



Arsyllfa **Wledig** Cymru
Wales **Rural** Observatory

KNOWLEDGE TRANSFER

AND

INNOVATION

Relating to the Wales Rural Development Plan

& European Innovation Partnership 2014-2020

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Llywodraeth Cymru
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LIST OF ACRONYMS

EU	European Union
WG	Welsh Government
RDP	Rural Development Programme
EIP	European Innovation Partnership
LAG	Local Action Group
KITE	Knowledge Innovation Technology Exchange Scheme
DDC	Dairy Development Centre
HCC	Hybu Cig Cymru
A4B	Academic Expertise for Business (Welsh Government Scheme)
TSB	Technology Strategy Board
IBERS	Institute of Biological, Environmental and Rural Sciences
BBSRC	Biotechnology and Biological Sciences Research Council
RELU	Rural Economy and Land Use Programme
SRUC	Scotland's Rural University College
WRO	Wales Rural Observatory
KESS	Knowledge Economy Skills Scholarships
BETS	Welsh Government's department for Business, Enterprise, Technology and Science

SECTION 1: INTRODUCTION

1.1 Aims and Objectives

This report was commissioned by the Welsh Government to analyse knowledge transfer (KT) and innovation activities of relevance to the Wales Rural Development Plan (RDP) and the European Innovation Partnership (EIP).

The **aims** of this analysis are to:

- Collate the knowledge transfer and innovation activities of relevance to the Wales RDP and EIP;
- Assess their effectiveness, resources and capacity; and
- Inform recommendations for the structure of the next RDP and EIP.

This involved the following **phases of data collection**:

- A desk based assessment of knowledge transfer and innovation initiatives of relevance to the Wales RDP and EIP;
- One-to-one interviews with key stakeholders involved in the provision and management of knowledge transfer and innovation in Wales; and
- A stakeholder consultation event to gather feedback from a wider array of stakeholders involved in the provision and management of knowledge transfer and innovation in Wales.

The **findings** of this analysis are detailed in the following report which includes:

- An overview of Knowledge Transfer and Innovation activities in Wales, delivered through the RDP or working with aligned aims;
- Examples of good practice from elsewhere;
- Feedback gained from both the telephone interviews and the stakeholder event;
- Thematic analysis of the lessons learnt; and
- Recommendations based on the evidence gathered regarding the preferred structure of the knowledge transfer, innovation and EIP elements of the forthcoming Wales RDP.

1.2 Policy Context

1.2.1 Innovation in the EU

Innovation is central to our economic and social development. This is more so now than ever as a depletion of primary resources, continual economic restructuring and a raft of environmental and social limitations demand that we seek new solutions to adapt previous processes of production and social organisation. Innovation has taken a central role across Europe with the advent of the Europe 2020: Smart Growth' development strategy, which highlights the importance of innovation to facilitate a smart, sustainable and inclusive economy across all sectors.

As a flagship initiative within this strategy 'The Innovation Union' was launched in October 2010, outlining a series of recommendations to boost research and innovation performance. Underpinning the Innovation Union is new €80 billion 'Horizon 2020' Programme which will be launched at the beginning of 2014. Funding will be targeted at three strategic objectives, which comprise of excellent science, industrial leadership and societal challenges. Of particular relevance to the RDP is 'Societal challenge 2' on Food Security, Sustainable Agriculture and the Bio-Economy which includes:

- Secure, sufficient supplies of safe and high quality food and other bio-based products;
- Develop productive and resource-efficient primary production systems;
- Foster related ecosystem services, alongside competitive and low carbon supply chains; and
- Accelerate the transition to a sustainable European bio-economy.

To address these issues Horizon 2020 will:

- Fund research projects aimed at enhancing the knowledge base, including on-farm experiments;
- Provide support for practice-oriented formats such as multi-actor projects, support for innovation brokers, innovation centres and thematic networks; and
- Interlink knowledge generation and sharing experience through dissemination activities and thematic networks

Currently, it is foreseen that €4.5 billion will be available for research and innovation in the field of food security, bio-economy and sustainable agriculture.

As an integral part of the Innovation Union, European Innovation Partnerships (EIP) will act as a framework bringing together major EU activities and policies. They are not intended to have additional funding attached to them, but will serve as a networking platform. However, the European Commission outline that existing funding streams could be used to support EIP activities; for example funding from the EAFRD, and particularly through funding for technical assistance.

1.2.2 Agricultural Productivity and Sustainability European Innovation Partnership

This EIP is intended to support an increase in production and productivity, whilst also improving environmental sustainability and resource efficiency. This is one of the grand challenges now faced by society, as outlined by the Foresight Report (2011) and United Nations Environment Programme (IAASTD 2008).

To do this the EIP aims to:

- Provide a working interface between research and farming practice and encourage the wider use of available innovation measures;
- Promote faster and wider adaption of innovative solutions into practice;
- Inform the scientific community about the research needs of farming practice.

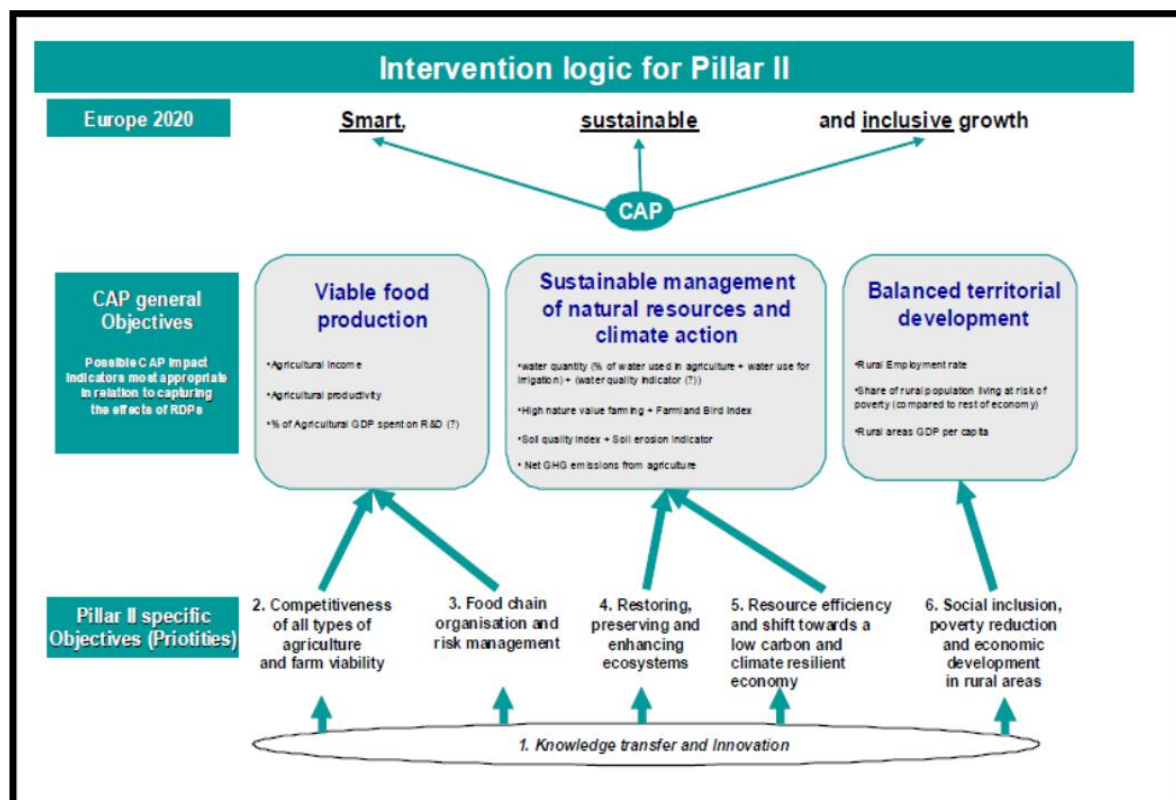
The EIP is built on an interactive innovation model, which focuses on forming partnerships using bottom-up approaches. This approach is expected to stimulate innovation from all sides. The scope of the EIP will be very broad: innovation may relate to technology and practices or forms of organisation (including social organisation).

The European Commission will establish an EIP Network to facilitate communication and exchange on innovation-related information, research results, practice needs and lessons learned. At a national/regional level, operational groups will be involved in practical implementation and experimentation, drawing on RDP and aligned support structures. Support for innovation brokers and innovation centres is also envisaged under the EU Research and Innovation Framework Programme and Cohesion and Education Policies.

1.2.3 The Wales Rural Development Plan

Sitting under the Europe 2020 strategy is the Common Strategic Framework (CSF), which unites European policy and funding programmes to provide targeted action on the Europe 2020 objectives. Within the CSF is the European Agricultural Fund for Rural Development, which delivers funding to Member States to enable the delivery of national Rural Development Plans (RDP). For the forthcoming RDP, the European Commission has placed knowledge transfer and innovation as central priorities, which will also act as cross cutting themes. This is shown diagrammatically in figure 1.1 (overleaf).

Figure 1.1: Knowledge transfer and innovation as a cross-cutting theme within the RDP



The new Priorities within the draft RDP regulations are designed to replace the 'Axes' that determined previous funding provision¹ and promote a more integrated approach to rural development that is based around competitiveness, environment and community, with knowledge transfer and innovation work working across all of these areas.

The Priorities have been broken down into 18 Focus Areas (Table 1.1 - overleaf). Knowledge transfer and innovation are essential to the delivery of all of these.

Other factors that need to be taken into consideration with the design of the Wales RDP are detailed at length in the Welsh Government's RDP Consultation document and SWOT analysis (WG 2013) and will be addressed in the analysis and recommendations when appropriate.

It is also important to note that at a Welsh national level the Programme for Government sets the overall context within which the RDP must deliver².

¹ Axes 1 –increasing competitiveness in the rural economy; Axes 2 –conserving our landscape and environment for the benefit of all; Axes 3 – improving quality of life and encouraging diversification; Axes 4 –helping local people to develop their own communities.

² See <http://wales.gov.uk/about/programmeforgov/?lang=en> for further info.

Table1.1: The RDP Priorities and focus areas

<p>Priority 1: Fostering Knowledge Transfer and Innovation in Agriculture, Forestry and Rural Areas</p> <ul style="list-style-type: none"> • Fostering innovation and the knowledge base in rural areas. • Strengthening the links between agriculture, food production and forestry and research and innovation. • Fostering lifelong learning and vocational training in the agricultural and forestry sectors.
<p>Priority 2: Enhancing the Competitiveness of all Types of Agriculture and Enhancing Farm Viability</p> <ul style="list-style-type: none"> • Facilitating restructuring of farms, notably farms with a low degree of market participation, market-oriented farms in particular sectors and farms in need of agricultural diversification. • Facilitating entry into the farming sector, and in particular generational renewal in the agricultural sector.
<p>Priority 3: Promoting Food Chain Organisation and Risk Management in Agriculture</p> <ul style="list-style-type: none"> • Better integrating primary producers into the food chain through quality schemes, promotion in local markets and short supply circuits, producer groups and inter-branch organisations and promoting animal welfare. • Supporting farm risk management.
<p>Priority 4: Restoring , Preserving and Enhancing Ecosystems Dependent on Agriculture and Forestry</p> <ul style="list-style-type: none"> • Restoring, preserving and enhancing biodiversity, including in Natura 2000 areas and high nature value farming, and the state of European landscapes. • Improving water and land management and contributing to meeting the Water Framework Directive objectives. • Improving soil, erosion, fertiliser and pesticide management.
<p>Priority 5: Promoting Resource Efficiency and Supporting the Shift Towards a Low Carbon and Climate Resilient Economy in the Agriculture, Food and Forestry Structure</p> <ul style="list-style-type: none"> • Increasing efficiency in water use by agriculture. • Increasing efficiency in energy use in agriculture and food processing. • Facilitating the supply and use of renewable sources of energy, of by-products, wastes, residues and other non-food raw material for purposes of the bio-economy. • Reducing greenhouse gas and ammonia emissions from agriculture and improving air quality. • Fostering carbon sequestration in agriculture and forestry.
<p>Priority 6: Promoting Social Inclusion, Poverty Reduction and Economic Development in Rural Areas</p> <ul style="list-style-type: none"> • Facilitating diversification, creation and development of small enterprises and job creation. • Fostering local development in rural areas. • Enhancing accessibility to, use and quality of information and communication technologies (ICT) in rural areas.

SECTION 2: LITERATURE REVIEW

The following section will outline key themes raised in the policy and academic literature that have informed the methodology and subsequent analysis presented in the report.

2.1 Transitions in Innovation Policy

Within the literature it is evident that there has been a shift away from innovation as a linear process, whereby knowledge is transferred via R&D to commercial application, towards the conceptualisation of innovation as a social process. This later concept is dependent upon processes of knowledge *exchange* and complex multi-stakeholder networks. This clearly resonates with the Welsh Government's own Innovation Policy.

From a policy perspective this shift has notable consequences, because innovation management now involves trying to steer a more complex and uncertain process of collective action (Smits et al. 2010, p10). Equally, monitoring and evaluation tools are not well developed for such a complex framework; hence the priority is to ensure the basic conditions for learning and adaptation to change (EU SCAR 2012, p18). This includes: motivating people to keep experimenting; promoting local responsiveness and attention to contextual details; facilitating open interactions in which trust, reliability and self-respect can grow to enable self-evaluation and appraisal.

2.2 Transitions in Applied Agricultural Research

Operating alongside these distinctive approaches to innovation policy is the division between basic and applied research. Basic research can be characterised as 'science for science', whereas applied research is 'science for innovation'. Within the UK agricultural sector there has been a clear shift away from applied research over the last 30 years. This has manifest in a decline in Government support for agricultural R&D and the prioritisation of basic scientific research in higher education and research institutes. This has led to the closure of nine major UK research institutes from 1985-2007 and a loss of core-funding to higher education colleges that continue to specialise in applied work. The lack of professional development opportunities now associated with applied work has led to a clear decline in expertise in this area (Leaver 2010).

In addition, the privatisation of the government's advisory service ADAS has resulted in an overall loss and greater disconnection between the remaining demonstration farms; increased disconnection from industry; and increased fragmentation in the provision of extension services by private consultants and third sector actors (Curry et al. 2013). A notable impact of these changes is the decline of productivity in UK

agriculture in relation to peers including France, the Netherlands, Belgium and Denmark (Leaver 2008).

Whilst the restructuring experienced in the UK has not been mirrored precisely in other EU countries, widespread liberalisation and shifting policy agendas have led to significant changes in the provision of extension services and applied research. Whilst some countries still retain a strong element of state involvement, for example Teagasc in Ireland and SRUC in Scotland, overall there is now a greater proliferation of actors involved, operating through diffuse networks. Equally, the emphasis is no longer on knowledge as a stock to be transferred, but rather upon the processes needed to make knowledge useful and applicable to other actors (Dockes et al. 2011). Across Europe, the EU Standing Committee on Agricultural Research (EU SCAR 2012) also shows that consistent, overarching Agricultural Knowledge and Innovation System policies are not apparent. The interaction with innovation in the private sector is also often weak. Monitoring is fragmented and there is a major inconsistency between the high level of attention to “innovation” in the policy domain and the lack of data and research for evidence-based policy.

