
Woodland management in Wales

Recent research and implications for policy

Prepared for the Wales Forest Business Partnership

Rob Marsh

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Rob Marsh Woodland Services Ltd



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Introduction

The people of Wales benefit hugely from its woodlands and forests. From the quality of water and the beauty of the landscape, to world-class mountain bike trails, to jobs in sawmills and the building industry. But the amount of benefit we get from woodlands depends on how well we look after them.

This study has looked at 22 papers, including 10 Forestry Commission Wales (FCW) Policy papers, about various aspects of woodland management and timber production in Wales. All of the documents were published in the last seven years. The aim has been to provide a summary of recent research specific to Wales, in the context of a period in which Welsh forestry is facing substantial changes to its actual environment, and to its political and administrative environment.

The study is presented in three sections:

1. The Discussion section gives an overview of the way in which aspects of woodland management and the timber industry are related. The papers included in this study have covered many topics: the intention here is to draw the various findings together and present them in a coherent and readable format. We have tried to give as balanced a picture as possible, but inevitably this has been a subjective process. It is hoped that this section will inform wider discussions. Readers are encouraged to look at the original documents as well as this commentary.
2. An overview of the topics covered by the various papers, broken down into subject headings. This section is accompanied by a spreadsheet “matrix” of study contents.
3. A précis of each of the studies, giving a summary of their methodology and main findings. This includes brief comments on the context and policy background, with particular reference to private-sector woodland management.

Discussion

Many woods in Wales are well-managed, healthy and productive. But in some cases, the picture is bleak: a lot of farm woodlands are neglected, and some are gradually disappearing. Many of our commercial plantations are under-managed, meaning not only that they yield less timber, but that they provide a poorer habitat and are less resilient to the impact of pests and diseases. These woodlands contribute less to the economy, and miss opportunities to substitute renewable resources for fossil fuels and embed carbon in timber products.

Timber processing industries in Wales – which are crucial to sustainable woodland management – are heavily influenced by cheap imported timber. It's difficult to assure timber growers that there will be a market for their produce that will cover the costs of management. It's equally difficult to assure timber processors that they will be able to rely on an adequate supply of good-quality Welsh timber at the right price. There can be real problems finding well-trained contractors with the right machinery to manage the woodlands properly.

A time of change

Pests and diseases are now having a serious impact on Wales' woodlands. 16% of our conifers are larches, seriously threatened by *Phytophthora ramorum* disease. A major component of Wales' broadleaf woodland is ash, and it is possible that much of this will be wiped out by *Chalara fraxinea* in the next decade. Several important pine species are affected by *Dothistroma* needle blight, so severely that it is unlikely that they will continue to be grown commercially in Wales.

Experts are warning that climate change will exacerbate the impact of pests and pathogens in coming years, as well as substantially altering the range of tree species which can be grown here and the rates at which they grow. Silviculture is changing in Wales, because it has to. But it's not just the natural environment that is changing.

The Forestry Commission has held a prominent role in the Welsh countryside for over half a century. Currently Forestry Commission Wales (FCW) manages the Welsh Government Woodland Estate, which accounts for 38% of the country's woodlands. It has an important regulatory and advisory role, and is responsible for delivering Welsh Government (WG) policies on forestry and woodland management. It extends WG's influence over the private sector by providing advice and guidance, and administering grant schemes.

In October 2012 WG announced the end of FCW: from April 2013, it will be merged into a "Single Environmental Body" comprising FCW, the Environment Agency, and the Countryside Council for Wales. This body will be called *Natural Resources Wales*. At the time of writing (Feb 2013) many important details have not been announced, and the likely effect of these changes is far from clear.

The context for timber production

With its estate of 117,000 hectares, WG is Wales' largest woodland landowner. But 62% of the country's woods are in other ownerships, including private estates, softwood plantations, farm woodlands, charity ownership, Local Authority-owned woods and small private landowners.

It is impossible to create a representative picture of private woodland management without taking into account the WG Estate, and vice versa. Many aspects of woodland management – for example silvicultural theory and practice, and the regulatory context – are essentially the same for both public and private sector. Contracting firms often work in both types of woodland, and many professional foresters find work in both sectors during their careers.

Timber production from both sectors has an effect on the timber price (which is affected by many other factors too), and the type and amount of timber grown has an influence on the processing industry. Public sector marketing activities are effectively centralised and subject to direct control and scrutiny; private sector activities are subject to a range of influences and are more obviously price and cost sensitive.

Timber harvesting in private woodlands is controlled by individual landowners with a wide range of management objectives, and may be limited by the availability of managers and contractors, as well as landowners' perceptions of market conditions. Active management may be readily encouraged by grants for management planning, restocking or infrastructure, or else constrained by their absence.

The influence of public sector production on timber markets is a frequent source of anxiety to private woodland owners: from their point of view, the public timber is restricting their access to an already limited market, pushing prices down and making sustainable management of the woodlands increasingly difficult.

The softwood resource

Compared to the WG Estate, private sector softwood forests are overstocked. Private woodlands account for 48% of Wales' standing softwood volume, on just 38% of the softwood-growing area. This suggests that private sector woodland owners are not engaging with management as much as they could do – with a knock-on effect for both the economics of Welsh woodlands, and the wider environmental and social benefits that they provide.

It means that private growers – faced with high operating costs, inadequate timber prices and high restocking costs – are delaying harvesting for as long as possible. As well as the effects on the forestry businesses and processing industries, this means that private woodlands are foregoing opportunities to improve carbon sequestration and substitution, while creating a difficult management problem for the future.

There is a paucity of data on timber volumes for minor species: we have reasonably reliable data for spruces, Douglas fir and larches, but less reliable information on other species¹. This is perhaps understandable, as seven species of tree currently make up 96% of Wales' conifer resource².

National Forest Inventory (NFI) data for private sector woodlands in Wales is useful for basic analysis of the resource and as the basis of further inventory. The woodland area and type information is particularly useful (at the time of writing not all NFI data has been published). Information on WG Estate woodlands may be regarded as very reliable, as it is based on a reasonably up-to-date management inventory of the entire Estate.

Data are less readily available for non-WG woodlands. In the NFI, species and volume data for the private estate is based on samples within 311 one-hectare squares. This means that a little under 0.2% of Wales 187k ha of private woodland was sampled.

Management practices

Timber harvesting is important to the sustainable management of most woodlands. In softwood plantations, it is absolutely essential: thinning allows windfirm stands to develop, which are thus suitable for subsequent thinnings and smaller-scale fellings or Continuous Cover methods.

Thinning also allows foresters to promote structural diversity, and gives greater scope for introducing a broader range of tree species into the woodlands; both are important to meet WG objectives for mitigating the effects of climate change and developing resilient woodlands.

Crucially for woodland owners (including WG) thinning and felling – whether in clearfells or in Low Impact Silvicultural Systems – is vital for the production of good-quality timber, which benefits both the economy and carbon embedding and substitution. In the private sector, these operations can only take place if they are economically viable – which brings us to the price of timber.

¹ At the time of writing 2012 National Forest Inventory figures for broadleaf woodland composition have not been published.

² Expressed as proportion of softwood stocked area, counting the larches as a single species. The seven species in order (largest first) are: Sitka spruce, larches, Douglas fir, Norway spruce, lodgepole pine, Scots pine, Corsican pine. Sitka spruce accounts for 59% of the softwood area in Wales, and 55% of current standing volume. *Forestry Commission: National Forest Inventory 2012.*

Without a timber price that makes woodland management viable, private-sector woodland management is heavily dependent on grants, and public sector woodland management is also more of a burden on the taxpayer.

Low and uncertain timber prices are an endemic problem in Welsh forestry, and dissuade woodland owners from actively managing their woods. Many factors contribute to the price uncertainty. The material reviewed here suggests that the prices could be improved by the promotion of processing industries using Welsh timber in construction within Wales. This would also support the Welsh Government's policies of promoting sustainable building technologies.

Timber processing

Timber used in construction is stress-graded, and architects customarily specify timber of a particular grade for new buildings. High-grade imported timber is available relatively cheaply. The conifer timber, mostly spruce, currently grown in Wales is suitable for use in construction; however, many architects, used to specifying imported timber, currently over-specify the grade for building projects.

There seems to be a paradoxical problem: Wales is capable of growing timber for use in standard timber frame construction and the higher value added processes such as laminated timber. However, the relatively small demand for home grown construction timber, the high investment costs associated with establishing factories for manufacturing laminated timber and the relative profitability of the sawn fencing market has meant that there have been few incentives for processors to invest or growers to improve the quality of their growing stock.

Increases in the prices of imported timber, associated with a weak pound, and the new demand for the supply of timber from a sustainable home grown resource, are slowly leading to changes in the sector. Technical research emanating from the Wales Forest Business Partnership, and Napier and Bath Universities (among others) is contributing to the development of markets for Welsh timber.

A number of high profile exemplar projects are now underway and the success of these projects will persuade customers, architects, quantity surveyors and building contractors that it is cost effective and practical to use home grown timber. By stimulating the demand for Welsh structural-grade timber in this way, the deadlock between supply and demand may be eased.

Another crucial element will be developing more advanced processing industries in Wales. Some "new" technologies – for example Glulam³ – can be used to make effective use of timber in all sorts of building projects.

