to the development of a single and unified sense of identity in rural areas. Both the private cross-cutting and sporting sector interviewees identified the building of social capital as a requirement for reducing conflict.

3.4.2 Challenges and opportunities

Several substantial challenges and opportunities were identified, both within and between sectors.

Private sector interviewees from the agricultural, cross-cutting and sporting sectors expressed hope for a society that is more aware and understanding of rural land management decisions, whilst also accepting limited societal influence on management practices.

'Trying to coerce too much from our land in terms of its political value and making everybody feel they're involved in land use decision-making, planning land use and all the rest of it. That's only going to stifle it. I can see why people want to do it, but I think it's counterproductive.' (Agriculture, Private)

This is in stark contrast to NGO interviewees, whose visions included engagement and involvement in land use decision-making as a key component.

'There would always be the challenges but I think you'd be far more likely to get sustainable development if people had that overall say and stake in it.'
(Renewables, NGO)

However, even among NGO interviewees, there was a divide between those working on the land (e.g. in the agriculture, crofting, forestry sectors) who want to see a more radical change in land ownership, enabling them to have more influence on how their sector wants land to be managed; and those who care about the societal benefits the land can provide (e.g. in the conservation and tourism sectors). The latter were more concerned that land is managed in favour, or consideration, of the environment, with adequate access for recreational activities, rather than the how it is used. Due to these complexities and the current polarisation, resolving the differences and barriers around land ownership will require time and carefully facilitated dialogue.

Potential change to subsidy regimes, including the possible introduction of PES-based schemes through which land managers are paid to provide public benefits, was another challenging topic that emerged. Whilst six interviewees from a range of sectors would like to see some form of payment for public goods and services, the stakeholder from the private agricultural said that the current subsidies are important to ensure food security. By contrast, the public-sector stakeholders would like farmers to receive payments for delivering public goods and services.

'It was really opportunity mapping that I was particularly interested in. And I'm sure it's going to happen way before 2050, but it's going to be an essential tool there. And these sorts of maps could be used much better for payment for ecosystem services and links in with SRDP and influencing much more strongly land use, but also increasing awareness and knowledge of land managers and consultants involved with it.'
(Renewables, Public)

Meanwhile, the private sector stakeholders from the forestry, sporting and cross-cutting sectors already see themselves as businesses delivering both market and public services and goods. They were proud of their limited reliance on subsidies, whilst acknowledging the importance of some public support (e.g. PES). Spatially targeted incentives can help maximise ecosystem service provision, and provide the potential to reward multi-objective land management (Tzilivakis et al. 2016; Reed et al. 2014).

A much more decentralised energy network also featured very strongly across the sectoral land use visions, although the issue of scale is a point of concern.

'I still think wind, onshore and offshore, is going to be the single biggest player, but there will be other technologies, small-scale technologies especially and I think it will begin to take up a larger slice of the burden of reducing our carbon emissions.' (Renewables, private)

Hydro, wind and biomass energy present an opportunity for developing local resilient economies that are not dependent on expensive energy sources such as oil and coal (Warren 2009; 2014). Wood fuel can also be a sustainable heating source; greater adoption would provide land managers with revenue and an incentive to better manage under-maintained forests (Strachan and Beck 2008), leading to both socioeconomic and environmental benefits.

'So in my view these huge-scale onshore wind developments, they don't really have a place because they're just not very efficient. For me the real move forward would be decentralized energy structure which used to be the vision of many in the green movement and environment movement.' (Renewables, NGO)

Reaching any of the identified visions will require a supportive policy framework to encourage land managers to deliver more sustainable land management. At the time of the interviews, high hopes were placed on the Scottish Land Use Strategy (SG 2016a) to guide these policy shifts, but since the UK's decision to leave Europe in June 2016 discussions are being held on a more national (UK) level. With Brexit come major uncertainties that will challenge the rural economy and the current policy instruments guiding land management, including direct farm subsidies, the Scottish Rural Development Programme (SRDP), and all environmental legislation. However, whilst the next few years may bring a period of great uncertainty, it may also ultimately provide new opportunities for tailored land use policies.

Climate change poses another great challenge, and limitations in the recognition of cross-sectoral interdependencies can leave society and government vulnerable to the dangers of conflicted or unintended adaptation policy outcomes from sectoral decisions (Holman et al. 2016). Developing cross-sectoral adaptation strategies (e.g. investment in innovation, best use of land, improved flood management) presents important opportunities in bringing the different land use sectors closer together.

3.4.3 A successful methodology

The research methodology presented here provided a structured approach to eliciting rich visions from a diverse group of stakeholders. The STEEP categorization was useful for structuring the interview analysis and helped participants to focus on a theme whilst still telling a wider story. Comparisons between stakeholder groups and across sectors provided a rich understanding.

The more subjective aggregation into consolidated visions helped to identify common ground and challenges for land management and governance in Scotland.

Despite the systematic approach to stakeholder selection, explicitly aimed at achieving stakeholder diversity, it is unlikely that we could reach full saturation with the current sample size. The findings for a specific sector/stakeholder group combination (e.g. private forestry) should be treated with some caution.

Nevertheless, the stakeholders were carefully selected based on their involvement in land use policy or strategic planning within their organisation and, as such, should have good awareness of issues in their peer groups.

Our research suggests that identifying 'shared vision elements' across the sectors and stakeholder types is an effective way to understand and compare visions. The approach also proved useful for deriving a limited set of consolidated visions that identify common ground and differences. This is similar to the approach by Verkerk et al. (2018) who identified building blocks within narrative visions to link these to model outputs. When visions are developed with a modelling application in mind (cf Verkerk et al. 2018; Brown et al. 2016), these elements can be included as themes in the inductive coding of the interviews.

The methodology described worked well at the national scale for Scotland, but would work equally well in other countries or at the regional scale, e.g. to support the development of catchment management plans. The outcomes can facilitate societal debate by making trade-offs explicit, and help to reach consensus about desired land management outcomes.

3.5 Conclusions

This research has shown that, whilst there is no unified land use vision for Scotland, there is general agreement amongst the sectoral land use stakeholders on several aspects, including: the importance of the environment; the wish for

more partnerships, dialogue and collaboration; the desire for society to be more engaged and aware about land use; resilient local economies; and a strong need for short-, medium- and long-term policies that help to achieve these goals. The most notable differences relate to land governance.

Brexit and climate change pose significant challenges to rural Scotland but also present opportunities to critically reflect on instruments and objectives and how to change them to better reflect Scottish preferences and conditions. Whilst there is great uncertainty about the outcomes of national and international negotiations and the impacts of climate change, it is important to have discussions now to work on solutions and explore preferred directions of travel.

CHAPTER 4 - YOUNG PEOPLE'S LAND USE VISIONS

'Thanks for listening to us!' - Exploring rural land use visions from young people in Scotland. (Chapter 4)

Valluri-Nitsch C, Metzger M, De Vries-Lentsch A, McMorran R, Price M. *Ecology and Society*. In review.

4.1 Introduction

As outlined in Section 1.3 the objectives for this Chapter were to understand young people's land use visions and the challenges and opportunities associated with these. The importance of scenarios and visions for this have already been described in Section 2.2 and are omitted here to avoid unnecessary repetition.

As with the previous Chapter, whilst a participatory method (the interactive STREAMLINE format) was applied, the analysis was predominantly quantitative to fit in with the overall research design / context (see Section 1.4). Section 6.3.5 and 7.1 explore how alternative methods could elicit the visions in more detail in any further work.

Although various recent studies have explored societal land use visions, e.g. through stakeholder consultation (Valluri-Nitsch et al. 2018; Perez-Soba et al. 2018) and crowd sourcing (Metzger et al. 2018a), young people are rarely consulted despite the fact that it is their future that is under consideration.

The rights to meaningful participation of young people in decision-making is set down in Article 12 of United Nations' Convention on the Rights of the Child, which states they 'have the right to express their views freely and have their opinions listened to in all matters affecting them' (UN 1990). This was embraced unambiguously by the European Union (EC 2017) and many countries have established youth parliaments, giving young people a formal voice in decision making.

Young people are keenly interested in the kind of future they may inherit and are concerned about many aspects of their future, ranging from the personal (e.g. good relationships, getting a good job) to the global (e.g. poverty and hunger, environmental damage) (Ipsos Mori 2009; Hicks 2012). They are also aware that global issues (e.g. climate change) will affect their lives and that the future holds both challenges and opportunities (Hicks 2001). For example, a recent survey

organised by the Scottish Youth Parliament (2016), reaching 74,744 young people, found overwhelming support to ‘drastically tackle climate change, protect the environment, and promote green initiatives’ (supported by 80% of participants) and that ‘national parks, national heritage sites, and green spaces should be protected’ (85%). These results illustrate that the next generation is aware of current and future challenges and wants to see action taken sooner rather than later.

Recently, the Scottish Government has introduced the Scottish Land Use Strategy (SG 2011a; 2016a), which sets out a policy agenda for all land in Scotland and promotes a more integrated and strategic approach to land use. The strategy also explicitly calls for urban and rural communities to be better connected to the land, with more people enjoying the land and positively influencing land use, presenting a real opportunity to include young people’s ideas. Furthermore, the United Kingdom’s decision to leave the European Union brings major uncertainties that will provide both challenges and opportunities for all environmental legislation and rural land use and which may have a major impact on the young generation in particular. It is therefore crucial to recognise that whilst the next few years may bring a period of great uncertainty, this may also ultimately provide new opportunities for tailored land use policies (Valluri-Nitsch et al. 2018). Now, perhaps more than ever, it is imperative for the UK to include young people in decision-making processes.

To develop a first understanding of young people’s attitude to land use in Scotland, this Chapter presents the results from 26 semi-structured interviews with 15-16 year-old pupils from two high schools in Perthshire, Scotland: one in an urban setting (Perth), the other in a rural setting (Aberfeldy). An engaging visual interview format was used to understand what, in their ideal vision, they would want rural Scotland to look like in 2040. Visions were defined in terms of the future they found desirable, and the responses were analysed to gain an understanding of their underlying motivations and viewpoints.

4.2 Methods

4.2.1 Participant selection

Using the Scottish Government's six-fold Urban-Rural Classification (Scottish Government 2014b), a rural and an urban school were selected in the rural local authority of Perthshire, Scotland. Breadalbane Academy is a composite campus catering for 453 pupils from age 2 to 18 in the rural village of Aberfeldy (population 2000). Pupils come from a wide rural catchment, ranging from Rannoch Moor in the west to Dunkeld and Pitlochry in the east. Perth Academy is a secondary school in the city of Perth (population 47,000) with 951 pupils aged from 11 to 18 (Perth & Kinross Council 2017a+b). It should be noted that Perth is a small city surrounded by countryside and the categorisation of 'urban' and 'rural' should therefore be treated with some caution.

The geography teachers of each school agreed to select 15 pupils with an approximately equal gender balance who were studying for Geography Highers (i.e. aged 15-16), which would allow the interviews to be conducted in three days per school. The interviews were face-to-face and took place in quiet public areas of the school campuses. In addition to the academic ethics assessment (appendix E and F), Perth and Kinross Council required the researcher to submit a research application through their own system to work with teenagers in the schools. Working with the teachers facilitated an efficient research process.

4.2.2 Interview design

The interview design was based on a European online crowd sourcing experiment which investigated desired land use futures across Europe (Murray-Rust et al. 2014, Metzger et al. 2018a). Instead of an online questionnaire, we used the visual interview format STREAMLINE³, which combines the benefits of traditional interviewing with the use of visual images (De Vries Lentsch & Metzger 2017). It consists of a series of laminated A3 graphic canvases. Each canvas invites the participant to set out their vision on a different aspect of the future through a

³ <https://www.streamline-research.com>

series of questions, which can be answered using a set of illustrated tiles (Figure 4.2.2.1).

STREAMLINE takes the experience of the participant as a starting point, to focus on what he or she cares about most in their life in the future. Along with the colourful appearance and tactile interface of the canvas, this makes for an open and interactive format where people can express 'what' they want or think and 'why' they feel that way. This can be particularly helpful when dealing with topics such as future visions. The canvases help to structure the interview, which facilitates analysis, while the tiles provide both contextual information and prompts for a wide range of possible responses. There is also the flexibility for participants to choose multiple tiles, formulate their own answers, and express themselves by drawing and/or writing on the canvas. The interviews are audio-recorded and transcribed, and tile choices recorded. The canvases are photographed and the photos put into a digital template. At the end of each interview, participants are presented with their own pdf graphic novel to take away (appendix G, H, I).

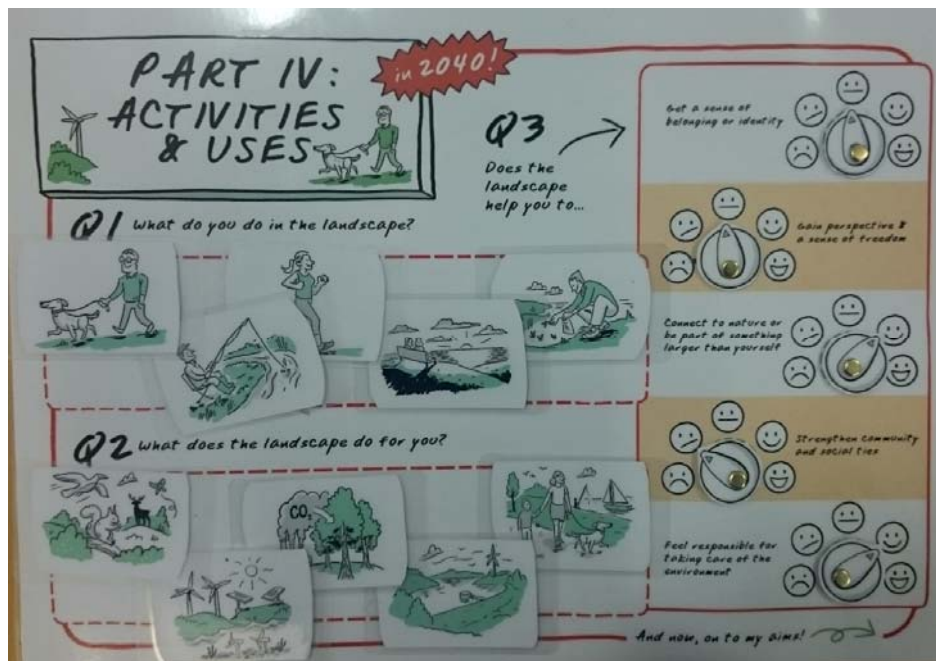


Figure 4.2.2.1 Example of a canvas describing the participant's activities and uses of the countryside.

The interview consisted of six themed canvases, focusing on different aspects related to the participants' individual preferences for land use in Scotland (Table 4.2.2.1).

The first three canvasses ('My home', 'My work', and 'My food') cover parts of daily life that indirectly influence, or rely on, land management (cf Metzger et al. 2018a). The fourth canvas concerns direct land use benefits or ecosystem services and reveals how participants value the countryside. Answers were collected through tile selection and statement responses on Likert scales. In the fifth canvas, 'My countryside', participants were presented with 14 land uses (e.g. renewable energy, mixed and diverse countryside, forestry plantations) and asked whether they would like or not like to see them in the countryside, or whether they did not care ('not fussed'). The themes were specifically chosen to represent contested land uses in Scotland characterised by conflict between policy makers, land managers and members of the general public, or interest groups, with an interest in the countryside.

The final 'Legacy' canvas concludes the session and asked participants to reflect on the future land use in their region. Apart from selecting tiles about what their place would be famous for in 2040, they are also asked to circle a range of words they would use to describe their region in 2040. These words, taken from Kenter et al. (2014), provide an indication of the Universal Values (Schwartz 2012) held by the participant, e.g. self-transcendence, self-enhancement, openness, and tradition.

Table 4.2.2.1 Survey questions per canvas, and their rationale for inclusion in the study, (1-3 based on Metzger et al. 2018a).

| Canvas | Question | Rationale |
|----------------|---|---|
| My home | Who is in your household? | Shared or multi-occupancy households use resources more efficiently (space, energy) |
| | Where do you live? | Will influence urban sprawl and rural regeneration and abandonment |
| | What type of home do you live in? | Will determine extent of urban area |
| | What is the most important feature of your home? | Gardens and spacious design affect extent |
| My work | Which sector do you work in? | Gauges interest in primary sector |
| | How do you get to work? | Influences transport infrastructure and energy demand |
| | Where do you work? | Influences transport infrastructure and energy demand |
| | Does your job require frequent business-related travel? | Influences transport infrastructure and energy demand |
| My food | What food do you eat? | Flexitarian, vegetarian and vegan diets will reduce demands on land |
| | Where do you prefer to buy your food? | Reflects demand for local food production |
| | How is the majority of your food transported? | Influences energy demand and demand for local food production |
| | How is your food produced? | Influence land use directly (e.g. extensive organic production) |

| | | |
|---|--|---|
| Activities and uses of the landscape in 2040 | What do you do in the landscape? | Gauges interest in outdoor activities and nature |
| | What does the landscape do for you? | Explores role of nature/environment in development of psyche/identity |
| | Does the landscape help you to: | |
| | Get a sense of belonging and identity? | Reflects intrinsic value |
| | Gain perspective and a sense of freedom? | Explores role of nature/environment in development of psyche/identity |
| | Connect to nature or be part of something larger than yourself? | Explores role of nature/environment in development of psyche/identity |
| | Strengthen community and social ties? | reflects use of outdoor environments to develop social networks |
| | Feel responsible for taking care of the environment? | Reflects development of environmental values |
| My countryside in 2040 | A selection of tiles with land uses that the participants were able to sort according to 'Yes please' 'No thanks' and 'Not fussed' | Describes desired future landscape |
| Legacy in 2040 | What words best describe Perth / Aberfeldy? | Describes desired future hometown |
| | What would you like your parents' generation to hand down to yours? | Identify common ground |
| | What will the Scottish countryside be renowned for? | Gauges interest in primary and service sectors |

4.2.3 Canvas analysis

The completed canvases were photographed and the interviews were transcribed and imported into NVivo 12 software for content analysis. The tile choices were compiled in a spreadsheet for descriptive analysis. The answer options for each question were listed in rows and participants in columns. The Likert scale answers were grouped into 'do not agree' (scores 1-2), 'neutral' (3) and 'agree' (4-5). The

Universal Values (Schwartz 2012) were determined based on the selected words (e.g. 'creative' and 'independent' to the Value of 'Self-direction').

Content analysis followed three stages: First, all answers were grouped by question (e.g. How and where will you be living in 2040?; What will the ideal landscape look like in 2040?) and responses inductively coded for similar themes. Second, each interview was read in its entirety to identify themes that were expressed during the canvas exercise, but were not picked up when reviewed per question. Finally, all coded responses were reviewed again after putting into an Excel spreadsheet to identify whether some themes occurred more in a specific group (i.e. Aberfeldy or Perth).

4.2.4 Consolidating visions

As demonstrated by Perez-Soba et al. (2018) and Valluri-Nitsch et al. (2018), diverse stakeholder visions can be consolidated, summarising contrasting views to facilitate discussion and explore how alternative policy measures could help achieve desired futures (cf Metzger et al. 2018b). Following Perez-Soba et al. (2018), a synergy table was constructed with the vision themes listed in rows and the participants in columns. Cells in the table were checked when a theme was discussed. Common strands were identified and used to structure a written summary, which was cross-checked and enriched by returning to the interview transcripts. Finally, similarities and differences between the pupils from Perth and Aberfeldy were assessed and also written as a summary to investigate if specific visions depended on location.

4.3 Results

4.3.1 Interviews

The interviews took place in December 2016 and lasted on average 30 minutes, with a range from 22 to 47 minutes. A few pupils withdrew from the process just before their planned interview resulting in 26 interview candidates. Seven males and six females were interviewed in Aberfeldy, and eight males and five females in Perth. Most participants engaged very well with the rather abstract topic, although some struggled to keep their thoughts in the future and were often drawn back to possible trajectories in the present. Participants were able to answer all questions, except for one rural and two urban participants who found it too difficult to answer the questions about 'What would you like your parents' generation to hand down to yours'.

4.3.2 Descriptive statistics

The full descriptive analysis of young people's visions (appendix J) provides more detail than can be presented here, but Figure 4.3.2.1 gives an example of how the results of the canvas questions were prepared for the descriptive analysis, illustrating the general preference for family living in detached houses, and more varied responses for where they would prefer to buy food. Table 4.3.2.1 presents the results of canvas five summarising the land uses respondents views on what they 'would like', 'would not like' or 'were not fussed' about in 2040, revealing a preference for a mixed and diverse countryside, including renewables, native forest and wilderness that is accessible to all.

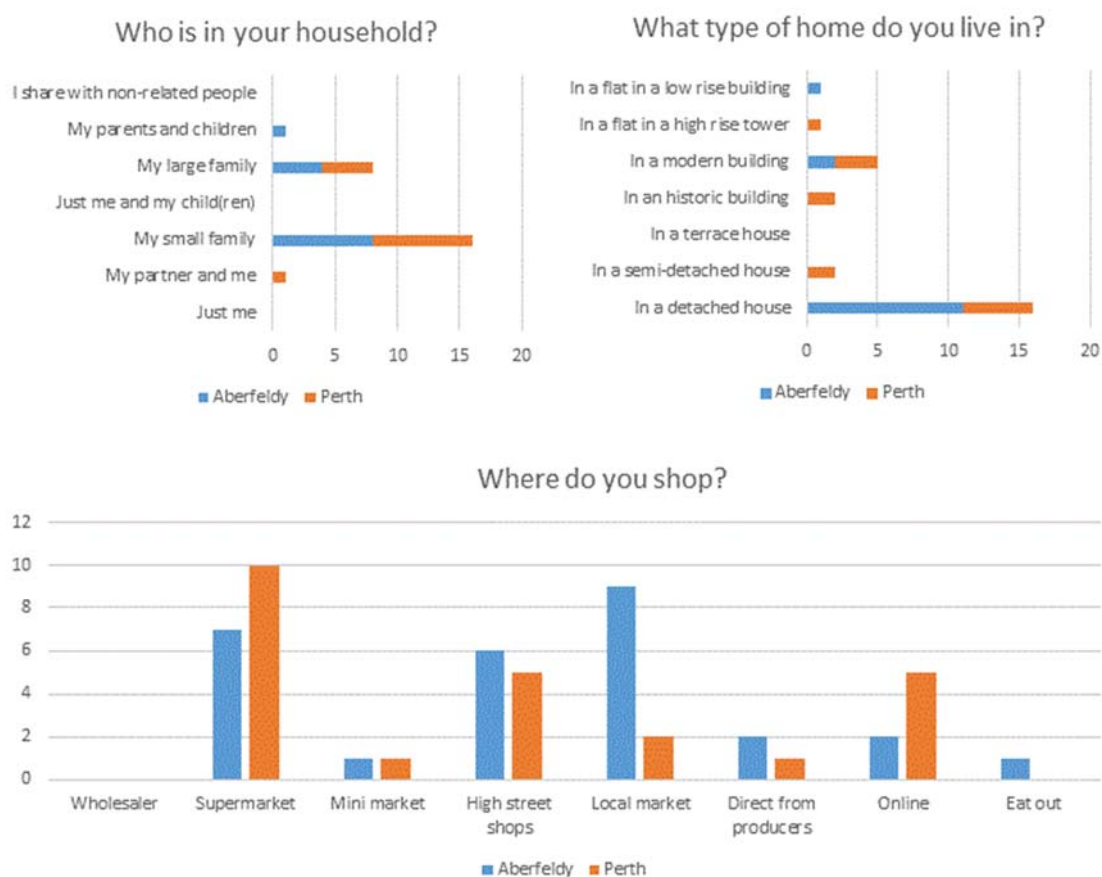


Figure 4.3.2.1 Examples of three survey questions where participants were asked to select tiles.

Table 4.3.2.1 Summary of the participant’s preferences for the Scottish countryside in 2040 (Canvas 5). ‘Not fussed’ is colloquial language for ‘do not care’.

| My ideal countryside in 2040 | ‘Not fussed’ | | | No, thanks | | | Yes, please | | |
|--|--------------|---|-------|------------|---|-------|-------------|---|-------|
| | A | P | Total | A | P | Total | A | P | Total |
| Access for everyone | 2 | 4 | 6 | 0 | 0 | 0 | 11 | 9 | 20 |
| Financial support for rural communities, urban receives less | 5 | 6 | 11 | 1 | 1 | 2 | 7 | 6 | 13 |
| Forestry plantations | 2 | 4 | 6 | 6 | 2 | 8 | 5 | 7 | 12 |
| Land managers paid for public benefits | 2 | 3 | 5 | 2 | 5 | 7 | 9 | 5 | 14 |

| My ideal countryside in 2040 | 'Not fussed' | | | No, thanks | | | Yes, please | | |
|--|---------------------|---|----|-------------------|----|----|--------------------|----|----|
| Large scale farmland | 4 | 2 | 6 | 8 | 10 | 18 | 1 | 1 | 2 |
| Mixed and diverse countryside | 3 | | 3 | 0 | 1 | 1 | 10 | 12 | 22 |
| Muirburn | 6 | 3 | 9 | 4 | 6 | 10 | 3 | 4 | 7 |
| Native and mixed forests | 3 | 5 | 8 | 0 | 0 | 0 | 10 | 8 | 18 |
| People understand and appreciate land management | 1 | 5 | 6 | 0 | 0 | 0 | 12 | 8 | 20 |
| Renewable energy to adapt to climate change | 1 | 1 | 2 | 0 | 2 | 2 | 12 | 10 | 22 |
| Small scale diversified farm land | 5 | 3 | 8 | 0 | 2 | 2 | 8 | 8 | 16 |
| Vibrant rural communities | 3 | 4 | 7 | 0 | 1 | 1 | 10 | 8 | 18 |
| Wilderness and reintroduction | 3 | 2 | 5 | 1 | 1 | 2 | 9 | 10 | 19 |
| Zoning | 6 | 5 | 11 | 0 | 3 | 3 | 7 | 5 | 12 |

Table 4.3.2.2 Frequency of attributes chosen by participants to describe their place in 2040 (further details are provided in the 'similarities' and 'differences' sections below.)

| Schwartz Values | | | Aberfeldy | Perth |
|-------------------------|-----------------------|-------------|------------------|--------------|
| Openness | <i>Self-Direction</i> | Creative | 6 | 3 |
| | | Independent | 4 | 4 |
| | <i>Stimulation</i> | Varied | 6 | 6 |
| | | Exciting | 2 | 2 |
| | <i>Hedonism</i> | Pleasant | 8 | 8 |
| | | Enjoyable | 4 | 3 |
| Self-enhancement | <i>Achievement</i> | Ambitious | 4 | 4 |
| | | Influential | 0 | 2 |
| | <i>Power</i> | Powerful | 0 | 2 |
| | | Wealthy | 1 | 1 |
| Tradition | <i>Security</i> | Safe | 10 | 8 |
| | | Clean | 11 | 6 |
| | <i>Conformity</i> | Caring | 7 | 6 |

| | | | | |
|---------------------------|---------------------|----------------------------|----|---|
| | | Polite | 3 | 4 |
| | Tradition | Respect for traditions | 6 | 6 |
| | | Humble | 1 | 0 |
| Self-transcendence | Benevolence | Law abiding | 1 | 3 |
| | | Healthy | 6 | 3 |
| | Universalism | Protecting the environment | 10 | 4 |
| | | Equality | 4 | 6 |

Similarities in responses between Aberfeldy and Perth participants

The descriptive analysis revealed that young people would like to live in either detached houses or modern buildings (21/26) with their small and large families (24/26) (Figure 2). Their work would mainly be full-time (22/26), with an ideal commute of no more than 30 minutes (16/26) to a workplace with a pleasant atmosphere, facilities and design (17/26). An option to work outdoors or share a desk at different locations (16/26) was also important.