Overall, it is critical that policy interventions in Wales are designed to address these weaknesses and reflect the manner in which innovation and knowledge exchange is now occurring. Opportunities for improvement will be considered in the course of this report and final recommendations made in section five.

2.3 Participatory Approaches and Knowledge Exchange

Within the UK the growing division between applied and basic science has now led to a renewed emphasis by the Research Councils upon knowledge exchange activities. For example, through the work of flagship programmes including ‘Rural Economy and Land Use’ (RELU) and ‘Living with Environmental Change’, which have now established a series of guidelines to support and promote future stakeholder engagement and participatory working. The thinking behind these approaches shows a clear emphasis on knowledge exchange through greater networking, connections and interaction.

In support of this approach, it is evident that decisions made in collaboration with stakeholders are higher quality and more durable. It is also apparent that establishing common ground and trust between participants can lead to a greater sense of ownership over process and outcomes, and potentially transform adversarial relationships (Reed 2008). But it is also evident that stakeholder engagement does not work if it is done badly. Hence, the importance of focusing on process and the role of the people involved is emphasised, rather than the application of ‘tool-kits’.

2.4 The Rural Development Context

To conclude this review of the literature it is important to expand upon the implications of the shifts outlined to the specific context of the Rural Development

Plan. In broad terms this review has outlined a general shift towards a conception of innovation and learning based on knowledge exchange. This fundamentally requires support for wider participation and an applied research focus. This has become increasingly pressing in light of the agenda for sustainable intensification, which has been described as a particularly knowledge intensive form of agriculture (LUPG 2013; EC 2012). Similarly, adaptation to increasing environmental change, both within and beyond agricultural production, is seen to require locally specific responses and responsiveness alongside more high-end technological support.

In terms of good-practice for agricultural extension and environmental management, table 2.1 summaries key points from the literature.

Table 2.1: Principles for Effective Knowledge Exchange with Farmers; adapted from Wynne-Jones 2012

Principles for Effective Knowledge Exchange with Farmers
<ul style="list-style-type: none"> • Ensure legitimacy of knowledge • Use trusted sources – often ‘in-group’ (other farmers) • Clarify seriousness of problem • Ensure personal relevance • Focus on practical knowledge • Exemplify through demonstrations and on-farm learning • Ensure capacity to affect changes • Tailor your approach to the individual (farm and farmer) • Make specific rather than general recommendations • Appreciate cultural norms and farming style • Ensure cost effectiveness and fit with productive needs • Use a developmental approach rather than uni-directional knowledge transfer • Appreciate influence of social networks and families in decision making • Use discussion groups and peer-support networks

It is also important to highlight tensions resulting from the different incentives for public and private benefits, which have implications for environmental management. This is one of the reasons why there is so much difficulty engaging farmers on this theme (Ingram 2008b). So whilst it is commonly acknowledged that we need to ensure synergies between the public and private benefits, by for example demonstrating the financial and wider business benefits of environmental management, there are some persistent trade-offs that require government support to ensure the delivery of public goods.

Looking beyond the land-use sector, insights from the LEADER Programme are important to note. LEADER has been described as a ‘laboratory’ for endogenous rural development (Ray 2000) operating through a bottom-up, participatory and endogenous approach for territorially-focused rural development across Europe. Four key mechanisms of implementation have been identified: participatory methods; partnership working; capacity-building; and competitive funding programmes. In addition, LEADER has promoted networking and information-sharing. Given the focus of this report, it is also useful to note that innovation, as taken forward through

LEADER, it is more likely to be understood by local actors in terms of social and cultural forms, rather the focus on technological innovation that dominates national policy discourses (see Tovey, 2008).

Despite many widely acclaimed successes in the empowerment of rural communities (Moseley, 2003), the assumption of democratic participation and accountability has been critiqued by studies highlighting limited public participation and unequal power relations (Edwards et al., 2000). Finally, in relation to questions of evaluation, research on LEADER schemes shows that the use of conventional economic measures is not appropriate for appraisals of social capital and capacity building (Kinsella et al, 2010). It is also evident that programmatic evaluation is predominantly centralised and undertaken at a step removed from the delivery organisations. In contrast, endogenous evaluation based in local contexts is seen to provide more effective opportunities to foster social learning in rural development (High and Nemes 2007).

2.5 Implications for Methodology

Drawing these points together, three key themes emerge to factor into the analytic focus of this report:

1. Innovation is a social process;
2. Knowledge is socially constructed; and
3. Innovation occurs through knowledge exchange.

This requires a socially attuned approach that considers interrelations, trust, power, social capital and networking. This can be captured by a focus on *who* is involved and *how* knowledge is developed and mobilised. The methodology outlined in this report incorporates these points as a means to provide more theoretically robust and refined insights.

SECTION 3: METHODOLOGY

In order to address the aims outlined in Section 1 the WRO were asked to conduct three phases of data collection:

3.1 Desk-based Assessment

This was intended to identify schemes, programmes and individual initiatives delivering knowledge transfer and innovation activities of relevance to the Wales Rural Development Plan (RDP) and European Innovation Partnership (EIP). The following information was gathered for each initiative:

- Aims and objectives
- Target groups
- Partners Funding
- Types of KT/innovation activity
- Lessons learnt

For lessons learnt, effectiveness of existing provision was assessed through secondary documentary material when this was available.

3.2 Stakeholder Interviews

Interviews were conducted to expand upon the documentary and web-based research. Interviewees were initially identified by the Welsh Government and subsequent interviewees were identified by the WRO during the research process. Twenty-six interviews conducted in total (see appendices in the full version for details). A semi-structured interview approach was used to obtain the required information (as listed in the bullets above). A detailed interview schedule is shown in the appendices. With regards to 'lessons learnt', evaluation was centred on the areas of questioning shown in the bullets below, which were derived from the themes raised in the literature review and the Welsh Government's specified areas of inquiry:

- How is knowledge transferred most successfully? – Processes, methods and techniques;
- What knowledge needs to be transferred to address EU priorities?;
- Who is involved? – Identifying effective networks and trusted individuals;
- Resource and capacity factors; and
- Strategic Alignment - Duplication and fragmentation in programme coverage and aims.

The primary data were then triangulated through comparison with findings of secondary material and by comparing the insights from different stakeholders. These processes of triangulation were used to gain a more balanced perspective on the strengths and weaknesses of the different initiatives, and to get beyond the problems

of biased reporting and vested interest that can be particularly notable when conducting evaluations to inform future funding specifications.

3.3 Stakeholder Consultation Event

This event was conducted as a means to consult a wider body of stakeholders than would have otherwise been possible with one-to-one interviews alone. Stakeholders responded to the following questions:

S1: Identify what works well and things that need be changed in existing programmes and initiatives.

S2: Evaluate the problems identified in the morning and designing potential solutions.

S3: What do you want to see for the KT and Innovation elements of the next RDP and EIP?

In order to provide robust data, stakeholders undertook the consultation activities S1-3 in groups of about 10 to ensure a deliberative process that pushed delegates to offer contributions that went beyond the iteration of their own vested interest. The questions addressed in S2 and S3 were also conducted in mixed groups that were not sector specific in order to move individuals away from their own specialist area and offer broader contributions. Equally the style of all the exercises required prioritisation and/or in-depth evaluations, which were designed to push delegates to justify their statements rather than simply outlining their own needs.

Trained facilitators were used who had been briefed to work with delegates to try and achieve less self-interested reporting. Further triangulation of the data collected during the event was also possible through one-to-one interviews conducted before and after the day, which enabled the WRO researchers to gain a clearer understanding of the vested-interests that were evident in the consultation responses. The data collected during the day was transcribed and is shown in the appendix.

3.4 Limitations and Issues Faced

In the writing of this report it is important to acknowledge the limitations of the research undertaken. This research is not intended as a comprehensive evaluation of all the activities discussed, as only limited primary data was collected in the conduct of this research. Whilst every effort has been taken to triangulate this with secondary sources and account for self-interested reporting from interviewees, it is important to acknowledge that there are some limitations on analysis given the data that was assessed.

It is also important to appreciate the difficulty encountered in the evaluation of 'successful' knowledge transfer and innovation due to a lack of appropriate metrics in the programmes considered and the fundamental tensions of measuring appropriate outputs.

SECTION 4: RESULTS

4.1 KNOWLEDGE TRANSFER & INNOVATION IN WALES

The following section provides an overview of the knowledge transfer and innovation activities that are currently delivered through the RDP, and non-RDP funded activities which have aligned aims. Some examples of good practise from elsewhere are shown in the appendix.

Table 4.1 shows the key actors and schemes, funded via the Wales RDP, which are involved in the provision of knowledge transfer and innovation³.

Table 4.1

Initiative and Lead Organisation	Partners	Funding	Target Audience
Farming Connect Menter a Busnes	Private Consultants Accredited training providers	Axes 1	Farming Community
KITE Cardiff Food Industry Centre	Food Centre Wales Coleg Menai Food Centre	Axes 1	Food Manufacturing & Processing Companies (SME's)
Tyfu Pobl Federation of City Farms and Community Gardens	Commercial Growers Organisations to which support community growing in Wales	Axes 1	Community Growing Initiatives
Growing the Future National Botanic Garden Wales	Aiming to form Growing the Future Network with other education centres.	Axes 1	Individuals and Community Growers
Supply Chain Efficiencies Schemes (e.g. Dairy Co; Dairy Development Centre; Hybu Cig Cymru; Organic Centre Wales; IBERS)	Various (See WG 2011 for details)	Axes 1	Various (See WG 2011 for details)
Glastir Schemes Welsh Government	Natural Resources Wales; Glastir Commons Development Officers; Farming Connect.	Axes 2	Farmers, land owners and land managers.
Local Action Groups (e.g. PLANED, GLASU)		Axes 3 & 4	Rural Communities

³ The Supply Chain Efficiencies and Axes 3 & 4 schemes shown are those that have been evaluated for the purposes of this report. A full overview of SCE schemes is detailed in WG 2011. A more comprehensive review of these schemes has not been within the scope of this report. However separate evaluations of the Axes 3 & 4 schemes are underway and will be fed into the development of forthcoming RDP.

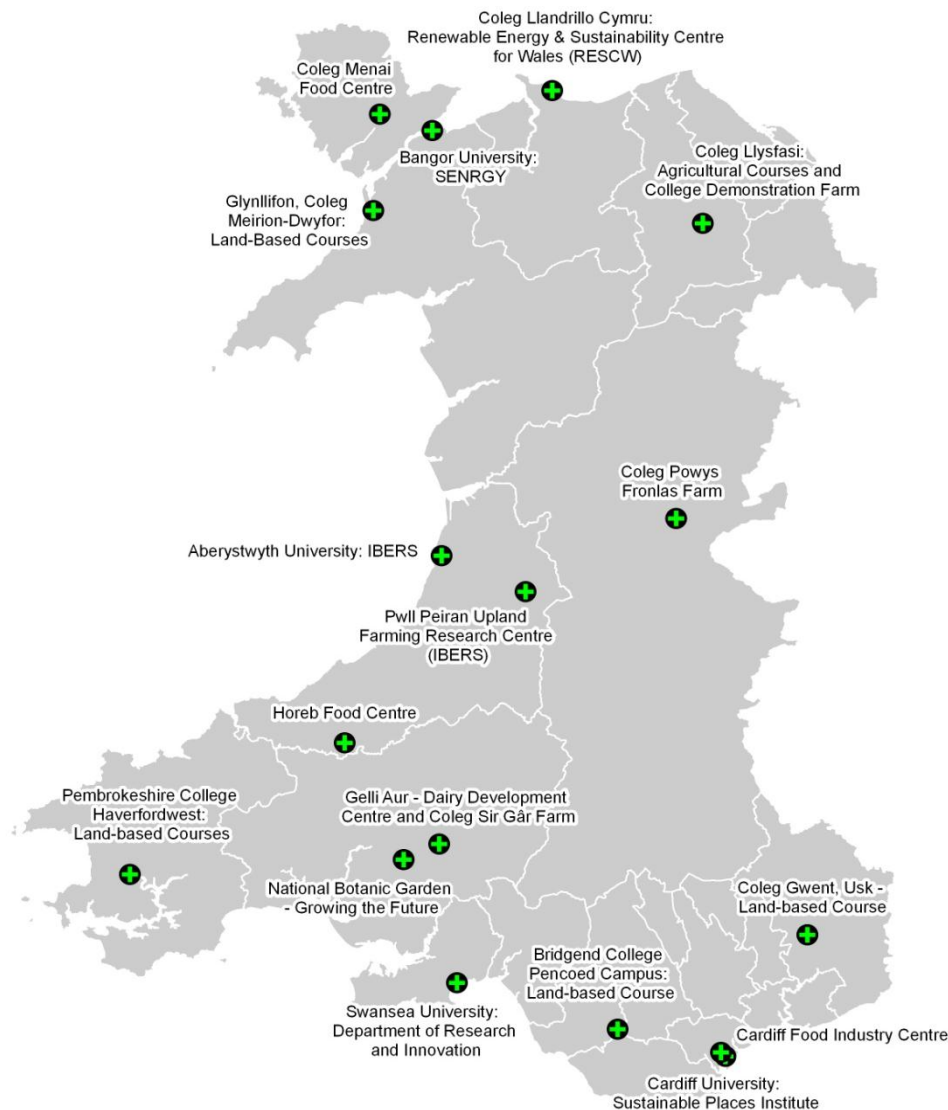
Table 4.2 shows other actors and schemes that work to support the Wales RDP, in the delivery of knowledge transfer and innovation.

Table 4.2

Initiative and Lead Organisation	Partners	Funding	Target Audience
IBERS	Harper Adams, NIAB-TAG; Bangor University	HEFCW; UK Research Councils; TSB; Industry	Agriculture, Forestry and Land-Use Sectors; Higher Education Sector
IBERS Pwllpeiran Upland Research Centre	Scottish Rural College	BBSRC	Agricultural Industry
SENRGY Bangor University	Aberystwyth University	HEFCW; UK Research Councils; TSB; Industry	Agriculture, Forestry and Land-Use Sectors; Higher Education Sector
Wales Environment Research Hub	Bangor University Welsh Government	Welsh Government	Welsh Government Higher Education Sector Industry
Farming Futures	IBERS, Harper Adams, NIAB-TAG; Waitrose; Agricultural Industries Confederation; AHDB	Industry	Agricultural Industry
Cardiff Food Industry Centre	Other Food Centres & Industry	Welsh Government HEFCW; RDP Axes 1	Further Education & Industry
Food Centre Wales	Other Food Centres & Industry	Welsh Government RDP Axes 1	Further Education & Industry
Coleg Menai	Other Food Centres & Industry	Welsh Government HEFCW; RDP Axes 1	Further Education & Industry
Coleg Llandrillo & Meirion Dwfor		Welsh Government HEFCW	Further Education Sector
Coleg Llysfasi	Deeside College	Welsh Government HEFCW	Further Education Sector
Dairy Development Centre, Gelli Aur Demonstration Farm	Coleg Sir Gar; Dairy Co	Coleg Sir Gar; Private Industry; Supply chain efficiencies scheme	Agricultural Industry; further/higher education sector
Dairy Co	DDC & ADHB; Farming Connect	Levy monies; Supply chain efficiencies scheme	Dairy Sector
Hybu Cig Cymru	Welsh Government Farming Connect	Levy monies; Supply chain efficiencies scheme	Red Meat Sector in Wales
Business Wales		Welsh Government	Businesses in Wales
BETS Schemes		Welsh Government	Businesses in Wales
Technology Strategy Board	UK Government; Private Industry	UK Government; Private Industry	Business in the UK

The map below (figure 4.1) provides an indication of the location of some⁴ key publically owned resources, within Wales, which deliver knowledge transfer and innovation activities of relevance to the RDP (some but not all of these are supported through RDP funding).