The problem of low timber prices is exacerbated by relatively high costs of carrying out work in woodlands. Woodland management in Wales is generally carried out to a high standard. Forestry management is regulated by FCW, and other aspects of management are subject to the scrutiny of an array of statutory bodies. Large commercial woodlands are likely to be involved in Certification schemes, which apply rigorous checks for environmental and social sustainability.

The cost to landowners and managers of dealing with an increasingly complex regulatory landscape cannot be ignored. While there are laudable reasons for the regulations themselves, we cannot escape the fact that if the costs of dealing with bureaucracy are prohibitively high, active and imaginative woodland management will be discouraged, in favour of methods with fewer risks and higher returns.

³ Glued laminated timber. This seems to be a growth industry worldwide, and incorporates a range of design and production techniques which enable wood to be used in applications where other materials would normally be used. (The technique has actually been in use since the nineteenth century.)

Restocking

Not all of the problems highlighted here are new. For decades, governments have recognised that the economics of woodland management are marginal, and also that managing woodlands well delivers substantial public benefit. Accordingly there has been a succession of grant schemes. A key attraction of these schemes for landowners is help with the cost of restocking after felling operations. To government administrators, restocking grants are a vital opportunity to influence the composition of woodlands, to achieve policy aims.

A restocking grant scheme may be reasonably deemed a success – from the point of view of the taxpayer – if it delivers the policies of the government effectively, and helps bring about woodland management which is environmentally beneficial and sustainable in the long-term. It may be considered a failure if it does not deliver government policy, or creates an unsustainable cost burden for the future.

For the good of the woodlands themselves, it is vitally important that policy makers consider what schemes *achieve*, rather than just what they *set out* to achieve: the two are not necessarily the same.

Recent restocking grants in Wales have been aimed squarely at delivering environmental benefits: most notably increasing the proportion of native species in restocking, but also on increasing the species diversity of non-native species in order to increase the resilience of our woodlands to climate change. These are both aspects that have the potential to reduce the economic productivity of woodlands; therefore the grants have to be high to make them attractive to landowners.

This is leading to two distinct and serious problems. One is that the absence of attractive restocking grants (combined with the timber price issue) is discouraging landowners from managing their woodlands – with all the knock-on effects for the environment, the industry and the economy which are entailed. Clearly this will exacerbate the problem of “over-stocked” private sector woodlands still further.

The second issue, which may be more serious, concerns the woodlands which *do* take up the new restocking grants. High proportions of site-native trees, and new and untested combinations of broadleaves and “unconventional” conifers, present some serious challenges to foresters. It seems likely that productivity will seriously decline, and that there will be new challenges associated with growing quality timber in the new mixtures (FCW’s programme documents are particularly clear on this point with regard to species diversification on the WG Estate).

In the private sector, uptake of the restocking grants proposed for Glastir Woodland Management may result in large areas of woodlands which are economically unviable for the foreseeable future. This, again, will lead to a lack of active management with consequent loss of public amenity. Clearly such woodlands are likely to be heavily grant-dependant for years to come, if they are not to become completely neglected.

Restocking grants will be necessary in Welsh forestry for some time to come. FC figures are already showing that private sector stands are overstocked, and the problem is getting worse; no “quick fix” will solve the problem, and expecting timber markets to suddenly buoy up the woodland management sector would be a triumph of hope over experience.

For the good of all concerned – the woodland owners, those who work in the sector, but most of all the taxpayer – it’s vital that restocking grants support long-term economic sustainability in woodland management, rather than simply “buying” a supposed biodiversity benefit, that turns out to be a long-term cost.

Going native

Intriguingly, private sector practitioners appear to be generally in agreement with FCW about the need to diversify woodlands⁴. The advice from scientists about climate change and woodland resilience is pretty clear and has been consistent for years. The main point at issue is how to achieve it. Several of the documents reviewed here draw attention to the fact that there needs to be effort to establish a demand for the products our changing forests will produce, and thus ensure the forests' economic sustainability. Without that, they will be forever dependent on government support.

There is considerably less sympathy among timber growers, for FCW's policy of promoting high proportions of site-native species on softwood restocking sites, or the use of taxpayers' money to grow conifers which are untested in Welsh conditions in the absence of information on suitable provenances for planting stock or the qualities of the timber. Apart from the matter of whether increasingly uneconomic woodlands are truly sustainable, this issue is compounded by the fact that most of the species classed as "native" to Wales are slow-growing and require a lot of costly management input to produce high-quality timber, if they can produce it at all.

Welsh foresters are used to landowners and members of the public reacting with incredulity when told that beech, sycamore and sweet chestnut (among others) are not deemed "native" to Wales, and thus not eligible for favourable planting grants. It is perhaps understandable that the "*native: good, non-native: bad*" catechism of the 1980s remained fashionable well into the 1990s: there was a legitimate need to protect sensitive native woodlands from further loss of area. Preventing the incursion of non-native trees into remnants of ancient habitat was recognised as a key part of responsible woodland management.

The use of the mantra in the 21st century is being seriously called into question. Our native woodlands are under threat, no longer from the march of conifer plantations, but from the changing climate, and the rapid spread of new pests and diseases, exemplified by *Chalara fraxinea* which threatens to rid the country of ash trees.

There is increasing call for policy that reflects the fact that – in native woodlands as in all woodlands – the environment is changing, and we have a duty to ensure that our woods are as resilient as possible in an uncertain future. Skewing tree planting grants in favour of an arbitrary list of "once-native" species could work *against* environmental sustainability, by promoting less diverse, and accordingly less resilient, woodlands.

In the context of climate change and woodland resilience, it can be seen that the "native" designation is even more out of place on softwood restocking sites, where (other than some sensitive PAW⁵ sites) the issue of protecting remnant native woodlands does not arise.

Perhaps it would be constructive to shift the focus of the debate, and consider climate change more positively, as an opportunity to re-consider what is planted in Welsh woodlands, and look at the way in which both broadleaved and conifer species can contribute to genuinely sustainable managed woodlands over the next hundred years. After all, the current situation is apparently not sustainable, so we may not have a great deal of choice in the matter.

If the overall aim is to reduce the risk to our woodlands and increase their resilience, Wales' foresters and policy makers need to work closely with researchers, nurseries, growers and sawmills: otherwise we could mitigate one set of risks, while falling foul of others. We also need to look carefully at the potential of different types of woodland (and types of management) to contribute positively to carbon sequestration, substitution and embedding.

⁴ Some of the assertions in this section are based on conversations with various private sector forest managers and timber growers over the last few years, rather than content in the papers reviewed here. The author has participated in discussions between FCW and private sector representatives on this topic, and edited the private sector versions of the FCW documents *Guidance for the use of silvicultural systems to increase woodland diversity* and *A guide for increasing tree species diversity in Wales* (both documents by Richard Carrick, Forestry Commission 2010).

⁵ Plantation on Ancient Woodland Sites (PAWS)

Farm woodlands

There is still a need to protect our native woodlands, but now their biggest enemy is neglect. Loss of native woodland area comes not from the march of conifer plantations, but from the steady munching of sheep. The documents reviewed in this study suggest that farm woodlands have a lot to offer, in terms of tangible benefits to the farmer, and wider benefits to the environment. However those benefits are seldom realised and farm woodlands are often undervalued by their owners, resulting in neglect and decline.

Like other types of woodland, when farm woodlands are not in active management, their decline will lead to a loss of public benefit. The “sticking plaster” approach to dealing with this is to use taxpayers’ money to “buy” public benefit, through agri-environment and woodland grant schemes. As with other woodlands, this is liable to result in an unsustainable dependency on grant. Notwithstanding the goodwill and environmental responsibility of many farmers, there is a risk that their woodlands will become valued mainly as a bargaining counter when the next grant scheme rolls around – or, more worryingly – a loss-making liability, if the next scheme doesn’t pay for woodlands.

Wider public benefits may be achieved in many farm woodland situations if the potential *economic* value of woodlands on part of the holding were appreciated. This may include sheltering farm buildings (reducing heating costs), producing firewood or wood chip for animal bedding, timber products such as fencing etc. or sale of firewood away from the farm. By bringing these woodlands into active, economically sustainable management, a range of wider public benefits would be realised. This isn’t necessarily easy – if it were, there would be no need to promote it – but there are examples of exactly this sort of diversification making a positive difference to farm businesses.

The flood risk mitigation effects of farm woodlands are well described in the Pont Bren document [3]. There is clearly potential for even small planting schemes to have a significant effect; however it is evidently difficult to persuade farmers to plant areas which are productive agricultural land. The current Glastir Woodland Creation grants appear to make beneficial planting schemes *less* attractive to farmers in many circumstances, most notably with the minimum width / block size. Some farmers are prevented from carrying out environmentally beneficial tree planting by their previous involvement with earlier agri-environment schemes.

Ecosystem services

The Welsh Government is committed to using an “Ecosystem approach” to delivering its Living Wales programme. One would expect this approach to be welcomed by the forestry sector, as it inherently acknowledges the value to society of many aspects of woodland management. The problem is that *recognising* them isn’t enough. What’s needed is a new and innovative approach to integrating ecosystem services into the economy.