Participants agreed that they would still be mainly omnivores (23/26) and some were concerned where their meat would come from (5/26). They also favoured more ethical and environmentally-friendly food production methods (20/26), rather than large-scale industrial farming and intensive indoor production (6/26). Furthermore, they preferred food transport to be by road or rail within the UK, for environmental and economic reasons (21/26).

Their top five choices of landscape use were exercising (20/20), enjoying views and sunsets (18/26), dog walking (17/26), enjoying peace and quiet (15/26) and enjoying wildlife (12/26). When asked about the most important *functions* of the landscape they chose 'sustaining habitat and wildlife' (26/26), 'providing space for recreation' (24/26), 'creating clean energy' (24/26), 'providing clean air and water' (22/26), 'attracting tourism' (20/26) and 'providing jobs' (18/26). No one chose 'providing space and infrastructure for industry' or 'space for transport of goods and people'.

Furthermore, the landscape was important for creating a sense of responsibility for protecting the environment (22/26); it would help participants to connect to nature and something larger than oneself (21/26) and it would help them to gain a sense of belonging and identity (21/26).

The Scottish countryside in 2040 would be famous for its wildlife and nature (24/26), rich cultural heritage (20/26), recreational opportunities (16/26) and quality of living (16/26). Large- and small-scale renewable energy sources would be in place to mitigate climate change, forests would be mixed and diverse, and large-scale farmland with monocultures would be a thing of the past (notably, pupils from Aberfeldy stated that single land uses would be bad for maintaining healthy and diverse habitats).

When asked what they would like their places to be renowned for in 2040, attributes relating to Hedonism ('pleasant', 'enjoyable') and Conformity ('caring', 'polite') were equally important for both groups (Table 4.3.2.2).

Differences in responses between Aberfeldy and Perth participants

Despite many similarities, there were some notable differences between the Aberfeldy and Perth pupils. Pupils in Aberfeldy said they would like to live in small towns or villages (9/13) and that the most important feature of their house would be the proximity to the outdoors (10/13). In contrast, their Perth counterparts said that they would like to live in suburbs (6/13) in spacious houses with a good-sized garden (8/13).

The Aberfeldy group had closer links to rural businesses (e.g. family involvement with local businesses, tourism) and the primary sector in general (e.g. one pupil wanted to take over the family farm). Pupils from Perth were more prepared to

travel to the city for work and to work for larger companies (e.g. Scottish and Southern Energy or Aviva, the two main employers in Perth).

Their shopping habits also varied in some details. Aberfeldy pupils would buy their produce from local markets (9/13) and high street shops (6/13), to support their local economy, whilst also buying a proportion from the supermarket (7/13), for convenience reasons. Perth pupils would do their shopping in supermarkets (10/13) and online (5/13) for convenience reasons, but also using some high street shops such as the butcher for good quality meat (5/13).

While both groups favoured more environmentally-friendly farming methods, the Aberfeldy pupils were more in favour of organic food production (9/13) than their Perth counterparts (5/13), who chose hi-tech eco-friendly farming (7/13) over organic farming. Some participants from Perth felt that large-scale indoor industrial farming still had a place in the food production chain (4/13). While food transport would predominantly be via road or rail within the UK for environmental and economic reasons, pupils from Perth also said that certain luxury items such as tea, coffee and bananas would be shipped from across the world (4/13). Those from Aberfeldy would grow some of their own produce (6/13).

With regards to their preferred countryside, the top choice from pupils from Perth was that rural Scotland's countryside would be mixed and diverse. For those from Aberfeldy, the top choice was the hope that people would understand and appreciate more why the land is managed the way it is, which was the second top choice that Perth pupils 'were not fussed' about after 'Financial support for rural communities, urban receives less' (Table 4.3.2.1).

Two pupils from Perth did not want any large-scale renewables because of their visual impact. Whilst access to the countryside came third for Aberfeldy pupils, Perth pupils would like to see a return to more wilderness and some

reintroduction of species. One pupil from Aberfeldy specifically did not want this, as it might cause conflict with their family's livestock. Perth pupils had some objections against muirburn management, mainly due to the visual impacts and felt skeptical about the statement that 'land managers should be paid for public benefits' as this came with the responsibilities of looking after the land in the first place. Six pupils from Aberfeldy not want to see any more forest plantations as opposed to two from Perth.

When asked what their place would be described as in 2040, Aberfeldy pupils were more similar in the attributes they chose (Table 4.3.2.2). The top three attributes pupils used to describe Aberfeldy in 2040 were 'clean', 'safe' and 'protecting the environment'. None used 'influential' and 'powerful', which were used twice by their Perth counterparts. While Perth pupils shared some of these values, their overall choices were much more heterogeneous. The top two attributes for describing Perth were 'safe' and 'pleasant'. However, it should also be 'varied', have 'respect for traditions', known for its 'equality', be 'clean' and 'caring'. The word 'humble' was not chosen by anyone.

Themes from content analysis

The inductive coding revealed four main themes:

- **Responsibility** – higher sense of duty to look after the planet;
- **Familiarity** - exposure to a certain way of living and thinking (e.g. personal experience, parents involved with rural business or working in the environmental sector);
- **Importance of education** – Either through education in school, outdoor activities or through learning / sharing experience from those living in the countryside;
- **Appreciation / Sense of place** – Feeling part of something bigger.

The responses suggest that the participants were able to see the bigger picture with regard to a wider future sustainability, as illustrated through quotes from the interviews in Table 4.3.2.3.

Table 4.3.2.3 Participants' quotes related to themes.

| Theme | Comments |
|--------------------------------------|---|
| Responsibility | <p>I feel it's important that habitat and wildlife are maintained and just for general biodiversity, welfare of the planet.</p> <p>So it's (the environment) important, it provides clean air and water, sustains the habitat and wildlife and it's not really our right to mess with that at all.</p> |
| Familiarity | <p>I think it's just my involvement with the outdoors and being in this area ...I think it is how you are brought up I guess, it like influences your personality and your views quite differently, in different aspects I guess.</p> <p>I know (justifying why organic food would be his preferred food choice) because my grandad runs an organic farm...a lot of the farmers left because it was a lot of hassle at times... but he stayed and quite enjoyed it. I am really proud of him.</p> |
| Importance of Education | <p>I'm doing climate change in geography at the moment and it's absolutely ... it's absolutely ridiculous, and it's crazy and scary and no it just makes me really upset, so definitely renewable energy is good.</p> <p>I did Duke of Edinburgh last year, I did bronze and silver. I really enjoyed that, I didn't think I would, but I really enjoyed it so it's made me want to go out and walk more and just enjoy the outdoors and stuff.</p> |
| Appreciation / Sense of Place | <p>I don't know, you just feel different when you're out there sometimes and it's to do with being by yourself as well. I think that gives you a sense of something a lot bigger than you, that you're a part of. I'm probably not making much sense.</p> <p>And you do feel responsible for it (the environment) because you're part of it.</p> |

There appears to be a direct link between the environment in which young people are brought up and their appreciation and responsibility towards the natural environment in general; cf. the concept of emotional geographies (Jones 2005). In particular, pupils from a rural background often referred to their own experiences and educational awareness or experience gained from their family's lifestyle, in order to describe the future they would like to see.

Those who were not exposed directly to the rural lifestyle – i.e. more of the Perth participants – highlighted their experiences of school or outdoor education projects such as the Duke of Edinburgh⁴ or John Muir Awards⁵ and how these had opened their eyes or connected them more closely to their environment. However, familiarity and education aside, the overwhelming majority of pupils demonstrated an intrinsic appreciation and conscientiousness towards the natural environment; many added that they feel a sense of responsibility or duty to protect it, which is confirmed in their Universal Values (Table 4.3.2.2).

4.3.3 Consolidating visions

Two visions (albeit based on the same underlying values) emerged from the descriptive statistics and analysis of interviews (Figure 4.3.3.1). Themes were sorted into those with general agreement (e.g. importance of the environment), Aberfeldy key themes (e.g. society has a better understanding of land management), and Perth key themes (e.g. more outdoor learning initiatives). At the core of these young people's visions lies the desire to improve and look after the natural environment, and to connect people to the land as well as fostering their cultural heritage. Whilst there are some differences between the visions for Aberfeldy and Perth, these do not themselves present challenges or barriers but

⁴ The Duke of Edinburgh's International Award is available to all 14-24 year olds and focusses on experiences outside the classroom to become committed, responsible and fulfilled citizens.

⁵ The John Muir Award is an environmental award scheme open for everyone, encouraging people to connect with wild spaces and is very popular with schools.

rather invite opportunities (e.g. people understand why land is managed the way it is; and Perth pupils would like to see more outdoor learning initiatives).

| | |
|--|--|
| <p>Characteristic of all visions:</p> <ul style="list-style-type: none">• Sustainable world with healthy ecosystems• More opportunities for renewable energy and recycling• Eco-friendly, high tech food production and move away from large scale agriculture• Children and young people are better connected to the land• Importance of cultural heritage | <p>Aberfeldy:</p> <ul style="list-style-type: none">• People understand why land is managed the way it is, appreciate that, and use it responsibly• Diverse rural countryside with a wide range of rural business opportunities and vibrant communities <p>Perth:</p> <ul style="list-style-type: none">• More outdoor learning initiatives• Easy access to the countryside from urban areas |
|--|--|

Figure 4.3.3.1 Consolidated visions of participants for rural Scotland in 2040.

4.4 Discussion

4.4.1 A successful methodology

From the verbal contributions and pictures from the canvases, it was possible to extract rich insights into young people's visions without the use of complex jargon. The canvases proved particularly useful in breaking down a complex topic – i.e. 'What do you want your life to be like in 2040?' – into digestible pieces. Most participants found it easy to select answers from pre-selected tiles (e.g. home, work, countryside), and talking through each canvas enabled them to interpret and elaborate on their choices.

The STREAMLINE methodology offered young people a vehicle to explain and describe issues, ideas and dreams in the course of being interviewed. It also created an atmosphere in which young people did not need to worry about giving the "right" answers, allowing them to be experts on a topic of interest to them: their future. Sheridan et al. (2011) argue that qualitative research generally relies on talk, but that talk can be assisted and supported by visual means. The experience with the use of the STREAMLINE method strongly supports this argument. It helped to effectively explain participants' future visions with regard to their lifestyle and the Scottish countryside. It also helped the interviewer to follow each participant's story, resulting in a versatile picture of this young person's social world.

Overall, the feedback from the participants was very positive. They felt engaged and described their experiences of the interview as: 'fun', 'enjoyable', 'different', 'interactive', 'easy', 'good interview' and 'thought provoking'. They also very much enjoyed the novel format and highlighted that having the prompts and canvases made the thought process much easier, particularly for abstract and difficult topics. Another key element was being able to pick multiple options and explain relationships between them, since most participants appreciated that many of the issues are not "black and white", or fit for a single solution. Similarly, the

participants welcomed the freedom of expression that being able to talk, write, circle and draw at the same time allowed.

The participants also expressed a strong sense of appreciation for being asked about their visions, on both a wider scale – ‘Thanks for taking young people’s views into account!’ ‘good to get thoughts out about the countryside’ – and a personal scale: ‘This made me think more about my future than I think I have ever done before and made me realise what my dreams are!’; ‘Makes you think about what it is important’. The genuine interest of young people to be engaged has also been shown in a 1995 study by Hillcoat et al, who spoke to young people about their environmental concerns and attitudes and who found a substantial amount of cynicism, frustration, and powerlessness stemming from the lack of being able to engage and be heard.

To make the participants feel at ease with the process and allow them to immerse themselves in their future, it was important that they understood the purpose of the study (Cree et al. 2002; Mason 2007; Ryen 2011). This was easily achieved with the canvases, as their images and structure were designed to help each participant to talk his or her way through their future. This was particularly appropriate for complex issues such as ‘ideal futures’ which might be hard for young people to envision. Even if they understand the nature of the work being done, they have less life experience than adults – though participation in such a study may also be difficult for adults (Mishna et al. 2004).

Using such participatory techniques helps, for example, to overcome obstacles pertaining to a young person’s possible lack of confidence when addressing adults because of lack of experience of being treated as an equal. In this case, focussing on the images that each participant could select meant that constant eye contact between the researcher and participant was not necessary, as the focus could be on the canvas. This made it easier for some participants to tell their stories.

4.4.2 Young people's visions

The visioning exercise found a series of traits among young people which are consistent with European and national studies. For example, Metzger et al. (2018a) found that young people in particular showed a strong desire for a more sustainable lifestyle during a recent European crowd sourcing experiment. In Scotland as well, young people are very much aware about the challenges about the local and global environment. They also demonstrate a clear sense of responsibility acting on this awareness (e.g. overall, the visual impacts of renewable developments did not concern them as much as the impacts of climate change) (Hillcoat et al.1995); they are aware that their choices can make an impact (e.g. supporting local food producers and environmentally-friendly farming).

Acting against climate change and sustaining wildlife, habitats and biodiversity were important to all. However, the identified mechanisms required to achieve these goals were different (e.g. What kind of renewable energy? local small-scale or national large-scale?). This echoes findings from Valluri-Nitsch et al. (2018), who examined sectoral land use visions in Scotland and found that, while the key concerns (e.g. climate change) are often shared between sectors, the suggested solutions vary greatly and can result in conflict (e.g. agreement about the importance of renewables to halt climate change but disagreement over whether it should be large or small scale).

It was particularly useful to work with the Schwartz values in this respect as they are universal values through all cultures which makes their use transferrable across countries (Schwartz 2012). The results showed that the word choices for both groups indicated a strong sense of, or desire for, traditions ('respect for traditions'), conformity ('politeness'), security ('clean'), self-direction ('creativity'), stimulation ('varied and exciting life') and hedonism ('pleasure' and 'enjoyable') (Table 4.3.2.2). These values may determine the way that these young people behave in the future and while, at first sight, these values may appear to contradict one another (e.g. tradition versus openness) they can also create opportunities in

particular with regard to overcoming challenges such as keeping rural communities alive and flourishing.

This is interesting because in the vast majority of countries who have worked with Schwartz values, benevolence, universalism, and self-direction values appear at the top of the hierarchy, while power, tradition, and stimulation values appear at the bottom, creating something of a dichotomy between 'business as usual / self-centred' and 'moving forward / societal focus' (Schwartz 2012). The young people who took part in this study however, chose values from both of these opposites which did not seem to be a problem (e.g. 'I like traditions because they made us who we are but we also need to look ahead at what we want to become'). This would require some further research to determine if adults choices would be different / more dichotomous.

Another interesting point to notice was that, while a few participants from Perth displayed a stronger degree of self-enhancement with regard to achievement and power ('powerful' and 'influential'), rural pupils had a very strong focus on self-transcendence, in particular with regard to universalism ('protecting the environment') and benevolence ('healthy'). This difference could be due to the fact that most rural pupils had family members working in rural businesses which, in most cases, depend on a healthy environment (e.g. visual aesthetics for tourism and environmental concerns for the primary sector). This does not mean that the urban participants do not care about protecting the environment, but rather that they are not affected to the same degree in their everyday life (e.g. a wet summer leading to a bad harvest) and can focus more on their own 'self-fulfilment' (Pateman 2011).

4.4.3 Limitations and implications

As outlined in the introduction to this chapter, it is important to not overlook the potential of engaging young people in the wider land use debate. Scotland's independence referendum in 2014 demonstrated how young people are very able to participate in broader discussions and present their own opinions (Eichhorn et al. 2014). The quality of answers in this study confirms their ability to engage in debates in an active way: a prerequisite for them to develop into responsible citizens of the future as opposed to passive receivers of centralised decision-making. 'Thanks for listening to us', and similar comments made during the feedback process, highlight the desire to speak up and be listened to. Perhaps it is a sad reflection of the fact that listening to young people is not the norm. However, given that 'their' future is often being discussed by today's policy makers, young people should be more included in decision-making processes as good practice.

The strong desire for young people to be involved in discussions about their future also supports a policy briefing following a cross-party discussion organised by Scotland's Rural College on 'Empowering young rural decision makers' (RPC 2015), which identified a range of key important policy messages. These included the wish from young people to have a friendly environment for voicing their opinions with clear, jargon free communication; peer to peer engagement and networking (i.e. rural meets urban and vice versa); and using a wide range of communication channels for young people to understand more about land use (e.g. schools, work experience, outdoor initiatives).

Feedback from this study showed that the STREAMLINE method is appropriate for this. There was also a clear demand for 'wider support in order to develop a coherent voice'. While this point was made in Chapter 4 of Scotland's first Land Use Strategy (SG 2011a), the second Land Use Strategy (SG 2016a) has no explicit references to the involvement of young people or children. This is disappointing,

especially given the potentially significant land use implications of Brexit (RPC 2017).

A sustained dialogue, whether that be through the curriculum for excellence in schools (SG 2008), land use sectors actively reaching out for young people (such as the Royal Highland Education Trust who organises farm visits for example, RHET 2017); the Youth Parliament; existing outdoor initiatives (e.g. Duke of Edinburgh, John Muir Award); or the private sector (e.g. Scottish Land Estate's 'Rural Youth Project') or a combination of these, can help to pre-empt conflict 'down the line' if relationships between groups with opposing views (e.g. small scale versus large scale renewables) are strong enough to facilitate working on solutions together.

In practical terms, whether in Scotland or elsewhere, the methodology we chose worked well in engaging in a meaningful discussion with young people about their desired futures. It would be interesting to extend the study by speaking to more young people in additional rural and urban locations across Scotland to obtain a better overview of young people's visions, including major cities and more remote locations. Nevertheless, we gained valuable insights to further our understanding with regards to land management in Scotland and participation for young people in decision making.

4.5 Conclusions

This study has shown that young people in Scotland are keen to engage and share their rural land use visions and the STREAMLINE methodology proved a successful and engaging methodology to capture these visions. The results show a strong ethos for looking after the natural environment and their cultural heritage, a desire for local and ecologically-friendly food production and access to the countryside. The group who lived in the more rural setting would like society to better understand land management; those that took part in the more urban areas would like to see more outdoor education initiatives and easy access to the countryside –

the complementary goals foster a win-win situation. The next steps for enabling this vision to become reality could include increased opportunities for outdoor education initiatives; a stronger focus on countryside management and future planning in school time tables; and decision makers actively reaching out to young people in order to encourage them to actively engage in creating 'their' desired future.

CHAPTER 5 – SOCIETAL LAND USE VISIONS

How does the Scottish public want to live in 2040 and what are the implications of their choices for the Scottish land use sector? (Chapter 5)

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5.1 Introduction

Having examined young people's visions, the objective for this Chapter is to understand the land use visions of the Scottish society, identifying similarities and differences, challenges and opportunities. The background to why scenarios as visions are important and an overview of Scottish land use and land use drivers have already been presented in Chapter 2 and are not repeated here.

The design and analysis uses a largely quantitative approach and analysis due to the nature of the survey design (e.g. a marketing survey with tick boxes) compared to semi-structured interviews (resulting in very rich data) and the STREAMLINE interviews which used a combination of both. Themes from the quantitative analysis are explored in more depth in section 5.4.3. However, these would benefit some further validation and investigation as outlined in Chapter 7 suggestions are provided on how to do this (e.g. stakeholder workshops, developing community visions).

Scotland's rural environment is internationally renowned for its outstanding history and scenery, quality local food and drink, and its endless opportunities to enjoy the outdoors which is one of the reasons why Scotland was recently voted the most beautiful country in the world by a major travel guide⁶. Nevertheless, its countryside faces numerous challenges and its management is the subject of a long and politically charged debate (Chapter 3).

However, it is not only the types of land management which are putting pressure on the landscape. Rural Scotland accounts for 98% of the land mass of Scotland but only one fifth of the population lives there (Skerrat et al. 2016). In recent years, rural Scotland has seen increased in-migration, mainly by older people or second home owners returning to rural areas, which has put strain on services such as healthcare and transport for example (SG 2016b). On the other hand, there are

⁶ <https://www.roughguides.com/gallery/most-beautiful-country-in-the-world/>

more and more young people leaving the countryside as they see no viable future there (SG 2008). Finally, there appears to be some controversy in relation to what urban people think happens in the countryside and what it is used for (e.g. outdoor playground versus working landscape) and what services the countryside delivers (e.g. clean air and water, or food and raw materials) (Pateman 2011).

The Scottish Government Land Use Strategy (SG 2016a) sets out a broad vision for 'a Scotland where we fully recognise, understand and value the importance of our land resources, and where our plans and decisions about land use will deliver improved and enduring benefits, enhancing the wellbeing of our nation'. To achieve this vision, it is important to have a better understanding what this future could look like in practice. Chapter 3 looked at views of professional stakeholders whose work is related to the land use sector, and the visions of high school pupils were investigated in Chapter 4 as they will be living with the consequences of the decisions that are being made today. The professional stakeholder visions revealed that, whilst they have no unified land use vision for Scotland, they generally agreed on several aspects, including: the importance of the environment; the wish for more partnerships, dialogue and collaboration; the desire for society to be more engaged and aware about land use; resilient local economies; and a strong need for short-, medium- and long-term policies to help achieving these goals. The results of the high school engagement demonstrated a strong ethos for looking after the natural environment and cultural heritage as well as a desire for local, environmental-friendly food production and access to the countryside (Chapter 4).

It is important to elicit and understand societal visions as the motivations and choices of individuals are major drivers of global, European and local land use. A recent crowdsourcing experiment was carried out in Europe to explore how young European citizens would like to live their lives in 2040. The results showed a strong desire for change and a more sustainable lifestyle (Metzger et al. 2018b).

The aim of this study was to understand how Scottish citizens want to live in 2040, by adopting the European crowd-sourcing idea for Scotland.

5.2 Methods

5.2.1 Design

To ensure a representative sample, a marketing research company was contracted to distribute the survey. At the time of the survey planning, we were made aware by the market research company that the sample would have a shortfall in the over 55-years old respondent category. This was not perceived as an issue because we were predominantly interested in your people’s view of their future, similar to the European study by Metzger et al. (2018). The questionnaire comprised seven short questions asking about participant socio-demographic attributes (e.g. gender, age, location, education, employment), followed by 14 questions to elicit land use visions. Table 5.2.1.1 lists and explains the vision questions. The survey was a mixture of single and multiple-choice questions, with one Likert Scale question.

Table 5.2.1.1: Survey questions, and their rationale for inclusion in the study, (‘my home’ – ‘recreation’ based on Metzger et al. 2018a). There is no number 13 as we were advised by the agency that this is an unlucky number for some which could have an impact on the result.

| Theme | Question | Question type | Rationale |
|---------|---|-----------------|--|
| My home | Q8. Who would be in the household with you? | Multiple choice | Shared or multi-occupancy households are more efficient use of resources (space, energy) |
| | Q9. Which of the following best describes where you would live? | Single choice | Will influence urban sprawl and rural regeneration and abandonment |
| My work | Q10. What type of home would you live in? | Single choice | Will determine extent of urban area |
| | Q11. Which sector would you work in? | Single choice | Gauges interest in primary sector |

| Theme | Question | Question type | Rationale |
|--|---|-----------------|---|
| | Q12. How would you travel to work? | Single choice | Influences transport infrastructure and energy demand |
| <i>My work cont.</i> | Q14. How far would you travel to work? | Single choice | Influences transport infrastructure and energy demand |
| | Q15. Would your job include frequent business travel? | Single choice | Influences transport infrastructure and energy demand |
| My food | Q16. What would you eat? | Single choice | Flexitarian, vegetarian and vegan diets will reduce demands on land |
| | Q17. Where would you mainly buy your food? | Multiple choice | Reflects demand for local food production |
| | Q18. How would you prefer your food to be produced? | Multiple choice | Influence land use directly (e.g. extensive organic production) |
| | Q19. How would you prefer your food to be transported? | Single choice | Influences energy demand and demand for local food production |
| Recreation | Q20. Which of the following would you like to have close to your home? | Multiple choice | Gauges interest in outdoor activities and nature and urban sprawl |
| | Q21. Where would you want to go for regular holidays? | Multiple choice | Influences transport infrastructure and energy demand |
| A selection of land uses of which the participants were able to pick up to three | Q22. What are the main features you would like to see in Scotland's countryside in 2040? | Multiple choice | Describes desired future land use and landscape |

| Theme | Question | Question type | Rationale |
|--|---|--|---|
| | Q23. What would you not like to see in the Scottish countryside in 2040? | Multiple choice | Describes desired future land use and landscape |
| Selection of statements about Land Use in Scotland | Q24. How important are the following statements in your vision for how land in Scotland is used in 2040'? | Likert Scale 1= disagree 7= agree strongly | Describes desired future land use and landscape |

Questions 8 – 21 were structured around four aspects of their future everyday life (home, food, work, and recreation), based on the European crowd sourcing study (Metzger et al. 2018a). These categories were chosen because they represent significant parts of everyday life which influence or rely on land management. Questions 22 and 23 ask participants what they would like Rural Scotland to look like. Finally, Q24 asks respondents whether respondents to indicate their agreement with ten broader statements related to land use in Scotland:

1. People understand how the land in Scotland is managed and the impact this has on their life
2. The same land is used for more than food production, such as nature, forests and leisure activities
3. People are encouraged by the government to get involved in voting and debates on land issues
4. Land managers and owners are paid for benefits the public gain from the land e.g. clean water, clean air from planting trees
5. The land is managed in a way that ensures Scotland is adapting to climate change

6. Scotland meets its energy needs through a combination of small scale and large scale renewables such as wind and solar power
7. Everyone has access to Scotland's healthy diverse natural environment
8. A variety of extinct species have been reintroduced (e.g. Lynx and wild boar)
9. Fertile land is used for farming, less fertile land is used for other purposes such as protecting nature
10. Rural communities receive financial support so they remain attractive places to live, even if this means other parts of the country have less financial support

5.2.2 Survey piloting and data collection

The survey was undertaken by the market research company *Panelbase*⁷. The survey was hosted on a secure in-house server at *Panelbase* and was tested by their IT/data management team. We were provided a link to the survey which enabled us to preview and check the survey before the pilot. Scottish *Panelbase* members were invited to participate in the survey by email explaining: the nature of the survey; the importance of response and the ways in which the data will be used; the length of the survey; the possibility to complete it in more than one sitting; an assurance that responses are confidential and will remain anonymous. Those who wanted to participate had to click on the unique link within the email and were directed to the survey on the secure server. The survey was tested by sending around 50 emails in an initial batch during early March 2015. After 10-20 completes, the data were exported to ensure that there were no technical errors and that routing was functioning correctly.