Figure 4.1



⁴ NB. The RDP schemes are not all shown as they are often spread across regions with local delivery i.e. Farming Connect, Glastir, Tyfu Pobl, Supply Chain Efficiencies, and Local Action Groupss. Levy body activity and WG business schemes are not shown as these also have a pan-Wales remit and localised delivery. It should also be noted that some of the college facilities in South-West Wales are now operating as part of the University of Wales Trinity Saint David's INSPIRE programme: <http://www.trinitysaintdavid.ac.uk/en/inspire/>.

4.2 Analysis

In the following section, analysis is structured around the key themes emerging from the data. This is connected with points from the literature where appropriate.

4.2.1 Knowledge Exchange

One of the most important reoccurring themes in the stakeholder interviews and consultation event was the need to move beyond a linear and top-down conception of knowledge transfer and to acknowledge the utility of knowledge exchange. The co-production of knowledge through a process of exchange was seen as a more effective means to produce appropriate knowledge and gain trust.

This was also the main point raised in the literature review (see also Cerf et al. 2000; Fazey et al. 2013; Ison and Russell 2000; Roling and Wagemaker 1998). Research work undertaken by the Rural Economy and Land Use programme, demonstrates that whilst knowledge transfer is still useful in some instances, it is not the only method of communication (RELU 2007; 2010). Their findings have also been incorporated into best practise guidelines for the Living with Environmental Change programme (LWEC 2012), which is a major UK Research Council funded initiative.

Considering programmes such as Farming Connect, it is apparent that knowledge exchange has been adopted as a key principle (Menter a Busines 2012), with increasing emphasis placed on two-way dialogue and interaction. But as farmers are very traditional in many ways there is still an important role for the straight-forward transfer of information (e.g. through fact sheets and lectures). As RELU (2007) outline, is it not a case of either or, but using the most appropriate strategies and appreciating the need for greater two-way dialogue in many instances. The focus on knowledge exchange is intended to expand rather than re-write the communication tool box.

Within Farming Connect, the emphasis on knowledge exchange was particularly evident in interview feedback from consultants who emphasised the benefits of using an advisory style that encourages farmers to reflect upon decisions, rather than telling them what to do. This supports farmers to come to their own conclusions and take ownership of those choices and plans. It is also a means to develop more tailored responses.

“there’s something about developing people...we run this project called Agrisgop and we get small groups of farmers together and that’s more personal development... If you’ve been involved in the process of making that decision you’re more likely to implement it and change will happen quicker”

(Eirwen Williams: Menter a Busines)

Farming Connect stakeholders also highlighted the value of bringing people together face-to-face at networking events as a means to facilitate knowledge exchange, noting that this was an opportunity that would not otherwise take place in the day to day lives of farmers:

“I think group work is still very important, because people learn so much by just coming together and talking to each other, and because farming can be quite a lonely occupation really.”

(Eirwen Williams: Menter a Business)

Several stakeholders from the higher education and farm advisory sector also stressed the need to build a strong knowledge infrastructure and a progressive, knowledge-based agricultural sector, which prioritises participatory approaches and avoids the marginalisation of local knowledge and decision systems. This is supported by evidence of best practise from elsewhere and in the literature (Cerf et al. 2000; Fazey et al. 2013; Ison and Russell 2000; Roling and Wagemaker 1998).

In other sectors, knowledge exchange through increased networking was highlighted as a major objective for RDP funded programmes. For example, LEADER initiatives and Tyfu Pobl all placed a high level of importance on enabling knowledge exchange as a means for groups to learn, share best practise and take their own ideas forward:

“It is bringing people together in a room and just getting them talking about what they do, where they’re at, good and bad, learning and bringing people together, it’s just so valuable.”

(Katie Jones: Tyfu Pobl)

This approach is very much in line with understandings of innovation that emphasise social processes and the need for ‘open’ approaches which enable information to be circulated more freely and do not privilege particular sites of knowledge production over others (for example, universities are not assumed to be the only sites of innovation). These were discussed in the literature (e.g. EU SCAR 2012; Smits et al. 2010), as well as being emphasised by stakeholders involved in business and innovation policy in Wales.

4.2.2 Trust

The importance of trust was outlined by all of the stakeholders interviewed and raised as a major theme in the consultation event. This is supported by the literature, which highlights trust as a cornerstone of successful communications and advisory provision (Blackstock et al. 2007; Ingram 2008a; Klerkx and Proctor 2013; Reed 2008). Respondents outlined that people need to feel comfortable with, and believe in, the person who is providing advice about their business or community venture. This requires suitable expertise, so that the advisor is respected and seen to provide appropriate information, informed by the latest research and best practise in the field.

It is also critical that advisors know how to work with individuals and are sensitive to subtle differences in their requirements, depending on distinctions of geography, stages in business development, and personal needs. If individuals feel that an advisor is not responsive in this manner it is hard for them to have faith in their advice, because they will see the advice as too generic for their specific needs. It is, therefore, critical that communication is two-way, so that advisory provision is founded on a full understanding of recipients’ needs.

Consequently, establishing trust with an audience is not just about demonstrating technical expertise, but equally depends upon 'softer' communication skills and tacit knowledge. For this reason, advisory provision is often more successful if individuals have time to get to know each other and build a relationship. Once trust has been established it is important to maintain that relationship and use the trusted person as a continued point of contact.

"I think that comes down to 15 years of working with farmers... and they've effectively become friends because I've been working with them for so long so it's a lot easier to phone up somebody and say look we're thinking about doing this project, will you come to have a session on... rather than just phoning up somebody cold..."

(Steven Bradley: PLANED)

"There is one person who wraps it together because that is what is important to businesses, they want a familiar face that they can build trust with"

(David Lloyd: Cardiff Food Industry Centre's KITE Scheme)

Trust is also affected by the opinions of peers and other individuals who are closely connected in a social network. Using individuals who are well known within a particular locale, and who have established a good reputation, is critical. In light of the point about having appropriate and adapted knowledge, local actors are similarly important because they are perceived to have a better insight into local farming systems / business dynamics.

"the only way you're going to build up a trusting relationship is working in the patch"

(Steven Bradley: PLANED)

"I think there's something about building up the relationship within the area, because... people, they know who that person is and they can contact him or her"

(Eirwen Williams: Menter a Business)

These points were emphasised repeatedly by the different stakeholders across all of the sectors considered. From interview responses and event feedback, the use of local expertise and trusted individuals currently seems to work well in Wales with the Farming Connect programme and LEADER schemes. It is, therefore, important that we continue to work to maintain trusted relations as a key priority.

Trust is also connected to a sense of shared identity and finding things in common. It is, therefore, important to employ staff who come from similar backgrounds to the target audience and/or can clearly relate to the group in question. The need to acknowledge 'circles of trust' was also evident in the literature (AIC 2013; Klerkx and Proctor 2013). In particular, individuals/organisations associated with business advice were deemed to be inside this circle, whereas those associated with regulation and restrictions were not. An important caveat on this point was that

advice needs to be sufficiently independent of commercial or government interests for people to trust it.

Finally, it is evident that trust is not only critical to advisory provision, but equally for innovation and wider relations between different businesses and partner organisations.

“Some of these things take a long time to build up... it depends on people in the end. If you're working with somebody for two or three years you feel more like you can share information freely and they're not going to run off, they're not going to do this, they're not going to do that. But that doesn't happen overnight.”

(Alistair Davies: WG Innovation Policy)

4.2.3 Continuity

In the first instance, the importance of continuity was raised most clearly as a means to ensure trust. This issue was raised in a number of different contexts, referring to different programmes and schemes. The concern was the same across these different manifestations. Specifically, it is appreciated that RDP funding is finite and relatively short term. Nevertheless, continuity is a key issue to sustaining activity levels that drive change. Continuity of funding was, therefore, a major worry for all of the stakeholders contacted.

“It has taken time to build a team of people to effectively deliver this project. Even a relatively short hiatus between funding programmes would result in the loss of skills and capacity and the necessity to effectively rebuild it again.”

(David Lloyd: Cardiff Food Industry Centre's KITE Scheme)

“...any project is only as good as the people running with it... and unless you're able to secure funding that overlaps, that takes one person from one project into another, you lose good staff”

(Steven Bradley: PLANED)

Whilst, it is important to account for vested interests in reporting these points, similar concerns were also reported in other evaluations of the RDP programme, where it was noted that some of the new LAGs formed for the current programme were short on know-how and experience. This was partly attributed to staff leaving because funding was insecure or not forthcoming. It was also reported that projects and schemes that only run for a couple of years, are really only just getting embedded in their localities, and then end with the end of a programme or funding. This results in lost momentum and a tendency to 'reinvent the wheel' (ADAS and AgraCEAS 2010).

In the one-to-one interviews, longevity and consistency was highlighted as a key part of PLANED's success; as they have been able to build up local recognition of the organisation and individual staff. To do this they have worked to retain staff and their expertise, by planning ahead in terms of the next funding stream, so that projects can follow-on and momentum is retained.

For other organisations, brand continuity was also stressed with many stakeholders at the consultation event acknowledging the importance of the Farming Connect brand as a point of continuity even when the delivering organisation and strategies for delivery had changed. Here, it is important to appreciate the perspective of those on the receiving end of the service and note that other evaluations have supported the need for brand continuity (Agra CEAS 2012; SQW 2013a). Similarly, the consultation event feedback highlighted the importance of using trusted brands.

Nevertheless, it was equally stressed that vested interests should not create inertia. Continuity is important, but it needs to be justified by robust evaluation, and some change is required to create improvements. The key factor here, then, is to ensure appropriate evaluation and the identification of best practise. This is discussed further in section 4.2.14.

4.2.4 Clarity of strategy and communication

The need for strong leadership and a clear vision to unite the rural sector was a point that came out very strongly from the consultation event. This is clearly aligned with the other concerns raised, about the need for greater co-ordination and trust, as a clearer strategy was discussed as a means to address these other issues.

In particular, respondents argued that a stronger policy steer and well defined direction of travel would enable primary producers, allied support institutions and processors to work together towards clearly defined targets. In addition, interviewees involved in advisory provision argued that farmers struggle to know what they are expected to do. Consequently, they felt that government needs to provide a very clear steer on the aspirations for agriculture in Wales and what they will support to make that happen.

Contrasting Wales with other countries, particularly Ireland, further reinforced this perceived lack of clear strategic aims for the agricultural sector. This point was made by a high proportion of interviewees and was also evidenced in the stakeholder event.

“What’s going on in the UK is that it is very hard to see that there is any central body or person responsible for even having a vision...”

(anon)

“I think we just need some strategic messages from government actually”

(anon)

The role of government was seen to be critical here, and in many instances it was outlined that particular issues needed to be led by government rather than the private sector. For example, a national strategy for carbon foot-printing of food produce was seen to be more desirable than the current retailer-led model. This also ties in with the points about pre-competitive platforms to co-ordinate the private sector response; as discussed in the next section. Similarly, in terms of setting

targets for knowledge transfer, it was argued that government should take a central role:

“We should be setting ourselves a strategy for technology transfer. What is the technology we want transferred, how is it being transferred? It should be led by farmers, Welsh Government, research and technology people, not led by the commercial consultants” (anon)

Sainsbury’s has spent an absolute fortune carbon foot printing their supply chains and benchmarking... they have carbon foot printed all of their dairy and lamb. Now, where are they going to go with that? You know, that should be happening at Government level. The Government should be providing the standardised methodology to do this for all supply chains. (anon)

For many respondents, these points were then connected to the importance of establishing benchmarks as a means to provide a goal or end point. This was discussed in relation to individual businesses and the whole industry; again drawing on the comparator of Ireland’s Harvest 2020 targets⁵.

“Ireland is the only country that’s got targets out for where they want agriculture to be...their industry knows how to respond and the country builds their research programme, their knowledge exchange programme etc. around that. It’s an extremely impressive model, so do look at Harvest 2020.” (Nigel Scollan: IBERS)

As a caveat to these recommendations for benchmarks, respondents stressed that the main priority was for leadership. This tied in particularly with comments in the consultation event about the need to have confidence and acknowledge what we do well. Interview respondents put this in the following terms:

“We need to be thinking ‘Wales Plc.’ and strategic delivery”. (anon)

Expanding on the reasoning behind these comments, about strategy and leadership, it was argued that the industry as a whole is hampered by ‘small picture thinking’, focused on subsidy and the implementation of schemes (such as Glastir) rather than having a sense of where they fit in the big picture. This has resulted in Welsh farmers receiving mixed messages from government over what it wants farmers to do.

This was noted in particular in relation to agri-environment initiatives, which it was argued should be positioned within a coherent farming strategy, with an integrated approach to the challenges of conservation, climate change adaptation and food security. The recently championed concept of ‘sustainable intensification’⁶ can play a

⁵ See <http://www.agriculture.gov.ie/agri-foodindustry/foodharvest2020/>

⁶ The goal of sustainable intensification is to increase food production from existing farmland while minimising pressure on the environment. It is a response to the challenges of increasing demand for food from a growing global population, in a world where land, water, energy and other inputs are in short supply, overexploited and used unsustainably. Any efforts to ‘intensify’ food production must be

key role here but not when it is used as a veneer for continued intensification. It should be about business *and* ecological efficiency.

“...there’s possibly some way to go in terms of sorting out government’s priority for sustainable intensification, agricultural strategy and the environment. It does seem to me to be an elephant in the room...” (anon)

Following this, clearer communication of Glastir’s aims and objectives is needed to encourage wider engagement. This should work alongside a communications strategy to explain and demonstrate the ecosystem approach⁷ and sustainable intensification to farmers. This has been noted in previous research as a key concern (WRO 2012).

On a simple practical level, there is a need to reinforce key messages, through repetition in different formats and media. Farmers in particular take time to make a change, so they need consistent advice over a long period. Knowledge transfer is not a one off but a continuum of learning and re-learning. Corresponding messages from more than one source has greatest impact (SQW 2013a).

...it’s important to keep repeating messages and remind people, even for very good people because they will all forget... it’s a little bit like the road speed signs along dangerous bends, people might know the road backwards but the sign is there for a reason”
(Tom Kelly: Teagasc)

Noting the array of different actors involved in advisory provision, from the private and public sectors, respondents outlined how farmers have become confused by an increasing array of often disparate messages. It is for this reason that they then stressed the need for co-ordination of messages at the top-level. A number of strategies for such integration were suggested, including forums for private sector collaboration on strategic aims (e.g. Farming Futures⁸), demonstrating that government is not the only actor that needs to be involved. Similarly, RELU’s Landbridge⁹ demonstrates the need to co-ordinate different actors and agencies.