The Woodland Carbon Code may turn out to be a forerunner of future schemes which pay landowners for ecosystem services, based on a calculation of the differential benefit derived from particular types of management. The scheme offers participants the opportunity to trade in sequestered carbon, on the basis of “additionality” – specifically, carbon that would not have been sequestered “anyway” but is a new addition to the forest resource.

The same principle may, in theory, be extended to other attributes of desirably-managed woodlands: the volume of high-quality timber (which can be used in building, thus embedding carbon for longer), soil protected near vulnerable watercourses, low-impact forestry in high-use recreation areas and so on.

At present, the formation of a market for carbon sequestered in UK carbon is in its infancy. If it develops successfully, perhaps the principle can be extended further. There may be scope for WG to develop and support mechanisms for the monetisation of ecosystem services, which would enable sustainable woodland management to be encouraged by the “pull factor” of attractive markets for timber and other forest products, thus removing the need for continual grant expenditure to deliver public benefit.

Processing industries

The picture which emerges from the documents reviewed in this study is of a highly price-sensitive timber markets dominated by a small number of large mills; yet these markets are clearly highly important to the future of woodland management in Wales.

A very important point (stressed in the Survey of Woodland Enterprises in Wales [6]) is that the larger enterprises have a greater impact on timber demand (hence, price) and may be seen as the obvious target for policy intervention. However, even if the large mills were persuaded to invest in new processes (e.g. laminated timber) enabling them to add value to Welsh timber, there are risks: should imports become more attractive (due to a strengthening Pound) before the use of Welsh timber in construction becomes better established, the benefits to our woodland management from these technologies could be lost.

Considered in the context of increasing species diversity and reducing timber yields, it may be more sensible for government to focus its attention on stimulating demand among a large number of smaller businesses (although there is no reason that both types of business cannot be considered simultaneously). In addition, changing building codes to require the use of home grown timber would force changes in a conservative construction sector which prefers to follow a known and tested supply chain rather than expose itself to the risk of innovation.

The reports do make clear that there is a serious lack of information to the processing industry about what will be grown in future, and its properties and suitability for manufacturing.

The discussion about woodland management and carbon tends to focus on sequestration within the woodland: it may be helpful to re-frame this debate to include the carbon benefits of a higher proportion of timber production going into construction and manufacturing industries, as opposed to biomass. Timber-frame construction and similar industries should be more widely perceived as offering positive ecosystem services.

Contracting

Several of the papers, but most notably the MWMACC Harvesting Resource Analysis [1], consider the situation of Wales' forestry contractors and machine operators. There are clearly problems to be addressed here, with an evidently disaffected, ageing workforce and (for some machine types) ageing machinery⁶. Line-wire working machinery is increasingly rare, along with operators skilled in its use. The report speaks of:

...inertia within the harvesting sector where a large proportion of the workforce is disappearing from lack of investment, low productivity, difficulty in retaining staff and poor confidence in harvesting management.
([1]p.25)

The paper concludes that the current contracting situation is manifestly unsustainable, and proposes that alternate ways of paying for woodland management are urgently necessary if a skilled operator base is to survive for much longer in Wales: its decline is already well underway.

The poor state of the contractor resource cannot be understood without looking at the economic vitality of woodland management as a whole. High management costs and low timber revenues mean that operators are squeezed harder as operations become increasingly marginal.

It should be noted here that this stark analysis seems to be entirely consistent with the message and tone of the other papers. At the risk of stating the staggeringly obvious, the sustainable management of Wales' woodlands, and the public benefits such management brings, simply cannot be delivered without skilled and motivated operators. The importance of dealing with the decline of the contracting sector can hardly be overstated.

⁶ According to this survey, the average age of operators is 41, and two-thirds of skidder machines are over 20 years old.

Overview of papers considered

The studies and FCW Programme documents considered in this report are listed below. Where documents are available online, links are provided here. In the absence of a working link, copies may be obtained from the authors or the organisations which commissioned the work. FCW Programme documents are not currently available online.

Ref	Title	Author	Published
1	Wales Timber Harvesting Resource Study	Chris Hughes (MWMACC), for WFBP	2007
2	The Pontbren Project	Clunie Keenleyside	2013
3	Pontbren: Impacts of upland land mgt. on flood risk	Flood Risk management Research Consortium (Wheater <i>et al</i>)	2008
4	Survey of farmers with woodland on their land	Wavehill Consulting, for FCW	2009
5	National Forest Inventory	Forestry Commission	2010
6	Survey of woodland enterprises in Wales	Wavehill Consulting, for FCW	2010
7	Wales Domestic Firewood Survey 2012	Forestry Commission	2011
8	Forest Product Business Survey	Beaufort Research, for WFBP	2011
9	Integrated Strategies for the Welsh Timber Industry	Thomas Stoney Bryans, for bere:architects	2011
10	Supply Chain Sawmill Survey	Kath McNulty, for WFBP	2012
11	A Forest Resource Study (Wales)	Chris Hughes (MWMACC)	2012
12	Encouraging greater take-up of log stoves(...)	Cwm Harry Land Trust for EST	2012
FCW-01	FCW P1 Managing more diverse woodlands	Forestry Commission Wales	2010
FCW-02	FCW P2 Tree protection and health	Forestry Commission Wales	2010
FCW-03	FCW P3 Renewable energy	Forestry Commission Wales	2010
FCW-04	FCW P4 Public involvement and enterprise	Forestry Commission Wales	2011
FCW-05	FCW P5 Recreation and access	Forestry Commission Wales	2010
FCW-06	FCW P6 Woodland based learning and sector skills	Forestry Commission Wales	2010
FCW-07	FCW P7 Urban woodlands and trees	Forestry Commission Wales	2010
FCW-08	FCW P8 Promotion of timber & development of the forest sector	Forestry Commission Wales	2009
FCW-09	FCW P9 Restoration of native woodlands and open habitats	Forestry Commission Wales	2011
FCW-10	FCW P10 Site-based biodiversity, heritage and landscape	Forestry Commission Wales	2011

Matrix of study contents

Most of the studies and policy documents include material on multiple aspects of forestry. To accommodate this, and allow policy documents to be compared more easily with corresponding research papers, a matrix of subject headings was prepared in a spreadsheet.

A copy of the spreadsheet is provided with this report. It allows the contents to be filtered, to easily show which papers contain information on specific topics, allowing them to be compared. This approach also allows gaps in available information to be identified; however it should be borne in mind that gaps may be due to non-inclusion in this study, rather than complete absence of information. The present study does not consider any material more than about five years old, and so does not include a number of well-known pieces of work which still have relevance. The matrix may be expanded to include these if necessary.

The studies considered here (excluding FCW policy / programme documents) included seven which were based on questionnaire-type surveys; the remainder included original fieldwork and research, along with consultancy and analysis.

Subject matter

Despite the many overlaps, the studies can be usefully split into four categories, as shown here. The document numbers in square brackets are used throughout this report, and correspond with the matrix:

1. Forest Resource
 - a. National Forest Inventory and report [5] (where necessary this has been compared with earlier published inventories, and other published statistics from FC)
 - b. MWMAC Forest Resource Study [11]
2. Woodland ownership, management and operations
 - a. MWMAC Harvesting Resource Study [1]
 - b. The Pontbren Project (overview brochure)[2]
 - c. Pontbren study into flood management [3]
 - d. Survey of farmers with woodland on their land [4]
 - e. Survey of Woodland Enterprises in Wales [6]
3. Timber processing and related industries
 - a. Forest Products Business Survey [8]
 - b. Integrated Strategies for the Welsh Timber Industry [9]
 - c. Supply Chain Sawmill Survey [10]
 - d. Cwm Harry Log Burner report [12]
 - e. Llais y Goedwig Wales Domestic Firewood Survey 2012 [7]
4. WG (FCW) Programme documents (x10 as listed in the table above)

Précis of documents considered

This section presents a brief summary of the documents, with comments on their main findings, limitations and relevance to current discussions about Welsh forestry policy. It may be regarded as an “executive summary of the executive summaries” but must be prefaced with apologies to the authors of the original documents, who may well be aggrieved to see their work filleted in this way. It is hoped that this summary will encourage people to refer to the sources.

Section 1: The forest resource

Document 5: National Forest Inventory (Inventory and Forecast Report)

The National Forest Inventory (NFI) is part of a periodic inventory and forecasting programme carried out by the Forestry Commission at UK-level, with information published specifically for Wales. The data capture methodology is complex, however it essentially relies on computerised management records of the land managed by FC, and fieldwork (sampling) carried out in private woodlands.

The latest NFI is a significant advance in the level of sophistication in surveying woodland conditions and forecasting future timber production. It reflects a hugely increased level of effort (and resources committed) by the Forestry Commission. For the purpose of simplicity the NFI is reviewed as two “documents” – the Inventory and the Forecast – but in reality it is a growing suite of documents and spreadsheets, all of which are published on the FC’s website. Nineteen documents ranging from the key statistics, to method statements and mensuration protocol, were considered as part of this exercise as thoroughly as possible in the time available.

The NFI is a continuing programme, and some data are not yet available. Specifically, most of the detailed information currently published relates to softwood areas and volumes. More information on the broadleaf resource will become available in the next few years. Most of the information on the forest resource in this study is from the recent NFI; other sources are cited where necessary.