⁷ <https://www.panelbase.net>

Once the data collection was completed, the data tables were sent to us in an Excel format and are included in the electronic appendix.

5.2.3 Analysis

Firstly, responses were reviewed to determine whether there were any clear preferences rather than a spread of responses. The responses from the older versus younger group, urban versus rural group, and different socio-economic groups were compared to look for any broad differences and then compared to Scottish national statistics to check for sample representativeness. A statistical analysis of the data was then undertaken to identify any significant preferences for future ways of life and forms of land management within groups (age groups, socio-economic group, gender etc.). Following visual comparison, group responses were analysed using 95% confidence intervals to identify the common features and clear differences between respondents (Section 5.3.2). The chi-square test was applied to cross-check whether the observed differences was significantly different from what might be expected. Finally, summary charts for each of the questions were produced and a narrative was written on how respondents would like to live in the future based on these (e.g. Your ideal Home, Work, Food, Recreation, Rural Scotland in 2040).

5.2.4 Consolidating Visions

By combining the data from the descriptive and statistical analysis, it was possible to develop a set of visions. As demonstrated by Perez-Soba et al. (2018) and Valluri-Nitsch et al. (2018), diverse stakeholder visions can be consolidated to summarise contrasting views which can be used to facilitate discussion and explore how alternative policy measures could help achieve desired futures (Metzger et al. 2018a). Following Perez-Soba et al. (2018b), a synergy table was constructed, with the vision themes listed in rows and the participants in columns.

Cells in the table were checked when a theme was discussed. Common strands were identified and used to structure a written summary.

5.2.5 Comparing Scottish to European Visions

Finally, a quantitative comparison was undertaken between the Scottish and European survey results (Metzger et al. 2018b) to investigate the similarities and differences between their answers. For the comparison, the result set of the European crowdsourcing experiment was filtered in Excel for complete answers only (no blanks). Results tables and graphs for each question which was comparable (i.e. some questions had a different set of answer options and were therefore non-comparable) were produced and a narrative written (Section 5.3.5).

5.3 Results

5.3.1 Descriptive statistics of respondents

410 members of the Scottish society took part in the online survey, between March 24th and 31st 2015. Consistent with Scotland's national statistics (SOS 2018), the sample comprised 51% females and 49% males, and the majority of respondents were based in central Scotland (46%) with another respondent peak in the Aberdeen area (10%) (SOS, 2018). There was, however, a difference in the representative age groups in our sample. Though there was a similar proportion of under 35-year olds (36% in our sample compared to 42% in the 2014 census), the 35-44 year olds were significantly over-represented (53% compared to 13%) whilst the over 55-year olds were significantly under represented (only 11% compared to 49%). The proportions of people's education were similar: higher education 48% (compared to 49%, SGNS, 2016); secondary education 44% (compared to 43%); and 8% (compared to 10%) having had professional training as their highest qualification.

Figure 5.3.1.1 below provides an overview of the location and age profile of the respondents.

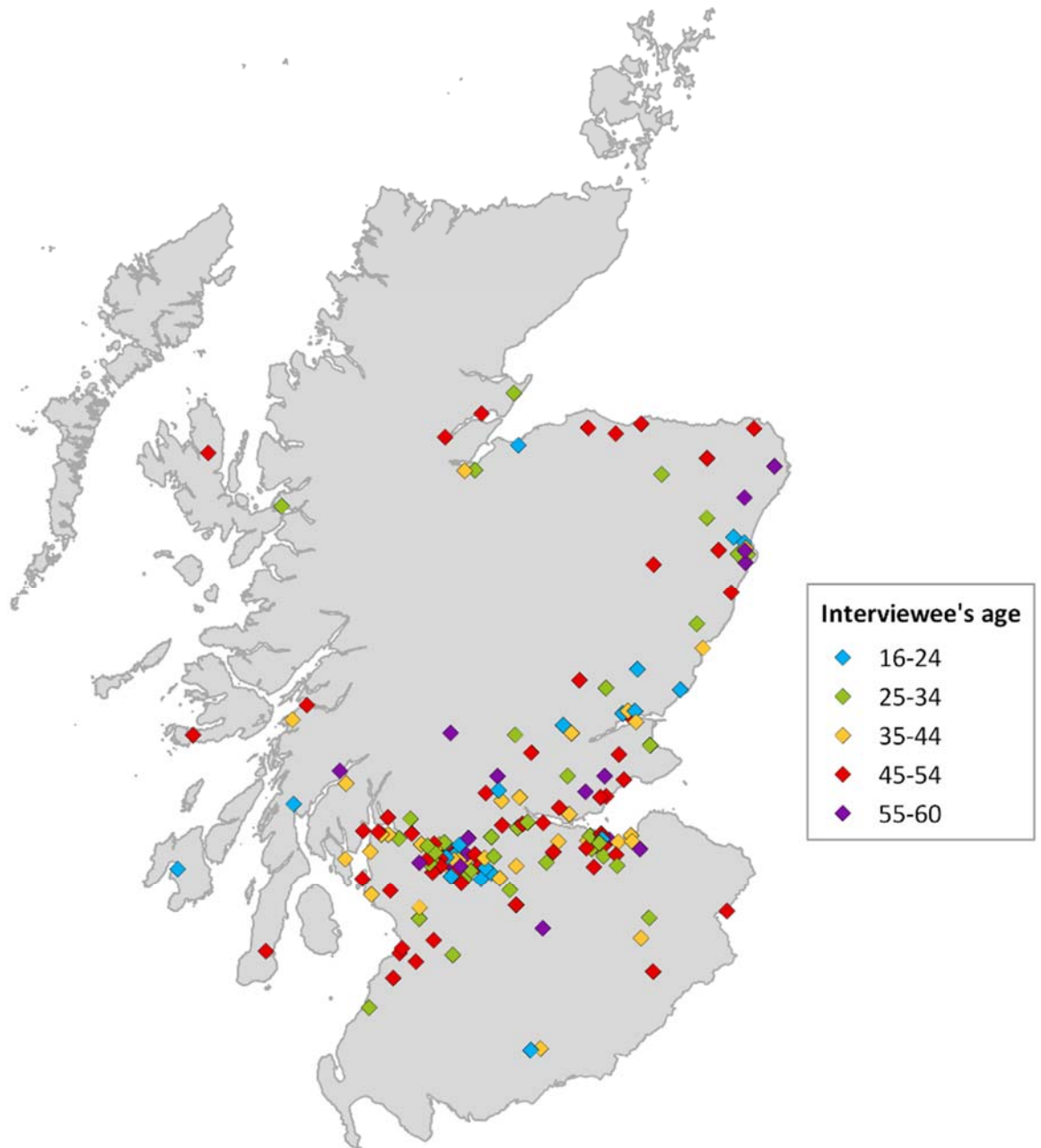


Figure 5.3.1.1 Overview of age and respondent's location.

5.3.2 Statistical Analysis

The data is presented as means with 95% Confidence Intervals (CIs), showing the 95% limits of the expected range of responses across the whole population, given the samples available and assuming normal distributions of responses. These results were cross-checked using a chi-square test, to determine if there was a statistical difference between the observed and expected values (Table 5.3.2.1 below).

Table 5.3.2.1 Results of cross checked chi-square test for results presented in this section

| | Live with | Live where | Work | Diet |
|---------------|-----------|------------|-------|-------|
| Age | <0.001 | | | >0.05 |
| Urban - Rural | | <0.001 | | >0.05 |
| SEG code | | | >0.05 | |

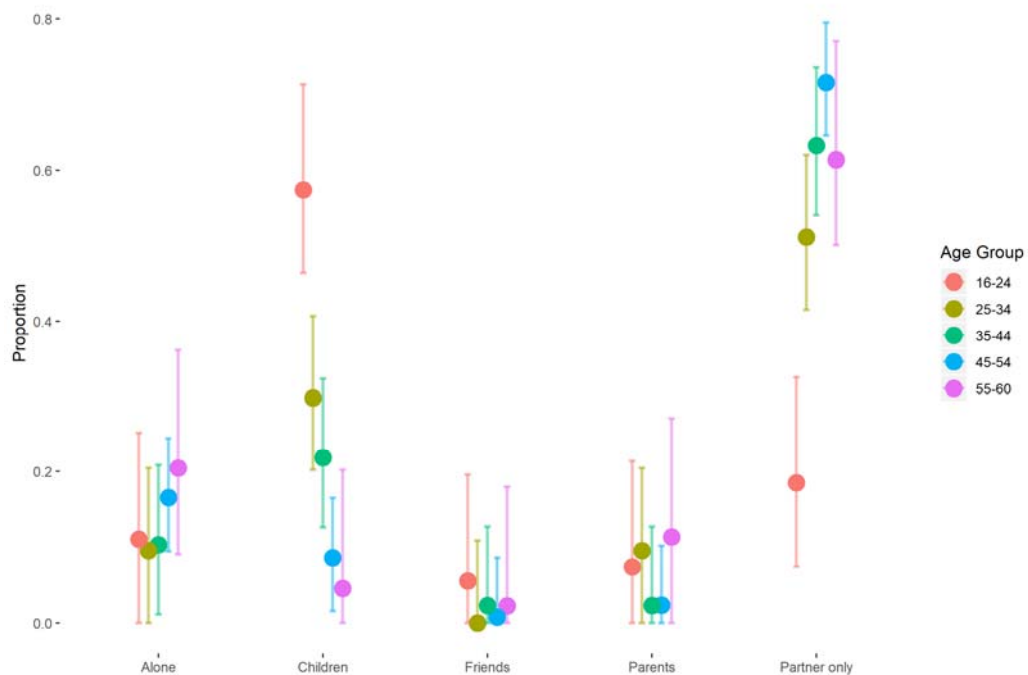


Figure 5.3.2.1 Who would be in the household with you? (The bars show the 95% CIs)

Figure 5.3.2.1 shows that more young people tended to see themselves living with children in the future versus the older age group who would be living with their partners and not children.

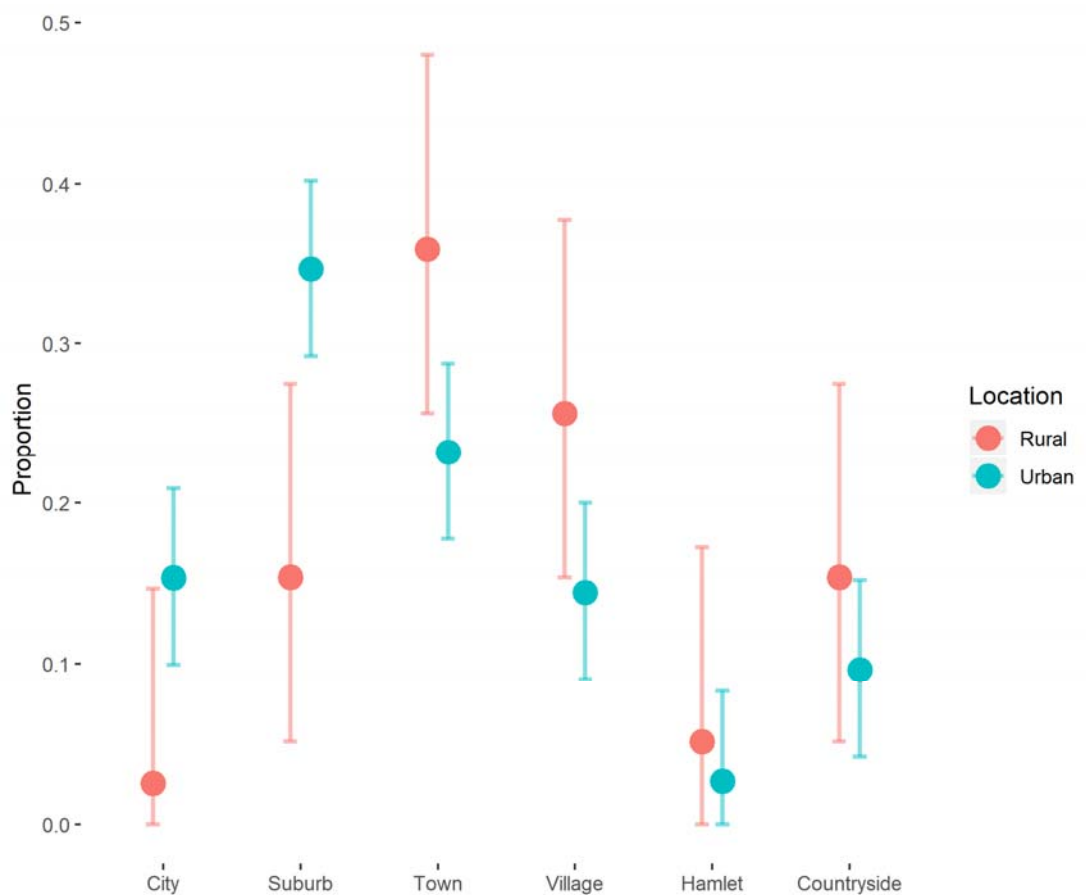


Figure 5.3.2.2 Which of the following best describes where you live? (The bars show the 95% CIs).

A significant proportion of those living in an urban setting would like to continue to live in urban or suburban settings. A significant proportion of those living in a rural setting would like to live in a town, whilst smaller numbers saw themselves living in a village or smaller setting (Figure 5.3.2.2).

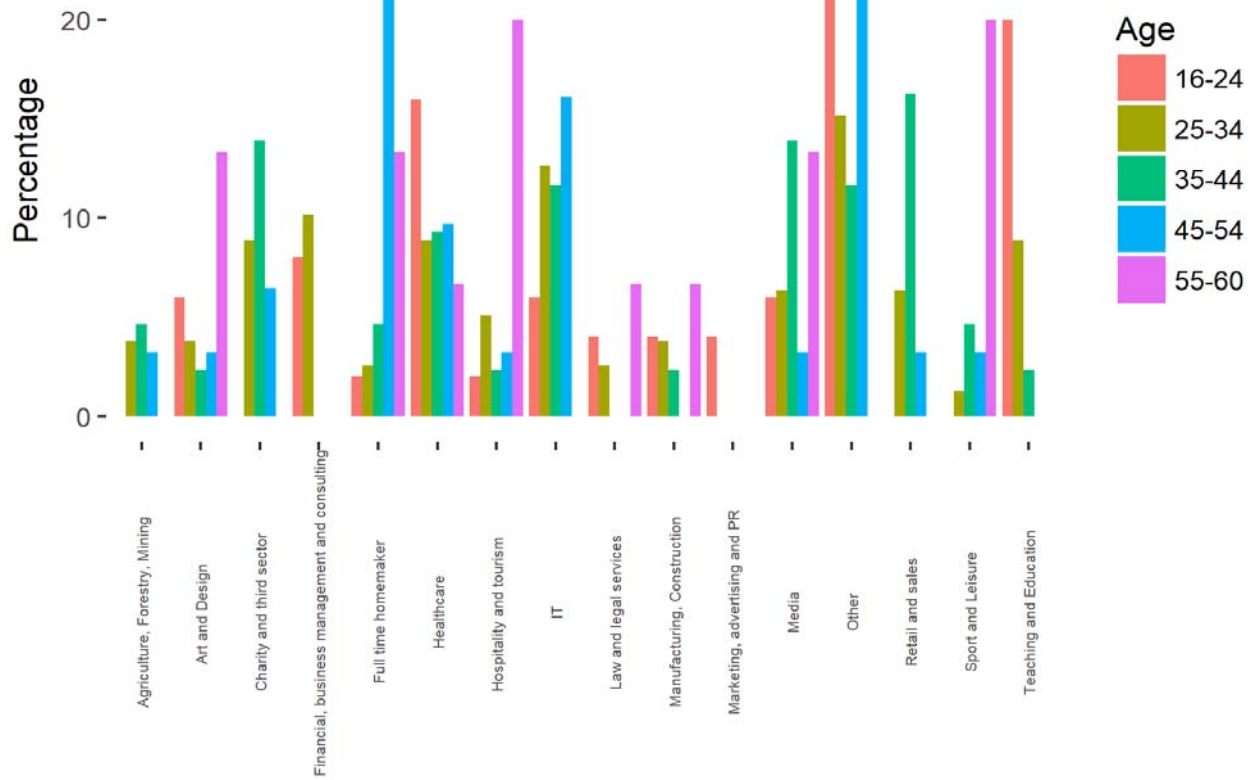


Figure 5.3.2.3 Which sector would you work in?

Though there is a spread of preferences within each of the age groups, it is worth noting that none of our sample from the younger age group chose to work in the primary sector.

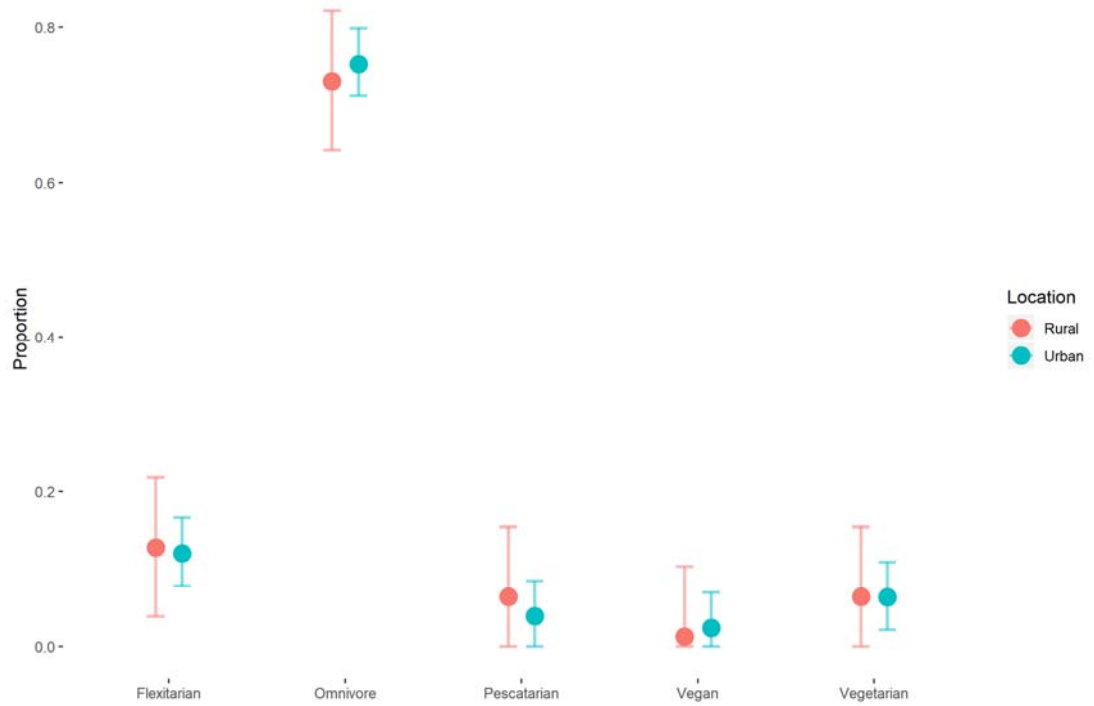


Figure 5.3.2.4 What would you eat? (by location). The bars show the 95% CIs.

There was no difference of urban and rural in dietary choices; the majority of both groups see themselves as being omnivores.

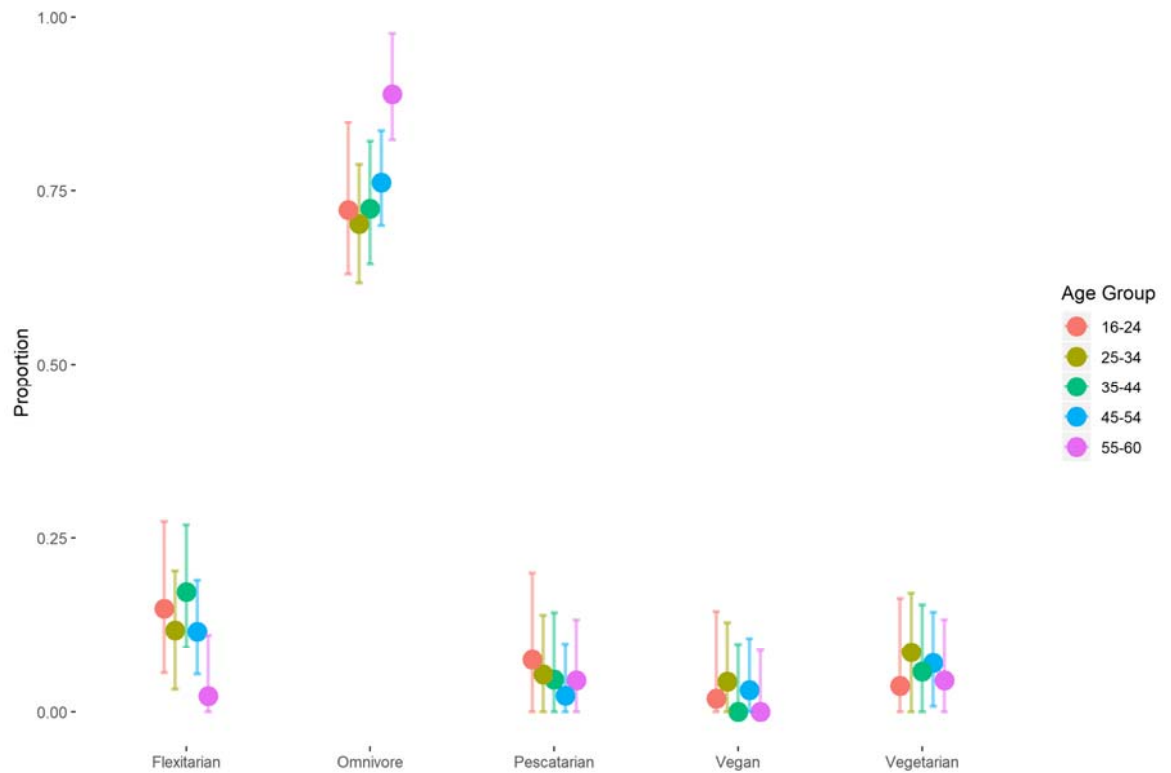


Figure 5.3.2.5 What would you eat (by age) Whiskers showing the 95% CIs.

The majority of all age groups selected omnivores. The older age group was least likely to define themselves as anything other than omnivore.

5.3.3 Descriptive narrative of results

Following the statistical analysis, a series of diagrams were produced, summarising the respondents' answers around which the narrative description was based. See Figure 5.3.3.1 below as an example.

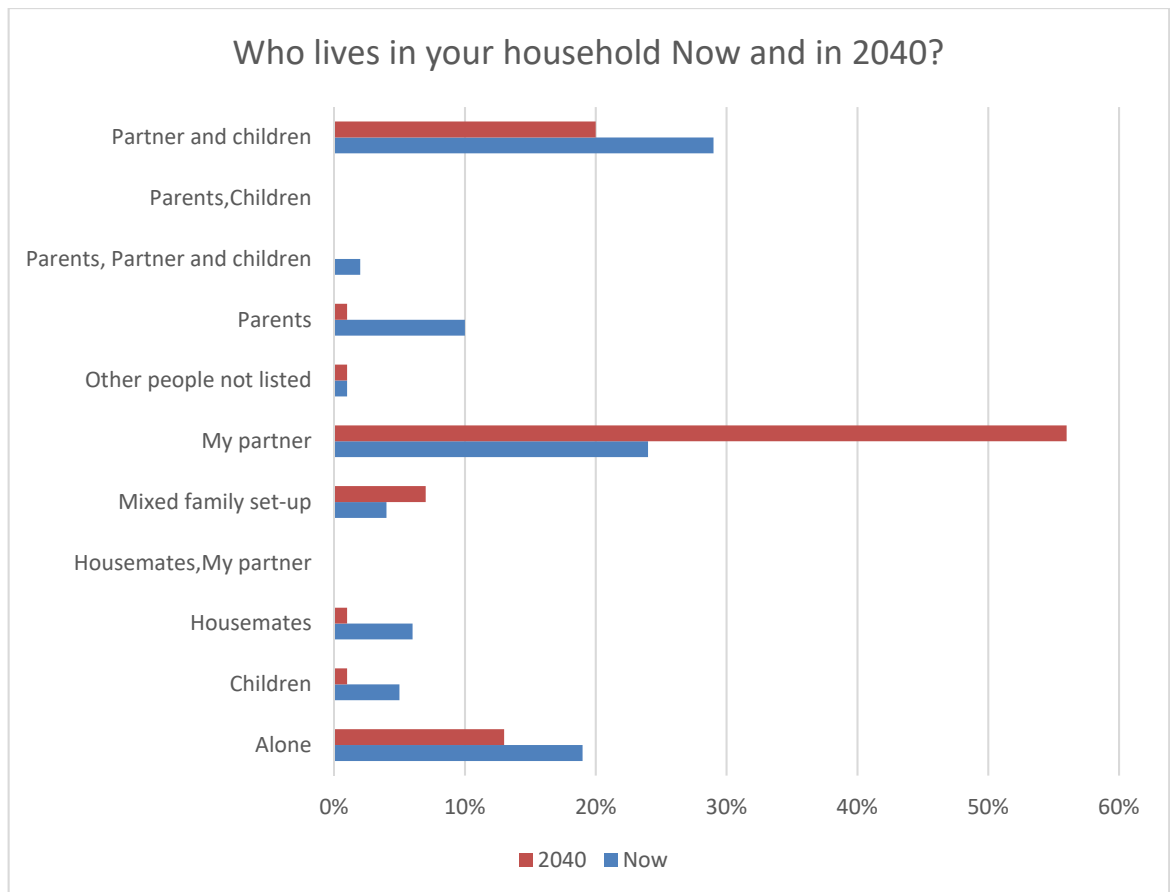


Figure 5.3.3.1 Example of a graphic representation of respondents' data prior to analysis

My home in 2040

Answers to questions about future home life were fairly conventional, with 58% living with their partner or their small family (20%), and 13% of respondents choosing living alone. There were also strong and statistically significant age-related patterns, with younger age groups far more likely to anticipate living with children, and older age groups far more likely to anticipate living alone or with their partners (Figure 5.3.2.1; p-value <0.001). The majority of respondents (57%) would want to live in small towns or suburbs within commuting distance of a city, whilst 13% want to live in the city centre. However, respondents were likely to choose options similar to their existing living arrangements (Figure 5.3.2.2; p-value <0.001). Life in the countryside (i.e. village, hamlet or without any neighbours) appealed to 31% of respondents. Detached houses (56%) stand out as

the most desirable option followed by semi-detached (17%), apartment / flat (14%) and terraced houses (11%).

My work in 2040

This section showed that the majority of respondents (43%) will be retired. Unsurprisingly, this was strongly age-dependent. The manufacturing and construction sector was most affected by planned retirements (down from 12% now to 2% in 2040), retail and sales (down from 11% now to 3% in 2040), transport and logistics (down from 9% now to 2% in 2040), and the teaching and education sector (down from 8% now to 4% in 2040). The only occupations with increases are Sport/Leisure (up from 1% to 2%) and media (up from 2% to 4%), although the youngest age group showed notable preferences for working in art and design, healthcare, or teaching and education. These figures are based on the initial number of respondents who worked in these sectors at the time of the survey. All other categories showed only minimal fluctuations.