“I think given the way things operate at retail level and through supply chains, the opportunity for supply chains to work together is probably more useful...I would get concerned that really, today, I think farmers probably get bombarded with too much”
(Nigel Scollan: IBERS)

matched by a concerted focus on making it ‘sustainable.’ Failing to do so will undermine our capacity to continue producing food in the future.

⁷ The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way.

⁸ See <http://www.farmingfutures.org.uk/about-farming-futures>; this initiative will be discussed further in section 4.2.5.

⁹ See <http://www.relu.ac.uk/landbridge/index.html>

4.2.5 Co-ordination & Co-operation

Building on the points made above, many respondents were concerned about fragmentation and a lack of co-ordination between agencies involved in programme delivery. The need for better co-ordination and reduced duplication was evident as one of the reasons for rationalisation of the Farming Connect delivery contracts into fewer Lots, and most respondents agreed that there was less duplication now occurring. The Agra CEAS (2012) evaluation of Farming Connect also supports this move, highlighting the added benefit of the three Lots being delivered by the same organisation, both in terms of the unified impression of Farming Connect that this gives and also in terms of synergies which are likely to have resulted in increased delivery efficiency. However it was apparent that there is some unnecessary overlap with some of the Supply Chain Efficiency Scheme projects duplicating elements of the Farming Connect Knowledge Transfer Programme.

It was also evident that the rationalisation of Farming Connect delivery and resulting change in delivery bodies in 2011 has generated some tensions between actors who have seen a change in their role and Menter a Business (who now deliver Farming Connect). This is an unfortunate outcome of the process of change, which has otherwise resulted in a more effective delivery strategy. Nevertheless, continued communications is essential, particularly with stakeholders who have an overlapping remit for sector specific delivery, such as the levy bodies. To do this clear mechanisms have been put in place to ensure effective communications between the different stakeholder organisations. For example, the levy bodies and other stakeholder groups sit on the steering group for Farming Connect, and sub-groups have been created for particular aspects of delivery such as dairy where there are multiple actors involved under the RDP. This has enabled practical co-ordination of activities through sharing of a collective diary for events. Such mechanisms provide an important tool for improved co-ordination, but it is important to stress that this is ultimately a question of personal action and conviviality.

More broadly, it was argued that there could be greater co-ordination of Welsh agricultural strategy, involving collaboration with Universities, colleges and demonstration facilities such as Gelli Aur. This could involve connecting higher education funding with the RDP through match-funding and closer collaborative working on projects.

“one of the key messages that I think needs to be fed through your research is that there needs to be better linkage between all the publicly funded resources available in Wales. We should be looking at the strategy for Welsh agriculture, looking at the research that’s coming through worldwide, and using existing resources to demonstrate that strategy to Welsh farmers, and if you take the facilities that they have at the university for doing research, our facility [the Gelli Aur demonstration farm] should be linked to that and we should be working with the research and with Welsh Government to plan what we are doing, how we are doing it, how we are getting the information, we need to have some more joined up use of these resources.”

(Peter Rees: Coleg Sir Gaer)

Connecting this point with wider comments about the availability and quality of knowledge and innovation provision in Wales, it is evident that there is a lot of expertise and potential here (see figure 4.1 and tables 4.1 and 4.2 on pages 14-16) which could be more effectively mobilised through co-ordinated efforts and clearer unifying objectives.

“Look at what happened in Scotland recently that is brilliant...we couldn’t do that here now because all our colleges have gone off elsewhere, they’re all part of other bigger higher education establishments, but what they’ve done in Scotland...wow. They can now say they’ve got the largest agricultural establishment in Europe and it also has a major consultancy arm...We should be aspiring to some sort of a structure like that in Wales, that pools people together to support farming, whether that’s in research, whether it’s in extension advisory, or teaching the next generation” (anon)

In relation to practical RDP delivery, many stakeholders at the consultation event suggested that there should be a clearer portal for advice and more effective signposting of appropriate advice. For example, Sion Aron Jones of Hybu Cig Cymru stated that the agricultural business manager needs to be able to access finance and support at the point of contact with the Welsh Government; they are not concerned with the mechanics of policy, funding pots and having to hunt down the appropriate body.

“the wiring behind the plug [...] is of no concern to the business from an external perspective”.

Other respondents noted that the branding of Farming Connect subsidised services as part of Farming Connect was important to avoid confusion amongst farmers and that sign-posting could be improved. It is apparent that this is working better now (Agra CEAS 2012), nevertheless it is important to maintain sign-posting and effective cross-selling across these services.

The need for better sign-posting and a clearer point of access was also evident in relation to wider rural business and payments schemes; this was raised as a major issue in the consultation event. It is also notable that the RDP consultation issued early this year (WG 2013) raised the question of Farming Connect and the Farm Advisory Service’s (FAS) role and whether they should be expanded. This reflects these concerns about a central point of access and greater clarity and co-ordination in access and provision. The evidence derived through this research is not conclusive enough to make any recommendations about such adaptation to Farming Connect and FAS’s role, beyond the need for a clearer point of access for recipients.

Some respondents thought that government schemes such as Glastir needed more promotion through Farming Connect, particularly woodland and forestry schemes. It was also evident that there are some tensions around the promotion of schemes if they are not seen to be the most effective business strategy for farmers; this point will be considered further in section 4.2.11. In addition, there was some uncertainty around who should be taking responsibility for different schemes:

“Farming Connect doesn’t do it [promote woodland schemes] because the Forestry Commission are supposed to be doing it and the Forestry Commission didn’t do it because Farming Connect was the farm advisory service, so there remains a gap”

(anon)

Looking to other schemes and initiatives, there was some suggestions that Axes 3 and 4 schemes were quite disjointed and there was duplication and overlap. However, given the number of stakeholders consulted in this area, it is not possible to reach firm conclusions on this. Representatives from the Organic Centre in Wales also noted that their own activities have been quite ‘bitty’ over the last year because of the nature of the funding they have been working with (lots of smaller pots). In future, they thought that it would be preferable if they could emulate the model of Tyfu Pobl, to act as a central co-ordinator of community and organic food education in Wales, connecting schools and community groups with growers, and facilitating educational events and activities to be rolled out across Wales.

On this point, it was evident that the emphasis upon central co-ordination as a strategy for Tyfu Pobl has been particularly effective. Specifically, Katie Jones outlined that the Pan-Wales remit of the project had allowed for the sharing of information between partner hubs across the whole of Wales and created the ability to work with any organisation without being mindful of local authority borders. This allows for consistency in message and delivery.

This model was also championed by PLANED in the delivery of community initiatives. Specifically, both organisations outlined the importance of a brokering and facilitating role. For example, PLANED focus on the development of ideas coming from individuals and communities through the use of community visioning exercises. They then use these to help build a realistic and sustainable plan through which to access and draw down funding from other sources.

“a grant for example is helpful but it’s not necessarily sustainable, a classic one is village halls, communities come to us and say can we have money to modernise it but nobody’s actually using it so what we do with our visioning is visit the communities and over two days look at what’s happening in the community, what’s the communities aspirations, look at all the clubs... different groups and build a community action plan which is a 5, 10 year plan which can be used to then access funds and organisations like the lottery and other funders can see that there is a sustainable plan”

(Steven Bradley: PLANED)

Finally, it was evident that there is potential for greater cross-border working with key institutions across the UK, in order to make better use of resources and facilities located outside of Wales. In particular, resources at Harper Adams were discussed, including their Centre for Precision Farming. Working in a more co-ordinated manner with such institutions would enable us to address key objectives for applied research and knowledge transfer. It is also notable that the EIP emphasises the potential of cross-national networking and study visits.

Overall, many respondents suggested that the reasons for fragmentation across the programme was due to a focus on competition, and the competitive nature of funding. As a consequence, there is a greater need to prioritise co-operation for the next round of the RDP:

“In Wales, we have... well, the last RDP we had, the supply chain efficiencies funding... but you end up then with a lot of individual projects...I would be concerned about the bittiness of that, rather than something a bit more strategic around it.” (anon)

Even amongst private businesses it was suggested that greater co-operation could lead to more beneficial public outcomes. One key exemplar that was raised by the stakeholders involved was ‘Farming Futures’. This is intended to operate as a pre-competitive platform to bring together CEO’s from academic institutions: Harper Adams, IBERS, NIAB-TAG, SRUC and private partners. They run conferences and individual initiatives with TSB support and 50% industry money.

The stakeholders involved felt that this platform was an important means to create networks amongst competing interests, which will be critical to the EIP.

“They have all agreed [the partners involved] to work together in a pre-competitive way. There’s areas where they compete naturally, but in terms of being responsible for public goods to helping farming, then these organisations want to work together to ensure that they get consistent messages going out... we need to be working together on this, so for me, we need structures that allow that, and that’s completely different from anything that exists today” (Nigel Scollan: IBERS)

4.2.6 Collaboration – Integration & Added Value

Co-operation and collaboration were also discussed as important strategies for adding value to the RDP programme. Working in partnership has long been established as a means to reach wider audiences. From programme evaluations and respondent feedback, it was evident that whilst partnership working can seem time consuming and perhaps frustrating, the benefits that are gained can be significant.

In the context of farm advisory services, making use of other networks (e.g. vets, accountants, feed and seed suppliers) that have access to hard-to-reach farmers was seen to be particularly important. This is a key priority in RELU’s Landbridge programme, as they try to work with a range of field advisors who act as intermediaries bringing science to the farm. Specifically, they work with the understanding that farmers look to their advisors to absorb complex messages from diverse sources, including technical, commercial and legislative developments, and translate them into terms they can understand and act upon.

Similarly, a high number of interviewees stressed that private sector collaboration was important for the delivery of knowledge transfer. For example, the Dairy Development Centre has worked a lot with First Milk doing technology transfer work.

IBERS and Harper Adams equally stressed the importance of partnerships and public-private collaboration, as this has been central to their success.

Looking beyond the farm advisory sector, feedback from Tyfu Pobl pointed to the potential of creating opportunities in the next RDP for overlap with other funding schemes. The aim here is that community groups can work with Tyfu Pobl to develop their ideas and capacity and then apply for other funding to initiate their ambitions for individual projects.

Connecting farming events with wider community events was also considered as an area for further collaboration in future, particularly in relation to the demand for community food projects. Equally, greater integration and connection with local communities can benefit the image and public understanding of farming

“We need to strengthen the community element, as well, because I think... to improve the image of farming and to get people to understand the way the farmers live... because you do sometimes get, in rural communities, you get that sort of division really, between the farmers and the rest of the community, and we need to bring them all together.” (Eirwen Williams: Menter a Business)

In relation to LEADER and other Axes 3 and 4 schemes, feedback shows that cooperation with organisations from different regions can provide access to ‘networks’ which would not otherwise be available. This was the case for GLASU, and also for PLANED who have a strong track record of European-level project work. Steven Bradbury from PLANED stressed the importance of not being too internally focused and being willing to learn from outside Wales, as they had done through European level networking and partnerships.

Finally, it was noted that whilst there is a greater push for cross sector working and joined-up thinking, there is still a sense that there are separate agendas of health, education, food production and procurement. Whilst there has been some political support for a united approach, respondents felt that it had not yet been properly supported in financial terms. This was evidenced in particular by the experiences of the Organics Centre who clearly try to span different agendas in the work on food education and health in schools, and with communities.

4.2.7 Appropriate communications – acknowledging difference

The need to tailor messages to your audience is a key message from teaching theory, and was widely reported by all interviewees. This ranged from the need for locally specific knowledge through to the provision of different advisory and support services for young people and women, such as the Merched y Maes initiative run by Menter a Busnes. The need for targeted messages and activities is further supported by the increasing demand for audience segmentation and the use of social marketing techniques in recent years.

Specialist provision was seen to be very important by a number of respondents. For example, Farming Connect, Dairy Co and the Dairy Development Centre (DDC)

outlined the importance of having dairy specific discussion groups and events. This point was re-affirmed by experts from Ireland who confirmed that they used specialist provision. Following this logic, it was argued that the top 10% of business performers will need to be targeted and communicated with in a different way. This is not to say that *availability* of information should be unequal, but to acknowledge the importance of different learning styles and needs.

“Farmers want to work with like-minded farmers. If you’ve got somebody at the top 10% they become very quickly disinterested if they only had to join events where you had everybody there.” (Peter Rees: Coleg Sir Gaer)

Advisory providers argued that it is useful to utilise a range of techniques to work with individuals’ different learning styles. This is common place in teaching practise in schools and other educational facilities. Respondents from the advisory sector also outlined the need to be responsive to beneficiary feedback and shifts in communications technology. Perhaps surprisingly, given other comments about the traditional nature of the industry, it was acknowledged that farmers are becoming more adept at using technology such as smart phone apps (particularly younger farmers). In response to this demand, Hybu Cig Cymru have set up a text messaging service offering information and advice (e.g. weekly market prices for sheep and beef) that has been well subscribed and promote apps developed by IBERS. Similarly Dairy Co and Farming Connect have both embraced new media as an important component of their communications package.

When it is feasible, a one-to-one approach is important to enable knowledge transfer and exchange which is specifically tailored to the individual beneficiary. A mentor can also provide an important role-model in a peer-to-peer context. In addition, the support of a one-to-one mentor/advisor was seen to be particularly important when individuals lack confidence in a group situation, or wanted to discuss sensitive information; for example about finances or succession issues:

“in those succession events we’ve held, we’ve had about 30 to 50 people turning up, but we’ve seen that not many people will ask questions because they keep it quite close, but at the end, you see them coming up to ask questions to the solicitor and accountant, so we decided on this one to one thing as well” (Eirwen Williams: Menter a Busnes)

Looking beyond farm advisory provision, it was argued that tailored approaches were also important for business. In particular, David Lloyd (Cardiff Food Industry Centre) stated that:

“innovation is not a simple case of parachuting ideas from one place to another. Everything is context dependent so it is more appropriate to transfer the processes through which innovation occurred rather than the exact business idea, and then enable a process of knowledge exchange to occur in order to develop appropriate ideas”

4.2.8 Visual and applied communication–kinaesthetic learning

Whilst the above points about tailoring communication to individuals' learning styles was seen as the main priority for knowledge transfer and teaching strategy, it was also acknowledged that farmers are primarily kinaesthetic learners. This was often explained in the following terms (or broadly similar statements):

“Farmers learn by seeing and doing, not by being told, and will adopt and adapt knowledge if they know it is tried and tested.”

(Tony Little: Organic Centre Wales)

For this reason farmer discussion groups and applied experimentation within farmer groups was seen to be critical to creating change and learning. Others argued that converting knowledge quickly into farm practice was key to ensuring change, coining the term 'sticky knowledge' to refer to this process.