It is useful to look at some key findings of the UK-wide inventory, before moving on to consider the findings for Wales in greater detail:

- There is more standing softwood volume than previously thought. This is due to improved inventory methodology (recent planting schemes have had no discernible effect on current standing volume).
- Relatively few species dominate British forestry, most notably Sitka spruce which accounts for about half of total standing volume at GB level (55% in Wales).
- GB has an uneven forest age profile, due to the history of forest establishment. The “single point in time” snapshot of standing volume exacerbates the effect of this.
- In GB as a whole the dominant age class range is between 21 and 40 years. In Wales it is 41-60 years (which has 51% of volume).

The key findings of the current NFI regarding Wales were as follows:

1.a Woodland area

“Woodland” is defined for the purposes of the NFI as “*areas with canopy cover of 20% or more (or potential to achieve this), with a minimum area of 0.5ha and width of 20 metres.*”⁷

⁷ *National Forest Inventory Woodland Areas Statistics: Wales*, Forestry Commission 2011 (p.7) For more detail see the *NFI Method Statement* Forestry Commission 2011.

Total woodland area in Wales has increased over the last twenty years, and is now estimated at 303.5k ha (14.3% of Wales' land area). This is an increase of 20k ha on FC's previous estimates. FC have directly compared the two sets of inventory and concluded that the main reason for the discrepancy is limitations in older technologies which resulted in under-reporting of woodland area in earlier inventories.

New planting accounts for an increase in woodland area of 8.7k ha over **twenty years** (1990-2010). Almost all of this is on non-FC land. The area which was not grant-aided appears to be negligible, although this component may be under-represented in the current statistics.

Woodland loss figures for the most recent **eleven year** period (97/98 – 09/10) suggest that this is comparatively slight, with a total loss of 133ha for the whole of Wales. Note that these figures do not include habitat restoration areas (woodland to non-woodland habitat) but do include losses to windfarm construction (recorded as a total of six hectares over that period).

1.b Woodland type

The total area stocked with conifers in Wales is given as 131.5k ha, which is 43% of the total woodland area described above. Of the remaining 57%, the majority is broadleaf woodland, although this interpretation will be complicated by mixed woodlands, wood pastures and various other definitions.

1.b.1 Broadleaf woodlands

Currently available data from the recent NFI does not include much information on non-conifer woodlands, although some useful data has clearly been gathered and will be published over the next few years. It is likely that this information will clarify the discrepancies which became apparent when looking at the NFI figures given above, in relation to some other documents:

Forestry Facts and Figures 2012 states that Wales' woodlands are split nearly 50 / 50 between conifers and broadleaves (151k ha and 153k ha respectively). Forestry Commission Wales Programme documents state that *"around 40% of Wales' woodlands are native woodlands (including those of ancient origin)"*.

The Ancient Woodland Inventory (2003) states that there are 62k ha of ancient woodlands in Wales, of which just over a quarter are Plantation on Ancient Woodland Sites (PAWS).

1.b.2 Conifer woodlands

A great deal of information is available on conifer forests from the new NFI, although it should be kept in mind that information pertaining to FCW-managed woodlands is likely to be considerably more accurate than the information for privately-owned woodlands (as the former is taken from subcompartment-level records, the latter from randomised sampling).

Information is presented in terms of stocked area (in hectares) and standing volume (cubic metres), and in all cases allows the comparison of FCW-managed and private sector woodlands. Datasets include species, age class and mean stand DBH.

Much of the data is of particular interest when considered against land ownership (public vs. private sector); however it is worth considering some "headline" all-Wales statistics:

- Seven species of tree make up 96% of Wales' conifer resource⁸.
- Sitka spruce accounts for 59% of the conifer area in Wales, and 55% of standing volume

⁸ This assumes the larches (Japanese, European and hybrid) can be treated as a single species.

- Larches make up 16% of the conifers in Wales.

1.c Woodland ownership

FC has not yet published all of the data from the recent NWI which relates to ownership, most notably in broadleaf woodlands. *Forestry Statistics 2012* (Forestry Commission) states that in 2012 of a total of 304k ha of woodland in Wales, 117k ha (38%) are managed by FCW, and 187k ha (62%) are in other ownership.

The same FC document provides a breakdown of ownership types taken from the National Inventory of Woodlands and Trees (1995-9) which suggests that the great majority of “other” ownership comprises “personal” ownership, followed by “other private business”. Unfortunately these figures do not distinguish farm woodlands from other woodlands, or allow the management objectives of “personal” woodland owners to be extrapolated.

Useful information is provided on the composition of Wales’ softwood resource, although it should be kept in mind that the extent of sampling effort on the private estate, in relation to the more minor species, could influence the reliability of the results. Standard error is presented along with the data: if (for example) we were to avoid detailed discussion of volumes for which a standard error is greater than 30%, we would be left with only Sitka spruce, Douglas fir and the larches. Nevertheless, the overall picture is valid and helpful.

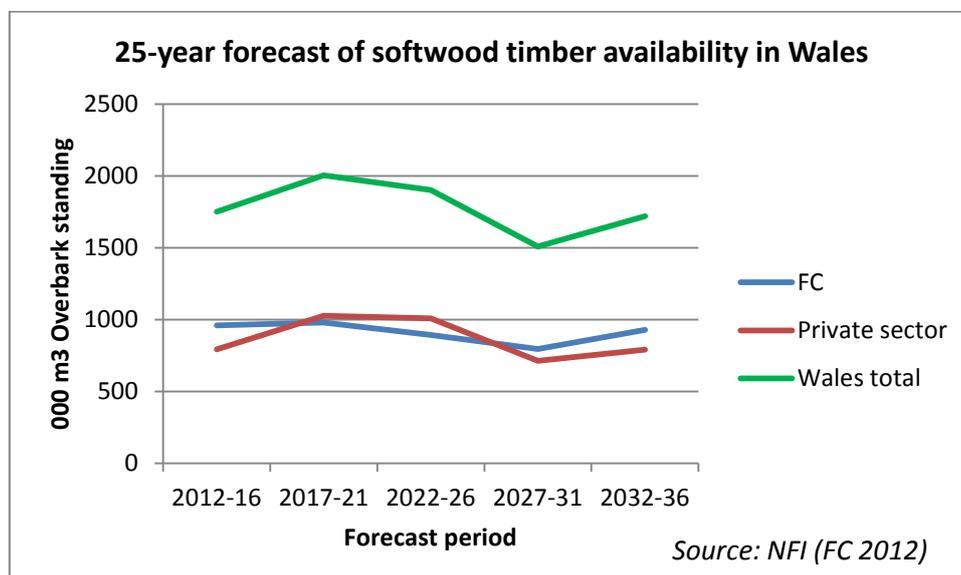
In Wales, the NFI data for tree species, volumes etc. in the private sector is based on sample plots within 311 one-hectare squares. This means that a little under 0.2% of Wales 187k ha of private woodland was sampled.

A striking aspect of the inventory data is that privately owned woodlands appear to be overstocked, compared to FCW-managed woodlands: private woodlands comprise 38% of the softwood growing area, but 48% of total standing volume; correspondingly, Assembly Government Estate woodlands make up for 62% of Wales’ softwood growing area, but have 52% of standing volume.

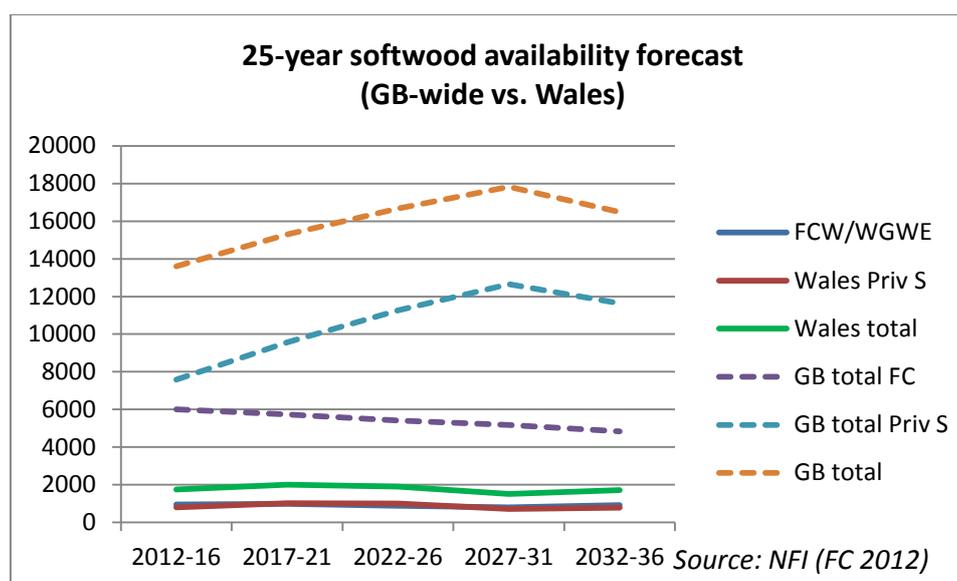
2. Volume forecast

The NFI report *25-year forecast of softwood timber availability* provides a headline figure of an average of **1.8 million m³** of softwood available annually from Wales over the next 25 year period. Actual **production** will depend on a wide range of factors. The NFI presents forecasts for a range of different management scenarios.