The most popular choices for getting to work are to drive alone (37%; in which the youngest age group are disproportionately represented), walking to work (18%), or working from home (17%; favoured by the 25-34 age group). Thirteen percent will use public transport and 11% will cycle to work, with only 3% wanting to car share. For 82% of respondents, work will be less than 10 miles away; only 7% will have to commute more than 20 miles to their workplace. The majority of jobs do not include business travel (44%); those who would travel will do so within the UK (24%), globally (21%) and across Europe (11%). Significant differences between age-groups revealed that global travel was most attractive to the youngest (16-24) age group. No business travel was also frequently preferred by this age group and, especially, the 25-34 group.

The top five choices from the open ended question 12b 'my job will be...' were working as a manager or a director in various sectors (22), working for the

National Health Service (16), in the academic field (15), in the arts and craft sector (13), and as an administrator or clerical assistant (11).

My food in 2040

This part revealed that the majority of respondents will eat a diverse diet, regularly including meat and fish (75%). The remaining 25% were split between those who sometimes eat meat and fish (12%), vegetarians (6%), pescetarians (4%) and vegans (2%). If food is not grown in the garden (38%), food will only require minimal transport as it will come from local producers (75%) or be transported on road or by rail across the UK (17%). Food preferences did not differ significantly between respondent groups.

Whilst the supermarket shop still features prominently (48%), shopping in 2040 will be a combination of sourcing items from different places such as high street shops (30%), local markets (27%), online shopping (22%), producers (10%), food cooperatives (6%), wholesalers (3%), and convenience stores (1%). Eating out would be an occasional treat (10%).

Apart from growing your own food (38%), food production will be a combination of organic farming (35%) high-tech eco-friendly (33%; favoured by the youngest age group), and small-scale mixed farming (31%). Food production by means of large-scale farming and intensive indoor production are less favoured (7% and 7% respectively).

My free time in 2040

The countryside (42%) was the most commonly mentioned greenspace close to home in the free time in 2040 section. This was closely followed by my garden (41%), the seaside (37%), woodland (36%), a pond, lake or loch (25%), and mountains (22%). Man-made natural features such as urban park (16%), river canal (15%), sport facility (11%), and village green (7%) are less favoured.

Travelling to different places across the world was the most popular holiday location (52%), followed by destinations within Europe (30%) and the UK (28%). Staycations with trips to local attractions (6%) and visits to the same places each year are not very popular, and 16% of respondents will not take regular holidays.

Countryside preferences for 2040

Features respondents would like and would not like to see in the countryside are presented in Figure 5.3.3.2. These responses were very similar across all respondent groups, although some minor differences in preferences were apparent. For instance, species reintroductions were more popular than not for all Socio Economic Groups (SEGs) and education levels, but most popular amongst those with postgraduate degrees. Payments for rural land use and ecosystem service provision were also broadly supported, but disproportionately so by workers in supervisory, managerial, professional or administrative roles.

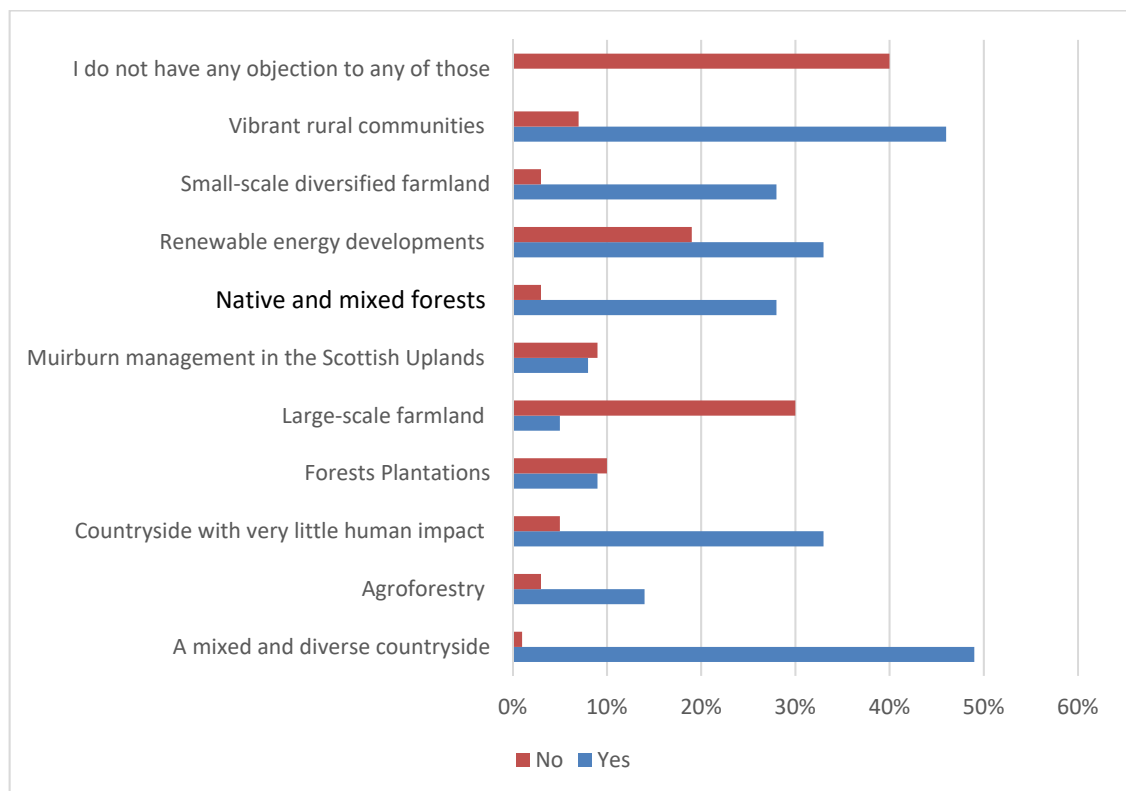


Figure 5.3.3.2 Respondents' ideal countryside in 2040.

5.3.4 Consolidating Visions - Scottish Societal Visions

The answers provided by the different segments of the Scottish population were quite similar. People would like to live with their partners and children in either detached or semi-detached houses and have a short commute to their workplace. Whilst still eating anything, they would like to see more local food production and environmentally-friendly farming methods. They would also prefer global travels for their holidays.

However, when looking into specific groups (e.g. age, gender, socio economic group) a few exceptions stood out from the statistical analysis. They are illustrated in Figure 5.3.4.1 below.

| | | |
|--|---|---|
| <p>Characteristics of all:</p> <ul style="list-style-type: none"> • Family with children • Detached or semi-detached house • Short commute • Omnivores • Local food production • Global travels | <p>Young people < 35:</p> <ul style="list-style-type: none"> • Flexi working and office locations • Environmentally friendly farming methods • No desire to work in primary sector | <p>Rural:</p> <ul style="list-style-type: none"> • No desire to move to urban areas • Favour intensive or mixed, small scale food production |
| | <p>Old people > 35:</p> <ul style="list-style-type: none"> • Detached houses in suburbs or small towns • Grow their own food in their gardens | <p>Urban:</p> <ul style="list-style-type: none"> • More likely to want to move to rural areas • Favour organic food production • Mixed diverse countryside with vibrant communities |

Figure 5.3.4.1 Consolidated visions of the Scottish Society about their visions for 2040.

Young people had a strong preference to live with their partners and children in detached or semi-detached houses and commute alone to their place of work. They prefer not to travel for work but, if they do it, would be global travel rather than UK or in Europe. There is very little interest in primary trades or charity-related work but a strong desire to work in art / design, retail, healthcare, teaching, marketing and consulting. Whilst they still would eat anything there is strong call for food that is locally produced by high-tech eco-friendly farming. These options were also voiced by the over-35 group.

There was a notable difference between respondents from rural and urban areas. Whilst respondents from urban areas favoured organically grown food and a

mixed and diverse countryside with vibrant communities, rural dwellers favoured intensive or mixed, small-scale food production.

There is also tension between people wanting to see renewable energy developments and those who would like to see wilderness. The dichotomy could be explained by the fact that in Scotland, renewables are often at the expense of wilderness and people would like to see large, relatively wild areas without any development in them (Kenter et al. 2015).

5.3.5 Similarities and differences between Scottish and European societal visions

A comparison with the outputs of the answers of the European Crowd sourcing experiment (n=765) revealed that although the gender balance is the same, there are great differences between the education level of respondents. This is probably due to the nature of the continental crowd sourcing experiment which was very well advertised and promoted through University staff and students and was not aimed to be a representative sample. Therefore, the results of the comparison should be treated with some caution.

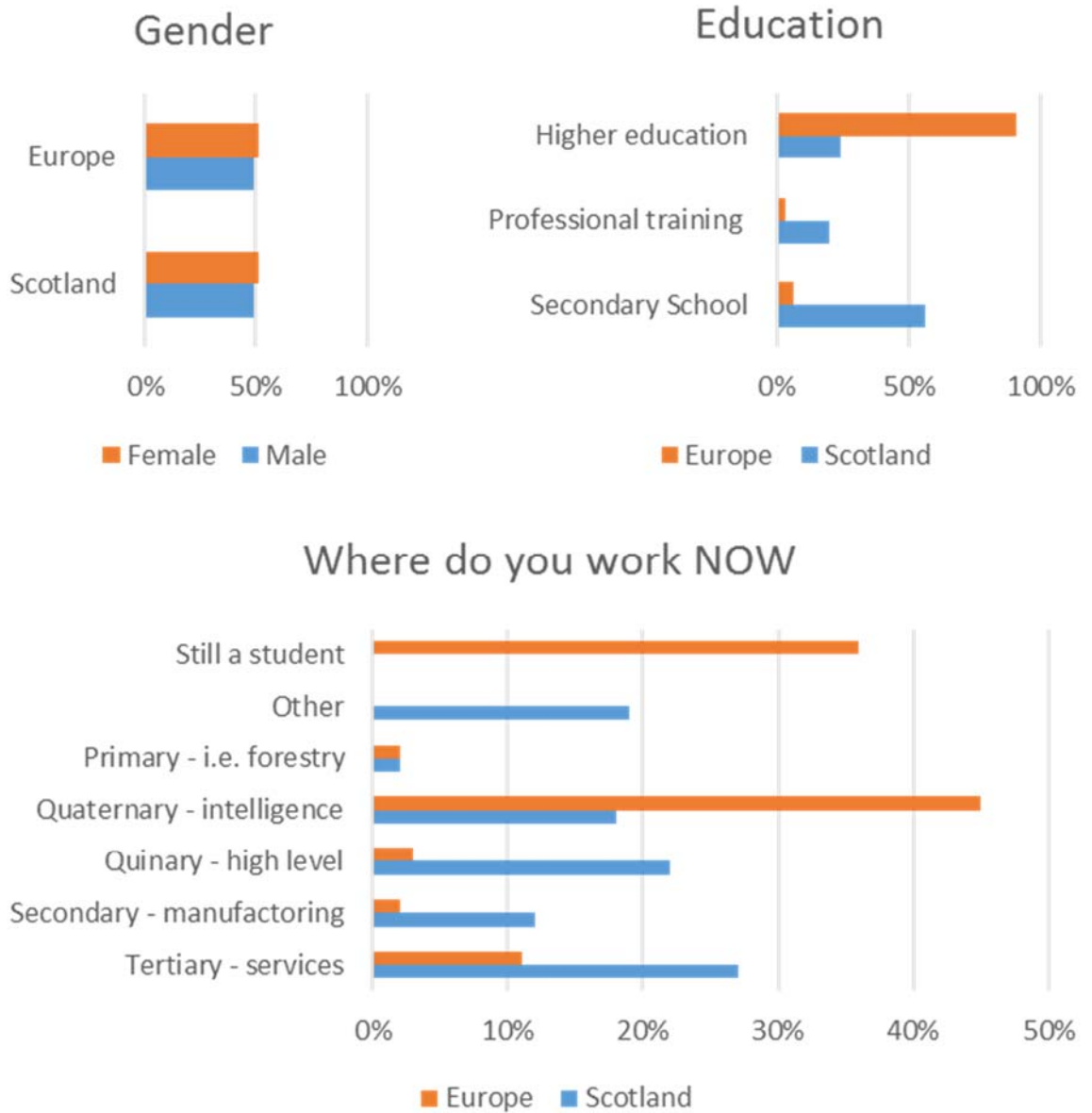


Figure 5.3.5.1 Comparison of European and Scottish respondents

However, despite this it seems that Scottish and European citizens have a strong overlap of similar vision elements except a few notable differences (Figure 5.3.5.2 below).

| | |
|--|---|
| <p>Characteristic of all visions:</p> <ul style="list-style-type: none"> • Family with children • Detached or semi-detached house • Short commute • Local food production • Environmentally friendly farming methods • Global travels | <p>Scotland:</p> <ul style="list-style-type: none"> • Suburb • Omnivores • Access to countryside • Drive alone by car |
| | <p>Europe:</p> <ul style="list-style-type: none"> • City or suburb • Flexitarian • Access to urban park and Countryside • Cycle to work or commute by public transport |

Figure 5.3.5.2 Comparison between Scottish and European visions

In both cases, the answers for ‘My Home’ are fairly conventional, with the majority of people living with a small family or as a couple living in detached houses in small towns. Europeans would also like to live in cities whereas their Scottish counterparts prefer the suburbs. The majority of participants would still be omnivores, but Europeans slightly preferred the flexitarian option i.e. reduced meat consumption. Furthermore, there was unanimous agreement with regard to holiday destinations: both groups said that they would holiday outwith Europe, followed by holidays somewhere in Europe, and staying in their own country as the third preferred option.

Notable differences included that, whilst in Scotland 43% of respondents would be retired, in Europe 48% would work in the Quaternary sector (although that could be due to the sample bias). The youngest respondents group in Scotland would be working in professions related to Art, Design, Healthcare, Teaching and Education. Also, whilst in Europe people would prefer to cycle or take public transport to work, or be away on business-related travel, in Scotland people would mainly drive alone, work at home, or walk to work.

Whilst both groups would still buy their food from the supermarket, Europeans would also buy their food as part of cooperatives or a local market. In Scotland,

local markets and high street shops as well as online shopping would also regularly be used.

Food production was also slightly differently ranked. Scottish people would like to grow more of their own food and buy organically grown food. In Europe, farming would be eco-friendly (the most preferred option for the youngest group in Scotland) followed by organic.

5.4 Discussion

5.4.1 Methods

The characteristics of the respondents, based on the questions asked in the survey, appear representative in comparison with Scotland's statistics (see 'Respondent data' section).

Web-based data collection methods are a fast and effective way of obtaining reliable data, in particular when done in conjunction with a market research company, pre-empting concerns of response rate (*did we get a big enough sample?*); quality (*are questions and layout in such a way that it is easy to understand for respondents*); sample size (*is it representative?*) and time (*will we get enough responses in the allocated time?*)

However, a couple of drawbacks of this method are that it excludes people who do not have access to the internet and that some people might give misleading answers – though the latter would also be equally true of other ways of asking questions. Nonetheless, we found that this method worked very well, helping to gain an insight into desired futures of the Scottish society.

5.4.2 Results

The aim of this study was to see how Scottish citizens want to live in 2040, if there are specific groups that have particular visions (e.g. age, location, socio-economic group), and how these findings compare to Europe. Five distinct trends stood out and are explained below.

Conflict

A key finding was that a high proportion of the Scottish society had no objections to specific land uses (Figure 5.3.3.2). Our data do not allow us to determine whether this is due to a lack of understanding of the issues or not.

Based on the findings from Valluri-Nitsch et al. (2018) where people with greater levels of understanding identified conflicts between different land uses, the assumption must be that there is limited awareness of these issues amongst Scottish society. What people did have an objection to seems to be based on what would have visual impacts (e.g. renewables, large-scale farmland). Further work would be to investigate what the level of understanding is and how to improve this. A series of recommendations are made in Section 5.4.3 below.

Young people

Young people would like to see a change. In particular, they would like to have flexible working arrangements, either working from home or from different locations and with a short commuting time (or work at home). One of the key messages that came across was the desire for more environmentally-friendly food production and the availability of local produce, which supports the findings of Valluri-Nitsch et al. *in press* (Chapter 4).

A major concern emerging from young people's visions is the lack of interest in working in the primary sector, in particular with regard to their desire for local environmentally-friendly food production (which tends to be more labour-intensive). This represents a major challenge which will need to be addressed

(Gebhard et al. 2015) sooner rather than later. Further work is needed to create a better understanding among school-leavers of the opportunities that exist in the primary sector.

Urban – Rural

The differences between the urban and rural group were also interesting, as these could result in challenges when urban people decide what happens in the countryside and how it should be used – without recognizing it as a working landscape. For example, the desire for wilderness from some parts of society could perhaps also explain the somewhat higher response of people not wanting to see a ‘vibrant rural countryside’. Those respondents were mostly urban dwellers with a higher socio-economic status. Other potential explanations could be that they did not rate that as important or that they might prefer a more mono-cultural countryside but this cannot be assumed without further questioning.

Consequences of choices

The desire for locally grown produce from more environmentally-friendly farming methods stood out as very important, but would require a large change in people’s diet and have a substantial impact for Scottish land use (e.g. increased space requirements for organically or extensively produced food) (Antrop 2004).

Flexible working arrangements at different locations, another important choice for the next generation, could especially benefit rural communities (if adequate broadband was available – which is not currently the case everywhere in Scotland (Skerratt et al. 2016)), so that people would not have to travel to urban areas to work.

From a sustainability perspective, some of the respondents’ desires are contradictory (i.e. a more sustainable lifestyle but at the same time enjoying long-distance travel or wanting to live in detached houses taking space away for local food production). Whilst education and engagement could play a key role in

promoting the required lifestyle choices, land use policies must also be supportive to foster the desired change. A recent sectoral study by Valluri-Nitsch et al. (2018) found that current land use policies in Scotland are non-coherent, lack joint thinking, and still largely promote sector-specific efficiency, in particular with regard to the agricultural sector promoting large-scale food production in the most favourable areas (Perez-Soba et al. 2008).

European Visions

A clear finding from the comparison of the Scottish results to the European crowd sourcing experiment is that, in general, large parts of society have the same desires (Figure 5.3.5.2) apart from a more urban/cycle focus and access to greenspaces in Europe (as opposed to suburbs, driving and access to the countryside in Scotland). Furthermore, young people in Europe and Scotland would also like to see a shift to a more sustainable future, echoing the results from section 4.4.2 which asked Scottish high school children what they would like their future to be.

Overall, the European visions are more specific, whilst Scottish visions focus on a general wish for a more sustainable future. This could be due to a couple of reasons: Firstly, the sample bias: European respondents were mostly working in the academic sector and were probably more aware of issues around the environment and already intrinsically motivated to take the survey. Secondly, Europe (in particular the Netherlands, which had a large proportion of the respondents) is quite pioneering with environmental issues (Liefferink and Wurzel 2016).

5.4.3 Implications

The importance of education and awareness raising

The results are encouraging, in that young people desire a change to more sustainable lifestyle. This reflects findings from interviews at Scottish high schools, which found that the majority of the respondents care for the environment, due to their experiences whilst spending time in the outdoors (e.g. outdoor learning

initiatives) (Valluri-Nitsch et al. in press). Given this positive impact, it would be good to see more of these opportunities being available for children of all ages.

Urban-rural school exchange could also help foster mutual understanding. The lack of interest of young people in the primary sector is a real concern, and spending time in a rural work environment could perhaps create the much needed interest in wanting to work in the primary sector: an issue which needs to be addressed urgently (Rural Youth Project 2018).

The curriculum needs to have a stronger focus on future proofing (Hicks 2012), with each taught subject having an explicit reference to the future implications of how we conduct our lives. Furthermore, it is vital to communicate to young people through the channels they use (e.g. traditional voting democracy is mostly taken up by older people whilst younger people use social media channels).

Once young people (<35) are busy establishing their lives other issues take precedence and choices are more driven by personal fulfilment (i.e. find a job, buy a house) rather than intrinsic values (i.e. I want a sustainable planet) (Valluri-Nitsch et al. *in press*). Nonetheless, it has repeatedly been shown (DEFRA 2011, Maudsley 2006, Moss 2012) that early exposure to nature has a positive impact in terms of maturing into adults who 'care' about the environment (Turtle et al 2015).

A society that does not know and/or care about the issues that lead to land use conflicts reflects the lack of connectedness between people and the land. An overall cultural shift is required from the detached self-centred consumerism of recent decades (i.e. I want, I deserve, bigger is better) (Hill 2011) to a society that still pursues self-fulfilment but is aware and cares of the impact of personal choices (i.e. I still want to fly to Thailand, but maybe I will try to buy more local food or I will try to use less energy in the house and walk more rather than using the car).

In recent years, councils, NGO's and communities have placed considerable emphasis on initiatives, outreach and engaging with the wider society in environmental matters (e.g. ranger walks, beach clean ups, seasonal activities, children's outdoor activities). At the same time, there is an apparent desire for going back to basics, reengaging with old traditions. However, it is important to not over-romanticise the countryside, but to also see and understand it as what it is: a modern landscape that delivers and provides services for everyday life.

Finally, there needs to be a balance between looking ahead and embracing change whilst preserving cultural heritage (Valluri-Nitsch et al. *in press*). Parts of Europe are perhaps much further ahead with awareness raising (Pierre et al. 2018) and therefore have much more different visions (i.e. if people understand better, they will be able to have a much clearer idea and make a wider selection of choices).

The role of policy

As previously mentioned, many communities, councils and NGO's have been taking a proactive approach in engaging wider society in environmental matters.

However, this is only one way of initiating societal change and crucial to dealing with complex issues. Some beneficial changes may come about due to political intervention (e.g. in 1983 fastening seatbelts became law and now few people would think twice about not clipping in). Consequently, the role of policy is crucial, and much more change could be brought about through more prescriptive and incentivizing approaches. Relatively simple mechanisms such as plastic bag charges or plastic bottle recycling schemes are very effective ways to change societal behaviours whilst creating funds at the same time, which could then be used to support education.

Environmentally-friendly local food production also stood out as a strong desire. In particular in the light of Brexit there is an opportunity to evolve agricultural activity and support in Scotland to a more holistic system across the rural and agricultural ecosystems. For this to happen agricultural policy would need to shift

from a sectoral point of view to one which places more emphasis on the agricultural interrelations with food production and the wider food industry or environmental sustainability for example. Scotland's Food and Drink strategy 'Ambition 2030 Scotland food and drink' also has the potential to help enabling communities in regional and national economic development, employability and skills development which could mean more local and sustainably produced food and drinks. This would also lead to more community resilience and regional tourism.

With regard to the high demand for housing for the future, statutory requirements could be introduced for all new builds to be passive houses (i.e. houses with small ecological footprints and ultra-low energy for heating and cooling) which are becoming increasingly more popular in Europe (Elswijk and Kaan 2008). Whilst this would most likely cause short-term significant sectoral upheaval and adjustment (i.e. lesser profit margin in return for a healthier planet), once adjusted, the contributions towards a sustainable society would be very significant (in particular with a growing demand for detached houses with gardens). Alternatively, if there is no political appetite for big legislative changes incentivising small-scale domestic renewables, would be an alternative way to stimulate a societal shift.

5.5 Conclusions

The results of this study have highlighted some interesting societal trends. Whilst there is an overall wish for a more sustainable future, in particular amongst young people (i.e. more environmentally-friendly farming methods), individual unsustainable choices such as driving alone to work or taking global holidays are still very popular.

A significant proportion of Scottish society does not have objections to how the land is used. There seems to be some conflict about specific types of land uses (e.g.

rewilding, renewables) which are held by members of the society with a higher socio-economic status. Further work is needed to explore whether that is genuinely the case or if this is due to the lack of understanding the challenges and trade-off of particular land uses as the majority of respondents were from urban areas.

The visions held by Scottish survey participants were also less radical than their European counterparts, but this could be attributed to the sample bias, as the majority of European respondents had higher education. This is in line with those members of Scottish society with higher education who also had more opposing / clearer views (see above Rewilding / renewables).

Individual aspirations, motivations and choice are major drivers of land use and, given the results, it appears that Scottish society is divided between a 'business as usual' lifestyle, held by a large proportion of the Scottish population, and the desire by those of a higher socio-economic class and young people to live a more sustainable lifestyle.

We know from market research how preferences can be influenced (Peloza et al. 2013) and changes can be initiated by incentives and restrictions (Thaler and Sunstein 2008) in order to promote sustainable behaviour. If we know what specific parts of society want, it will be much easier to tailor policies to have the maximum impact, as well as focusing on educational schemes which have been proven to be effective in making people care.

CHAPTER 6 – GENERAL DISCUSSION

6.1 Introduction

This research was carried out to understand the similarities and differences in Scottish land use visions. This was achieved by looking at sectoral visions (Chapter 3), visions of young people (Chapter 4), and societal visions (Chapter 5) as set out the objectives (Figure 1.4.1) and based on the recommendations of the OECD (2008) (Section 2.4.3) which recognised the need for eliciting visions from different elements of Scottish society and for identifying the opportunities and challenges in order to work towards a more unified land use vision.

As the three preceding chapters each involved different approaches this chapter consists of a qualitative summary of the key findings, followed by critical reflection on the visions that emerged, the key opportunities and challenges resulting from these, and how well the methods worked. It ends with a reflection how I, the researcher, have shaped the research.

6.2 Scottish land use visions – bringing it all together

6.2.1 Areas of agreement

As outlined in Table 6.2.3.1, there is agreement among the different groups on many factors concerning the environment, society, economy, and governance.

Improved ecosystem health

Everyone is concerned about the natural environment and the impacts of climate change, and wants improved ecosystem health whether it be for continued supply of natural capital (e.g. timber, food) or intrinsic values (e.g. recreation, conservation) (Sections 3.4.1, 4.4.2, 5.3.5).

Importance of renewable energy in combating climate change

Sectoral stakeholders and young people highlighted the need for more alternative energy production; the sectoral stakeholders were more concerned about

opportunities for improving rural businesses (Section 3.4.2), and young people see renewable energy as a means of addressing climate change (Section 4.4.2).

A shift towards more environmentally friendly farming

NGO respondents (Section 3.3.3) and young people (Section 4.4.2) would like to see a change in farming methods to a more environmentally-friendly, high-tech, less intensive agricultural farming system, whilst society overall would like to see more local food production (Section 5.3.4).

Resilient local communities

The sectoral stakeholders' wish for resilient rural economies (Section 3.3.4) with good public services could also tie in with the young people's desire for more flexible working environments (Section 4.4.2) such as hot desking (e.g. providing a hub) or good IT provision (e.g. rural broadband), which could attract more young families to the countryside.

Engaged citizens

Young people would like to be more engaged in discussions concerning their future (Section 4.4.1); sectoral stakeholders stress the importance of a society that is aware and understands how land is managed (Section 3.3.2). Scotland's independence referendum demonstrated how young people are very able to participate in broader discussions and present their own opinions (Eichhorn et al. 2014), and the quality of answers in this study reflects their ability to engage in debates in an active way. Herein lies a particular opportunity for sectoral stakeholders to reach out, as younger people do not seem to have fixed and entrenched views as yet (Section 4.4.2).