In response to this trend, interviewees stressed the importance of demonstration and development farms¹⁰. This was also raised by a high proportion of stakeholders at the consultation event. Farming Connect does support a network of demonstration farms across Wales. However, the feeling amongst respondents was that there has been a decline in this area, as many of the farms formally associated with colleges are no longer operating, and those remaining are not being utilised in such a co-ordinated fashion. This is a point that is echoed in the literature (Leaver 2010). It was also argued that development farms need to better connect research to commercial farming. An example of good practise here was the ProSoil project at IBERS¹¹. But in other examples it was suggested that research was not adequately connected with real-world scenarios, and demonstration farms are not effective if they cannot show the value of change or the need to invest.

Alongside the need for demonstration and development farms, respondents also felt that there was a need to spend more time on farms developing appropriate solutions on-site, appreciating that this is expensive but worth the investment.

Supporting the feedback gained through the event and from one-to-one interviews, examples of best practise demonstrate how and why the points outlined here work, and have been successful in raising standards elsewhere. These include the Scottish and New Zealand Monitor Farms, Irish BETTER farms and Farmer Study Clubs in the Netherlands and New Zealand (SQW 2013a).

¹⁰ A demonstration farm is commonly considered as a farm which literally serves as a demonstration site; these are often run by private businesses and chosen as examples of good practise.

Development farm are usually run for experimental purposes, often by public sector and research agencies. However, they are not mutually exclusive, and as the comments in this section show there is an increasing need for experimentation across a wider range of commercial farms.

¹¹ See http://www.aber.ac.uk/en/ibers/research/major_research_projects/prosoil/

4.2.9 Applied research

Thinking more broadly, it is clear that the decline in applied working over the last thirty years has had a substantial negative impact on the sector (Leaver 2008; 2010). A number of respondents in the higher education sector outlined that there had been an over-emphasis on international work outside of Wales and 'blue-skies' research, to the detriment of applied science. This is changing with the increasing interest in 'ecosystem goods and services',¹² which has highlighted the potential of research within Wales and money is now being re-directed into studies here. This was seen as a good precedent to continue.

This message was echoed by many stakeholders from advisory services who had felt the impacts of this shift. However, it is also evident that Wales has world leading teaching and research facilities. But many interviewees felt that this was not well recognised outside the academic sector, and that industry-academia links should be improved. Professor Wynne Jones felt that this was partly a reflection of the loss of government funded development farms and the brand identity that went with those institutions.

On this point, it was argued that there is a need for greater interface between public research institutes and knowledge transfer actors to ensure that research can be disseminated in a commercial setting. Even stakeholders from research institutes agreed that their work was not being disseminated through to farmers in the way that it could. Consequently, more emphasis is needed on translating this knowledge through skilled practitioners who are up to date with the academic debates *and* can convert this information for dissemination to a more generalist applied audience. This was contrasted with the situation in Ireland, New Zealand where research is much more readily and effectively translated to commercial contexts.

To do this, it was suggested that mechanisms are needed to build more effective relations between these groups. These could include regular meeting forums, open days and demonstration farm visits to reflect on the application of R&D. The operation of the EIP was also noted as something which would work alongside these aims and exchange frameworks. Other evaluations have also recommended that facilitator networks would be a useful way to address this need, building on the successes of similar networks associated with Monitor farms in Scotland (SQW 2013a). It was also argued that more professionals with the specialist skills in 'knowledge exchange' were needed:

"at the moment, we don't have a structure that has got technologists or...translational people who can work and go in and listen to a scientist..."

¹² The concept of ecosystem services has been developed to aid our understanding of the human use and management of natural resources. Our health and wellbeing depends upon the services provided by ecosystems and their components: water, soil, nutrients and organisms. Therefore, ecosystem services are the processes by which the environment produces resources utilised by humans such as clean air, water, food and materials.

then translate it into something that's really powerful and...put it into real, industrial relevance"

(Nigel Scollan: IBERS)

It is evident that UK Research Council funding is now much more attuned towards the need for such knowledge exchange as part of the research process; for example through the initiation of new funding mechanisms such as BBSRC's LINK¹³ and by placing greater weight on research 'impact'. But this is just a first step. Enabling greater links between basic and applied science in future could be achieved by making further connections between RDP and other funding sources, such as the EU's Horizon 2020 Programme.

Looking beyond the interviews and event feedback, it is notable that part of the rationale for producing the 'Feeding the Future' report was that *"the pattern of funding for R&D that can drive technological innovation has changed dramatically over the last two decades, with a reduced participation by the state in both applied research and knowledge transfer"*. (Pollock 2013) In contrast with the declining situation in England and Wales, Feeding the Future outlines that Scotland has agreed national priorities which are used to drive the development of R&D programmes covering strategic and applied research. These are linked to specific end points that have both policy and industry relevance; they are also linked to a structured programme of knowledge transfer and extension activity.

Discussing these issues with the Vice Chancellor of Harper Adams, it was noted that applied working had been able to flourish at Harper because they were never heavily dependent upon Research Council monies and work extensively with Levy and Technology Strategy Board funds¹⁴. Nevertheless, he reports that their model is difficult to emulate simply because there is a national deficit in staff trained in applied research skills. Hence the UK is now faced with a need to retrain biologists, for example, in more applied practise. In addition, he stated that latest figures show a decreasing number of students applying for applied courses (reporting an almost 50% drop), which is going to exacerbate this critical skills gap in future.

Within Wales, stakeholders similarly felt that there was a need for new entrants to applied agricultural research. It was noted that some postgraduate places are funded via the Levy Bodies and UK Research Councils. Nevertheless, the Welsh Government could give further consideration to promoting biosciences and agricultural research career pathways through the Higher Education Funding Council Wales (HEFCW), and through mechanisms to support Knowledge Transfer Partnerships¹⁵ and Knowledge Economy Skills Scholarships (KESS) with industry¹⁶. Funding could also come from the Welsh Government's Ser Cymru initiative¹⁷

¹³ See <http://www.bbsrc.ac.uk/business/collaborative-research/stand-alone-link.aspx>

¹⁴ See <https://www.innovateuk.org/>

¹⁵ See <https://www.innovateuk.org/-/knowledge-transfer-partnerships>

¹⁶ The Knowledge Economy Skills Scholarships (KESS) are a major European Convergence programme operating through the Higher Education Sector in Wales. Benefiting from European Social Funds (ESF), KESS will support collaborative research projects (Research Masters and PhD) with external partners based in the Convergence area of Wales (West Wales and the Valleys). KESS will run from 2009 until 2014.

¹⁷ See <http://wales.gov.uk/topics/businessandeconomy/csaw/sercymruprogramme/?lang=en>

In order to secure greater funding for applied working, it was also argued that public sector institutions need to work more with the private sector given the high levels of investment that industry makes in R&D. This is occurring through TSB initiatives and Welsh Government mechanisms, including A4B, but needs continued prioritisation. Institutes such as IBERS state that a substantial amount of their funding is attained through private sector partnerships; this is an important model to emulate and nurture.

Stakeholders from across the advisory and research sectors suggested that there was a need for more pilot work and participatory research. In particular, it was argued that participatory working would help to build trust and effectively communicate the aims and outcomes of new approaches e.g. sustainable intensification, and potentially also schemes such as Glastir. It was also evident that examples of best practise such as the New Zealand Sustainable Farming Fund, had gained success through farmer-led groups taking a stake and ownership in research processes. This is also evidenced by the Pontbren group in Wales (WRO 2013) ¹⁸.

In terms of specific research objectives for applied working, the shift towards sustainable intensification was seen as a major priority by all stakeholders. Here the development of precision farming' was highlighted as one key example that would be important for future profitability and reducing environmental damage. To address the EIP aims it was also noted that we should look beyond the normal conventions of agricultural research, to consider how expertise in engineering, robotics, and the bio-economy could support agricultural productivity and sustainability. Here there will also be potential for collaborations across the other EIP networks on water and raw materials.

Looking beyond agriculture, the need for closer connections between applied working and academic knowledge production was still considered as an important priority. In the KITE programme for example, academic context and underpinning is essential to the success of project providing, via conferences and other opportunities, the means to bring the latest ideas and techniques in the industry to Wales.

4.2.10 Business drivers

Business application was raised as an important issue in terms of ensuring interest and the perceived credibility of advice. As outlined in the section on trust, relation to business can have an impact on individuals' willingness to engage and attitudes towards an advisor / other sources of information. Whilst it was evident that advisors should be independent of commercial interest, it is important to maintain a healthy interface between the private and public sector to ensure the commercial application of information. This point was raised, for example, by consultants delivering the Farming Connect subsidised services. In particular, respondents argued that higher

¹⁸ <http://www.coedcymru.org.uk/images/user/5472%20Pontbren%20CS%20v12.pdf>

quality of advisory provision was supported by utilising consultants that work across both the private and public sectors.

Similarly, it was argued that demonstration farms need to be chosen for their commercial success, to ensure the credibility and wider relevance of their work. This would also ensure that private consultancies were more willing to engage and work with these farms as key learning resources. For example, Peter Rees of Coleg Sir Gar stated that their Gelli Aur farm is respected for knowledge transfer work because it is a financially successful and therefore credible demonstration farm. This is seen to be more effective than the old animal husbandry farms, which did not demonstrate the financial aspects of the farm, only the technology. This point is supported by the success of the Monitor and BETTER farm schemes in Scotland and Ireland respectively¹⁹, which involve private businesses.

Other respondents stressed the need for environmental messages to be delivered and demonstrated by financially successful businesses in order to be credible.

“We are going after farm efficiency here, that’s the selling point to farmers. It’s not really going after just reducing carbon...it’s about trying to show that we can manage our carbon by doing the things we should be doing anyway which are our cost efficient and effective productive systems...”

(Tom Kelly: Teagasc)

It is for this reason that stakeholders also felt it was not effective to have ‘environmental’ demonstration farms because this was too divisive and there is a need to showcase how to do both food and environment together. These points were even supported by stakeholders from the environmental sector, and were seen to be critical to the success of future initiatives for sustainable intensification (as outlined in section 4.2.12). In relation to government schemes, including Glastir, advisors felt that it was not appropriate for them to encourage farmers to make decisions and / or apply for schemes which are not suitable for their economic sustainability. They stated that economic and environmental targets need to be met in synergy, and government schemes need to be designed to meet this objective.

“If you take your average Welsh farmer, if you want them to adopt some environmental enhancement scheme, then you have to demonstrate that it’s not going to have a negative impact on his or her business”

(Peter Rees: Coleg Sir Gaer)

At this point it is important to clarify that financial drivers are not the only influence upon farmers, but they are commonly acknowledged as the ‘bottom line’ in decision. Hence the appeal to, and framing of, advice in business terms is seen to be an important strategy. In this regard, a number of respondents stressed the benefits of demonstrating the value for money gained through attending a course or undertaking particular actions. This was particularly so for things that might not otherwise be associated with business benefits such as regulatory issues.

¹⁹ See http://www.qmスコotland.co.uk/index.php?option=com_content&view=article&id=720&Itemid=96
http://www.teagasc.ie/advisory/better_farms/

There was mixed feeling about the impacts of getting farmers to pay for advice. Many people reported that this created a greater sense of buy-in as farmers wanted to get value for their money. However, it was also evident that the Farming Connect subsidised services programme has also provided an important resource for those businesses that would not have otherwise have accessed private advice and were not seen to distort the market for private consultancy. Similarly the rise to 80% (from 50%) funding was well received and has been an important factor in the success of the services. This is particularly so for uptake of services by sheep and beef farmers who have traditionally been less likely to engage (compared with their dairy counterparts) in the past (SQW 2013b).

Looking at the situation in other countries, it was notable that the Irish Government pays farmers in discussion groups 1000 euros to incentivise them. This is conditional upon them having completed an attendance monitoring form; undertaking activities, such as participating in a breeding record scheme where they have to fill in online forms; and allowing the discussion group members to visit their farm (which creates a clear pressure for them to show active development). There is also compulsory profit monitor benchmarking with the discussion groups.

4.2.11 Business skills

In relation to farming, it was acknowledged by several interviewees that business skills were the hardest thing to get across; both for young farmers in college through to more established ones. In Ireland the need to improve business skills has been the biggest focus of their knowledge transfer program²⁰. They have invested a lot in this, getting advisors to go in for a day to work with farmers on all elements of their business statistics, through to providing free software packages online to support them. The support of discussion groups is also seen to be critical here, because farmers are working with a small trusted network. The benefits of benchmarking within discussion groups were evidenced across the UK (e.g. Dairy Co 2012²¹) and in wider international exemplars.

Within Wales, interviewees argued that too few farmers keep performance records (see also WRO 2012). Many farmers are seen to be reluctant to share farm specific information or to benchmark their performance, possibly out of pride and fear of failure, and interviewees suggested that a common refrain was: 'wait three years and I'll benchmark, let me get my act together first'. Although some farmers, by contrast, clearly enjoy the competitive element and find group benchmarking exercises very rewarding and motivating (WRO 2012). Overall, in light of the experiences of good practise elsewhere, it is suggested that some investment is needed to support farmers with the development of their skills in this area.

To support farmers with these skills, ICT use has increased through Farming Connect and with HCC and Dairy Co. Feedback from these stakeholders suggests that with the development of smart phone apps and the use of communication tools

²⁰ See <http://www.teagasc.ie/advisory/>

²¹ See also <http://www.dairyco.org.uk/resources-library/technical-information/milkbenchplus/milkbenchplus-report-2013/>

such as texting and twitter, it should be possible to achieve improvements in productivity, profit and efficiency. However, it was also noted that record keeping should be useful, not for the sake of it. It needs to be quick, not time consuming, and this is why mobile apps and technology can make a difference.

In addition, it was stressed that performance indicators should be measureable, practical, comparable and important to the business. Good practise from elsewhere (including the Monitor programmes) supports these points. Respondents within Wales argued that indicators have two uses, to measure where things can be improved, but also to measure where things are working. The latter is often underplayed in indicator development.

Other interviewees suggested that greater parity in benchmarking tools could help achieve a national set of targets, and further adapting and promoting publically owned resources, as Farming Connect has done with the Farm Business Survey, could help here, although it was acknowledged that different consultancies like using their own models.

4.2.12 Environmental Priorities and Sustainable Intensification

Picking up on the points made in the sections on business priorities and coherent policy (4.2.4; 4.2.11), stakeholders were unanimous in their recommendation that government departments and supporting agencies need to work together to ensure effective communication which does not create trade-offs in priorities for the environment and business. The need for greater co-ordination in government operations in this area has long been acknowledged (see e.g. Curry and Winter 2010).