In the UK as a whole, the figures suggest on an increasing availability of timber, in which the forecast production of the public sector falls, while the private sector sees an increase. In Wales, the picture is rather less clear-cut, with no clear trend emerging and relatively small-scale fluctuations in available timber predicted over the 25-year period.



It may be helpful to consider the same data in the context of total GB production, which suggests a steady increase in volumes of available timber over the next twenty years:



Document 11: MWMAC Forest Resource Study

This study was prepared in 2012/3 by Chris Hughes, for FCW. It is based on a telephone survey of 988 respondents including woodland owners, contractors, agents and hauliers. It explores perceptions of *Woodlands for Wales* (WfW), explores the uses of private woodlands with a view to identifying employment and skills gaps and barriers to business growth. It also considers why some woodlands are unmanaged.

The key conclusions are:

- Most private owners hold relatively small areas of woodland (especially farmers).
- A minority of owners utilise their woodlands for production of fuel or timber. There are considerable problems in bringing smaller woodlands into regular management, but the material in these woodlands represents a significant resource, with the potential to contribute positively to the economy.
- “Woodland owners who did not harvest timber at all represented 43% of the private woodland in Wales... covering 81,700ha”
- ...”If this acreage was brought into harvesting at the lowest figures calculated from the survey of 1.2 tonnes per acre per year this would bring a further 242,262 tonnes [per year] onto the market”

An important finding of the report is that 43% of private woodland owners do not harvest woodland at all. The survey found that roughly half of woodland owners are in (or have been in) a grant scheme. This is higher for non-farmers. Farm woodlands tend to be roughly half the size of non-farm woodlands. Only 3% of farm woodlands were utilised commercially, although 30% use their wood for fuel on-farm. A large proportion of woodland owners carry out work in the woodland themselves rather than employing contractors, although this information was not correlated to woodland size.

The high level of use “on-farm” for fuel corresponds with the findings of the recent Llais y Goedwig report [7] which suggests a large amount of the fuel wood produced is used by the landowner, or in informal arrangements with neighbours etc. without reaching the cash economy.

Roughly half of woodland owners had some kind of management plan in place (higher for non-farmers). Half of farmers with woodland have no management plan and do not receive grant. Owners without a management plan do not usually intend to create one (70%) for a range of reasons, including not seeing the need for one.

The main perceived “challenges” when bringing woodlands in to management were access and cost. “Red tape” was also noted.

Around 90% of owners said that Low Impact Silvicultural Systems (LISS) best describe how they manage their woodlands, however based on the other responses, it seems fair to observe that a great many of them clearly do not have a “silvicultural system” in place, and that the high proportion under LISS simply represents those who do not envisage any clearfelling. Owners of larger woodlands were more likely to practice clearfelling. These owners tended to suggest that LISS were “uneconomic”.

Only 8.5% of farmers, and 17.4% of non-farmers, indicated that they intend to plant new areas of woodland in the next twenty years, although almost a fifth (of both groups) said they were unsure. Just under 20% of each group said they’d think about new planting if grant aid were available. The report (p.60 onwards) includes much more detail on landowners’ attitudes to new planting. This section has not been considered in great detail here, as most of the material is outside the scope of the current exercise.

The report presents figures for time spent by contractors on different harvesting methods. There is a reasonably even distribution of felling and extraction methods among respondents. It would be interesting to see this data correlated with the contractors’ rate of production (i.e. volume of timber).

The study found that 82% of woodland owners had not harvested timber from their woodlands in the last 3 years. Fewer farmers than non-farmers had harvested timber recently. The smaller the woodland, the less likelihood of recent timber harvesting (although to some extent this would be expected even in situations with no impediments to timber harvesting).

Section 2: Woodland ownership, management and operations

Document 6: Survey of Woodland Enterprises in Wales

This report was prepared by Endaf Griffiths of Wavehill, for FCW in 2010. It is a wide-ranging survey of “woodland enterprises”, including:

- 233 “timber-based enterprises”, of which it estimates there are 1,900 in Wales. These are enterprises that “offer woodland related services, sell timber or use it to produce a product”.
- 110 “woodland recreational enterprises”: enterprises which are either based in woodlands or which offer services which are dependent on it in some way. The survey estimates that there are at least 347 such businesses in Wales.
- 96 “private woodland owners who generate an income from their woodlands” (66 of whom (68%) also own other woodland enterprises as described above). The report does not attempt to estimate how many private woodland owners there are in Wales⁹.

The report suggests that while timber enterprise is currently the largest source of employment arising from woodlands, the recreation sector may have the largest potential for growth, and has a substantial economic effect on the wider economy

Of the timber-based enterprises, the survey found that a large proportion of respondents are small businesses & sole traders: many have never accessed any government support and the report suggests that there is a lack of interest in government support in this particular sector. A small number of large companies employ a lot of people (to illustrate this, of the 2,809 people employed in the 233 businesses surveyed, 42% were employed by three businesses).

The report estimates that **around 19,000 Full-Time Equivalent jobs** are sustained by timber-based enterprises in Wales.

Most businesses in the “private woodland owner” sector are small (sole traders or SMEs) but the few larger businesses have a greater influence on the industry as a whole.

The report suggests (p.21) that it may be more effective to focus on the few large businesses if the objective is to increase the amount of Welsh timber used; however it notes that while a shift from big businesses in favour of Welsh wood would be dramatic, a subsequent shift in the other direction could cause major problems.

The report also points to advantages in government adopting two distinct strategies, for small and large timber enterprises. It observes that large enterprises have a large effect on timber demand, but that the development of many smaller businesses may be more sustainable, emphasising that the smaller businesses use proportionally more Welsh timber.

There are estimated to be at least 347 woodland recreational enterprises in Wales, supporting about **3,255 jobs**. Again smaller businesses predominate. A majority of the sample said that less than a quarter of their income was dependant on woodlands. 31% of these businesses were also woodland owners.

The report summary (p.6) cites another paper, *The Economic Contribution of the Visitor Economy*¹⁰, which estimates that the visitor economy in Wales will grow from £2.8bn in 2010 to £4.4bn in 2020. The Wavehill report uses this (cautiously) to suggest room for expansion in woodland recreation enterprises.

⁹ Forestry Statistics 2012 (Forestry Commission) states that 187,000ha of woodlands (62% of Wales’ woodland resource) is in non-FCW management. This encompasses a wide range of woodland types and ownership types.

¹⁰ Deloitte and Oxford Economics, 2010

It may be observed here that woodland recreation is to a varying extent dependent – for its quality of environment and access infrastructure – on woodland management activities. The positive contribution of forestry to Wales' economy would be seriously under-represented if figures from woodland and timber enterprises were considered alone.

The report goes on to suggest that WfW objectives could be met by encouraging recreational businesses, which would both help the economy, and fulfil some of the “social” elements of WfW. Woodland owners are apparently carrying out few income generating activities apart from the production of timber and firewood. There is little diversification in most situations.

It is suggested (p.7) that:

Arguably, the greatest potential for ‘growth’ in economic terms lies within the ‘woodland recreational’ sector. This also has policy implications for FC Wales as the woodland recreational sector is potentially an avenue for achieving the outcomes relating to the ‘woodland for people’ theme of Woodlands for Wales. Can woodland recreational businesses be used to encourage people to visit and use woodlands? The answer is probably ‘yes’ and, hence, those businesses can be a vehicle for achieving the range of ambitions set out in Woodlands for Wales, the woodland strategy for Wales.

This raises the question of whether the costs of managing woodlands (as locations for recreation) can be recovered from the recreational sector. It may be noted that the paragraph quoted is consistent with the findings of the MWMAC Harvesting Resource study, described below.

Document 1: MWMAC Wales Timber Harvesting Resource Study

This study by Chris Hughes was produced in March 2007 for WFBP, in association with WG & FCW. It describes a telephone survey of harvesting contractors in Wales, looking at their areas of operation, machinery, workforce, operational constraints and prospects for the future. The survey included a wide range of operators including private sector and WG Estate operators.

The survey paints a picture of a moribund contracting industry. It suggests that Wales' contractor resource is ageing (average age of operators is 41) and there are serious difficulties recruiting trained staff. The corollary of this is that the workforce could be truthfully said to be highly experienced, however this advantage is outweighed by the lack of younger workers.

Operators using harvester / forwarder equipment tend to be reasonably well equipped, however, line wire working equipment is increasingly rare. This machinery tends to be old, particularly skidders (two thirds of which are over 20 years old).

Some contractors are clearly frustrated with forest managers, specifically with regard to continuity of work and communications. The Forestry Contractors Association no longer has an officer in Wales, which could leave operators seriously under-represented in the industry and at WG-level.

The “SWOT” analysis provided the following key points:

- **Strengths** are mostly experience, competence, dedication and specialist skills. Modern equipment was also mentioned in some cases.
- **Weaknesses** are thought to be an ageing workforce and loss of skills, the low wages / rates and high machine running costs. Large travelling distances and lack of co-operation between operators is also significant.
- **Opportunities:** new woodfuel markets & added value markets; increasing availability of material in the public sector; increasing line wire work; a generally increasing demand for timber.

- **Threats:** Continuity of work (lack of long term contract), competition from bigger companies and cheap timber imports; poor management and variable policies.

The following words are taken from the report conclusions (p.25, my emphasis):

The time has obviously come, from the nature of the responses to the survey, to completely re-think how marginal areas are to be harvested especially when many areas will need thinning to avoid dereliction.