6.2.2 Tensions and concerns

Control versus indifference

The complexities and the current polarisation with regard to land management and ownership was perceived as the biggest challenge for land use sectors (Section 3.4.2). In contrast, a high proportion of Scottish society did not have any objections to specific land uses (Section 5.3.3). However, the data are insufficient to determine whether this is due to a lack of understanding of the issues or not. People's objections seem to be based on what would have visually impacts (e.g. renewables, large-scale farmland). Young people were open to change whilst holding on to traditions; their main concerns were linked to intrinsic values (e.g. feeling part of something bigger). They did not see conflict as a great concern, as this could be resolved with awareness raising (Section 4.4.2).

Future of the primary workforce

A major concern emerging from young people's vision is the lack of interest in working in the primary sector (Section 5.4.3), in particular when considering the sectoral stakeholders' wish for a vibrant rural countryside (much of which relies on a primary sector work force). When taken with their desire for more local, environmentally-friendly food production (which will require an expansion in those working in the primary sector), this will need to be addressed sooner rather than later as it might require more labour and Scotland has already seen a decline in seasonal farm workers following the Brexit referendum.

Unsustainable lifestyle choices

As highlighted in Section 5.4.2, many of the respondents' answers were contradictory with regard to their overall desire for a sustainable lifestyle. This may often derive from a combination of 'personal choice due to peer pressure / media suggestions' and 'not knowing any better'. This would need to be further investigated; however, in the meantime it is important to start working towards a

discourse about more sustainable behaviour; suggestions have been made in Table 6.4.2.1 below and Chapter 7.

6.2.3 Turning challenges into opportunities

It is encouraging to see that there is wide agreement on many issues (Table 6.2.3.1 below). The more complex areas of concern (i.e. Brexit, land ownership) have already been addressed within their wider political contexts. The table below provides a list of issues that can be worked on independently in order to move closer to the Scotland people want to live in in 2040. It also recognises the wide base of agreement and the huge potential that lies within that.

Table 6.2.3.1 Making the vision work - turning challenges into opportunities.

| Joint Vision elements | Challenges | Opportunities |
|--|--|---|
| Sustainable world with healthy ecosystems | Unsustainable individual and sectoral choices | e.g. Education, incentivise recycling (i.e. Plastic bottle return scheme) and payment for public benefits |
| Meeting climate change targets | Unsustainable individual and sectoral choices | e.g. Education, more opportunities for small scale domestic renewable energy, legislation to build all new houses carbon neutral |
| Eco-friendly, high tech food production and move away from large scale agriculture | Eco-friendly, high tech food production and move away from large scale agriculture Lack of space required to match production with alternative methods and lack of technology for new ways of farming combined with lack of will power to pioneer new | e.g. Incentivise alternative farming methods, and fund research into better technology |
| Multifunctional landscape | Long standing land use conflicts and logistical (e.g. what could go where and who decides) | e.g. Increased dialogue and collaboration to optimise land use combined with incentives for solutions |
| People of all ages are better connected to the land (physically and emotionally) | How to get people to care, insufficient transport links from urban to rural | e.g. 'future-proofing' education in the curriculum, outdoor initiatives, media (such as Countryfile, out of doors for example), improve transport links |
| Families with children living in detached houses in small towns and suburbs with short commute to work | Urban sprawl, conflict with local food production if houses are built on agricultural land | e.g. Continue promote flexi-working (with adequate infrastructure), and build resilient local economies so people are not tied to a specific location; have attractive rural communities where people feel they can bring up their children rather than staying urban to 'make it work' |
| In favour of local food production / Omnivores but conscious how food is produced | Increased pressure on available land. See section above on environmentally friendly farming methods | e.g. Integrated innovative spatial planning, change in consumer behaviour (i.e. needs versus wants) |
| European and global holidays | Impact of individual choices (Are people aware of the environmental impacts of global travels?) | e.g. Educate about environmental impacts on air travel and offer viable alternatives (i.e. encourage a change in behaviour / make staycation 'trendy') |
| Diverse and resilient local economies | Time and resources to allow communities to establish / reinvent themselves | e.g. Build on existing knowledge exchange programmes, make more funding available for rural start-ups, ensure public services (e.g school, healthcare, IT, transport) are provided making it desirable for people to move |
| Coherent short and long term policies and payment mechanisms | Brexit and the effects on current policies and payment mechanisms | e.g. Encourage ongoing discussions with all stakeholders |
| More dialogue and collaboration | Turning the abstract into 'on-the-ground' workable solutions | e.g. Sharing good Practice, Knowledge transfer, encouraging local and regional partnerships |

6.2.4 Abstract visions require concrete solutions

This research shows that all stakeholders want a Scotland with healthy ecosystems and people who care about the land. Three broad visions – similar to the European visions described by Perez-Soba et al. (2018) – have emerged during the research process which inform the recommendations in Section 7.2:

1. ‘Scotland the brand’, which makes optimal use of land, ensuring optimum production of food, natural products and preserving its iconic landscapes, putting Scotland in a strong global economy whilst meeting society’s demands.
2. ‘Regional connected Scotland’, where societal needs are met regionally in a coherent relationship between people and their resources, away from a global economy and with a strong emphasis of serving regional population, creating more autonomy, involvement, and resilience.
3. ‘Multifunctional Scotland’, which acknowledges both of the above and tries to balance society’s demands with sustainable land management whilst still having a flourishing national economy contributing to the global economy.

However, these are very abstract statements and as soon as they are broken down into ‘workable’ chunks, substantial challenges become evident, as discussed in Section 3.4.2 (e.g. who is making the decisions?, what should the land be managed for?). It will be important to look at what spatial level we need to think about land use and land use conflict, and whether a more decentralised, place-based approach (as recommended by OECD) might be one way of addressing this (Section 2.4.2). The ecosystem approach offers an overarching framework for addressing these challenges, with the principles of such an approach evidenced in the

implementation of regional catchment plans (which were successfully trialled during the first Land Use Strategy implementation in 2012).

The Land Use Strategy did set ambitious targets to secure sustainable land use, delivering benefits for the environment, society, and economy, but due to the lack of legal status it has never established itself next to the marine and national planning frameworks (Section 2.4.2). If this were to change, these three frameworks would sit at national level and could be coupled with regional and local place-based approaches across Scotland, taking into account specific conflicts and solutions.

As it stands, Brexit has taken precedence on the policy agenda, but it would be unfortunate if the Land Use Strategy would be ignored after all the effort which has gone into it. Whatever policies emerge post-Brexit, whether a new set of policies or a revised statutory version of the existing Land Use Strategy, it will be important that guidance, incentives and regulatory tools are fully aligned to secure buy-in from land managers and deliver multiple benefits, ensuring optimal/efficient investment of public money. Any approach will need a long-term vision which is outcomes-focused and incorporates short- and long-term objectives (OECD 2008).

6.3 Did the visioning methods work?

This section reflects on the effectiveness of the methods used in this research in eliciting visions. The approaches complemented each other, targeting different groups with different methods (Table 6.3.1). Nonetheless, through the consolidation process (Section 6.3.3) it was possible to identify common themes (Table 6.4.2.1) and differences from across a range of stakeholder groups (Section 6.2), leading to a set of recommendations (Chapter 7). Table 6.3.1 summarises the methods used, why they were chosen, and key lessons learned.

Table 6.3.1 Overview of methods and lessons learned

| Group | Method | Why | Lessons learned |
|---------------------|---|--|--|
| Sectoral | Face to face semi-structured interviews split up according to STEEP drivers | Expert opinions, guide for in-depth interviews divided by drivers for ease of analysis | Successful method as it allowed nudging respondents back to the STEEP drivers if they went 'off topic' |
| Society | Online survey following VOLANTE structure | Obtain a representative sample which can be compared to Europe study | Be more specific on answer options, more detail on postcode to better distinguish urban / rural |
| Young people | Visual STREAMLINE interview method | Interactive, creative, to test on young people | Successful method as it gently guided participants through a complex topic |

6.3.1 Sample size

Though an attempt was made to establish appropriate sample sizes from each group to allow valid conclusions to be drawn, there is always a risk of people dropping out (which was the case with four pupils during the high school interviews) or withdrawing their interview (one sectoral interview was subsequently withdrawn due to a change in the department's policy on giving interviews). However, the overall sample size of the three groups of respondents has provided a wealth of information from which it was possible to draw a range of conclusions.

As outlined in Section 3.2.1, 24 interview candidates were selected from seven land use sectors (and one cross-cutting sector representing land owners and land managers) following an extensive literature review. Dividing the sectors into private (P), non-governmental (NGO), or public (PU) stakeholders proved

successful, as it was possible to extract a broader base of opinions from a relatively small sample size. It also enabled comparison amongst stakeholders (e.g. all private stakeholders)

The aim for the societal survey was to obtain a representative sample of the Scottish population; this was the main driver for selecting a market research company for this part of the research (Section 5.2). It was a two-way working relationship with the researcher explaining the context and drafting the survey, and the market research company providing the technical skills in setting up the online questionnaire, running a pilot, and then distributing it to their large set of respondents. The rough format from the Volante crowdsourcing experiment (Table 5.2.1.1) proved very helpful. However, one lesson learned from this exercise was that, in order to obtain a more in-depth urban/rural classification, more than the first four letters of the postcode are needed.

Following on from this, the Scottish Government's six-fold Urban-Rural Classification (SG 2014a) was used to select one school from an urban and one school from a rural setting (Section 4.2.1). In keeping with ethical requirements, students were selected with the assistance of class teachers, and interviews were conducted using the STREAMLINE methodology to elicit the students' opinions. It would have been preferable to have conducted interviews across a wider geographical and socio-economic spread to obtain broader samples, but this was not possible due to time and financial constraints.

6.3.2 Interview design

The interview format of looking at Scotland in 2040 based around the STEEP land use drivers in the sectoral interviews worked very well for both interviewee (i.e. structured discussion, less likely to go 'off course') and interviewer (i.e. loose guidance during the interview and very helpful during the analysis as their key concerns were already grouped under the drivers which they perceived as having the most influence on their visions).

Whilst the one-on-one interviews were guided by the STEEP land use drivers, the societal and high school work was structured around the crowd-sourcing experiment 'My life in 2040' question set derived from the VOLANTE project (Table 5.2.1.1). During the design stages of the survey, the market research company advised changing some of the answer choices to make the survey 'flow' better for the Scottish participants. In hindsight, retaining the original answer options would have facilitated easier comparison of the answer sets. Furthermore, better comparison of socio-economic data would have been possible (e.g. location) if respondents had been asked to give a six digit post code rather than four digit; this derived from the policy of the survey company, to protect the privacy of respondents.

The sectoral and young people's surveys provided richer data due to the nature of methods applied (i.e. face-to-face dialogue over an hour, as opposed to a 10-minute online survey). This is important to take into consideration regarding the societal visions that were constructed, as there was no access to the reasoning behind societal answers and it was not possible to tease out further details (i.e. 'please tick all that apply' as opposed to 'can you explain why').

The STREAMLINE method used in Chapter 4 had not previously been tested with young people. This research has shown that the method is successful for reaching

out to young people (Section 4.4.1). The participants' feedback was very positive and as the canvasses were sorted by themes, the analysis was straightforward.

6.3.3 The consolidating process

A general inductive approach (Thomas 2006) to thematic content analysis was used for the analysis of the expert (Sections 3.2.3 and 3.2.4) and young people's (Section 4.2.4) visions in a replicable and systematic manner (Bryman 2012). This proved to be an effective way to distil the huge amount of information in the visions presented in Figures 3.3.5.1 and 4.3.6.1 respectively. Due to the sheer amount of data available for the societal exercise, a set of predetermined variables was applied (Section 5.2.3) to explore specific sub-groups within society (i.e. old, young, urban, rural, socio-economic status).

Despite the different methodologies the consolidation process made it possible to develop a set of visions for each group, which could then be compared, resulting in a table listing the elements all stakeholder groups agreed on (Table 6.4.2.1). This is important when developing new policies, frameworks, strategies and engaging with society as a whole. In particular with the uncertainty posed by Brexit, it is important to be aware where areas of consensus lie and where policies could have quick positive outputs.

6.3.4 Transferability of methods

Whilst eliciting Scottish land use visions it was also designed to develop a set of methods to address a complex situation (Table 6.3.1). Often, only parts of our socio-environment are considered (e.g. future of farming, projections of timber supply, consumer habits, and recreational trends) and there is a lack of cross-referencing between them. Sustainable visions will only be possible with a thorough understanding of the individual 'components' (e.g. economic and environmental trends, societal habits and desires) *and* their interactions with each other. It is therefore important to approach the question from as wide as possible

an angle, to attempt to understand the complexity and then zoom into the components of the system, choosing methods to suit the individual components (i.e. in this case, in-depth expert interview, fun interactive interviews to engage young people and a snapshot of society, Figure 6.3.4.1 below). These methods can be used as a template for eliciting visions for any aspect (e.g. healthcare, education).

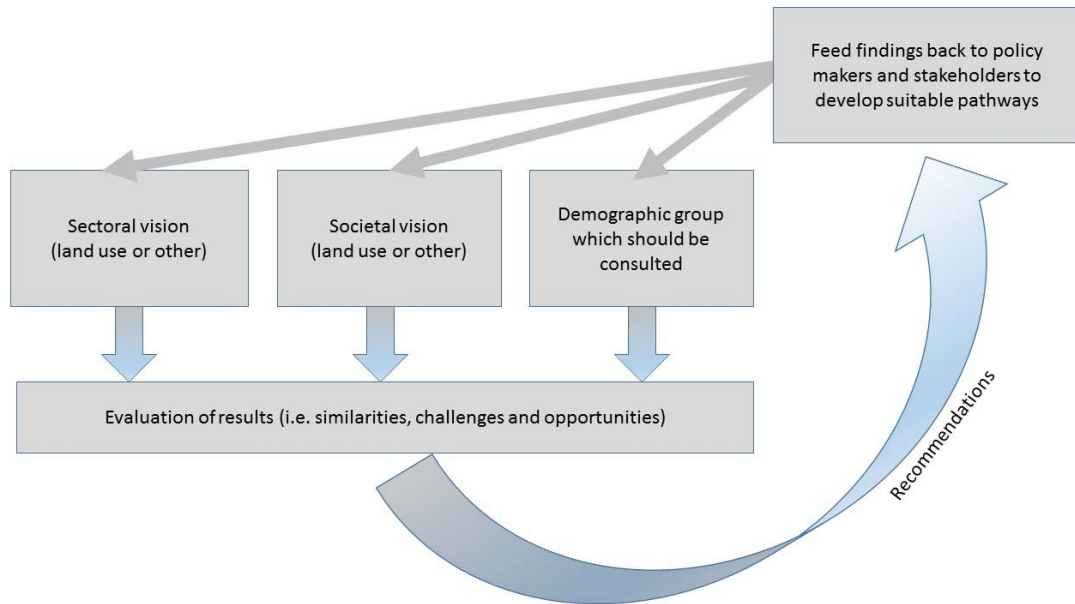


Figure 6.3.4.1 Schematic overview of the visioning process. Chapter 7 gives examples on how the findings could be fed back to policy makers.

6.3.5 Critical reflection of methods and analysis

This section critically examines the methods chosen and considers other ways in which this research could have been approached. As outlined in section 1.4 the methods were partly chosen to enable compassion between Scottish and European visions based on the VOLANTE project, hence a similar approach was desirable. However, whilst the ‘European vision team’ was in excess of 10 researches in different locations it was therefore able to hold various stakeholder events around Europe to develop the expert visions (see Perez-Soba et al., 2018). The possibilities as a one person researcher were somewhat limited. The Volante crowd sourcing

experiment (Metzger et al., 2018) was replaced with a more structured market research questionnaire in this research which allowed some statistical analysis but a major disadvantage of this method is the lack of two-way communications (e.g. no interaction with participant to see if they understand the question or to better understand their motives for the ‘ticks’ they make whilst completing the survey).

As illustrated in Table 6.3.5.1 amended from Guimaraes et al. (2015), it is important to acknowledge that other methods could have been chosen which might have had a significant impact on the results. Questionnaires, Interviews and Delphi surveys are successful methods to gain a deeper understanding of a particular topic and to gather a range of opinions before opening the subject to a wider participatory approach.

Table 6.3.5.1 Overview of alternative research methods (amended from Guimaraes et al. 2015)

| | Method | Type of communication flow | Interactions between participants |
|--|-----------------------|---|---|
| Phase 1 – Information gathering / establishing overview (Doctoral Research) | Questionnaires | One way communication, gathering information on a specific topic, researcher to decide how data is used | No interactions between participants |
| | Interviews | One way communication, gathering information on a specific topic, researcher to decide how data is used | No interactions between participants |
| | Delphi surveys | One way communication, gathering information on a specific topic, researcher to decide how data is used | No interactions between participants |
| Phase 2 – A more participatory | Q-methodology | On the verge of two way as the statements used are normally obtained from a variety of stakeholders. | No active but passive interactions between participants because the information provided to participants represents |

| | | |
|---|--|--|
| | | the perspectives of others (Asah et al. 2012) |
| Focus groups and in-depth groups | Two way communication as the researcher is involved in the discussion and information is produced collectively | Active interaction, whereby participants have to explain their views to others, present and listen to arguments, and negotiate where a consensus is required |
| Workshops | Two way communication as the researcher is involved in the discussion and information is produced collectively | Active interaction, whereby participants have to explain their views to others, present and listen to arguments, and negotiate where a consensus is required |

Interviews were chosen over the Delphi method because it was felt in light of further work that it would be good to establish face-to-face connections / a network early to build social capital and trust between the researcher and the stakeholder prior to any participatory methods. Participatory approaches would be next logical steps in order to co-create solutions (section 7.2).

With regards to the analysis, this research has largely taken a reductionist approach using the STEEP framework which fitted well within the time horizon and personal expertise (section 1.4). But it is acknowledged that this comes with a certain risk, in particular the risk of losing certain nuances which could have been picked up in discourse analysis (the analysis of constructions /representations / preconceived contexts) or a wider (beyond STEEP) thematic analysis. Rather than being determined *deductively* from the literature review, the vision elements could have then been more driven by *inductive* analysis (Braun and Clarke 2006). Whilst this was done to a certain extent it is important to mention that I as the researcher had some preconceived ideas after the extensive literature review (e.g. look specifically for anything to do with STEEEP).

Critical discourse analysis exploring debates within and between stakeholder groups (Gee 2011) around key issues such as land reform or payment for ecosystem services would have been yet another way of exploring the data (i.e. why is s/he saying that now and to me? What could s/he be trying to achieve?)

Research in land use often links close to policy, therefore a 'neat end product' (i.e. a series of visions and recommendations) from a land use PhD research was thought to be a good starting point for any further work.

6.4 What next? – Implications of the findings

The following section critically examines the implications of the research findings; concrete suggestions on how this could be taken further are made in Chapter 7.

6.4.1 The need for a cultural shift - Carrot or stick?

This research has shown that whilst people overall want a more sustainable future (e.g. healthy ecosystem, local food production, fighting climate change), they still make unsustainable choices (consciously and/or unconsciously) which are counterproductive to these societal visions (Section 5.4.2). We know from the past that some governmental interventions have had very positive impacts (i.e. the fee for plastic bags reducing waste and creating funds), therefore more innovative ideas (e.g. the recently proposed plastic bottle charge scheme) would a first step in encouraging society to be more sustainable.

A strong demand from society and young people for local produce and environmentally-friendly farming methods was also evident (Sections 4.4.2 and 5.4.2). In response to this demand, many farm shops have already become established; however, this sector is still currently tailored to the wealthier parts of society, with artisan produce/farmers' markets commonly occurring once or twice a month, as opposed to twice weekly, as in many European countries.

Increased environmental education and spending time outdoors as part of the curriculum will need to play a much bigger role in the Scottish curriculum. The young people who participated in this research unanimously agreed that spending time in the outdoors has had an impact on how they feel about the environment. This confirms research by Wells et al. (2006), who discovered that people who care about the environment have spent a significant amount of time as children in the outdoors, in particular before the age of 11. Whilst this relates to children, it is also important that adults get opportunities to bond with the environment, as the more people learn about a place, the more they appreciate it (Lindemann et al. 2010), again supporting an argument for a more place-based approach.

In order to initiate a cultural shift (e.g. a long-term change of behaviour), which is needed for achieving key parts of respondents' visions (i.e. healthy ecosystems, aware society, mitigating climate change), there need to be some fundamental policy and legislative changes. It would appear advisable to look at how other European countries are achieving a cultural shift for the better through rules and incentives (GHC): for example, 66% of waste in Germany is recycled, compared to 45% in the UK (DEFRA 2016); and in Sweden, environmental policy is an integrated component of the larger project of restructuring the economy and making it more environmentally-friendly through 'green taxes' (Pierre et al. 2018) given to environmental protection by the government, the parliament, civil society, enterprises and the public over economic growth (Pierre et al. 2018).

6.4.2 A vision – more than meets the eye

Societal visions for rural Scotland (Figure 5.3.4.1) often represent what respondents associate Scotland with, in terms of the visual appearance of the landscape and their desire to keep it that way. There are those who prefer 'wild', 'romantic', or the characteristic crofting scenery of Scotland's West (even though the latter is highly dependent on agricultural subsidies); and those who would like

to see a vibrant, resilient countryside that is open to innovation and has a flourishing population. In contrast, many sectoral visions are centred on non-visual visions such coherent policies, strong local economies, less conflict.

But whose vision should we be aiming for? Sustainability rather than choice may have to be the overriding factor. That again is where dialogue, education and awareness-raising become relevant in order to make informed choices on land management (both from a sectoral and societal point of view). A series of recommendations for achieving this are outlined in Chapter 7.

6.5 Reflexivity

Apart from pursuing this research for academic reasons (i.e. gaps in knowledge), there has also been considerable personal motivation behind my research. This section is a brief reflection on how my personal history has shaped the research.


My parents are outdoor people and I spent a lot of my childhood outside in the 'wild' and 'domesticated wild' in our small holiday hut, the allotment, or my auntie's small subsistence farm in the former German Democratic Republic. Whilst other interests took precedence during my teenage years, it was always clear to me that one day I would live on a small farm in the countryside with children (so much for pursuing a vision...). Therefore, this research has always been something much closer to me than only contributing to the academic world.

I still remember many 'insights' that I had whilst exploring plants and animals or building dens, and it fills me with great joy to see my children now having similar experiences, as well as learning from research participants that they also remember key moments in the natural environment. Apart from living on a little farm, my two oldest children have been going to a forest kindergarten (my youngest child will do this in due course) and, compared to many of their peers, they appear to be more responsible and have a genuine empathy for the natural environment and for 'looking after the planet' (again something which has been reconfirmed by the findings of the study).

Before we started the smallholding where I live, and in the early stages of this research, I found myself being somewhat biased towards the wilderness vision (which still now has a place in my vision for Scotland), but the more I learned from people I spoke to during the project, the literature I read, and moving from a more urban to a rural place, I started to think more about the concept of multi-functionality and that there probably is an adequate place and time for most land uses.

During this research, there were several different roles I took on - each of which led to a different set of insights - which are summarised in Table 6.5.1 below.

Table 6.5.1 Personal reflexivity on the PhD process

| 2012 | Me, the researcher | Sectoral Interviews | High school interviews | Societal Survey |
|--|----------------------------------|---|---|--|
|  | My role / bias | Researcher / enthusiastic smallholder | Researcher / mother | Researcher / data analyst |
| | What were my preconceived ideas? | Very sectoral: 'I like wilderness, small scale subsistence farming and think land ownership is very unequal.' | Perhaps stereotypical adult perception of young people: 'I don't think they care very much - though I wish they would because it is so important' | 'Don't think Scottish society cares much - European citizens will care a lot more; we cycle everywhere, have great Eco-villages, have farmers markets all the time, and recycle almost everything' |
| | Reflectivity during my research | 'Perhaps he / she has a good point here? I wasn't aware of that...I need to go away and have a think about that.' | 'Wow, they really get it – if this lot goes into policy, land use or education when they grow up we are sorted!' | 'So much data – surely you can find anything you want to find – do we really cycle, recycle etc?' |
| | How did I feel? | Slightly embarrassed about my 'arrogance' to 'know all about it' | Slightly embarrassed about my 'arrogance' to 'know all about it' | Being a researcher come with great responsibility i.e. importance of objectivity and flexibility when analysing big datasets |
| | Where am I now? | I have a much more balanced approach to land use in Scotland. There is space and time for all land uses and types of ownership in Scotland and I believe we need bits of everything in order to create a resilient and diverse future for Scotland. | I believe 'future proofing' should be a staple subject in the curriculum and young people should not only have the opportunity but it should be mandatory to gain some practical experience in land use related subjects. | |
| | Reflectivity at the end | <p><i>PhD relevance:</i> Open dialogue and genuine engagement helped to overcome preconceived ideas</p> <p><i>Personal:</i> I am much more careful and humble about labelling stereotypes</p> | <p><i>PhD relevance:</i> Adults often assume young people do not care or do not have the experience to engage in meaningful way about the future – this is not the case</p> <p><i>Personal:</i> My two eldest daughters now draw simple vision boards of their ideal lives and we talk about it</p> | <p><i>PhD relevance:</i> Scottish and European people desire a more sustainable lifestyle but it is also important to make people aware of the impacts of their choices</p> <p><i>Personal:</i> I have a much more healthy dose of scepticism with regards to generalisations based on study findings in particular with regards to media coverage</p> |
| 2018 | | | | |

I am very passionate about the subject of this research, and felt privileged that participants engaged so well and that it was mainly a two-way process. This may be why I felt the least attached to the societal survey, as this was done online due to different objectives (e.g. representative sample / societal snap shot as opposed to in-depth knowledge). However, this survey was just as valid in terms of establishing the vision as the other two parts of the research.

Furthermore, now that I am coming to the end of my PhD, I wonder if I have a responsibility to develop my research area further? I have been in the privileged position that I came from a sectoral background but, having had the opportunities to speak to many people from different sectors and backgrounds. I feel that I am able to 'see the bigger / abstract picture' and also have the ability to zoom in and understand the hopes and concerns from different stakeholders. I would like to think that open dialogue, links between urban and rural schools and better awareness of implications of personal choices could provide these insights without having to do a PhD....

CHAPTER 7 – FURTHER WORK AND RECOMMENDATIONS

This research has shown that, despite some long-standing conflicts in the land use sector, there are also many areas of agreement with and across land use sectors, young people, and Scottish society: improved ecosystem health, the importance of renewable energies with regard to climate change, the desire for more environmentally-friendly farming practices, resilient local communities and engaged citizens. Participant feedback has also indicated an appetite for dialogue from all stakeholders to take this discussion further, albeit there will be challenges on how to translate abstract concepts into workable solutions on the ground.

There are areas of concern and tensions around land management and ownership, and unsustainable personal societal choices. Policy needs to be more prescriptive in order to initiate a cultural shift (e.g. stricter policy to nudge people to make more sustainable choices, greener policies to change land management practices). Brexit could therefore be a good opportunity to review and adapt policies so that they better reflect and support sustainable personal and managerial choices desired by so many.