Despite the clear need for synergies to be maximised, it was also acknowledged that this would not always be possible, and government should provide a clear steer on these issues. Similarly, government needs to secure areas of continued market failure (biodiversity was noted here in particular), although the private sector may be able to deliver some 'ecosystem goods and services'. A number of options are now being explored in this area, and this should be encouraged to ensure future sustainability in light of reductions in the CAP budget and public funds. Innovative co-operative ventures could be particularly important for the delivery of ecosystem benefits in coming years and these should be supported. A useful exemplar here is the Pontbren Project in Wales (see eg. WRO 2013)

Connected to this point, there is a need for more knowledge exchange on ecosystem services. There is currently a very big demand for this, particularly for NGO and Natural Resources Wales staff to ensure that they are confident with the application of this 'new' approach. In relation to emerging concepts, stakeholders also argued that sustainable intensification needs to be more clearly defined if we are going to communicate this concept to farmers:

“I think this goes for any form of education, doesn’t it? If you’re not clear about what you’re trying to say people will go away with a very confused... if you’re not clear people will lose interest” (Brian Pawson: Land Use Policy Group)

This relates to wider points about clearer communications and having a strong policy steer. However, it was acknowledged that it is not a straightforward issue:

“Part of the issue around sustainable intensification is, it’s a nebulous concept, but is it a concept that everyone ought to adopt? Or is it more a case that on some farms you need to produce more food, and on some farms we need to produce food but we also need to spend more time actually managing the environment...”

“You have to alter the meaning of the term depending on where you are, and if you are up in the uplands of Wales, sustainable intensification probably means quality products, and looking after all the ecosystem services. If you’re down in the low lands, it could mean a lot more production but having less negative impacts on your ecosystem services...”

(Brian Pawson: Land Use Policy Group)

As the above comments show, there is a need for locally specific application of this approach, and equally a more regionalised framework of research and development to work-out the practical applications that are needed. This clearly aligns with wider demands for more applied working and a more extensive network of development and demonstration farms. Dr. Julia Wright from the Centre for Agroecology outlined how a regionalised knowledge exchange network and increased levels of participatory research with farmers was central to the development of agroecological systems which have been championed internationally as a means to deliver future food security (de Schutter 2010; IAASTD 2008; Wibbelman and Brock 2011). Specifically she outlined that agroecology is a knowledge intensive approach that takes a whole systems perspective to work *with* ecological principles:

“the way a more ecological approach is characterised, they’re intensive. You could still call it sustainable intensification...but it’s intensive in terms of knowledge and complexity of the system and sometimes labour, but not intensive in chemical input. But you can still have intensive grazing systems”

In addition, she argued that agroecology is not just about small-scale growing. There are large-scale techniques such as mob grazing²² which are useful for carbon management. There are also arable examples such as UK farmer John Letts who has been growing populations of wheat, with up to 50 varieties in one field²³. These applications need to be researched and applied more in the UK as a means to ‘mainstream’ agroecology amongst conventional farmers.

²² Mob grazing is a term used to describe a system where stock are kept at far higher densities than normal but moved on more quickly - usually at intervals of anything from 12 hours up to a maximum of about a week, during periods of slow growth.

²³ See <http://www.dovesfarm.co.uk/resources/whats-new/interview-with-archaeobotanist-john-letts/>

Stakeholders from the community growing sector also saw potential to connect farmers with community growing initiatives and Community Supported Agriculture, particularly with regards to sharing local knowledge and seed varieties. This has begun to occur, and been very fruitful in some instances but the sectors are still by and large very separate.

The need to engage with a range of different approaches is particularly notable in light of the findings of the Land Use Policy Group's report on sustainable intensification (2013), which shows that it will be particularly challenging in Wales. This is because dairy and livestock producers are the least likely to achieve simultaneous gains in productivity and environmental benefits, and the industry is dominated by these sectors in Wales. Brian Pawson of the LUPG recommends that we should adapt our strategy here, focusing instead on adding value through quality products, shorter supply chains and delivering high environmental benefits.

Tying in with the need to expand our horizons of how to farm in an ecologically appropriate manner, respondents also argued that the promotion of environmental messages amongst advisory agencies should be wider than just trying to promote Glastir. As the above discussion shows, there are a wide range of options for diversification and ecologically appropriate farming which need to be pursued alongside the Glastir schemes.

4.2.13 Professional development

A further theme that emerged from the data was the need for more emphasis upon professional development within the agricultural industry and the land-based sector more broadly. Stakeholders from colleges, LANTRA and the community growing sector all highlighted that land based industries lagged behind and did not have a strong image to attract new entrants. In particular, they discussed concerns about low wages, low levels of skills accreditation and a lack of opportunities for professional development in this area.

"we've got sustainable employment opportunities and career paths but we're not actually selling that to the industry and I think there are other sectors doing a much better job at saying come and join the Police Force, come and join other career paths because they've got themselves together they're far more organised and structured and say right if you come in here you can progress to this. I think we need to show that there are opportunities, career paths and we're not just a low pay economy" (Kevin Thomas: LANTRA)

Within the community growing sector in particular, it was noted that the potential to scale-up projects and become more viable within the food supply chain was currently restricted by a lack of skills and resources in commercial food production (i.e. professional horticultural growers). This was attributed to the low wage and status of the horticultural sector.

Whilst Farming Connect has clearly started to target the question of skills accreditation within the agricultural sector, more can still be done. In relation to horticultural expertise, the situation in Wales was reported to be consistent with wider reports of a horticultural skills shortage in the UK generally. To address these issues, we need to promote career paths and professional development across the whole land-based economy.

I think that's something that I'd like to see within the next RDP - how do we develop, call it what you like professional skills framework or a CPD structure, but some way of showing the skills and ability that individuals have and showing that with those skills there are career paths

(Kevin Thomas: LANTRA)

There are some existing schemes currently in place in Wales e.g. the Heritage Lottery-funded Heritage Horticulture Skills Scheme, however more work to address the low wages and status associated with the sector will be required.

"I don't know if there are enough [skilled professional growers in Wales] and I think that is a repercussion of how horticulture as a profession has been seen for the last 20-30 years. It's been almost considered one of those lesser careers, you go and do a practical course if you're not very good at academic stuff...but it's far from that, you need serious academic knowledge in horticulture... it has been put down and it's only now I work in this job that I think actually that's shameful but also it's coming back to bite us because we don't have the knowledge-base here."

(Andrea Powell, Growing the Future).

Whilst these concerns were clearly acknowledged by a range of stakeholders, some caveats were noted. In particular, it was argued that professional development is needed to improve the image and standards of agriculture but accreditation should not be associated with further regulation and restrictions from retailers (e.g. demanding a certain level of attainment before they will buy produce).

The concerns raised in interviews were also supported in the literature. The 'Feeding the Future' report (Pollock 2013), in particular, details the need to extend training and professional development for researchers, practitioners and advisors. It also outlines a need to improve the supply of graduates and postgraduates with relevant training; and develop CPD availability across agribusiness and integrate that with existing extension activities. These later points were also raised in interviews; with advisory and higher education staff in particular outlining that consultants need to have better CPD and clearer engagement with latest research.

More broadly, it was argued that we need to make better use of graduates and training courses as opportunities for knowledge transfer across a range of audiences. A key exemplar here was the Cardiff Food Industry Centre's Knowledge Innovation Technology and Exchange (KITE) scheme²⁴ which embeds graduates as

²⁴ See <http://www.kite-programme.org.uk/>

a means to support technical innovation and improvement in individual businesses. The expertise of the graduates also draws down expertise of the Centre (professors, technologists) to apply it to the problems of the company. Other opportunities for utilising graduates more effectively include schemes such as the EU funded 'Access to Masters' and 'KESS' programme which connects students and companies. These types of programmes will be critical to continued knowledge exchange in future, and as a means to improve standards across rural regions.

4.2.14 Evaluation and programme administration

Comments from interviews and the consultation event demonstrate there is a need to adapt current evaluation processes to ensure they are more effective. This is because knowledge transfer / exchange is not being fully captured in current evaluation programmes. However, evaluation of knowledge transfer is not simple. It is not just a case of attaining responses stating 'yes I have learnt a lesson' or 'yes I did this...' There are complicated reasons why people may not change, and we need to be able to appreciate and engage with their decisions, rather than prioritising overly-simplistic evaluation for the sake of needing to monitor. In addition, it was argued that learning and innovation are long-term processes that occur in complex cycles. Therefore, we need to look beyond the impact of individual events and interventions in order to appreciate this.

A high proportion of stakeholders stressed that current metrics were not appropriate, as they were too focused around participant numbers, and did not capture what learning had occurred. Whilst a number of programmes were addressing the need for more appropriate indicators and measurements, there was a perception that EU requirements were leading to the prioritisation of quantitative outputs, when qualitative measures and broader indications of 'outcomes' may be more useful. Nevertheless, as earlier discussions around clear strategies and benchmarks suggests, respondents did agree with the need for baselines and on-going evaluations.

On-going evaluation was stressed as an important component of RDP schemes, in order to ensure they are fit for purpose. But it was also noted that greater self-evaluation and / or involvement in the evaluation process was needed to enable lessons to be learnt by stakeholders, and subsequently shared amongst appropriate networks. This was discussed as a key point in the consultation event. In particular, it was felt that whilst evaluation has been built into the project design there was not such a clear sense of what happened next. Particularly in relation to Axes 3 and 4 Schemes, it was perceived that whilst evaluation was being circulated through networks, it was less clear whether lessons were being acted upon.

In response to this issue, it was suggested that more networking and dissemination channels between LAGs would be beneficial for joint learning and sharing of good practice. Currently it was felt that the Wales Rural Network has proved ineffective as a networking mechanism between LAGs; and there would potentially be greater buy-in from LAGs if they were managing it. Whilst this point about the Rural Network clearly needs further investigation, given the relatively low number of respondents in

this area, it does connect with some key themes on networking and sharing lessons that were raised by a wider range of stakeholders.

I think there's more ownership if it's a LAG running it rather than WG. I appreciate WG are obviously administrating it and coordinating it but I think... there's been no clear Memorandum of Understanding, to say 'what is the purpose of it?' Is it for WG to learn what the LAGs are doing? Is it LAGs to learn off each other? (anon)

More broadly it was argued that 'good practise has not travelled well in Wales', with particular reference to successful projects such as Pontbren. We, therefore, need to ensure that knowledge transfer work is supported more fully for such exemplars. For this reason, it was argued that knowledge transfer should be supported across the RDP, so that all schemes and initiatives can gain funding and prioritise these activities, rather than fixing knowledge transfer as a distinct component within the wider Programme.

Other points made in relation to RDP administration centred around the need for flexibility and responsiveness. In particular, respondents from the KITE, Tyfu Pobl and Growing the Future schemes all highlighted this. For Tyfu Pobl and Growing the Future, their experiences were contrasted with previous initiatives which they had run through Axes 3 and 4 and with Lottery Funding, which had been much more pre-specified.

"We've been able to broadly say what it is we're doing without restricting ourselves so that we've got flexibility and room to manoeuvre to respond to needs on the ground... things can change quite quickly...for example because of the flooding last year and the kind of irrational weather system we've got... we can put training on to share knowledge and best practice on how groups have been dealing and tackling with increased rain and flooding...we may not have thought of that at the beginning but we've got that flexibility to go, okay, that training would be really useful right now, let's put that on. So we've been able to be responsive" (Katie Jones: Tyfu Pobl)

For the KITE scheme flexibility was discussed in relation to the need to adapt the scheme to fit the business rather than the business to fit the scheme. In other words, KITE has been set up to be responsive to what the business customer needs rather than prescribing what they have to do and how. Their ability to do this through the current funding arrangement was seen as an important strength. The KITE scheme is also designed to be very output focused. Monitoring is, therefore, essential - with the programme structured to be adaptable and responsive, driven by individual projects (company partnerships) such that if improvement is not observable then the programme is reviewed and amended.

A final point made by respondents was that innovation inherently involves risk, and this needs to be permissible if we are going to support the advances required. Associated with this point was the need to learn from our mistakes, rather than

burying them; again reinforcing the importance of effective evaluator frameworks and knowledge sharing networks.

SECTION 5: RECOMMENDATIONS AND CONCLUSIONS

*Recommendations are not in an order of priority

1. Policy makers and practitioners should add-value to the RDP by supporting greater cooperation, collaboration and co-ordination across and beyond the Programme. This will also serve to support the function of the EIP as a knowledge sharing network.

- There is a lot of talent, expertise and resources in Wales, in relation to agricultural research and extension services, and wider rural business development; but it is fragmented and sometimes unnecessarily competitive.
- It is necessary to provide further integration of fragmented elements of the advice and delivery mechanisms. This will include support for effective platforms for communication and collaboration between key actors, such as Farming Connect, the Levy Bodies and Higher / Further Education colleges.
- There is a wide array of actors who are involved in providing advice to farmers and rural businesses. It is important to ensure coherence between their messages and make best use of individuals who have regular contact with farmers and rural businesses to communicate key messages. (for example, see RELU's Landbridge).
- A co-ordinating and capacity building approach is an effective way to gain wider coverage and impact; as demonstrated by the Tyfu Pobl scheme and PLANED, who have achieved success by focusing on knowledge brokering and facilitation.
- Working with the private sector, a culture of co-operation could be nurtured through the RDP by supporting platforms for pre-competitive co-operation, such as 'Farming Futures'. This could help to address question of public good such as carbon reduction, soil health and animal welfare.
- There is potential to link up with cross-border partners (e.g. the Agricultural and Horticultural Development Board and Further Education colleges), as we face similar challenges and many useful resources are hosted in England.

2. Knowledge *exchange* should be used as the guiding principle for learning, information sharing and innovation within and across the RDP and EIP.

- Knowledge exchange promotes the principle that advisory and support services are enabling and empowering processes. It is also more effective for engaging people, and enables the development of more appropriate knowledge that is better connected to peoples' needs.
- This can be practically mobilised through participatory research and using a range of approaches in the provision of extension, including discussion groups and peer-to-peer learning. Effective communication and evaluation channels are also critical here (in line with other recommendations made).

3. Trust is essential for effective knowledge exchange and innovation; ensure it is there from the start and continues to be nurtured through-out.

- Building trust and social capital takes time and requires continuity.

- Avoid short term contracts for the provision of long term services and/or try to maintain continuity between contracts, in both branding and the individuals involved. Otherwise, there is a danger of losing skilled staff and their knowledge base as well as creating a breakdown in trust with the target audience.
- Stakeholder feedback demonstrates that many RDP interventions are not self-sustaining without continued public funding. Stakeholders and Government should reflect on how funding gaps or 'exit strategies' can be managed.
- Make sure that interventions build on best practise. Take care not to reinvent or alter things that are working well, as this breaks trust.
- Use local actors who are well known and connected with the target audience whenever possible. Equally, the perceived credibility and legitimacy of knowledge sources and actors involved is critical to their success. Here we need to be aware of 'circles of trust'. Peer-peer and one-to-one learning is useful, as well as working with targeted groups who have a shared sense of identity / interest.

4. The guiding principles for the development and implementation of the RDP and Welsh Government rural policy should be clarity and coherence.

- The Welsh Government should set a clear and coherent strategy for rural development and the land economy in Wales. A clear direction of travel and well defined targets are currently lacking, and will provide a focus to unite the agricultural and land-use sector.
- Coherent policy is particularly important to ensure the delivery of sustainable intensification in the agricultural sector.
- The Welsh Government should clearly set out the function, objectives and how the EIP will operate to the appropriate audiences within Wales, in order to ensure that it is accessible and comprehensible.
- Use reinforcing and repeated messages and actions.
- In order to simplify access to RDP resources, a single portal would be useful for some aspects of delivery. This would not be exclusive, so schemes and grants can be accessed independently, but a central access portal could provide sign-posting and advice for those who need it.
- Ensure adequate signposting across the spectrum of available business advice so beneficiaries are made aware of appropriate services. Clearer information and signposting for government schemes is also needed. The Glastir schemes have suffered as a consequence of weak communication.