There is an open question as to whether a proportion of the work undertaken is more amenity, recreation, landscape or conservation work than timber harvesting per se and needs supporting by those industries and not be dependent on timber income to sustain what are in reality marginal harvesting exercises.

Document 4: Survey of farmers with woodland on their land

This study was conducted by Wavehill consultants in 2009, on behalf of FCW. It was based on a telephone survey of 264 farmers¹¹, to discover whether and how they are using their woodlands, their reasons for managing woodlands (or not), whether they are generating any income from their woods, and attitudes to grants.

It found that a substantial majority of farmers use their woodlands in some way, and 93% had done some kind of work in the woods in the last three years. The most common work types were boundary work, clearing dead / fallen trees, habitat improvement and control of invasive species.

Grants appear to have a significant effect: a higher proportion of farmers who have received grants (as opposed to those who have not) are actively using their woodlands, and grant recipients undertake a broader range of activities in their woods. Grant schemes generally get good reviews from farmers, but almost a quarter were unaware of the availability of woodland grants.

The main uses of farm woodland (in order) are wildlife, shelter, firewood, grazing, recreation / access. Relatively minor uses given were soil / water protection, timber production and game cover.

The vast majority of farm woodlands do not appear to be generating any kind of income, although some are clearly contributing towards domestic heating needs. The study reports that 48% of farm woodland owners use their material for heating (and a further 25% give some away) but no volume figures for this are available, so it is not possible to put a cash value on firewood used in this way.

A majority of farmers have no idea of the value of timber on their land. Estimates of value per tonne varied from £30 to £1,000 for softwood firewood and £75 to £2,000 for hardwood firewood.

Document 2: The Pontbren Project: a farmer-led approach to sustainable land management in the uplands

This brochure describes the history and activities of the Pontbren Project: co-ordinated farming and farm woodland research carried out by a group of neighbouring farmers in the uplands of north Wales. Their work started in 1997, and the original group of three farmers expanded to ten in 2001.

The farmers have endeavoured to make upland livestock farming more sustainable, in environmental, social and economic terms. This has entailed using farm woodland and hedgerow creation to improve conditions for outdoor rearing of livestock, allowing more hardy breeds of animal to be used, reducing husbandry costs.

A key finding from the project has been that woodlands and hedgerows – which have historically been removed by many farmers attempting to maximise their agricultural efficiency – can actually contribute positively to the livestock business, the capital value of the land, and the farm business as a whole.

¹¹ According to this study, there are 7,500 farms in Wales with at least 0.5ha of woodland (from a total of 38,000 farm holdings in Wales).

The Pontbren farmers found that their woods provide wider benefits: enhanced biodiversity, the production of wood for fuel and timber (which has been incorporated into the farm business practices) and – arguably the most striking aspect of the project – improvements to river quality. These findings seem to have particular resonance at present, when the Welsh Government has announced an “ecosystems approach” to resource management, and the Water Frameworks Directive comes into force, emphasising the need to manage watercourses responsibly.

Work at Pontbren has been assisted by Coed Cymru, and the farmers have been very positive about involving researchers in the work. Accordingly there have been various studies published on the agricultural side, the use of wood chips for animal bedding, and the influence of trees into flood management and mitigation (see below).

Document 3: Pontbren study into flood management

This study was produced by various authors for the Flood Risk Management Research Consortium in 2008. It describes catchment modelling work carried out at Pontbren, a farming co-operative in north Wales, which includes 1,000ha of mainly grazing land in the upper Severn catchment.

The data collected and models used suggest there is scope for “significant” reduction in flood risk in low permeability landscapes at local scales. The project has established the importance of trees in mitigating flood events, and suggests that optimum placement of shelterbelts and hedgerows could reduce flow peaks by up to 40%.

This document deals only with flood risk mitigation. Other findings from the Pontbren Experiment (not reviewed as part of this exercise) have apparently concluded that there are water quality benefits from tree planting, including sediment trapping.

There is currently a great deal of interest from policy makers in this aspect of woodland management, particularly in view of the Water Frameworks Directive. The Pontbren experiments support the use of woodland planting to ameliorate flooding, and provide some guidance on how this may best be achieved. It is particularly notable that some of the positive effects noted in this research arise from newly-planted trees.

Section 3: Timber processing and related industries

Document 8: Forest Products Business Survey

The survey was carried out by Beaufort Research for the WFBP 2011. It involved 304 telephone interviews with forest product businesses taken from WFBP's database, with the intention of establishing the level of awareness of WFBP's marketing activities, and to enquire about issues perceived as affecting the sector.

The survey found that a small majority of businesses trade outside Wales as well as inside, but only 16% trade outside the UK (NB: 16% of the number of businesses, not volume of business).

15% of businesses had no orders on their books, and most committed orders did not go beyond 3 months in advance. 58% of businesses were trying to expand, mainly by increasing manufacturing capacity.

Over half of businesses source timber from Wales; only 13% import it from outside the UK (again, this refers to numbers of businesses, and may not reflect volume of timber and proportion of the industry).

Timber buyers stated that price is the main consideration when sourcing timber (52%) followed by quality (35%) and availability (21%). Only 7% of buyers mentioned sustainability unprompted, although 64% said that some of their customers were looking for sustainably produced products.

Document 9: Integrated Strategies for the Welsh Timber Industry

This report was produced in 2011 by Thomas Stoney Bryans, on behalf of bere:architects and BRE Wales, with support from WEFO. It considers the extent of Wales' forest resource (based on pre-NFI figures) in relation to the timber supply chain and the processing industry.

It is emphasised that the Welsh timber industry is at a disadvantage in an international context, particularly due to climate and extent of forest area when compared to northern European countries. It outlines the economic situation whereby buyers of construction timber prefer to buy slightly more expensive (higher grade) imported timber, rather than Welsh timber, because less of it is needed in construction resulting in overall cost savings in the perception of the buyers.

The report provides examples of timber technologies which are appropriate to the softwood timber already produced readily in Wales (laminated beams, "I-Joists", box beams etc.)

The key recommendations of the document are:

1. Increased collaboration between sectors (timber production and various parts of the processing industry)
2. Investment in the long-term evolution of the industry
3. Focus should be on adding value throughout the supply chain, rather than just increasing the volume of output.

The document provides some interesting insight into emerging technologies which are well-adapted to Wales timber output, but perhaps the most important conclusion to be drawn is that – for now at least – the main timber markets respond fundamentally to **price** and **quality**. There is currently little additional value in specifically Welsh (or British) grown timber.

Document 10: Supply Chain Sawmill Survey

This report was written by Kath McNulty in 2012, for WFBP. It provides a picture of the main sawmilling businesses in Wales (and some of those in England which buy Welsh timber).

The majority of timber harvested in Wales is processed into sawn fencing and packaging in Wales and the Marches, for sale in Wales and England. Medium-sized mills apparently have few difficulties with quality and quantity of raw material, but larger mills have problems with securing enough quality material. This appears to be a constraint on business expansion.

Sawn fencing appears to be the most profitable market. Construction timber requires increased processing effort (kiln drying) which deters small and medium producers from entering this market; however the report concludes that the sawmilling industry in Wales is likely to respond positively to new opportunities to sell into a growing timber-frame construction market.

The report makes a number of recommendations; the key ones are as follows:

- There is a need to increase the amount of information about timber products, and influence end users and professionals (especially in the UK Timber Frame Association, and the construction industry more widely). Specifically, it's necessary to communicate to buyers that it's not necessary to specify C24-grade timber for all applications.
- Further research is needed on timber properties and suitable provenances, in support of enhanced species diversity in Welsh forests.
- Continued support for initiatives which improve knowledge and co-operation within the industry and increase the demand for timber (notably Woodknowledge Wales, Wood for Good and Woodsource Wales).
- New planting schemes should have an increased emphasis on commercial species, with a view to improving the economy and sequestering / embedding carbon in wood products.
- The Welsh Government needs to be helped to understand the importance of woodland management and the role of conifers in the Welsh economy, so that it can support growers to produce the quality of material needed...
- ...accordingly a grant scheme is necessary which encourages thinning, pruning, access, pest and disease management and restocking in private woodlands.
- WG should be encouraged to understand the importance of woodland management to creating timber which can contribute to improving the carbon stocks via sequestration, embedding and substitution.

Document 12: Cwm Harry Log Burner report

Log stoves are not currently supported by the Renewable Heat Incentive or Green Deal. This report was produced by Cwm Harry, for the Energy Saving Trust in 2012. It considers whether those financial support mechanisms should be added, and if so, how. This includes research into ways that heat output could be measured, and the potential for installing log stoves more widely.

The report concludes that there is potential for more widespread use of log-burning stoves. Their efficiency in practice is typically 25% to 50%, although 80% is theoretically possible. Users are not confident about buying fuel: it is suggested that measures to increase confidence in fuel supply, and use the technology efficiently, are needed.

Regarding participation in subsidy schemes: metering of heat output is not thought to be feasible. The document suggests an alternative, in which an Energy Supply Company (ESCo) is set up to supply fuel, providing an audit trail of fuel purchase and distribution. This solution is recommended in the conclusions. It is further pointed out that such an ESCo would also be able to address the quality assurance / confidence issues for users.