Whist sections 7.1 explores alternative *methods* which could be applied to take this research into the next phase, section 7.2 suggests *themes* based on the work already carried out in this research which could be further explored within the context of these methods. Therefore, the next two sections should be seen complimentary to each other.

7.1 Suitable approaches for the next steps

The two most obvious options for taking this work further would be to either look at the existing data again through discourse analysis and explore how and if this changes the existing vision elements and / or to open this topic for a wider participatory / transdisciplinary approach.

Participatory methods and transdisciplinary approaches have widely embedded in the environmental decision making and can help to facilitate flexible and transparent decision making process (Berkes 2004, Cundill et al. 2005 Dryzek and Stevenson 2011, Hadorn et al. 2008). In particular it offers a way of co-creating knowledge to tackle real world problem (Klein 2004). This would be a particularly useful way to explore the sectoral stakeholder visions (Chapter 3) in more depth whilst producing insights into the influence of power, social learning and participants' behaviour which could subsequently be further explored during critical discourse analysis (section 6.3.5).

However, it is important to follow a set of rules within the stakeholder process in order to avoid disillusionment of how much power/ value is given to each stakeholder voice and disappointment if claims are not realised. Reed (2008) identified '8 features of best practice participation' which should be adhered to in the stakeholder participation process (Table 7.1.1).

Table 7.1.1 Best practice stakeholder participation rules (after Reed 2008).

Stakeholder participation needs to be underpinned by a philosophy that emphasises empowerment, equity, trust and learning

Where relevant, stakeholder participation should be considered as early as possible and throughout the process

Relevant stakeholders need to be analysed and represented systematically

Clear objectives from the participatory process need to be agreed among stakeholders at the outset

Methods should be selected and tailored to the decision making context, considering the objectives, type of participants and appropriate level of engagement

High skilled facilitation is essential

Local and scientific knowledge should be integrated

Participation needs to be institutionalised

On more practical level, following from this research, some suggestions could be to:

- Facilitate **sectoral stakeholder workshops** where the visions resulting from this workshop are open for discussion. Some questions need careful consideration prior to any participatory work for example '*who should be at the workshop? / focus groups*' (i.e. individual land use sectors (e.g. NGO, Pu, P of each land use sector), types of sectors (e.g. all NGOs, all Pu, all P) or everyone coming together).
- Look at a **community level vision planning** where all parts of society would be involved and use the visions from this work as a starting point for discussion whilst putting the research results from the three main chapters into a local context.

- **Develop classroom resources** for primary and secondary schools by either summarising the findings from this work or by developing the STREAMLINE method into a user-friendly format for schools.

7.2 Elements worth exploring further

On a more academic or policy level a series of recommendations resulted from this research which could be explored through academic research (e.g. Honours, Masters or Phd research) or government funded policy supportive research (e.g. the Scottish Government strategic research programme, the Scottish Government Centres for expertise, and Forestry Commission funded research). Rather than a prescriptive set of actions the suggestions below should be seen a menu of options from which decision makers and research funders could choose to support – any one of those or any combination of the above could make a positive difference and improve the resilience for future land use in Scotland.

Sectoral Land Use Visions:

How can social capital between land use sectors / land managers be increased to reduce tensions and conflicts, identify trade-offs and work towards compromises and consensus?

Opportunities identified from this research:

- Establish a facilitation fund to encourage innovations and social capital building across multi-sectoral projects or projects which work across different estates (e.g. Cairngorms Connect / Deer management groups).
- On the other end of the spectrum (compared to the facilitation fund) could be a stronger policy framework to reward Outcome based / Catchment / Regional approaches which could encourage people to work together
- Establish an advisory service where trusted individuals within our outwith the community coach and mentor land managers / farmers and small businesses on personal and professional matters so that they can maximise their potential
- Develop a system whereby estates and farms can be peer reviewed to foster cooperation and collaborative learning between land managers

Potential research question to address Climate Change and Ecosystem Health:

How can we deliver better fit for purpose, coherent, integrated land use policy with a strong focus on the environment and climate change?

Opportunities identified from this research:

If the land use strategy could be revived and given legal status, it could encompass a series of rules and regulations. Some of which could include:

- Certain 'must dos' for land managers (e.g. develop a climate change risk assessment and lay out how this will be addressed) but leaving land managers the options on 'how to do this' from a choice of options so they can see what suits best (e.g. planting more trees for flood mitigation, restoring peatland)
- Financial support which is linked to CPD training where higher rates could be awarded to 'greener' types of training
- Stronger regulation to force a shift to environmentally friendly farming – this could perhaps be done by means of true cost accounting, the establishment of a pesticide tax
- Incentives which favour regional land management and / or outcome based approaches as mentioned in previous paragraph
- Develop a process for payments for ecosystem services and / or the natural capital index and set up pilot projects whereby the initial uptake could be through microtargeting of already interested land managers

Potential follow up research question with regards to Education:

How can we improve the education system so that it can be made more suitable giving young people an emotional connection to the natural environment, understanding of rural issues, climate change, ecosystem health and the impacts their choices have on those?

Opportunities identified from this research:

- Increase the number of Forest schools and Nature Kindergarten so that all children have exposure to the outdoor and have a chance to develop a connection with nature / the outdoors
- Develop an Urban – Rural School exchange programme or Buddy system to foster understanding from urban pupils how the countryside works and from rural pupils to gain an insight what impact urban life has for the understanding of the rural landscape
- Currently Rural skill courses are being taught in rural settings most likely due to a demand and supply situation however pupils in urban schools would also benefit from this (in particular with addressing the shortage of workforce in the rural sector). Perhaps online teaching similar to e-sgoil for example (which provides wider and more equitable choice of Gaelic subjects for pupils across all secondary schools in the Western Isles). That way resources are kept to a minimum but it can reach a wide pool of interested pupils urban and rural alike.
- Stronger focus on agro-ecology in college and higher education – interviews suggested that there is still too much of a focus on production and profitable management choices. It would therefore be useful if agro-forestry could demonstrate how production and profit could still be good whilst practicing more sustainable stewardship
- Establish more centres of expertise (or local hubs) to deliver training in and expansion of rural skills for the existing workforce and create more rural apprentices and / or shared apprentices schemes to attract new interest

Potential research questions with regards to Society:

How can we change / challenge the current status quo lifestyle which is by large unsustainable and focussed on the individual to one that has engaged, empathetic citizens at its heart who are committed to sustainable choices?

Opportunities identified from this research:

- Make it easier to do 'the right thing' such as for example strong incentives for sustainable choices; or have recycling options in the supermarkets so customers can leave unnecessary packaging at the shops rather disposing them at home.
- Make something socially unacceptable such as the growing awareness of plastic waste (i.e. be prepared for trigger points / social trends and piggybacking on those with messages (such as the 'Blue Planet' effect); next step: the majority of people questioned wanted more environmentally friendly food production – what should we be telling them?)
- Legislating against harmful choices (e.g. Higher taxes of unsustainable lifestyle choices (limiting the number of flights allowed to one person per year - controversial but discussed by some respondents))

Some of these suggestions are not new and are already being investigated or implemented which means that there is a general awareness. The difficulty however is how to maintain momentum and commitment to take it to the next stage. Paramount to this will be continued stakeholder work, participatory approaches and pilot projects with partners who are willing to try any of the opportunities identified.

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APPENDIX A – Email Project Introduction

Dear,

My name is Christiane Valluri-Nitsch and I am a doctoral student at Edinburgh University. I am doing my research on Visions for Land Use in 2050 and am supervised by Dr Marc Metzger and Dr James Patterson (University of Edinburgh), Prof Martin Price (Centre for Mountain Studies, University of the Highlands and Islands) and Dr Rob McMorran (SRUC).

You have been recommended as an expert in your sector and I was hoping you would be willing to take part in a one hour face-to-face interview sometime between now and Christmas.

I would be speaking to you about your vision for 2050 relating to the environment, economy, society, governance and technological advances; how that would affect land use and whether there might be some regional differences. I am interested in your personal views which may or may not be different of those of your organisation.

You will be given a consent form prior to your interview and you can choose your level of anonymity. Once the interview is transcribed, you will have the opportunity to review and edit the transcript if you wish to.

Should you have any further questions please do not hesitate to contact me either by phone (01738 877223) or email me at c.k.f.valluri-nitsch@sms.ed.ac.uk.

Please find attached a short overview of my research and I will contact you at the beginning of next week to see if you are able to take participate.

With best wishes and I am looking forward to speaking to you soon, Christiane

APPENDIX B – Project Overview Attachment



VISIONS FOR LAND USE IN RURAL SCOTLAND

Brief overview of the context of the research

Aims of the PhD research:

- To improve the understanding of different visions between land use sectors
- To identify alignments and misalignments between those visions
- To improve existing decision making by
 - informing the future development of the Scottish Land Use Strategy
 - developing a method for extracting visions which may be useful for other partnerships and stakeholder groups

Scotland is a small country with limited resources. With many pressures and competing demands on the rural landscape it is inevitable that there are different visions for future land use. It is therefore important to think now about what kind of Scotland we would like to live in 40 years' time and to identify and synthesise land use visions to be able to balance demands and evaluate trade-offs.

Interactions between sectors can have direct consequences for land use and land use change in Scotland, e.g. how afforestation and renewables will change the landscape, how biofuels may be competing with agricultural land used for food production and whether specific recreational activities happen on a regional or national scale. But there are also indirect consequences, particularly from the European and global level (e.g. climate change adaptation and mitigation strategies and high commodity prices).

Furthermore, various land use sectors have different objectives (e.g. the security of future food supplies and the conservation of endangered habitats). Current and future pressures for environmental protection, energy production, transport, food, housing and recreation have led many organisations to develop some form of vision statement to plan their long-term goals and objectives.

With regard to land use and land use change, a wide variety of future scenario approaches exist to identify "*What is possible?*" and "*What is plausible?*". However, the question "*What is desirable?*" has received little attention so far.

It is hoped that this research will provide answers to questions such as: What are the different stakeholders' visions? What is the feasibility of the identified visions? Are there any visions of particular interest (i.e. novel visions)?

c.k.f.valluri-nitsch@sms.ed.ac.uk



APPENDIX C – Interview Consent Form (Sectoral)

Interview Consent Form

Research project: Visions for Land Use in Rural Scotland

Researcher: Christiane Valluri-Nitsch

Research participant's name:

About the project

Thank you for taking part in this study. The objective of this interdisciplinary PhD research is to identify visions of future land use in Scotland and to assess differences and similarities of those visions.

Data collection

The Researcher will be responsible for collecting the data for this study. She will be conducting a series of interviews with stakeholders from sectoral interest groups.

She will conduct semi-structured interviews in order to collect the data. Each interview will take approximately one hour. Participants may opt out at any time.

Ethical procedures for academic research undertaken from UK institutions require that interviewees explicitly agree to being interviewed and how the information contained in their interview will be used. This consent form is necessary for me to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation. Would you therefore please sign this form to certify that you approve the following:

- The interview will be recorded and a transcript or summary will be produced
- The transcript/summary of the interview will be analysed by Christiane Valluri-Nitsch
- Everything shared in the interview will be treated anonymously, but direct quotes may be used.

- The results of the analysis will be published in my PhD dissertation and scientific articles
- Any variation of the conditions above will only occur with your further explicit approval.

_____ Tick if you wish to wish to review the notes, transcripts, or other data collected during the research that refer to your participation.

_____ Tick if you wish to receive the final outcomes from this study.

By signing this form I agree that;

1. I am voluntarily taking part in this project. I understand that I don't have to take part and I can stop the interview at any time;
2. I am taking part on my own behalf and not on behalf of my organisation;
3. I don't expect to receive any benefit or payment resulting from my participation;
4. I can request a copy of the transcript/summary of my interview and make edits I feel necessary to ensure the effectiveness of any agreement made about confidentiality;
5. I have been able to ask any questions I might have, and I understand that I am free to contact the researcher with any questions I may have in the future.

Printed Name, Date

Participant's Signature

Researcher's Signature

APPENDIX D – Sectoral Land Use Visions

| Drivers | Agriculture Sector Vision |
|-------------|---|
| Society | <p>In the Agricultural vision the society of 2050 will be more aware about the value of the land and how it is being managed. Whilst the NGO sector highlighted the importance of society to be educated and involved in land use decision making, the private sector focused more on awareness raising but with limited involvement in discussion making. The public sector fell somewhat in the middle by stating that people need to be aware and understand what impact their consumer choices have on the wider market. The NGO vision talks about a fair and equal society which has a ‘happy and healthy’ lifestyle and which makes much more conscious choices. This has led to an increase in demand on Scottish produce. More and more cities, towns and villages are striving to achieve ‘sustainable’ status as there is a straight forward, easy-to-use system of measurable criteria in place. The private sector sees less people living in the countryside and most people being employers of the state or working in the service sector. An important part in the private sectors vision is the protection of prime agricultural land from housing development on urban fringes.</p> |
| Technology | <p>Apart from efficient broadband throughout Scotland, on which all sector types agreed, technological advances such as High-Tec precision farming, the use of GM crops and advancement in animal cloning were important features in the public and private sector. Everyone agreed that farming will be more environmentally friendly in 2050.</p> |
| Economy | <p>Whilst the current subsidy regime still plays an important part in the private sectors vision, the public sectors sees Scotland’s farmers are striving business men in a free open market economy delivering a range of public services and goods rather than subsidies. True cost accounting is a key element of the economic vision in the NGO sector as is farm diversification (i.e. renewable energy, tourism, off-farm employment). Much more food is produced and used in Scotland rather than exported which has resulted in resilient local economies. All sector types agreed that Scotland stand in a good position in the wider European market and is well known throughout the world for its high quality niche markets such as seafood and Whisky. The economic climate fosters innovation, collaboration and cooperatives.</p> |
| Environment | <p>All sector types agreed that in 2050, Scotland’s environment is recovering, biodiversity loss has come to a halt and agriculture is driven by land use capability which has resulted in a win-win situation for farmers and the environment. Carbon emissions are reduced considerably and targets are adhered too. Climate change has also had some positive impacts in such that marginal land has moved up to less marginal and can be used for agricultural productivity. The focus is very much on optimising land use rather than maximising including the areas of the ‘squeezed middle’. Agro-forestry is widely seen across Scotland and it is common practice for farmers to harness the environmental characteristics and attributes rather than breaking or eradicating them (i.e. bees and pollinators).</p> |

| | |
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| Policy and Governance | The public and private sector emphasised that in 2050, Scotland holds more devolved and rule making powers and is in a stronger position to influence wider European and international policy rules (e.g. CAP, WTO). The private and NGO sector agreed that the 'silo' mentality in the land use planning system has disappeared, and there is clear understanding of trade-offs. All sector types wanted well working, fully coherent long and short-term policies which would see farmers actively investing in the land resulting in a long-term sustainable economy. |
|------------------------------|--|

| Drivers | Crofting Sector Vision |
|------------------------------|--|
| Society | Both sectors agree that in 2050 Scotland will see a wide distribution of prosperous, working family farms. Scotland's society is living 'the good life'. More people are living in rural areas, are engaged with the land, producing food, enjoying being part of agriculture and rural Scotland. Everyone one who wants to produce food or grow flowers has access to land whether it is a three by three metre plot (e.g. therapeutic gardening) or several hectares, and the means to do so. Having these small producers all over Scotland has also had a positive impact on bringing communities together. The private sector highlighted the need for a more egalitarian model of ownership. |
| Technology | Both sectors agree that in 2050, the main technological advances are improved renewable energy technologies and the nationwide coverage of broadband. The energy network will be much more decentralised and small scale renewables play a big part. The public sector hopes that society has come to like large scale windfarm which cover many parts of Scotland. Offshore wind and tidal plants have been shelved as they turned out to be too expensive. The Denmark example has been taken up by Scotland and many larger windfarm developments are owned by cooperatives due to a change in the regulatory system. Furthermore both sectors agreed that lighter weight machinery has improved farming efficiency on fragile crofting land. |
| Economy | Both sectors agree that more people are working in the productive sector rather than the service sector. Capital for investment is available and many reasonably sized family farms (~100+ hectares) are run as productive businesses and contributing to Scotland's vibrant economy. The private sector anticipates that land taxation has resulted in a much fairer pattern of land ownership. |
| Environment | Both sectors agree that in 2050 Improvements have been made to tackle climate change. There is no land abandonment and the less productive areas of Scotland being used for high nature value farming which secures a good income. Agro forestry and land grazed predominately by cattle is common practice and crofters are working in partnership with nature which is now central to the Common Agricultural Policy. The private sector also sees an opportunity of exporting water to parts of England which are affected by continuing droughts as a result of climate change. |
| Policy and Governance | Both sectors agree that in 2050, Scotland's Government has successfully implemented policies that foster place-based multi-functionality and support high nature value farming. The public sector sees Scotland as being part of a federal Britain. The private sector wants to see a 'the Scottish Government' that is run by the people of Scotland and not by a few powerful lobbying groups. |

| Drivers | Forestry Sector Vision |
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| Society | The private sector wants forestry to be seen and recognised as a natural part of the land management system. The public and NGO sector envisages a society that is very much engaged with and aware of land use issues in Scotland. In 2050 it is common practice to use forests as part of wider education for young and old. The NGO sector would like to see changes a more egalitarian land ownership system where large chunks of woodland are owned by communities and woodland smallholders. As a result of this hutting culture has developed in Scotland which is bringing many more people into the countryside. The public sector anticipates that the shift in societal values is picked up by the media which, in 2050 is much more 'green and environmental' and being out and about is seen as the hip thing to be doing. The kids of the early 2000s, who were the first generation who received a more holistic environmentally orientated education, are now running the country and the ethos of valuing the environment is firmly embedded throughout all aspects of life. |
| Technology | The private sector would like to see technological advances that have improved the understanding and the quality of the raw material that can be grown in Scotland. As a result of this Scotland is now able to grow better quality products which are used in higher value markets like construction. Improvements in harvesting machinery mean that trees can be grown on steeper hillsides and soil disturbance is kept to a minimum. The NGO sector would like to see a return to more traditional extraction methods such as horse led extraction for use in small scale woodlands. |
| Economy | All sectors agree that in 2050, the improvements in timber quality and the increase number of small scale and community woodlands have resulted in a resilient, local timber economy. This security has led to widespread investment in the industry and there is now a healthy distribution of sawmills and machine rings through the country which allows small land owners to work their land for profit. Whilst large scale forestry operations produce high grade timber, many of the smaller wood producers specialise in biofuel which helps communities and individuals to establish a more decentralised energy network. There is more dialogue with farmers and with a readjustment in subsidised and the strong price in timber there has been a shift away from grazing sheep on poor quality land to forestry and agroforestry giving much better financial returns. |
| Environment | All sectors agree that in 2050, Scotland's forests are healthy and diverse ranging from the 'pretty forests' of semi ancient woodland, commercial forestry, to rural communities making a living of the land. Scotland has also become much better at meeting its carbon emission targets. The public sector emphasis that, following mistakes of the past, the environment in 2050 is central to any new planning developments and it will be protected by adequate market based instruments (i.e. true cost accounting). The NGO sector would like that the environmental concerns of the 2020s such as invasive species, the impact of deer on regeneration, habitat fragmentation and the place of non-native species as replacements have been addressed. |
| Policy and Governance | The public sector would like to see that as a result of the implementation of the land use strategy, an advisory service has been set up helping land managers to make informed choices on the best options for their land. The public sector envisages that forestry is no longer left out and as a result of this many land managers opt into agroforestry schemes. Subsidising forestry is not necessary because it is a stable profitable sector. There are, however, first time starter grants available for first time forest owners. Scotland has more rule making power and the NOG sector would like Scotland's governmental set up similar to that of other federal states with local authorities having much more powers and freedom and Communities and individuals can become as much or as little involved as they wish. |

| Drivers | Renewables Sector Vision |
|--------------------|--|
| Society | All sectors agree that in 2050 Scotland has a very engaged, democratic, fair, inclusive, caring society which has a thorough understanding and value of the environment and what the environment means to them. It is also a multicultural society beaming with new ideas and thoughts. People feel connected to the countryside and the environmental and rural issues. The public sector hopes that by then it is common practice and very strongly encouraged from teachers and parents alike to get children (especially those who are living in cities) to visit farms and to learn about how food (e.g. milk, bread and cereals) is produced. The private and NGO sector would like to see a much more egalitarian form of land ownership and wide parts of society are receiving the benefits (e.g. the rents from windfarms). |
| Technology | In particular the public sector hopes that in 2050, decision making tools (e.g. remote sensing for carbon mapping, opportunity mapping, soft- hardware developments and the use of apps) have improved greatly and are readily available helping to make better decisions and land manager level. Resulting from that, the next generation of farmers have taken up more modern management techniques such as the use of GPS for applying fertiliser and pesticides which is resulting in a more targeted use of inputs. All sectors agree that Scotland will have a lot more small scale renewables (e.g. ground and air source heat pumps) and community owned renewables but the private sector also hopes that large scale wind and solar will play an important role in mitigating climate change. There is however agreement of all sectors that the increase in small scale renewables and community owned renewables has also resulted in a more decentralised energy structure throughout Scotland and the efficiency in new housing has led to a greatly reduced carbon footprint. |
| Economy | All sectors agreed that the Common Agricultural Policy in 2050 would be restructured to have the environment at its core. Payments will subsequently focus on the delivery of public services and goods. The NGO sector would like to see strong, resilient, local economies where small scale renewables play an important role. It also wants true cost accounting to be a common practice which would aid investors to make more sensible decisions with regards to climate change mitigation and adaptation, soil quality, water quality and biodiversity. The private sector emphasised that by 2050 Scotland will be going through the third phase of repowering their on- and offshore plants and the sector is still creating and maintaining jobs in the renewables industry for urban and rural people alike. Parts, as well as being produced in Scotland, are being manufactured throughout the European Union which is benefitting the wider economy of Europe. |
| Environment | All sectors agreed that in 2050 environmental degradation has come to a complete halt and Scotland's ecosystems would be recovering. Scotland would also be on the way to meet its climate change targets of an 80% reduction of greenhouse gasses to the 1990 baseline. The public sector would like to see ninety seven percent of water courses are meeting good water quality. The close collaboration between public bodies and land managers has led to a mutual trusting relationship and improved environmental incentive schemes mean that new ideas and suggestions are readily taken up or trialled. The private sector hopes that Scotland's land use is more diverse and the sheep monoculture has been replaced with a mosaic pattern of different land uses creating different habitats where species (including humans) live together. The private and NGO sector agree that some areas of Scotland have been re-wilded and a range of species have been re-introduced to the Scottish landscape (e.g. Lynx, wild boar). |

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| Policy and Governance | <p>All sectors agree that localism is important and the 32 large local authorities in Scotland have been restructured to smaller more regional or catchment groups (however, still sitting under a national framework) which will make land use planning more efficiently. This has led to improved stakeholder engagement and communities are equal partners in the decision making process. The public sector would like to see that the Land Use Strategy has been fine-tuned to a regional based structure and its principles firmly embedded in land use decision making. As a result of this Scotland is using an advisory approach to land use rather than regulatory one which has led to better partnerships within the land use sector and co-ownership of land related issues. A new programme of incentives available to research providers from the Scottish Government. That means that funding is now available for any projects that aims to amalgamate existing data (e.g. weather, crop, soil data) in order to provide an in depth output map of which areas would be useful to have native woodland that would protect soil, sequestrated carbon, give links to wildlife and mitigate flood risks for example. The NGO sector would like to see Scotland as a vibrant, independent, small country in Europe similar to other Scandinavian countries.</p> |
|------------------------------|--|

| Drivers | Sporting Sector Vision |
|--------------------|--|
| Society | <p>All sectors hope that in 2050 Society recognises the value of the sporting sector and understands why land is managed the way it is. Increased dialogue and awareness raising from and with land managers has also led to society feeling more connected to the land. As a result of this there will be a lot less conflict around land management and land use (i.e. society understand why they need to pay a higher council tax rate (e.g. flood alleviation measures further up the catchment)). However the private sector hopes that, whilst society is informed and has a better understanding of land management, the decision making power still mostly lies with land managers.</p> |
| Technology | <p>The public service would like to see improved in monitoring techniques (e.g. drones, GPS, remote sensing) to gain a better information of abundance, distribution, number and types of species. The public and NGO sector agreed that this data should be commonly owned and shared amongst people working in the sporting sector. As a result of this species of conservation concern can be sustainably harvested. This improvement in technologies will also lead in better adaptive management approaches to population.</p> |
| Economy | <p>All sectors would like to see that the change in societal awareness will result in a positive impact on local markets as a result of a change in consumption patterns. They hope that in 2050 Scotland has a thriving meat market (e.g. venison, geese, duck and other game species) known and valued for their healthy, free range, organic, sustainable characteristics. The private sector would like to see the sporting sector as a proud, vibrant, profitable sector with mixed land uses, providing a wide range of local jobs and does not rely on government subsidies. Instead Payment for ecosystem services is common practice and everyone (i.e. society and land managers / owners) is clear with the benefits and values associated with these services which are derived from healthy ecosystems.</p> |
| Environment | <p>All sectors agreed that landscape scale approaches, ecosystem health and the services that healthy ecosystem services provide very much underpin land management in Scotland in 2050. Scotland is meeting its carbon emission targets and land managers are happy to try new approaches to aid conservation. The Private sector pointed out that climate change and a shift in land management could lead to an increased softening around edges of ground managed for sporting which again would be led by land capability.</p> |