5. Communication should be adapted to acknowledge difference in regional / local contexts; audience typology; and learning styles.

- Using a range of techniques under one programme, from one-to-one advice and mentoring through to group learning, has been successful in previous iterations.
- It is important to use appropriate language, both in terms of accessible terminology and jargon, and providing Welsh language provision.

- The public and private sector work through different channels and forums, so it is important to engage them both appropriately.
- Exchange of specialist knowledge is important to attract and retain audiences; individuals want to work closely with similar business types to advance and exchange knowledge.
- One-to-one advice and mentoring is often more appropriate when individuals are not confident, or uncomfortable discussing sensitive information (e.g. financial or personal) in a group context. It can also enable a more tailored approach.

6. Knowledge transfer/exchange is most effective through visual and applied methods. This principle should inform individual interventions and wider funding strategies for supporting demonstration sites and programmes that stimulate applied and active knowledge exchange.

- Whilst individuals have different learning preferences, and text-based material remains popular, those engaged in the land-based economy are often kinaesthetic learners.
- RDP investment should be used to support and expand the existing network of demonstration and development farms across Wales. These can be run in partnership with Further and Higher Education Institutes and private sector commercial farms. This will fit with the EIP operational group structure and links to the Horizon 2020 research priorities.
- RDP monies should support study visits to these sites and others further afield across Europe and internationally; this would support the proposed information exchange model for the EIP.

7. Greater emphasis and support is needed for applied research within agriculture and sustainable land management.

- There is a shortfall in applied research created by the current prioritisation of basic science, which needs to be addressed to meet the aims of the EIP (to increase agricultural outputs and reduce environmental degradation).
- This objective can also be supported by providing RDP support for more regional demonstration and development work (outlined above). Developing locally appropriate solutions through such a network is also critical to meet the goals for sustainable intensification outlined by the EIP.
- This will require partnerships and match-funding with Higher and Further Education Institutes and the private sector; particularly as industry invests substantially in applied work through R&D.
- This should include demand driven and participatory research that works with a range of actors, within and beyond supply chains, who are involved in all stages of the research from commissioning through to dissemination (see for example, New Zealand's Sustainable Farming Fund, RELU in the UK and the Pontbren Project in Wales).
- There is a need for greater levels of interface between academics, advisory professionals and farmers, across Wales, in order to exchange information about research priorities and disseminate findings. This will ensure that

research is commercially applicable. The EIP operational groups could be used to enable these knowledge exchange meetings.

- The Welsh Government should provide political support for knowledge exchange as a key priority for UK Research Councils.
- Funding for applied institutes needs to be restored in order that expertise and professional development can be reinstated in this area. This could be done in part with core funding (see e.g Teagasc in Ireland). Ser Cymru could also support an applied approach to address the skills shortage in this area.

8. Policy makers and practitioners need to work with business priorities to create greater incentives for knowledge exchange and innovation.

- It is important to present a good business case to 'sell' information and raise awareness of the return on investment for participation in different initiatives. This is particularly useful when communicating material on environmental and regulatory issues, which beneficiaries may otherwise be less inclined to engage with.
- Whilst paying for advisory services can be useful to create participant 'buy-in', past experience in Wales demonstrates that subsidisation of services is necessary to maintain uptake.
- To ensure effective use of public money, there is potential to attach conditions to the receipt of advisory services, such as requiring farmers to undertake training, business planning, or participate in benchmarking.
- Benchmarking is essential for raising standards and incomes within the land economy. Whilst it has been promoted through the current Programme, it needs to be taken forward as a means to proactively develop business and record-keeping skills. Benchmarking and performance indicators need to be easily measurable, practical, comparable, useful and quick.

9. There needs to be a greater prioritisation of professional development within the land economy, in order to raise the status and standards of the sector and provide more attractive employment prospects.

- The rural and land based sectors currently lag behind other areas of industry in terms of professional status and opportunities for career development.
- The enhanced professional status of the land-economy should connect with wider rural development strategy and be supported by a strong message from Government on the potential of rural areas as key sites for the future of the Green Economy.
- We need to make better use of graduates within Wales to raise standards across industry. This can be done through initiatives such as the Food Industry Centre's KITE scheme, and through the conduct of more applied and participatory research programmes.
- There is a need to promote training, Continuing Professional Development and professional support networks amongst land economy professions and advisors. This could also be used to speed up the rate of knowledge transfer from research to industry.

10. Current methods of administering and evaluating the RDP need to be adapted to ensure a more flexible and responsive Programme. This should embed a better framework for evaluating knowledge exchange and ensure more effective learning across and between Programmes.

- Knowledge exchange needs to be supported across the RDP and not restricted to a specific pot within the Programme.
- There is no clear framework currently in use for evaluating knowledge exchange and innovation within the RDP.
- Current metrics centred on measurable outputs, such as numbers of participants, have not effectively captured what learning has taken place or how effective knowledge exchange has been. A focus on *outcomes* may be more effective. Soft knowledge and subjective indicators are appropriate and already being used to measure outcomes in some initiatives.
- Learning and innovation are long-term processes that occur in complex cycles. Therefore, we should not delimit evaluation to individual events or interventions. However, outcomes should be defined and benchmarks established in order to compare changes and outcomes over time.
- Innovation involves risks and sometimes failure, which should not be penalised if a culture of innovation is to be effectively nurtured in Wales.
- It is important to ensure that flexibility and on-going evaluations are built-in to the RDP specifications.
- Current evaluation is often conducted in a way that does not foster ownership or inclusion of the participating groups; some element of self-evaluation should be present and on-going.
- The sharing of learning and best-practice across different schemes and initiatives is not currently effective. Improving the process of evaluation as outlined could improve this, but equally a central portal and/or network for knowledge exchange is needed to work to this end. There is a potential role for both the Wales Rural Network and Farming Connect to contribute in this regard.

11. There needs to be a shift in mind-set to ‘focus on the problem not the funding pot’.

- Activities with the rural sector are often defined by their multifunctionality and associated potential to connect across agendas for social well-being and cohesion, and economic and environmental prosperity. This clearly demonstrates the importance of thinking beyond silos and administrative divisions.
- We should not limit ourselves to thinking only within the parameters of the RDP to address areas of need. Instead the RDP provides an opportunity to tackle Welsh specific problems in a pro-active manner. So we should look to the ways in which the RDP can work with and add-value to other areas of funding and private investment.

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APPENDICES

Stakeholder Interviews Completed

Name	Organisation
Peter Davies	Sustainable Futures Commissioner Chair – Rural Development Plan 2014-2020 Advisory Group
Alistair Davies	Welsh Government: Head of Innovation Policy
David Lloyd Thomas	Welsh Government: Lead – Agri environment, Climate and Forestry Work group
Neil Howard	Welsh Government: Lead – Competitiveness of Agriculture, Supply Chains and SME's work group
Prof. Nigel Scollan	Institute of Biological, Environmental and Rural Sciences (IBERS)
Sion Aron Jones	Hybu Cig Cymru
Delyth Davies	Dairy Co: Head of Dairy Development Wales
Shaun Russell	Wales Environment Research Hub
Peter Rees	Coleg Sir Gâr: Vice Principal
Kevin Thomas	LANTRA
Prof. Wynne Jones	Chair of Farming Connect Strategic Advisory Group
David Lloyd	UWIC's Food Industry Centre: Cardiff Metropolitan University (KITE Scheme)
Bill MacDonald	Welsh Government: Forestry and Environment Policy and Programme Manager & Forestry Commission
Brian Pawson	Countryside Council for Wales and LUPG

Eirwen Williams	Menter a Busnes & Farming Connect
Dewi Jones	Deeside College: <i>Farm Manager</i>
Steven Bradley	PLANED (Pembrokeshire LAG) & Glastir Commons Development Officer
Tom Kelly	Teagasc: Head of Knowledge Transfer
Bill Slee	James Hutton: FP7 Farmpath & Evaluation of SRPD
Julie Ingram	CCRI: FP7 SOLINSA Project
Katie Jones	Tyfu Pobl
Andrea Powell	Growing the Future: National Botanic Garden
Julia Wright	Deputy Director Centre for Agroecology
Jayne Powell & Tony Little	Organics Centre Wales / FACE / RCE-ESD
Philip Lowe	RELU Landbridge
David Llewellyn	Harper Adams
Stuart Perry	Agri-Plan Cymru Consultancy Services

Stakeholder Event Attendees

Bob	Stevenson	Raglan Veterinary Centre
Rhian	Nowell-Phillips	FUW - Aberystwyth
Terri	Thomas	WG - Welsh Government - Cardiff
Nigel	Bowyer	RE & EA Bowyer
Sue	Buckingham	N Pearson & D Owen
Phil	Chappell	Vale of Glamorgan County Council
Thomas	Allison	JD, CMM & JM Allison
Nick	Davis	TS and CHT Davis
Rita	Jones	WG - Welsh Government - Cardiff
Becky	Hughes	Adventa
Sion	Jones	Hybu Cig Cymru
Iestyn	Jones	Welsh lamb & beef production ltd
Karen	Stothard	WG - Welsh Government - Cardiff
P	Chappell	Creative Rural Communities
David	Probert	DW Probert
David	Jones	Jones Farm Account
Gary	Douch	WG - Welsh Government - Aberystwyth
Einir	Davies	Davies Bros.
Martin	Jardine	Coleg Menai
Brian	Pawson	Countryside Council for Wales
Richard	Lewis	Glyndwr University
Olwen	Thomas	Menter a Busnes
Siŷn	Roberts-Davis	Lantra Wales
Edward	Perkins	Edward Perkins
Nigel	Ajax-Lewis	The Wildlife Trust of South & West Wales
Rebecca	Beaumont	RA Beaumont
Angela	Davies	A B Davies
Dylan	Bradley	Agraceas
Berkeley	Hill	Agraceas
Katie	Jones	Federation of Community Farms & City Gardens
Kevin	Thomas	Lantra Wales
Jonathan	Pike	J Pike
Kristoffer	Murphy	Kris Murphy, Perrotts
Mike	Thomas	Mike Thomas
Joey	Hughes	WG - Welsh Government - Cardiff
Keri	Davies	KH & J Davies
Wynne	Jones	Farming Connect Carmarthen
Mike	Shaw	Ceredigion County Council
David	Morris	WG - Welsh Government - Cardiff

Liz	Thomas	Monmouthshire County Council
Sally	Shiels	C.S. Powys C.C. - Builth Wells
David	Merchant	T & D Merchant
Sidney	Jones	SB & RE Jones
John	Griffiths	Coleg Sir Gar
Delyth	Davies	Dairy Co.
David	John	Future Farmers of Wales
Peter	Rees	Coleg Sir Gar
Bill	MacDonald	Forestry Commission Wales
Cath	Godfrey	C Godfrey
Rhodri	Thomas	Cynnal Cymru
Huw	Rees	Improve Ltd
Helen	Williams	WG - Welsh Government - Cardiff
Robert	Whittall	EH & KV Whittall & Son
Hefin	Jones	V E and H B Jones
Dorian	Davies	WG - Welsh Government - Aberystwyth
Steven	Bradley	Planed
Rhiannon	Hardiman	Bridgend County Council
Bob	Merriman	Cyfoeth Naturiol Cymru
Dewi	Jones	WG - Welsh Government - Cardiff
Neil	Blackburn	Kite Consulting
Nia	Thomas	Wales Environment Research Hub
Stuart	Perry	JL & TWE Jones
Arwyn	Watkins	Cambrian Training Company
Daniel	Impey	GW and FM Jones
Tony	Little	Organic Centre Wales
John	Davies	Food Centre Wales
Mike	Bacigalupo	WG - Welsh Government - Cardiff
Catrin	Downes	TD & JE Downes
Ionwen	Lewis	Women's Food and Farming Union
Dafydd	Jarrett	NFU Cymru
Brian	Lane	BK Lane
Don	Thomas	Welsh lamb & beef production ltd
Lisa	Pughe	RA & SA Roberts
Eirwen	Williams	Menter a Busnes
Ian	Lewis	IA Lewis
Gareth	Wilson	WG - Welsh Government - Cardiff
Ryan	Davies	WG - Welsh Government - Cardiff
Cate	Barrow	ADAS
Patrick	Green	Forestry Commission Wales
Nerys	Jones	Messrs TA Jones
Ian	Jewell	Improve Ltd

Key Stakeholders Interview Schedule

This is a semi-structure interview schedule and the following questions are used as a framework for discussions – specific lines of questioning have to be adapted during the interview to respond to the points / context of the respondent's replies.

- How are you / your organisation involved in KT and innovation within a rural economy context; details of specific projects / networks that they work with(in):

*Aims and objectives
Beneficiary / target groups
Outcomes / outputs
Partners
Funding*

- In your experience, what do you think are the most important factors in achieving successful KT and innovation in the rural economy?
- Exemplars of best practise within or beyond Wales?
- How do we measure success / determine how effective KT / innovation programmes are?

Has your organisation undertaken any evaluation exercises of the KT / innovation activities they run / are involved in? Are these available?

- Do you think there is anything distinctive we need to consider about a rural context, or indeed the Welsh context, when applying more generic evaluations of KT and innovation?
- What would you recommend as the key priorities for developing successful KT / innovation in the next RDP programme and the European Innovation Partnership?

Ask explicitly about the challenges of sustainable intensification.

- In terms of funding / support provision, should there be any pre-requisites or conditions attached?
- Do we need to focus pre or post-farm-gate in terms of KT and innovation?
- Where/when should non-RDP (including non-government) support be used instead / to compliment RDP activity?
- Are there any opportunities or gaps which you feel are currently under-utilised?
- What are the main problems and barriers that you perceive with the current situation? How would you tackle these?

Stakeholder Event Feedback

Session 1: Identifying what works well & things that need be changed in existing programmes and initiatives.

This was a rapid brainstorming activity where points were listed and prioritised. The chart shows the number of times a point was listed by different groups.