The report notes that there is potential to increase the volume harvested from UK forests, and that some of that could go into log fuels; however the surplus / overdue timber noted in the NFI is softwood, which would be considerably less attractive to users than hardwoods (although it could be brought to market at a standardised moisture content considerably more cheaply). Users would need more storage space for softwood supplies, and would need to re-fill their stoves more frequently.

Document 7: Wales Domestic Firewood Survey 2012

This study is based on a questionnaire conducted in locations throughout Wales, in which members of the public were asked about whether they used firewood for domestic heating, their level and type of their use, and (for non-users) whether they would consider moving to firewood heating. 535 people completed the questionnaire.

The survey revealed generally positive attitudes to wood heating, with many people perceiving it as environmentally friendly. Notably, fewer than half of households with existing wood heating, source their fuel commercially: instead many cut wood from their own land, or from other people's land with permission¹². 27% of respondents buy all their wood, and a further 18% buy some of it.

The report estimates¹³ that the total annual consumption of firewood in Wales is 576,400m³ (expressed as solid roundwood), which (the report suggests) is roughly 40% of annual wood production in Wales. As this is mainly hardwood, the report indicates that production from private farms and woodlands is around 20 times greater than FCW figures for non-FC hardwood production.

Even making allowances for the small sample size, and the difficulties in obtaining accurate information on volumes from survey respondents, this report suggests that the actual level of hardwood use in Wales is seriously underestimated.

The report points out that the survey findings show a willingness to use wood fuel, and considerable knowledge among users of wood fuel, even if the supply chain is somewhat informal. This appears to support a re-evaluation of agri-environment schemes, and the Renewable Heat Initiative, to make them more supportive of fuel wood production from farm woodlands and other small woods.

¹² As the report points out, many of the questionnaires were completed at agricultural shows; therefore it is likely a higher proportion of respondents would have access to their own timber supplies than if more of the surveys had been completed in an urban setting.

¹³ See p.31 of the report. The estimates are presented cautiously due to the relatively small sample size.

Section 4: FCW Corporate Programme documents (x10)

These ten documents set out the planned activities of FCW for a 3-5 year period, and also indicate the organisations intentions with regard to the longer term. They are accompanied by a diagram which explains how each Programme sits between the “Policy Positions” arising from the Wales Woodland Strategy, and FCW’s Delivery Plans.

The present study can only consider each document very briefly, and it is acknowledged that this means that the summary is not a complete or fair picture of FCW’s Programmes. However the intention here is to draw attention to aspects of the Programmes which are of particular interest to the private sector and WFBP, and to allow an analysis of “gaps”, both in the FCW Programmes and in the availability of supporting evidence and information. This approach means the analysis which follows is somewhat critical in nature – it is intended to be constructive criticism.

All documents

Some characteristics are common to all of the documents. The most prominent of these is that the Better Woodlands for Wales (BWW) scheme is frequently cited as FCW’s mechanism for delivering the programme in private sector woodlands. The BWW scheme closed to new applicants in 2010, (which is noted prominently in the Programme documents). The absence of a replacement mechanism for influencing the private sector is the most obvious “gap” between FCW’s stated intentions, and capacity to deliver.

In several instances BWW is noted for its ability to provide a strategic forest planning tool with site-level management planning.

It may be argued that the Glastir Woodland Creation (GWC) and Glastir Woodland Management (GWM) schemes are the replacement mechanism. This may be true, but to date there is insufficient detail available to form any impression of a link between specific programme targets and the grant scheme. None of the information currently available on GWM indicates that it offers anything aspiring to be a management plan or strategic forest planning tool.

FCW Programme 1 – Managing more diverse woodlands

There are a range of drivers for diversification of woodlands, most of which are well-known. Perhaps the most prominent is adaptation to a changing climate. In this document they state the following principle:

“Managed woodland and trees can and do deliver multiple benefits, at the same time and in the same place, and therefore optimisation across a range of potential benefits will often be more appropriate than maximisation of single benefits”(p.8)

The document states that *“the potential trade-off between greater diversity (to increase resilience), changes to woodland character, distribution and timber production **will be managed at a national rather than local level, through measures to create new woodlands and to bring more woodlands into active management, including wood protection**”* (p.8, my emphasis).

The implication here is that FCW acknowledge that diversity measures in woodlands will reduce productivity but that this can be addressed by increasing woodland cover. This presents (at least) three questions: how much new productive woodland will be needed, how will it come into existence, and (on this basis) how should owners of smaller woodlands be encouraged to reconcile themselves to loss of production?

WFBP is noted as a delivery partner in this programme, specifically to promote the benefits of Certification, to promote site-based management planning, to help to scope and prioritise investment in contractor machinery, working practices etc., as a partner in developing skills within the sector, and promote operational guidance on tree species diversity. The document does not suggest how WFBP should find the resources to do this.

FCW intends to market 770,000m³ of timber (including CF and thinnings) from 2010, and plan for more thinnings and less clearfell volume in future. Their working figure (target?) for production arising from woodlands in private ownership is 670,000m³. (p.21)

FCW Programme 2 – Tree Protection and Health

The document notes a number of drivers for this Programme including the economic and environmental implications of pests, plus the fact that damage to forestry makes delivering other public policy outcomes less feasible.

The most notable actions arising from this plan are:

- The production of a structured assessment of existing and potential pests to Wales' forests.
- To work at UK level to develop and publish guidance notes
- To implement the disease management strategies for *P. ramorum*
- Organise plant health days for private sector practitioners, both regularly and in response to specific outbreaks.

The Programme includes WFBP as a delivery partner, with regard to “working with partners to develop, publish and implement the Wales Deer Strategy and Action Plan”.

FCW Programme 3 – Renewable Energy

Describes the means by which FCW will support the development of renewable energy **from woodlands and trees** and includes wood as fuel, wind energy and hydro-electric energy on the WGWE.

Specifically, the programme supports two themes from WWS: responding to climate change and developing a competitive and integrated forest sector; however, it is noted prominently that **the wood energy market offers opportunities to support a wider range of woodland strategy objectives via encouraging the sustainable management of woodlands, including small woodlands.**

Policy direction on non-wood renewables (i.e. wind and hydro) is provided via WG & UK energy policies.

The Programme includes commitment to biomass production on the WGWE:

“Make available wood fuel and biomass products for users in Wales, fulfilling our contractual commitments providing approx. 100k m³ over bark standing each year” (p6)

FCW's position regarding windfarms, and tree planting to ameliorate the effect of felling to create them, is dealt with in this document. This is outside the scope of the current study, other than to note that the Programme states (p. 7) that funding for wind and hydro should not come from baseline forestry funding.

FCW state their intention to develop an evidence base for the economic potential of wood energy markets to encourage the sustainable management of farm woodlands (p.10). They also indicate that they wish to develop models for appropriate short rotation forestry in Wales (p.11).

The approach to woodfuel can be summarised as: FCW supports it, but thinks it should complement, rather than compromise the management of our forests for timber production and other benefits.

The document gives considerable support to investigating the potential of SRF in Wales, recovering more material from arisings etc. from other work, and developing “complementary” markets for woodfuel in relation to conventional forestry products.

FCW Programme 4 – Public involvement and enterprise

Public involvement is regarded (in the UKFS) as one of the criteria for sustainability, and all WG departments are required to take due account of public opinion. This programme document sets out FCW's approach. It notes the importance of communities in WG policy, and that there are significantly different levels of woodland use which characterise the more affluent and deprived communities in Wales.

There are few parts of this document with immediate implications for the current study; most of the action points relate to the management of the WG Estate. It should be noted that the Programme makes a commitment to Llais y Goedwig (p.12) and recognises the role of the wider forest sector in encouraging and promoting public benefits from woodlands (p.6). There is also reference (p.16) to encouraging the sale of woodfuel through local businesses, to local people, through the Firewood Framework Contracts.

FCW Programme 5 – Recreation and Access

This programme describes FCW's corporate direction with regard to recreation in, and public access to, the woodlands of Wales. Most of the emphasis is on management of the WG Estate; however, there are some points to note with reference to the private sector.

The programme notes the economic drivers for public access and recreation (in addition to community outcomes).

It states (p.5) that:

WG aims to increase the percentage of people in Wales using the Welsh natural environment... and to ensure (by 2025) that 95% of people in Wales have a footpath or cycle path within a ten-minute walk, and no-one lives more than a six minute walk from their nearest natural space.

The Programme suggests (p.17) that FCW will "...work with others to provide access to existing Welsh Government Woodland Estate or new woodlands close to where people live". It points out that the BWW scheme was the mechanism for doing this; however, it offers no alternative mechanism, noting that the scheme has now closed.

FCW Programme 6 – Learning and sector skills

This programme sets out FCW's approach to the provision of education, principally via the use of woodlands as a location for learning, but also incorporating actions arising from its commitment to "a thriving, skilled workforce in the forestry sector".

The document confirms FCW's continuing support for Forest Schools and the Forest Education Initiative (which work with private woodlands as well as on the WG Estate). It stresses that FCW's activities with Forest Schools should be targeted to areas with no existing provision, thus not threatening existing Independent Forest School providers.