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| Policy and Governance | <p>All sectors agreed that in 2050, there is a balanced approach to land management and the land use strategy is still accepted as the broad overriding policy. The private sector would like to see the that government is broadly overseeing Scottish land use but also trusts land owners to do the ‘right’ thing and this approach has been rewarded with landowner’s aligning their interests with the public interest. The government has also stepped back with regards to subsidies which has resulted in much more diversity and the marked unfolding in a more natural way. The public and private sector would like to see a restructuring of local authorities to a more regional basis to improve efficiency (e.g. Catchment regions). The private sector suggested that rather than discussing individual land use issues (e.g. deer, forestry, and renewables) in separate groups, to discuss all the land use issues at semi-formal local management groups. This would be an efficient way in terms of resources and time. Furthermore, as the public sector pointed out, the result of increased collaboration between stakeholders the synergies, opportunities, demands and trade-offs will become lot clearer which in turn leads to reduced conflict. This would provide a safe ground in which everyone can work with and reap the benefits of owning land.</p> |
|------------------------------|--|

| Drivers | Tourism and Recreation Sector Vision |
|-------------------|--|
| Society | <p>The NGO sector acknowledges that whilst it is not so much about land ownership rather than how land is managed, it would still like to see a more egalitarian form of land ownership to reconnect people to the land. In 2050 rural and urban people feel that they have a greater stake in the land and are therefore actively engaged in the land decision making process. This awareness shift in favour of the environment has also led to more people making small but conscious choices to mitigate climate change (e.g. walk through the local park with your children to get a pint of milk rather than driving everywhere). A three day working week is the norm which has seen a reduction in unemployment and improved efficiency during working hours. As a result life satisfaction is high and the increased leisure time has also improved our health and wellbeing. Most people have one ‘citizen’ day a week where they help out somewhere for the greater good (e.g. help out at the local rangers service or visit people in retirement homes). The public sector would like to see Gaelic taught in all schools alongside English. Society values Scotland’s natural heritage and unique landscapes and is a flourishing holiday destination.</p> |
| Technology | <p>Both sectors agreed that improvements in the IT services are key to their vision. The smartphone is the essential tool for this sector. Transport links and IT services are up to scratch with the latest technology and linked to smartphone apps. There is live up to date local updates available on events and walks in the area you are travelling in. However, a fine balance has been struck between incorporating the latest technological advancements and the market for escapism where people actively go to ‘switch off’. There is an extensive network of foot and cycle paths around the country which is heavily used but locals and tourists alike. Local activities can be better promoted and different budgets are catered for (e.g. free things to do with the kids and farmers markets).</p> |

| | |
|------------------------------|---|
| Economy | <p>A central part of the NGO sector’s 2050 vision would be the restructuring of the Common Agricultural Policy in favour of the environment. Payments would subsequently focus on the delivery of public services and goods including species specific management options. Stronger environmental legislation including true cost accounting is also central to that vision. Local economies will be strong and resilient and the energy network will be more decentralised. A three day working week is common and many people have a ‘citizen-day’ where they contribute to something that matters to them without getting paid for it. Furthermore, more food is produced and used in Scotland rather than exported which has resulted in resilient local economies. The public sector would like to see Scotland is continuing to hold work class events such as the Ryder cup which is drawing in people from across the world and who extend their stay by a few days to explore the Scottish countryside where they contribute to the wider local economy.</p> |
| Environment | <p>Both sectors agreed that that in 2050, Scotland’s environment is recovering, biodiversity loss has come to a halt. Environment is central to everything and is valued for its intrinsic significance (i.e. physical and mental wellbeing). Landscapes are places where people live and work as well as places for recreation which has resulted in a diverse and multifunctional landscape. The NGO sector would like to see Scotland on track to meet its carbon emission targets in 2050.</p> |
| Policy and Governance | <p>In 2050, both sectors would like to see short and long term policies that are coherent, complementary and fit for purpose. The NGO sector would also like to see a restructuring of local authorities to a lower tier more efficient level where people feel they can make a difference. It would also like to see the common agricultural policy to be restructured in favour of the environment.</p> |

| Drivers | Biodiversity and Conservation Sector Vision |
|-------------------|---|
| Society | <p>Both sectors agree that as a result of open and honest dialogue between society and land owners/ managers the meaning of ‘stewardship’ has been redefined and because of this ‘stewardship’ has wide public acceptance. In 2050 society (e.g. including land owners, professionals) has become much better at making difficult decisions (e.g. should there be a forest at the expense of moorland) and is aware of consequences of their decisions (i.e. trade-offs, win-wins). Improvements in the supply of basic services (e.g. schools, doctors, broadband, and transport) resulted in a vibrant thriving countryside where a local food culture is firmly established. Landowners, whoever they are, pay great attention to their responsibilities and manage what they own in the public good and interest.</p> |
| Technology | <p>The public sectors sees the West Coast of Scotland more densely populated as a result of improvements in the infrastructure (transport and IT) and improved means of dealing with midges. The NGO sector would like to see the energy supply more decentralised and small scale renewables and technologies to be encouraged through various government schemes. As a result many farms and communities will be working together to produce electricity and power for the local community creating a stable local market. Electric cars will become affordable and much more common and there is a nationwide network of charging stations. All new housing will be built to very high environmental standards such as triple glazing and super-insulation.</p> |

| | |
|------------------------------|---|
| Economy | Both sectors agreed that in 2050, extensive conversation on the concept of Ecosystem Services has resulted in a transparent system highlighting what the tax payer and landowner should pay and it is working well for land managers / owners and the wider society. The NGO sector would like to see start-up money being made available from the Government fostering a local sustainable economy of small to medium sized businesses. Tourism and Renewables also provide stable income to the Scottish economy as do woodlands (e.g. timber, recreation, wood fuel). True cost accounting will be implemented and people are happy and able to pay the extra premium for sustainably produced food. It also penalises those who are not working to the highest environmental standards (e.g. water pollution or greenhouse emissions). |
| Environment | Environment is central to everything apart from the goods it delivers it is also very much valued for its intrinsic significance (i.e. physical and mental wellbeing). By 2050 the climate has changed and midges are no longer the same kind of issue which has resulted in a higher population in the west coast of Scotland as a result of the pressure on land in the east of the country. Species such as the lynx have been successfully re-introduced and form a stable part of the environment whilst naturally controlling deer numbers. A thorough discussion on environmental conservation objectives has happened (i.e. native composition versus function of woodland) which has resulted in better environmental decision making in the light of continuing biotic and abiotic environmental change. Peatland restoration has been a success and is having a positive impact on carbon sequestration. Adaptations have been made to the Payments for Ecosystem scheme and the NGO sector would like to see a focus on 'Goods' which were previously not covered (e.g. payment to a landowner to manage for a particular species). |
| Policy and Governance | The public sector would like to see that in 2050, the government has become better and more competent at taking difficult decisions, in particular win-lose decisions. Rather than listening to the loudest voices, politicians will be working with a list of variables weighing off different aspects of the issue. This system has also greatly improved the nature of decision making for the wider audience. The NGO sector would like to see that the environment is also central to everything and the government is actively supporting and funding rural development and decisions are made at a more local level. Better enforcement of the polluter pays principles combined with increased environmental legislation has resulted in an overall improvement in Scotland's environment. |

| | |
|----------------|---|
| Drivers | Cross cutting Sector Vision |
| Society | In 2050, the public sector would like people in Scotland to be economically and socially secure. They are able to participate in land use decision making and have the means and education to do so. The social stratification of the early millennium has given way to a more equal society. The shift in societal appreciation of the environment has also meant that people are making much more conscious choices to counteract climate change (e.g. ranging from buying local food to not going on foreign holidays) and actively working towards a carbon neutral society. The private sector hopes that in 2050 people understand and accept that rural land is also a working landscape and management decisions are done in the best interest to the wider society whilst accepting that it is also a business which has to remain viable. Some of the people who have left rural parts of Scotland to live in more urban areas during their younger years have returned (e.g. to the Western Isles) and brought back skills that are having a positive effect to those communities. |

| | |
|---|---|
| <p style="text-align: center;">Technology</p> | <p>Both sectors agreed that in 2050 excellent broadband will available in every corner of Scotland which was made possible through an overhaul in rural development policy. Land use emission have also been reduced to a very low level following the advances in technological development. The public sector would like to see a healthy balance being struck between too little and too much data for land management. Monitoring methods (e.g. state of historic buildings, ecological surveys) have become very accurate and the data is well understood enabling real time understanding of what is happening which has resulted in better decision making. The private sector hopes that a combination of selective breeding for livestock and GM improvements for cropping will have led to a viable business stream for land owners / land managers. It would also like to see a more decentralised energy network with a focus on energy production within catchments through a variety of means (e.g. biomass, wind, solar).</p> |
| <p style="text-align: center;">Economy</p> | <p>Both sectors agreed that in the more decentralised energy network in 2050 has had an positive effect on the local economy, communities and the way land management is perceived (e.g. the development of native woodland is done on a much larger scale underpinning local biomass production which supplies the local schools) . The private sector hopes for a healthy mix between the local and global economy and that people can succeed through their own effort in a free for all market approach. This has resulted in an efficient, rational approach to land use and increased levels of innovation. There are also much better mechanisms for valuing environmental services feeding into those rational choices being made by land managers. The public sector would like to see viable areas of small scale high nature value farming in parts of Scotland and that the shift in societal values has resulted in steady demand for locally produced goods (e.g. croft produced cheese). It would also like to see that the global economy has recognised the importance of a sustainable economy and that outsourcing production to save costs at the expense of poor labour conditions and damage to the environment is no longer and accepted practiced to improve profits (i.e. true cost accounting).</p> |
| <p style="text-align: center;">Environment</p> | <p>Both sectors agreed that landscape scale approaches and ecosystem health and the underpin land management in Scotland in 2050 and the public sector would like to see Scotland being on track of meeting its Carbon emission targets. The private sector highlighted that as a result of the free for all market approach stronger environmental legislation might need to be put in place to avoid environmental damage at the cost of economical profit.</p> |
| <p style="text-align: center;">Policy and Governance</p> | <p>In 2050, both sectors would like to see short and long term polices that are coherent, complementary and integrated reassuring land managers when making land use decisions. They would also like to see a radical change in rural policy enabling people to be working in a variety of business activities where government schemes create a healthy spirit of entrepreneurship, start-up businesses and community initiatives. The private sector would like to see the Common Agricultural Policy abolished in 2050 and land managers would make rational business choices in relationship to the market. After an initial period of restructuring farmers would have rebalanced themselves with a variety of land business (e.g. farming, tourism, renewables, and forestry). The public sector would also like to see a more egalitarian form of land ownership. Furthermore, local authorities have been restructured to small, local, more efficiently entities and there are a lot more non-career politicians bringing in interesting variety of backgrounds to parliament rather than absorbing other people’s ideas.</p> |

APPENDIX E – University Ethics Form



THE UNIVERSITY of EDINBURGH
School of GeoSciences

PART 2 - Research Ethics and Integrity Assessment Form

| | |
|--|--|
| Tick either Self or Full Assessment | |
| SELF ASSESSMENT | <input type="checkbox"/> Read Research Ethics and Integrity Self-Assessment Guidance Notes |
| FULL ASSESSMENT | <input checked="" type="checkbox"/> Read Self-Assessment Guidance Notes in conjunction with Full Research Ethics and Integrity Assessment Guidance Notes |
| Has a member of the Committee been consulted prior submission? | <input type="checkbox"/> If ticked please provide the name of Committee Member Name |

| | | |
|--|--|-----------------|
| Title of Research Project: | Rural Land Use Visions for Scotland in 2050 | |
| Duration of Research Project: | 5 years | |
| Name of Principal Investigator: | Christiane Valluri-Nitsch | |
| Signature of Principal Investigator: <small>(Electronic signatures / typed names are accepted)</small> | Christiane Valluri-Nitsch | Date: 2/11/2016 |
| Research Institute: | University of Edinburgh, School of Geosciences | |
| Internal address (staff and PhD only): | Drummond Street, Edinburgh, EH8 9XP | |
| Email: | c.k.f.valluri-nitsch@sms.ed.ac.uk | |
| Co-Investigator(s) (if applicable): | | |

| | | |
|---|-----|-----------------|
| Student supervisor information (if applicable) | | |
| Name of Supervisor: Marc Metzger | | |
| | | |
| Signature of Supervisor*: <small>(Electronic signatures / typed names are accepted)</small> | | Date: 2/11/2016 |
| Supervisor confirms Research Ethics and Integrity Assessment: | Yes | X |

| | |
|--|--------------------------|
| Type of student (if applicable) | |
| Undergraduate Honours | <input type="checkbox"/> |
| Taught MSc | <input type="checkbox"/> |
| MSc by Research | <input type="checkbox"/> |
| PhD | X |
| <i>Undergraduate students should attach the completed form to their dissertation research proposal. MSc students should attach the completed form (signed by their supervisor) to their research proposals or forward the form to their Programme Director for review. PhD students should submit their form (signed by their supervisor) to the School Ethics and Research Integrity Committee. The ONLY time an Undergraduate or Masters student should submit a form to the School Research Ethics and Integrity Committee is if their research requires a Full Assessment.</i> | |

APPENDIX F – Project and Consent Form (High School)

Interview Consent Form

Hello and welcome!

My name is Christiane and I am a doctoral student at the University of Edinburgh.

I am interested in how Rural Scotland might look like in 2040, including the hopes, dreams and ideas of the Scottish population. I have previously spoken to policy makers in the land use sector (e.g. forestry, agriculture, tourism etc.) and ran a social survey online to get a sample of what the wider Scottish population wants.

The third stage of this research is now speaking to you – the future adults of Scotland - and I would like to thank you very much for showing your interest to participate in my study!

But before the interview it is important you understand what your rights are as a participant, and my responsibilities as a researcher.

So please take a moment to read this information sheet.

1. **Taking part in this study is completely voluntary:** You do not have to take part and are free to stop the interview at any time, or decline to answer questions you do not like.
2. *This is what we will discuss: The interviews will be on a one-on-one basis and should last about 30 minutes. I will be asking you about your ideas and hopes for Scottish society, things to do with technology, the environment, the economy, and how Scotland should be governed in 2040 using a format called STREAMLINE. I will audio-record the conversation, with your permission. At the end (when you know what you have told me) I will ask your consent to use the information you have provided. Your teacher will have allocated an appropriate space in the school building where we can hold the interview.*
3. *It is okay to change your mind: If at any point during the interview you want to stop, that is absolutely fine, and you do not have to tell me why. Similarly, if at a later stage you want to take back or change anything you have said, that is fine as well.*
4. **Your data is kept safe:** All my notes, recordings and transcripts are encrypted and stored securely. Your personal details will not be shared with other organisations. Everything you tell me is private, unless you give me explicit permission to quote from your interview.
5. **You will get to review my report:** After the interview I will send you an overview of the data you provided and I will also send you a copy of the report once it is all done. If you have any issues with the way I have presented your views, please let me know so I can amend the report accordingly.

By signing this form I agree to the above statements;

Printed Name, Date

Participant's Signature

Gatekeeper's Signature

Researcher's Signature

Should you have any further questions please do not hesitate to get in touch with me via email at: c.k.f.valluri-nitsch@sms.ed.ac.uk


Thanks again and I look forward to our interview!

Disclaimer:

This research has been reviewed and approved by the Edinburgh University Ethics Board. If you have any concerns about the way it is conducted or any other issues, you can contact the Chair of the GeoScience Ethics Committee, University of Edinburgh, Drummond St., Edinburgh EH8 9XP or email at: ethics@geos.ed.ac.uk

APPENDIX G - Blank Canvases

PART 1: MY HOME

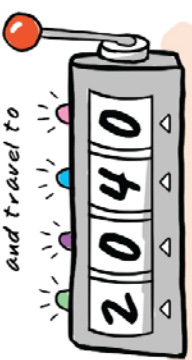


HELLO & WELCOME!

to a graphic novel where
YOU write the story of the

FUTURE!

So step into the
time-machine
and travel to



Tadaaaa!
Now tell me:
what does it
look like?

in 2040!

Q1 Who is in your household?

Q2 What kind of area do you live in?

Q3 Where do you live?

- Aberfeldy
- Cities in central belt (Glasgow, Edinburgh, Stirling)
- Village/countryside in central belt
- Elsewhere in Scotland
- Elsewhere in UK
- Abroad

Q4 What type of home do you live in?

Q5 What is the most important feature of your home?

And now, off to work! →

PART 11: My work



in 2040!



Q1 How do you earn a living?

Q2



Full-time or part-time?

Q3 Where do you work?

And where is it located?

- Abertfeldy
- Cities in central belt (Glasgow, Edinburgh, Stirling)
- Village/countryside in central belt
- Elsewhere in Scotland
- Elsewhere in UK
- Abroad



Q4 How do you get to work?



And how long does that take?



Q5

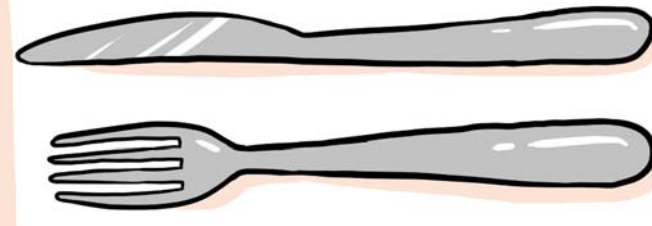

What is the most important feature of your workplace?



Now let's go outdoors!

in 2040!

**PART III:
MY FOOD**



Q2 Where do you buy your food?

Q3 How is your food produced?

Q1 What would you like to eat?

Q4 How is it transported?

Now let's go outdoors!

PART IV: ACTIVITIES & USES

in 2040!



Q3 →

Does the landscape help you to...

Q1 What do you do in the landscape?

Q2 What does the landscape do for you?

Get a sense of belonging or identity

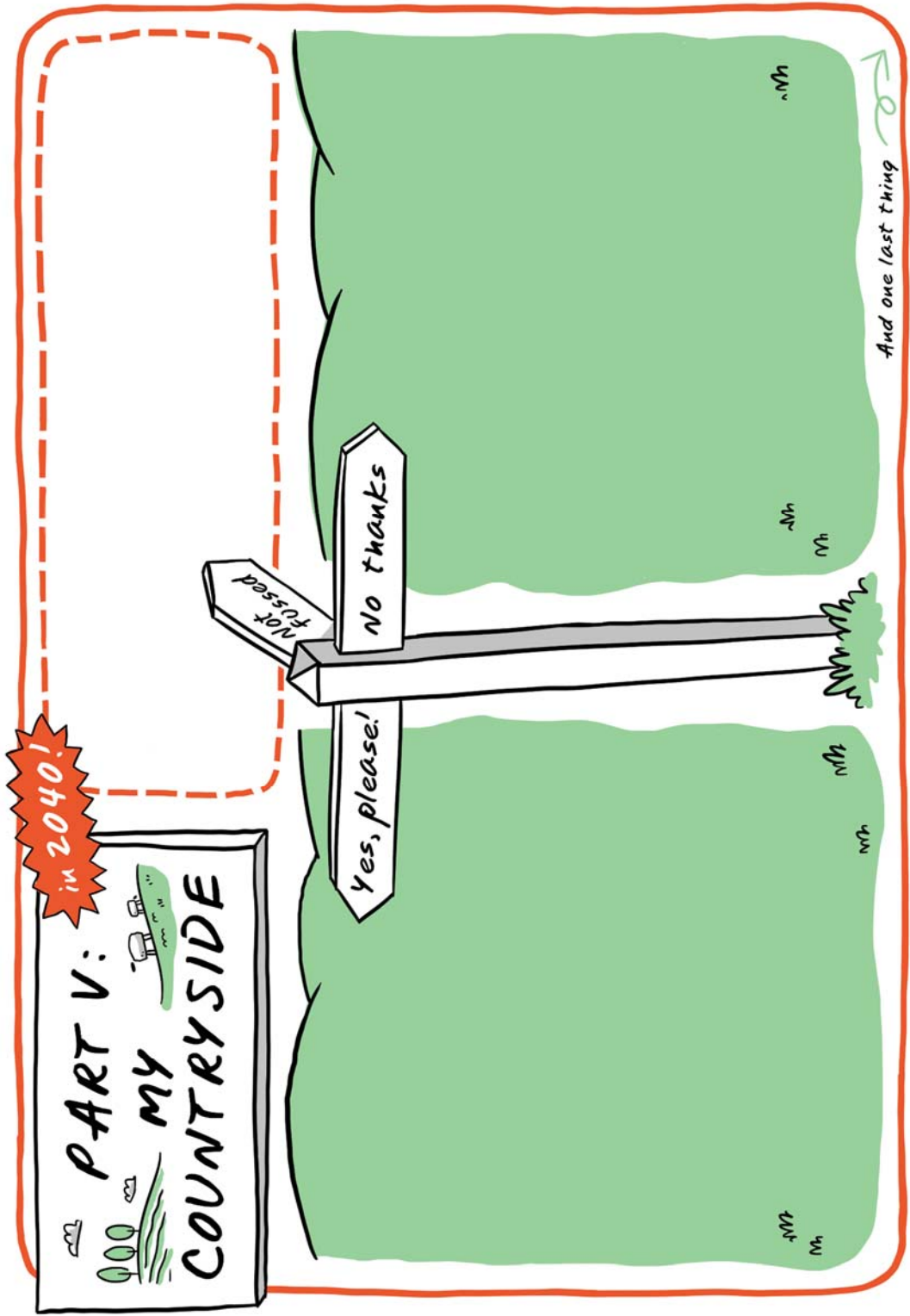
Gain perspective & a sense of freedom

Connect to nature or be part of something larger than yourself

Strengthen community and social ties

Feel responsible for taking care of the environment

And now, on to my aims! →



PART VI: LEGACY

in 2040!



Q2 What would you like your parents' generation to hand down to yours?



Q3 What will the Scottish countryside be renowned for?

Q1 What words best describe Aberfeldy by 2040?

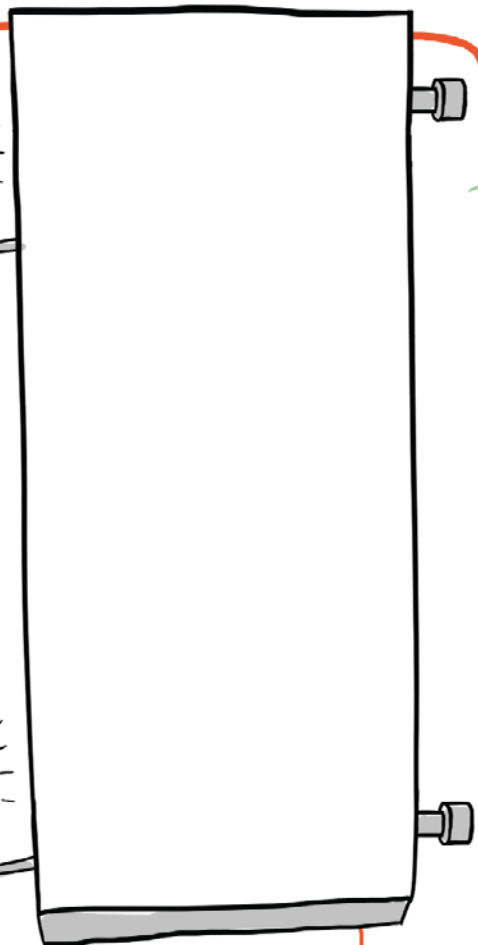
Humble
Powerful
Varied
Independent

Clean
Safe
Enjoyable
Healthy
Protecting the environment

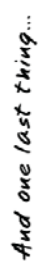
Caring
Exciting
Polite
Influential
wealthy

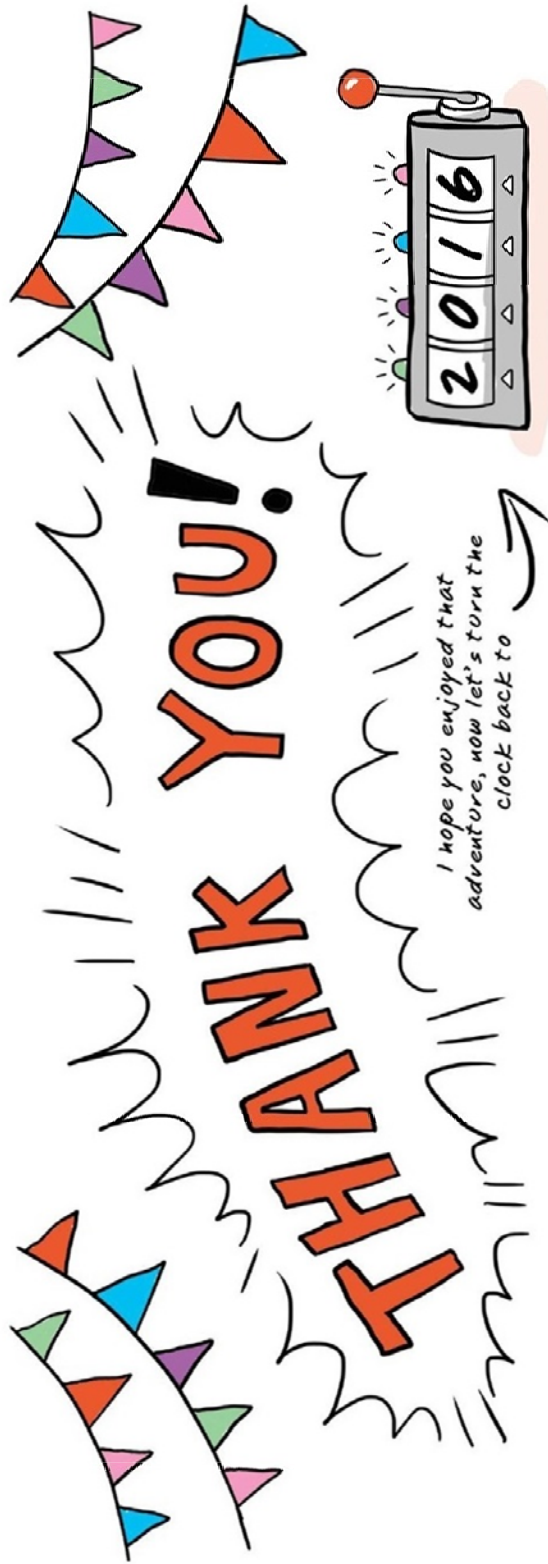
Ambitious
Pleasant
Law abiding

Respect
for traditions
Equality












And one last thing...








| | |
|--|--|
| <p>Where do you live? _____</p> <p>Age: _____ Gender: _____</p> | <p>Interview Experience & Feedback:</p> |
| <p>May I keep you up-to-date?</p> <p><input type="checkbox"/> Yes, sure</p> <p><input type="checkbox"/> No, thanks</p> | <p>Contact Details</p> <p>Phone: _____</p> <p>Email: _____</p> |