What Works	
Trusted Source / Knowledge Broker – build relationships	IIIIII
Knowledgeable professionals	II
Mentoring	III
Good facilitation	II
Bespoke / Specialised Delivery – dairy / red meat / YES	IIII
Discussion Groups & peer-to-peer eg. Agrisgop	III
Demonstration Farms & Open days	III
Farmer Champions	I
Networking – sharing best-practise	I
Agri-academy	I
Trusted Brands eg. Farming Connect	IIII
Support / gateways to further training eg. legislation training	II
Local Links	III
Complimentary programmes & signposting across programmes	IIII
Sharing funding (adding value) and info eg. Levy and RDP monies.	III
LEADER's model of fostering innovation	III
Financial incentives eg. link access to funding to promote behaviour change (ACRES)	I
Easy access to information – eg. levy body schemes texting farmers / internet portals on market intelligence, genetics etc.	IIII
Clarity & Strong messages – eg. Irish Dairy Strategy	I
Flexibility & adaptability eg. Supply Chain Efficiencies Scheme	I
Food Centres & Rural Hubs (good potential but could be better)	II

What Needs to Change

Need for applied research – the link between farmers and research	IIII
Better KT from existing research	II
Need development farms – experiments on working farms (loss of CALU and development centres negatively affects this)	IIII
Too much focus on ‘innovation’ – not basic level / small step improvements	II
Good practise doesn’t travel eg. Pont Bren	I
Not enough Professional Development – eligibility for training	III
Need to be able to take risks in order to innovate	III
Bureaucratic / funding barriers – eg. levy body match funding issues.	I
Continuity / Length of contracts / funding	IIII
Focus of Evaluation – not learning lessons - Need to evaluate real outcomes and results – not ‘bums on seats’	IIIIII
Be outcome-oriented – less prescriptive	I
Simplification / single information portal / delivery body	IIII
Inconsistent communication – too many conflicting messages	III
Too many parallel programmes – duplication – not joined up enough	III
Need stronger links with the private sector	II
Glastir – poor intro – need better training for consultants and farmers & more connection between Farming Connect and Glastir	III
Poorly trained facilitators	II
More cross-border sharing of info with agencies –eg. AHDB	I
Package EU requirements around recipients needs	II

Session 2: Evaluating the problems identified in the morning & designing potential solutions.

Each group was provided with a question taken from the points raised in the first session.

To aid evaluation, facilitators were asked to prompt the groups to identify barriers /gaps with:

- How knowledge is transferred – processes, methods and techniques;
- What knowledge needs to be transferred to address EU priorities
- Who is involved – effective networks and trusted individuals?
- Resource and capacity factors

To design solutions by:

- Encouraging cross-sector thinking
- Approaching problems from new angles

Evaluation and solutions are listed separately – although evaluation was not always detailed.

How can we make better use of private sector connections and add-value to RDP provision?

Solutions:

- Avoid competition between public and private sector
- Better use of public sector institutions and connections eg. Universities, Dairy Co.
- Let farmers know what's out there (University R&D) stepping stones to farmer: HCC Scholarship, Farmer Champions, Study Tours.
- Farmers relate better to those they work with on a regular basis – work with peer groups.
- Work alongside trusted groups
- Farming Connect is a One-Stop Shop (overall brand brings everyone together) – need same for food processing sector.
- Need to look outside Wales – stronger networks (develop thematic groups) eg. Grassland Societies, Harper Adams...
- Incentivise the private sector
- Targeted and planned approach rather than generalist
- Make better use of graduates - Improve graduate employability

There is not enough applied research

Evaluation:

- No funding for applied research
- Only high-end research focused on publishing papers gets recognition
- Can't use Levy funds to match EU funds for applied research

Solutions:

- Need Agri' Colleges and academic institutions to deliver – and colleges get more involved in the KT.
- Identify and use farmers for research activity
- Farmer involvement using 3rd yr sandwich students to participate in research
- Need a strategic plan for Welsh Agriculture to set out applied research requirements and how it will be delivered.
- Communicate with supply chain to identify innovation/ new product requirements

Not enough on-farm technical advice and demonstration farm facilities across Wales.

Evaluation:

- Existing demo farms cannot be truly experimental / innovative as they have to attend to business viability.

Solutions:

- Potential for gov' run farms: Pwll Peiran
- Establish a demo farm network – leveraging in private sector monies too.
- Need to involve commercial partners in demo farms to promote uptake of new tech' – currently a big difference between demonstration and innovation.
- Organisations need to work better together (working smarter) – good eg. Dairy Co and EA slurry storage doc.
- Farming Connect could become more of a conduit between farmer and experts
- One-off open days on farms linked to innovative practise / investment
- Look at previous (historical) network of college demo farms
- Lessons from Eire and Scotland – similar to 'old' ADAS model – core funding from WG would eliminate RDP cycles disruption
- 2 way feedback: Knowledge Exchange

Not enough effective KT from 'concept proofing' research across the land-use economy (including forestry and other rural businesses)?

Evaluation:

- Patents and intellectual property inhibit KT

Solutions:

- Need to learn more from existing examples – eg. Moor Park
- But Q. how transferable these ideas are – need for local / regional proofing
- Increase awareness of funding mechanisms for 'proof of concept' (BETS)
- Industry drives this – but doesn't feed through to rural population
- Farming Connect needs faster links to 'proven' concepts
- Match-funding – ensure ownership and control

Lack of community capacity in many areas– it is often only key individuals that drive projects forward.

Evaluation:

- Fragmentation and isolation
- Lack of sharing and co-operation
- Lack of initiative and empathy
- 100% funding is not always effective / sustainable

Solutions:

- Focus on communities of interest not geographic area
- Use social networking
- Ensure sufficient advice and grant funding for groups
- Open innovation models and rewards – smart specialisation (EU)
- Bring key individuals together
- Use technology – broadband

Continued persistence of a low skills-low wage economy. The land-use economy lacks professional status and career development opportunities.

Solutions:

- Need to be multi-disciplinary, and media / marketing savvy
- Need more links – precompetitive engagements - with YFC, Universities, Vets...
- Need continuity / branding
- Professionalise KT community
- Use trusted sources
- Recognise learning styles
- Acknowledge / recognise skills and competencies with qualifications
- Pull all training providers together (LANTRA, ATP, Colleges) – too fragmented
- Up-skill people to work across sectors and encourage employers to train staff
- Address new skills gaps – eg. renewables
- Capture skills of ‘returners’ to Wales
- NESTA type approach
- Link funding to KT – incentivise training
- Need to up-skill wider rural population – not just farm sector – need support beyond Farming Connect.
- Need more ‘courageous’ evaluation

Key concepts are hard to communicate and there is lack of clarity and consensus over meanings: eg.

Sustainable Intensification. & continued tensions here between ‘Sustainability’ and ‘Intensification’.

Solutions:

- Agree clear definition using a balance of environmental, social and economic indicators
- Agree *measurable* indicators
- Find / focus on synergies – be positive
- Use Farm Advisory Service – to ensure KT / uptake of tools available to farmers: for productivity gains, grass utilisation etc.
- Market the profitability gains to producers
- Use supply chain efficiencies to support delivery?
- Support / trial alternative production methods
- Better interaction with researchers from institutions such as IBERS
- Learn by doing – using farmers’ own records, benchmarking etc.
- R&D on emerging diseases, climate change
- Ensure we are getting the most out of AES investment
- Make sure ALL farmers have opportunity to access funding
- Ensure Pillar 1 payments support sustainability goals

How can we share learning more effectively within existing networks?

Solutions:

- Use innovative & multiple methods of communication: text, twitter, TV, websites...
- Combine messages eg. tractor event and carbon reduction, flooding and soil...
- Carrot and stick
- Farmers attending events get a top-up on SFP eg. Eire £1000 bonus for KT participants
- H&S attend events to get accreditation
- Capitalise on current period of change – need for new knowledge eg. climate change
- Applied and demonstrated results
- Quota of money for event / network organisation
- Set-up information hubs using existing networks
- Wales Rural Network more joined-up and with wider contacts (EU)
- Learn best practise from elsewhere – Germany, Holland, NZ, Oz
- Measurement of success is important –industry changes, messages of consequences, cost saving...

There is a lack of continuity and signs of fragmentation within existing advisory programmes.

Evaluation:

- Contract renewal problems
- Too many silo'd bodies eg. LEADER
- Farmers / beneficiaries unable / willing to travel – need multiple events
- Contracts do not stipulate clearly enough to avoid duplication eg. farming factsheet duplications / errors.

Solutions:

- Capacity – build-in % of budget to cover overlap
- Central catalogue / information portal of activities
- One co-coordinating body overseeing KT?
- Client management systems – new social media technology
- Lack of direction in the industry – clearer strategy

SME's struggle to gain market advantage & access technology transfer.

Evaluation:

- Advice signposting is inadequate
- Banks don't provide business advice
- Culture: Farmers ruled by the heart not their head.
- SME's do not do enough market research or business planning

Solutions:

- Possible need for a single business advice system?
- Loan guarantee needed or combo of grant and loans
- SME success is in small improvements NOT massive innovation
- Need hand-holding for growing businesses AND start-ups

SME's that do succeed often do not remain in rural locations. A footloose economy is not beneficial for rural resilience.

Evaluation:

- Transport costs
- Lack of Skills base
- Poor broadband provision
- Lack of strong brand/ business identity
- Planning issues
- Alternative / novel business systems have difficulties in accessing finance

Solutions:

- Rural proofing essential in relation to business regulations
- Competitive incentives needed
- Innovative approach to business – community ownership / co-ops
- Potential for using local hubs as centres for business

Low uptake of farm diversification strategies and WG Glastir schemes.

Evaluation:

- Lack of clarity on opportunities available
- Need more information

Solutions:

- Better communication and the right people to do this (trusted)
- Need for credible advice and long-term planning
- Need for better business planning as part of schemes
- Acknowledge that core businesses need to be strengthened as a priority – not weakened further by spreading energies more thinly (diversifying)
- Need better integration of policy with KT and implementation
- Need to ensure schemes are fit for purpose - credibility

Session 3: What do you want to see for the KT and Innovation elements of the next RDP and EIP?

Delegates were given time to discuss and then top 2 priorities from each group were fed back in a plenary. Additional comments were then added by Peter Davies in a final closing speech summarising the day.

This plenary discussion was recorded and then transcribed.

Knowledge Exchange

- Focus on lateral transfer and co-development of knowledge not just top-down from experts. This is better for engaging people and ensures more appropriate knowledge is mobilised, which is better connected to peoples' needs.
- More applied research.
- Apply learning from existing schemes / experiences – too much is lost and lessons not learnt.
- Address tensions between agendas for competitiveness and need for collaboration. Need to share knowledge to ensure competitiveness and effective R&D.

Continuity

- Start from what we already have and build on best-practise from previous schemes.
- Avoid disconnect from contract to contract. Have contracts longer than 3 years.
- Acknowledge what we do well and exploit these ideas.
- Use trusted brands
- *But* ensure vested interested do not create inertia – continuity is good, but needs to be justified by robust evaluation. Some change is required to create improvements.

Clarity

- Use clear and consistent messages
- Streamline information – use one point of contact for different advice and funding as there is too much information, fragmentation, and duplication at the moment.

Confidence & commitment

- Develop a clear vision and long term policy objective –eg. Irish Harvest 2020.
- Believe in ourselves more
- Provide strong leadership
- Commit to address complex issues that are hard to communicate – eg. sustainable intensification.

Integration and Value-added

- Strengthen existing partnerships
- Make better use of existing programmes / hubs to ensure faster and wider exchange of knowledge transfer.
- Use knowledge brokers as portals / sign-posts to more specialist knowledge
- Use lean-thinking – promote integration and multi-disciplinarity.
- Make more effective use of public resources – join-up and maximise value from connected areas such as Universities and NGO's.
- Realise opportunities for better connections with industry and retailers
- Collaborate more across interest-groups (not always place based)
- Make better use of professional bodies and networks eg. RELU Landbridge.
- Connect with other policy priorities and maximise synergies.
- Use broadband effectively to support learning and innovation
- *But* ensure targeted / sector-specific support – to deliver appropriate knowledge and maintain credibility.

Demonstrations

- Develop more small-scale trials – more people involved creates greater impact and learning
- Widen network of demo' farms using agricultural colleges and more one-off events to share innovation on farms.
- Ensure long-term investment in demonstration *and* development sites – eg. Moorpark

Human Capacity

- Develop *people*
- Build on trust and confidence – this takes time!
- Support opportunities for mentoring and one-to one support
- Bring farm(er)s and communities closer together – CSA's; FCFCG
- Build on community hubs and use these as a connection point
- Create better professional development opportunities in the land-use sector

Evaluation and Monitoring

- Innovation requires risk and sometimes failure. Need to make this possible in funding and auditing terms.
- Better evaluation focus – on lessons learnt and impacts rather than current audit indicators

Good Practise from Elsewhere

Table lists exemplars of good practise from elsewhere (i.e. these exemplars were raised in interviews and/or derived from the literature review).

Country / Region	Exemplar	Web-link / Reference for Supporting Information	Reason for recommendation
Ireland	Teagasc BETTER Farms	http://www.teagasc.ie/advisory/better_farms/ http://www.teagasc.ie/advisory/better_farms/	<ul style="list-style-type: none"> • Clear strategy, strong government lead and central funding. • Well integrated research and demonstration network with discussion groups (Better Farm Network). • Technology focused advisory service. • Strong benchmarking programme and prioritisation of business skills development
Scotland	SRUC Monitor Farms	http://www.sruc.ac.uk/ www.gmscotland.co.uk/monitorfarms/	<ul style="list-style-type: none"> • Clear national integration of research and higher education institutions to support policy making and industry. • Well-embedded network of Monitor farms with high levels of farmer participation – strong sense of ownership and commitment to programme. • Good use of base-line indicators and business monitoring provides strong evidence of change – which is important for communications.
New Zealand	Monitor Farms Sustainable Farming Fund	SQW 2013a http://www.landcare.org.nz/Projects/Sustainable-Farming-Fund	<ul style="list-style-type: none"> • Strong Monitor farm programme – see points from Scotland above regarding use of indicators and having a

			<p>participant-led network</p> <ul style="list-style-type: none"> • Sustainable Farming Fund supports communities of interest to come together and conducted research, development and on-farm change. • Participatory research and practical demonstrations are critical tools for knowledge transfer.
Netherlands	Farmer Study Clubs	Klerkx and Leeuwis 2009	<ul style="list-style-type: none"> • Group work can change social norms and create collective impetus for change. • Issue led study clubs provide greater motivation for farmers to participate. • Farmers gain confidence to experiment and participate in cycles of continuous learning through study clubs.
England	<p>RELU Landbridge</p> <p>ADAS Integrated Advice Pilot</p> <p>Demonstration Test Catchments</p>	<p>http://www.relu.ac.uk/landbridge/index.html</p> <p>http://www.adas.co.uk/Home/Projects/IAP/tabid/349/Default.aspx</p> <p>http://www.demonstratingcatchmentmanagement.net/</p>	<ul style="list-style-type: none"> • Addressing fragmentation in advisory services and creating a platform to support more effective use of knowledge brokers • Addressing problems of disparate and conflicting advice provision. • Exemplifies the importance of demonstration sites and farmer-to-farmer communications.
Denmark	Danish Agricultural Advisory Service	<p>http://www.vfl.dk/english/english.htm</p> <p>http://www.fao.org/docs/eims/upload/277058/Denmark.pdf</p>	<ul style="list-style-type: none"> • Clear strategy, strong government lead and central funding. • Strong agricultural

			<p>research system.</p> <ul style="list-style-type: none"> • Strong culture of professionalization and continuous learning amongst Danish farmers. • Strong co-operative sector.
EU	GAP 2 Fisheries' Governance Research Programme	http://gap2.eu/	<ul style="list-style-type: none"> • Created effective forums to bring stakeholders and scientists together to solve problems.