The document emphasises the importance of communicating to all age groups *"the importance of active woodland management, and the use of timber as a valuable renewable resource which can help to mitigate the effects of climate change through carbon sequestration and substitution."* (p. 13)

The section pertaining to the forestry sector includes several points which may inform how FCW / WG relate to private sector woodland owners and managers. The action points include (p. 14 onwards):

- Reviewing the skills required within the sector to accommodate a management planning approach, improved silviculture and new woodland creation.
- Reviewing "Silvicultural governance / procedural planning processes" and training and mentoring programmes.

- Undertaking an Equality Impact Assessment
- Improving provision and quality of work placements (the emphasis appears to be on those within FCW)
- Continued commitment to an apprenticeship scheme

Overall the “sector skills” section of this Programme appears to be very positive with regard to provision for young people entering the industry, but says very little about developing skills of existing contractors and managers in the industry.

FCW Programme 7 – Urban Woodlands and Trees

This document is an interesting insight into FCW’s work on urban forestry; however, it contains little of immediate relevance to the current study. Most of FCW’s activities in this area involve management of the WG Estate close to densely populated areas, and working with various other organisations to provide public benefits through trees in urban areas.

In the context of an “ecosystem services” approach to forest management, and the perceived need (noted elsewhere in this report) to find imaginative new ways of funding woodland management which provides wider public benefits, the private sector could perhaps benefit from examining the methods and funding mechanisms of urban forestry.

FCW Programme 8 – Promotion of timber & development of the forest sector

This document is of particular relevance to WFBP’s members.

The “key drivers” section of this programme points out that timber is a “*renewable and flexible low-carbon raw material*”, and that it is an effective, environmentally-friendly and under-utilised building material. It is a good source of renewable energy. The management of woodlands for timber production can generate significant economic activity in rural areas, economic benefits which can be further increased by processing of timber (adding value). It points out that Welsh hardwoods are currently under-utilised compared to softwoods.

The document acknowledges that “*...the growing and use of timber supports a number of public policy outcomes*”, that Wales is currently a net importer of timber, and notes that this means “*...the whole of the Welsh grown resource has a potential market*” (p.7). The same section observes, somewhat prosaically, that there is “*no fundamental market failure in [timber] production globally*”, which appears to mean that Wales’ timber would be more readily marketable at home, were it not for imported timber.

The Programme proposes that: “*...the economic performance of the whole forestry and wood using sectors should be the focus of support, rather than measures to favour a single business or business model*”, and suggests that there would be benefits from a more strongly integrated sector, with better connections between consumers and growers.

The Actions section includes a number of points which are of interest to (and directly involve) WFBP members, including:

- Supporting the National Forest Inventory (as described elsewhere in the current document) and developing an integrated Production Forecast for the Welsh Forest (including the private sector). This includes specific reference to the Private Sector Production Forecast Group.
- Developing timber yield modelling which takes account of changing silvicultural practices.
- Developing the Production Forecast tool (part of FCW’s Forester GIS system) to incorporate private sector data, and management intent. (NB: there is no detail given regarding how management intent is to be recorded and interpreted in the absence of government-supported woodland management plans.)
- Integration of softwood log quality predictions into the production forecast process.
- Improving the quality and quantity of data for hardwood production forecasts.

- Improving the availability of data on wood fibre for the wood fuels markets.
- Developing systems enabling stakeholders to track the open market price of timber and wood products, and thus accurately assess the value of particular parcels of timber.
- Provide information on the impact of climate change mitigation on timber growers and the processing industry.

The WFBP itself is specifically identified (p.11) as the lead body to:

- *“Encourage greater co-operation across the forestry sector in Wales to:*
 - *(a) strengthen the competitiveness of single businesses and the forestry sector*
 - *(b) develop products and opportunities which make good use of timber”*

FCW is named as the lead on identifying and sharing best practice on the *“management of woodland linked to the use of timber in construction and fuel”* via the Future Forest project, and through developing the Construct project.

Confor is named as lead to *“support efforts to reduce the impact of timber transport within Wales”*.

Part 3 of the Actions section (p11) mentions a “timber promotion campaign” involving the private and public sectors, with a number of outcomes identified, including to: *“Educate potential users of timber to understand that the active management of woodland is an essential part of maintaining and improving its condition and that timber is a renewable and sustainable product of that process”*

Other aims of the scheme include a study of Wales’ dependency on timber imports and promotion of the Certification and Chain of Custody schemes; however the precise nature of this promotion campaign is not made clear. “Industry” is recorded as the lead for streamlining the process for obtaining woodland certification (etc.) although there is no suggestion of how FCW expects this to be achieved.

WFBP is to take the lead on *“Identifying, publishing and promoting the data on the carbon saving benefits derived from using timber in construction, packaging and as an energy source.”* (p.13)

The corporate performance measures listed in this document include a long-term aim of **180,000ha of woodland in Wales with an approved management plan meeting UKFS**. Assuming all WG Estate woodland qualifies, this means 63,000ha of privately owned woodland would be required to meet the target. The now closed Better Woodlands for Wales scheme – which included a UKFS-compliant woodland management plan – included about 40,000ha of private woodlands¹⁴. It should be noted that there are other private woodlands (including many under UKWAS certification standard schemes) which would also contribute towards FCW’s target, despite not being in a grant scheme.

FCW Programme 9 – Restoration and management of native woodlands and open habitats

This programme notes that “virtually all” of Wales’ Ancient Semi-Natural Woodland is in non-Assembly ownership, and that native woodlands are generally small and “fragmented and not actively managed”.

It points out that many forests have open habitats associated with them, which may be integral to the woodland, and (especially when in the same ownership) offer the potential to contribute to important habitat networks.

The document states that about a sixth (19,000ha) of the WGWE is open space, and there are 12,000ha of deep peat habitat with “potential for restoration” on the Estate.

¹⁴ Source: Forest Research evaluation of the BWW scheme, [available online](#)

The document emphasises the “catastrophic risk” from reliance on a handful of softwood species, and indicates that Wales needs to adapt management regimes, develop a “sound approach” to genetic diversity and increase the diversity of tree species used in Welsh forestry.

The document commits FCW to developing further guidance on the management of Native Woodlands in Wales, although it does not clarify whether such advice will be tailored to meet the requirements of changing environmental conditions which the report itself has emphasised. Notably (p.8), the document commits FCW to taking a prioritised approach to restoring PAWS and converting non-native woodlands to a “more natural state”. Exactly what “natural” means, in the context of actively promoting woodlands’ resilience to an artificially altered climate, is not clear.

It also commits FCW to a project to identify priorities for deep peat habitat restoration, entitled “strategic assessment of the afforested deep peat resource in Wales and biodiversity, greenhouse gas flux and hydrological implications of various management approaches for targeting peatland restoration”.

It is noted that further (unspecified) sources of funding will be required, along with collaboration with others outside of WG, although no details are specified at this stage.(p.9, point 6).

The “Actions” includes a UKBAP action “By 2030 80% of all native woodlands will have a ‘management plan’ indicating intention to restore”. As the Programme itself points out that most native woodland is not in Assembly ownership, it is reasonable to observe here that WG’s closure of the BWW scheme appears to have ended the only programme which was likely to bring significant areas of native woodland into structured management planning.

Targets (3-5%) are set for the conversion of non-ancient, non-native woodland to native state, with 3% being achieved by 2030. The document (p. 17) sets out the various targets for native woodland creation (UKBAP, Corporate target and Glastir).

The “Partnership Working” section describes the partners with which FCW intends to work to achieve the Native Woodland outcomes. These include various government agencies but do not include the owners or managers of Wales’ native woodlands, or any of their representative organisations (Confor, NFU / FUW, CLA, Small Woods Association etc.).

FCW Programme 10 – Site-based biodiversity, heritage and landscape

This is a wide-ranging programme document, encompassing biodiversity (species and habitat management), heritage (including archaeology and the cultural significance of woodlands) and landscape (including National Parks and designated landscape areas). Clearly, many of the targets and actions listed relate primarily to management of the WG Estate; the following comments are focussed on the wider forestry sector:

The document states that FCW will “continue to seek landowners’ agreement to management plans...”. The importance of considering habitat connectivity and networks is emphasised, as is the need to provide woodland managers and landowners with guidance on appropriate management techniques.

The approach to biodiversity management in the private sector outlined here is mainly limited to the provision of guidance (e.g. published guidance on protected species; licencing decision trees) and encouraging good practice. There is scope for more direct influence via the use of habitat networks in targeted planting schemes, but the development of the “layers-based” objective targeting for Glastir Woodland Management (since this Programme was published) may be said to have filled some of the gaps left by the withdrawal of BWW.

It may be observed again here that (as the Programme itself points out) 86% of native woodland is in private ownership. The contribution of this area to Wales’ biodiversity, heritage and landscape is obviously enormous. The programme states:

“Building closer and more meaningful relationships with others who have direct regulatory responsibility for biodiversity action, neighbouring landowners and potential partners will provide clarity for managers of the Welsh Government Woodland Estate and other woodland owners and managers in Wales. For non-statutory issues there needs to be a clear set of priority issues to tackle, stating what, why, where and how and, arguably, most importantly funded [sic].” (p.20)

The “Partnership working” section specifies the need to work closely with various government agencies, but does not make any specific mention of how most landowners and their representatives will be involved, other than via the influence of notable landowners such as the MOD, National Trust and Woodland Trust.