APPENDIX H – Tiles Catalogue






| Canvas | Question | | Image title | Tile | Tick/Tell | |
|---------|--|---|---------------------------------|---|---|-----|
| My Home | 1. Who is in your household? [Tile] | 1 | Just me |  | N/A | |
| | | 2 | My Partner and me |  | N/A | |
| | | 3 | My family (small) |  | N/A | |
| | | 4 | My family (large) |  | N/A | |
| | | 5 | My parents and children (m gen) |  | N/A | |
| | | 6 | Just me and my child(ren) |  | N/A | |
| | | 7 | I share with non-related peo |  | N/A | |
| | | | 1 | In a city centre |  | N/A |
| | | | 2 | In a suburb |  | N/A |




| | | | | | |
|--|--|---|-----------------|---|-----|
| | | 3 | In a small town |  | N/A |
|--|--|---|-----------------|---|-----|











| | | | | | |
|--|---|---|--------------|---|--------------------------|
| | 2. What kind of area do live in? [Tile] | 4 | In a village |  | N/A |
| | | 5 | In a hamlet |  | N/A |
| | 3. Where do you live? [Tick] | 1 | Inner Forth | N/A | Tick from list or canvas |





| | | | | | |
|---|-------------------------------|---|---|---|--------------------------|
| | | 2 | Cities in central belt (Glasgow, Edinburgh, Stirling) | N/A | Tick from list or canvas |
| | | 3 | Village/countryside in central belt | N/A | Tick from list or canvas |
| | | 4 | Elsewhere in Scotland | N/A | Tick from list or canvas |
| | | 5 | Elsewhere in UK | N/A | Tick from list or canvas |
| | | 6 | Abroad | N/A | Tick from list or canvas |
| | | | | 1 | In a terrace house |
| 2 | In a flat in low-rise housing | | |  | N/A |







| | | | | | |
|--|--|---|--------------------------|---|-----|
| | | 3 | In a semi-detached house |  | N/A |
| | | 4 | In a detached house |  | N/A |








| | | | | | |
|--|--|---|--------------------------------|---|-----|
| | 4. What type of home do you live in? [Tile] | 5 | In a flat in a high-rise tower |  | N/A |
| | | 6 | In a modern building |  | N/A |
| | | 7 | In an historic building |  | N/A |
| | 5. What is the most important feature of your home? [Tile] | 1 | Its smart, hi-tech features |  | N/A |
| | | 2 | The garden |  | N/A |





| | | | | | |
|--|--|---|--------------------------------|---|-----|
| | | 3 | Its eco-friendly specification |  | N/A |
| | | 4 | Its leisure space |  | N/A |
| | | 5 | Its spacious design |  | N/A |







| | | | | | |
|----------------|---|---|---|---|---|
| | | 6 | The private car-parking |  | N/A |
| | | 7 | Its proximity to the outdoors |  | N/A |
| My work | 6. How do you earn your living? [Tell & Tick] | 1 | Open Answer | N/A | Tell in small text on canvas |
| | | a | Fulltime | N/A |  |
| | | b | Part-time | N/A |  |
| | 7. Which sector do you work in? [Tile] | 1 | Primary – agriculture, forestry, mining |  | N/A |
| | | 2 | Secondary – manufacturing |  | N/A |
| | | 3 | Tertiary – services |  | N/A |
| | | 4 | Quaternary – intellectual activities |  | N/A |
| | | 5 | Quinary – high-level decision making |  | N/A |
| | 8. Where do you work? [Tile] | 1 | I work at home |  | N/A |








| | | | | | |
|--|--|---|---------------------------------------|---|-----|
| | | 2 | I work at the office/shop/factory |  | N/A |
| | | 3 | I share a desk at different locations |  | N/A |
| | | 4 | I make site visits |  | N/A |
| | | 5 | I work outdoors |  | N/A |


| | | | | | |
|--|---------------------------------------|---|---|--|--------------------------|
| | | 6 | I work at sea |  | N/A |
| | 9. And where is it located? [Tick] | 1 | Inner Forth | N/A | Tick from list on canvas |
| | | 2 | Cities in central belt (Glasgow, Edinburgh, Stirling) | N/A | Tick from list on canvas |
| | | 3 | Village/countryside in central belt | N/A | Tick from list on canvas |
| | | 4 | Elsewhere in Scotland | N/A | Tick from list on canvas |
| | | 5 | Elsewhere in UK | N/A | Tick from list on canvas |
| | | 6 | Abroad | N/A | Tick from list on canvas |
| | 10. How do you get to work? [Tile] | 1 | I work at home |  | N/A |
| | | 2 | I walk to work |  | N/A |
| | | 3 | I cycle to work |  | N/A |
| | | 4 | I take local public transport |  | N/A |
| | | 5 | I commute by regional public transport |  | N/A |












| | | | | | |
|--|--|---|---|--|---|
| | | 7 | I commute by electric car |  | N/A |
| | | 8 | I car share |  | N/A |
| 11. How long does commute take? [Tick] | | 1 | Less than 30 minutes | N/A |  Tick on canvas |
| | | 2 | 30-50 minutes | N/A |  Tick on canvas |
| | | 3 | More than 50 minutes | N/A |  Tick on canvas |
| | | 1 | Its proximity to outdoor areas/green spaces |  | N/A |
| | | 2 | Good traffic connections |  | N/A |


| | | | | | |
|------------------------|---|---|--|---|-----|
| | 12. What the most important feature of your workplace? [Tile] | 3 | Close to existing infrastructure |  | N/A |
| | | 4 | Its design and pleasant atmosphere or facilities |  | N/A |
| | | 5 | Distance from where I live |  | N/A |
| Activities uses | 13. What do you do in the landscape? [Tile] | 1 | Dog walking |  | N/A |





| | | | | | |
|--|--|---|----------------------------------|---|-----|
| | | 2 | Fishing/hunting |  | N/A |
| | | 3 | Exercise |  | N/A |
| | | 4 | Enjoying wildlife (birdwatching) |  | N/A |
| | | 5 | Enjoy cultural heritage |  | N/A |
| | | 6 | Entertain & educate children |  | N/A |
| | | 7 | Work |  | N/A |






| | | | | | |
|--|---|---|---|---|-----|
| | | 8 | Research/science |  | N/A |
| | | 9 | Enjoy peace and quiet/meditation |  | N/A |
| | | | | | |
| | | 10 | Create arts and crafts |  | N/A |
| | | 11 | Enjoy views/sunsets |  | N/A |
| | | 12 | Water sports |  | N/A |
| | | 13 | Foraging |  | N/A |
| 14. What does the landscape do for you? [Tile] | 1 | Generates clean energy |  | N/A | |
| | 2 | Absorb/store carbon & exhaust (mitigate climate change) | | N/A | |







| | | | | | |
|--|--|---|-----------------------|---|-----|
| | | 3 | Produce food & timber |  | N/A |
|--|--|---|-----------------------|---|-----|








| | | | | | |
|--|--|----|---|---|-----|
| | | 4 | Provide flood protection |  | N/A |
| | | 5 | Sustain habitat and wildlife |  | N/A |
| | | 6 | Clean air and water |  | N/A |
| | | 7 | Space for housing |  | N/A |
| | | 8 | Space and infrastructure (natural) for industry |  | N/A |
| | | 9 | Energy from fossil fuels (coal, gas, oil, fracking) |  | N/A |
| | | 10 | Provide jobs (for local people) |  | N/A |
| | | 11 | Attract tourism |  | N/A |
| | | 12 | Store waste/recycling (land tips) |  | N/A |
| | | 13 | Provide inspiration |  | N/A |
| | | 14 | Provide space for recreation |  | N/A |

| | | | | | |
|--|--|----|--|---|-----------------------------------|
| | | 15 | Provide space for transport goods & people |  | N/A |
| | 15. If you could assign a 100 points to the importance of each these uses, how would you divide them? [Tell] | 1 | Open Question | N/A | Write on canvas, textbox required |

| | | | | | |
|-----------------------|-------------------------------------|---|--|---|--|
| | | 0 | <u>Canvas prop: Dial</u> |  | Used to choose between faces on canvas (see description for details) |
| | 16 Does the landscape you... [Tick] | 1 | Get a sense of belonging & identity | N/A | Tick using dial |
| | | 2 | Gain perspective & a sense of freedom | N/A | Tick using dial |
| | | 3 | Connect to nature or be part of something larger than yourself | N/A | Tick using dial |
| | | 4 | Strengthen community and social ties | N/A | Tick using dial |
| | | 5 | Feel responsible for taking care of the environment | N/A | Tick using dial |
| My Countryside | | 1 | Vibrant rural communities |  | N/A |
| | | 2 | Zoning (fertile land for farming, less fertile for other) |  | N/A |
| | | 3 | Large-scale farmland |  | N/A |

| | | | | | |
|--|--|---|--|---|-----|
| | 17 How do you feel about [yes / no / not fussed] | 4 | Small-scale diversified farm |  | N/A |
| | | 5 | Muirburn |  | N/A |
| | | 6 | Renewable energy to adopt to climate change |  | N/A |
| | | 7 | Forestry Plantations |  | N/A |
| | | 8 | People understand appreciate land management |  | N/A |

| | | | | | |
|--|--|----|--|---|-----|
| | | 9 | Wilderness and reintroduction |  | N/A |
| | | 10 | Native and mixed forests |  | N/A |
| | | 11 | Financial support for rural areas, urban receives less |  | N/A |
| | | 12 | Land managers paid for public benefits (clean air / water) |  | N/A |
| | | 13 | Mixed and diverse countryside |  | N/A |
| | | 14 | Access for everyone |  | N/A |

| | | | | | |
|-------|--|---|-------------------------------------|---|---|
| Legal | 25 Which words best describe Perth and Aberfeldy best? [Tick & Tell] | 1 | Open question | N/A | Select words in large text balloon shaped box on canvas |
| | 26 What would you like your parent generation to hand down to yours? | 1 | Open questions | N/A | Write on canvas |
| | 27 What will the Scottish Countryside be renowned for? | 1 | Wildlife & nature |  | N/A |
| | | 2 | Industry (productivity) |  | N/A |
| | | 3 | Recreational opportunities |  | N/A |
| | | 4 | Local Produce (incl. arts & crafts) |  | N/A |
| | | 5 | Cultural Heritage |  | N/A |
| | | 6 | Quality of Living |  | N/A |
| | | 7 | Innovation |  | N/A |

APPENDIX I – Example of Completed Canvas

Your Vision



for
Land Use in Scotland

in 2040!

PART 1: MY HOME

HELLO & WELCOME!
to a graphic novel where
YOU write the story of the
FUTURE!
So step into the
time-machine
and travel to

Tadaaa!
Now tell me:
what does it
look like?

in 2040!

Q1 Who is in your household?

Q2 What kind of area do you live in?

Q3 Where do you live?

- Aberfeldy
- Cities in central belt (Glasgow, Edinburgh, Stirling)
- Village/countryside in central belt
- Elsewhere in Scotland
- Elsewhere in UK
- Abroad

Q4 What type of home do you live in?

Q5 What is the most important feature of your home?

And now, off to work! →

PART II: MY WORK

in 2040!

Q1 How do you earn a living?

Q2

Full-time or Part-time?

Q3 Where do you work?

And where is it located?

- Aberfeldy
- Cities in central belt (Glasgow, Edinburgh, Stirling)
- Village/countryside in central belt
- Elsewhere in Scotland
- Elsewhere in UK
- Abroad

And how long does that take?

- <30
- 30-50
- >50

Q4 How do you get to work?

Q5 What is the most?

Now let's go outdoors! →

PART III: MY FOOD

in 2040!

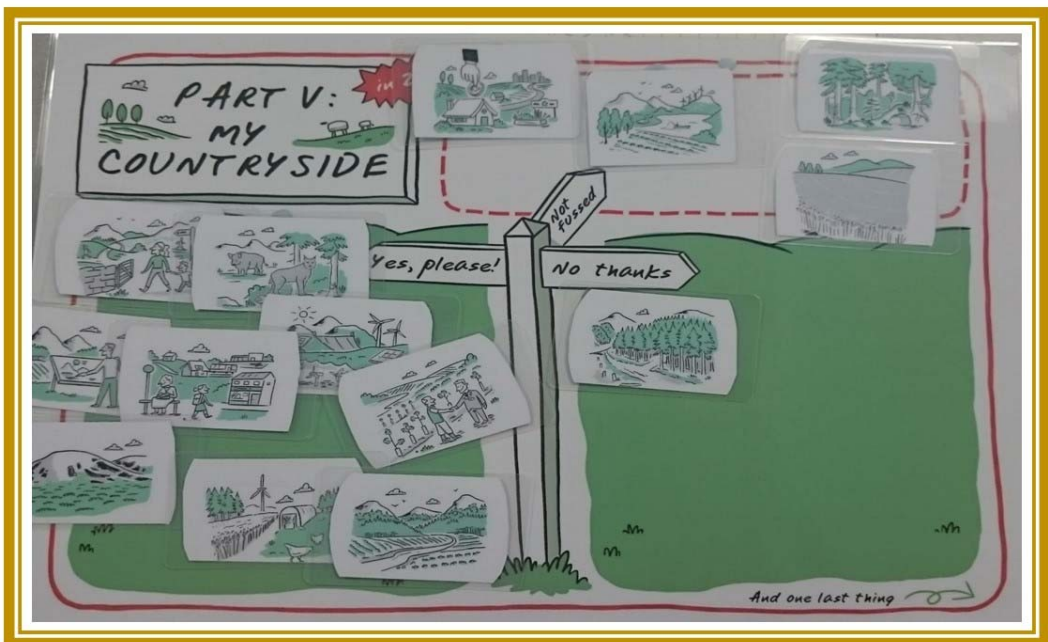
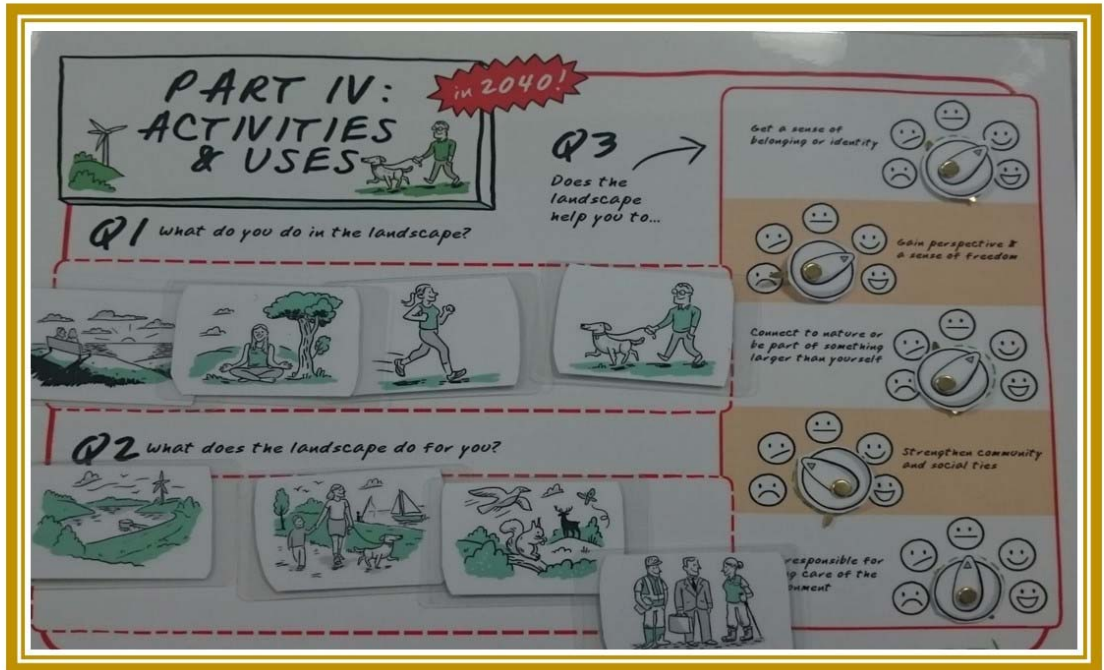
Q1 What would you like to eat?

Q2 Where do you buy your food?

Q3 How is your food produced?

Q4 How is it transported?

Now let's go outdoors! →



PART VI: LEGACY

in 2040!



Q1 What words best describe Aberfeldy by 2040?

- Humble
- Powerful
- Varied
- Independent
- Creative
- Clean
- Safe
- Enjoyable
- Healthy
- Caring
- Exciting
- Influential
- Respect for traditions
- Pleasant
- Polite
- Law abiding
- Wealthy
- Protecting the environment

Q2 What would you like your parent's generation to hand down to yours?

A world that's still sustainable, to provide a healthy lifestyle for next gen.



Q3 What will the Scottish countryside be renowned for?



APPENDIX J – Young People’s Land Use Visions

Home - Whilst both groups wanted detached houses with high tech features for their small and large families, the rural participants would like to live in villages and small towns with close proximity to the outdoors. In contrast, their urban counterparts preferred a spacious detached or semidetached modern house with a garden.

With regard to their geographical location, the urban participants were either going to live and work in or around the central belt, commute from Perth, or move abroad whilst their rural counterparts saw themselves mainly living elsewhere in Scotland (more specifically Highlands or West Coast) or elsewhere in the UK, with only one participant staying locally hoping to take on her father’s farm.

Work - Both groups agreed that their work would mainly be full-time, with an ideal commute of no more than 30 minutes to a workplace with a pleasant atmosphere, facilities and design.

Rural participants would mostly like to work in the knowledge based part of economy (e.g. IT, consultancy, research and development) and wider spread of other sectors (e.g. Primary and tertiary), whilst their urban counterparts focussed predominantly on jobs in the knowledge based part of economy and high-level decision making sector.

Both groups would like to have the option to work from home or share a desk at different locations, but more rural participants chose the outdoors as their preferred workplace. They were also more flexible with how they saw themselves getting to work – e.g. car (petrol and electric) car share, walk and regional transport – compared to urban participants who would either walk to work or take their car (mainly petrol / some electric).

Food – Both groups said they would overall still be mainly omnivores, but almost half of the rural participants added that they would also be flexitarian and more

concerned about where the food would come from, how it would be produced, and what impact that would have on the environment. One rural participant explicitly highlighted she would strive to become a vegan as this was better for the planet. Nonetheless, the urban group also said they would be concerned where their meat would come from but did not go as far as labelling themselves as 'flexitarian'.

The rural weekly shop would be a combination of local markets, supermarkets (for convenience products) and high street shops to support the local economy, whereas the first choice of their urban counterparts would be supermarkets and online for convenience reasons. Nonetheless, they would also 'treat' themselves to the occasional farmers' market and meat, in particular, would be bought from high street shops as it was perceived to be local and of better quality, compared to supermarket meat.

Urban and rural participants generally agreed on more ethical and environmentally-friendly food production methods in the future and away from large-scale industrial farming and intensive indoor production (apart from high tech eco-friendly vegetable growing). Urban favoured the move towards small-scale diversified farming whereby rural participants had slightly more focus on organic and urban more on high-tech eco-friendly farming methods.

Whilst both groups wanted food transport to be by road or rail within the UK for environmental and economic reasons, the rural participants were slightly more prepared to eat local, seasonal, home grown food, whereas their urban counterparts also wanted some foods shipped and flown in for freshness and availability all year round (e.g. strawberries).

Landscape – Whilst the answers with regard to what participants did in the landscape were similar for both groups (see Figure 5), their top five choices came in slightly different order. The preferred activities of the urban group consisted of exercising, dog walking, enjoying peace and quiet, enjoying views and sunsets, and

enjoying wildlife. None of the urban participants uses the landscape for creating arts and crafts or foraging which was chosen three times by rural participants. Research and science was chosen by only once by an urban participant but no rural.

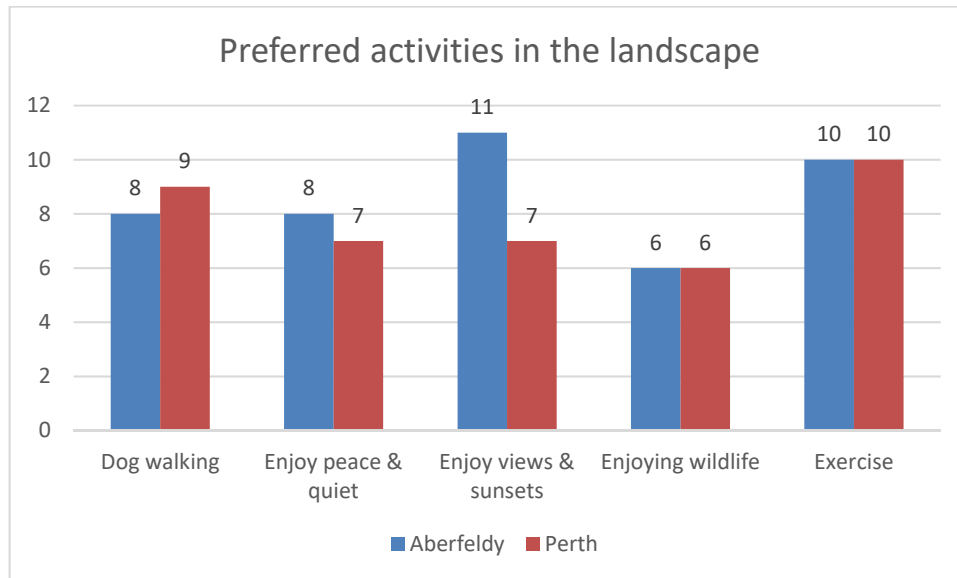


Figure 5: Participants’ preferred activities in the landscape

The overall top five most important functions of the landscape are shown in Figure 6. As with landscape activities, the answers of both groups were quite homogenous. However, there was a noticeable difference in that almost half of the rural participants said that the landscape was important because it attracts tourism which did not feature in any of the urban responses. On the other hand, a landscape that provided jobs was important to just over half of the urban participants whereas it was not mentioned by any of the rural pupils (although many of their parents were working in or around countryside based businesses (i.e. farming, tourism). The landscape was important in sustaining habitat and wildlife, providing space for recreation, creating clean energy, providing clean air and water, attracting tourism and providing jobs. No one chose the options of ‘providing space and infrastructure for industry’ or ‘space for transport of goods and people’. However, compared to their rural counterparts, two urban participants said the landscape is important for providing space for housing.

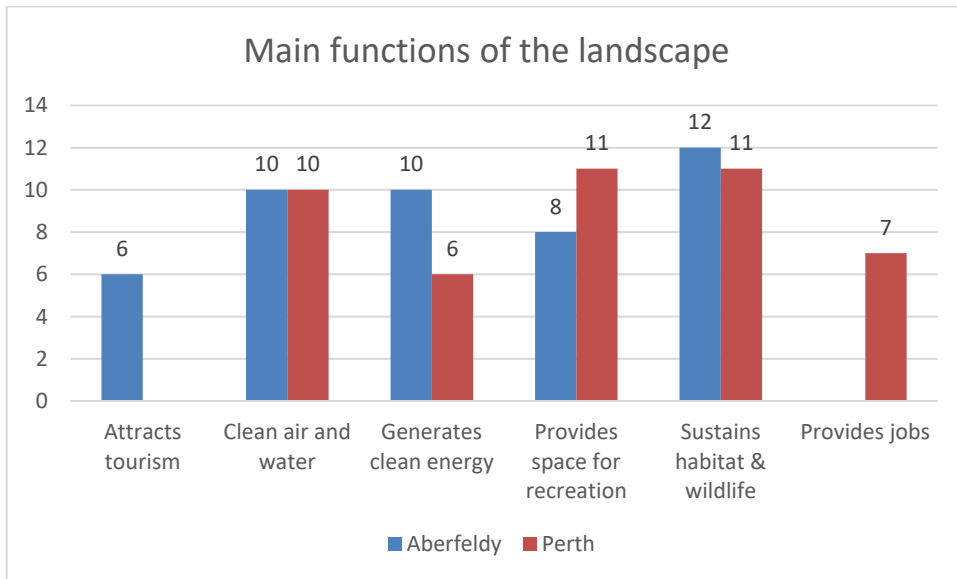


Figure 6: Participants’ preferred functions in the landscape

Both groups were also asked to respond to a range of statements about the landscape. The answers of rural and urban participants were quite uniformly spread, although a slightly smaller proportion of urban pupils said that the landscape would help them to get a sense of belonging or identity.

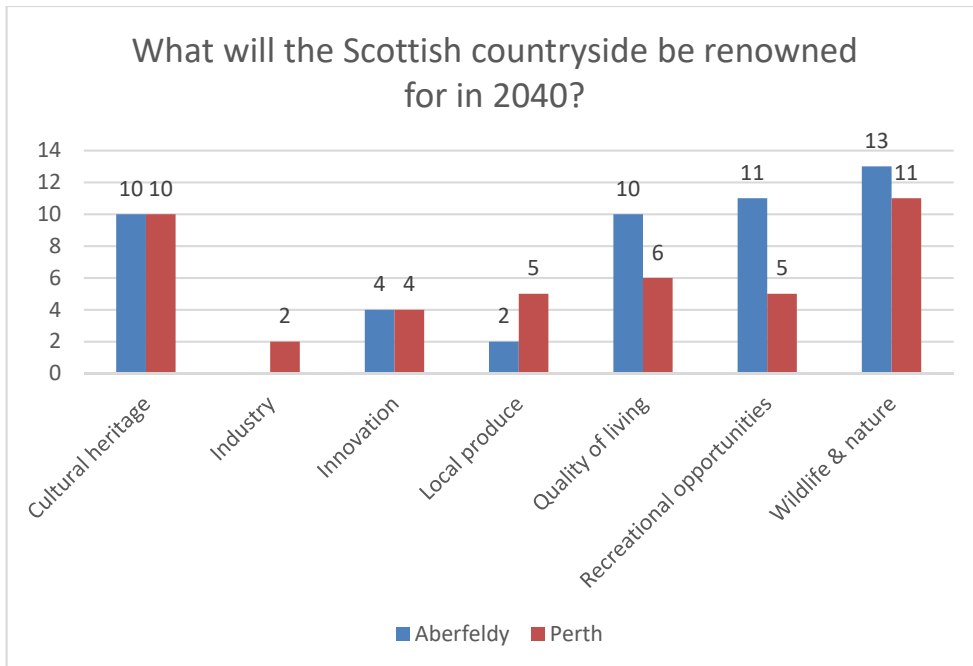


Figure 7: Participants’ choices of what the Scottish countryside would be renowned for by 2040.

Countryside - As with the landscape section, the answers of urban and rural participants were quite homogenous when asked what the Scottish countryside would be renowned for in 2040 (Figure 6). Scotland would be famous for its wildlife and nature, rich cultural heritage, recreational opportunities and quality of living. The oil industry was only identified as important by two urban participants. Nonetheless, there were also some notable differences between their choices e.g. quality of living and recreational opportunities were chosen very often by the rural participants (10 and 11 respectively), but only received 6 and 5 votes from the urban participants. And although the majority of rural participants would go to local markets for their preferred food shop, only two said the Scottish countryside would be renowned for its local produce, compared to five participants from the urban sample.

Whilst the statements regarding landscape uses and functions and Scotland's countryside reputation were quite similar between the two groups, the makeup of their ideal countryside showed much greater variety (see Figure 8). Rural participants generally acknowledged more land uses as being important (for economic reasons of running a rural business) and only strongly opposed large-scale farmland, forestry plantations and, to an extent, muirburn for environmental, not visual reasons. The responses from the urban participants were much wider and, whilst some justified their choices with environmental sustainability and economic reasons, an equally large proportion objected on the grounds of negative visual impacts of certain types of land uses, in particular large-scale farmland and muirburn (see Figure 8). Furthermore, there was, overall, a higher proportion of 'not fussed' answers from the urban participants and, when asked why, a significant proportion answered that they did not fully understand the implications of some of the statements and therefore felt unable to comment on them.

The top three choices of urban participants for their ideal countryside in 2040 were that Scotland would have a mixed and diverse countryside (1st), more wilderness and species re-introduction and sufficient renewable energy to adapt to climate change (2nd) and access to the countryside for everyone (3rd).

Their rural counterparts envisioned people having a better understanding of land management and enough renewable energy to adapt to climate change (1st); that everyone has 'responsible' access to the countryside (2nd) – 'responsible' was mentioned a lot as an add on as participants felt that it was not only about having access but being considered with regard to the environment and land uses that were taking place; and a mixed and diverse countryside with vibrant rural communities (3rd).

My parents' generation's legacy -

At the end of the interview, all participants were asked what they would hope their parents' generation would pass on to them. This was an open-ended question with no prompts, and appeared to be the one that participants struggled with the most. However, overall the rural Aberfeldy participants appeared to answer the question more quickly and confidently. Eight were hoping for a sustainable world with healthy ecosystems / healthy stable environment / plentiful wildlife; and for five culture / traditions / values / heritage were important. Attributes such as open attitude / equality / respect / manners got three mentions each. Their urban counterparts in Perth chose a range of different legacies. Their answers were more generic and focussed on stable economies, financial security, general life lessons, and importance of life work ratio. Nonetheless, there were also some overlaps, namely good opportunities for renewable energy and the importance of recycling.