Exploring value beyond carbon in Woodland Carbon Code founded woodland expansion in Scotland

James Koronka[1], Paola Ovando Pol[1], Jo Vergunst[2]

1 Social, Economic and Geographical Sciences Department, The James Hutton Institute, Craigiebuckler, Aberdeen, AB15 8QH

2 Department of Anthropology, The School of Social Science, Edward Wright Building, University of Aberdeen, Aberdeen, AB24 3QY

Emails: James.Koronka@hutton.ac.uk; Paola.OvandoPol@hutton.ac.uk; J.Vergunst@abdn.ac.uk

Introduction

Forest expansion is a key objective of both the UK and Scottish Governments. Scotland aims to increase forest cover from 18% to 21% by 2032. Carbon sequestration through forest expansion is also an important goal for the UK Government, hoping to meet their commitment to achieve Net-Zero by 2050.

The Woodland Carbon Code (WCC), initiated in 2011, is a scheme designed to sequester carbon from new woodland creation, funded by the sale of carbon credits. The scheme demands that forests meet the standards of the Forestry Commission, and undergo independent inspections every 10 years to verify the carbon sequestered.

Since 2011, 526 forests (as of September 2020) have joined the WCC in the UK. Of these projects, 258 have been 'validated', meaning that they have been certified as meeting the standards of the WCC scheme. Including projects that are 'under development', this represents an area of more than 22,000 hectares of forested ground, with roughly half of this area located in Scotland.

Research has shown the plurality of different reasons for woodland creation[1]. This new emphasis on woodland carbon, presents a new motivation for woodland creation. This generates new questions related to *value*, understood as monetary value, and other values; environmental, social, cultural, etc. What sorts of forests are being created through the WCC? Is carbon impacting on people's perception of the value of forests? What other motivations alongside carbon do people have for forest creation?

Our analysis, attempts to answer some of these questions through an interdisciplinary approach that uses both quantitative and qualitative methods, to build a broad picture of WCC woodland expansion projects, and to give a human face to the scheme.

This research fits into The James Hutton Institute's Corporate Strategic Objective; *'Science Strategy 2: Protect and enhance the resilience of ecosystems for multiple benefits.'* This work is ongoing, and these results must be interpreted as preliminary, but we suggest some trends and conclusions from what we have observed so far.

References

1. 1. Yang, A. (2020) 'The Multiple Roles of Scottish Woodlands.' *SB 20-58*. Available at: https://digitalpublications.parliament.scot/ResearchBriefings/Report/2020/9/9/The-Multiple-Roles-of-Scottish-Woodlands-1 (Accessed: 25.10.2020).

Methods

I. Statistical analysis of new planting and carbon sequestration

Primary data was collected from the IHS Markit Environmental Registry (https://mer.markit.com/). Areas of forest planted and types of forest, e.g. 'predominantly broadleaf' (≥80%) and 'predominantly coniferous' (≥80%), have been analysed to build a picture of new forest expansion under the WCC (*Figure 1*). Rates of woodland expansion under the WCC have also been compared with total levels of planting in Scotland since the WCC's creation.

II. Statistical analysis of projects' 'stated aims and objectives', and 'predicted environmental and social benefits'

Project Design Documents (PDDs) are used by developers when making an application to the WCC. PDDs contain detailed sections that describe projects' 'aims and objectives', 'expected environmental benefits' and 'expected social benefits'. These data are being analysed using N-Vivo12.

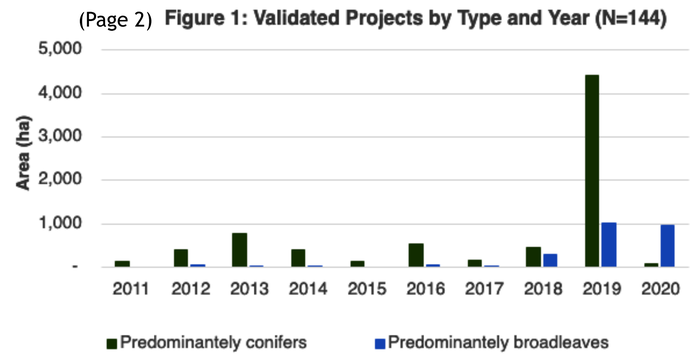
III. Semi-structured interviews with stakeholders (N=8)

Semi-structured interviews with 8 stakeholders representing 4 project developers and 4 landowners (2 charities and 2 private landowners). Questions were designed to understand stakeholders' experiences of the WCC process; motivations and values in planting forests; and experiences of selling carbon credits.

Results

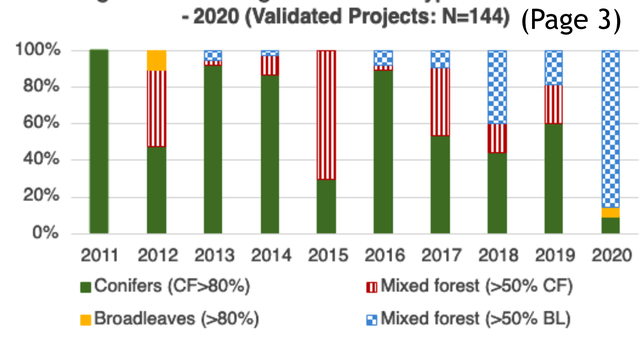
I. Our analysis (Figure 1), shows an increase in projects joining the WCC since 2011, peaking in 2019. Note that the sharp peak in 2019 is produced by one single group of projects that represents half of the validated hectares that year, (see page 5 for more information). Even not considering these projects, we still see an increase in projects from 2011 to 2020. We attribute the slower rate of new projects in 2020 to the COVID19 pandemic.

(Page 2) **Figure 1: Validated Projects by Type and Year (N=144)**



II. We also show that predominantly coniferous species have been planted (Figures 1 and 2). However, 2018 and 2019 saw significantly higher proportions of broadleaf planting than previous years, and 2020 has so far seen a majority of broadleaves planted. 2020 has clearly been an unusual year, and it is difficult to know if this is an indication of the future direction of the scheme, or a circumstantial change. Developers (N=4) highlighted that carbon funding for broadleaf forests is particularly important because these forests often lack other sources of income. When comparing the intended management-

Figure 2: Percentage Share of the Type of Woodland 2011 - 2020 (Validated Projects: N=144) (Page 3)



- regimes of these forests, we find 89% of broadleaf forests are opting for 'no thinning or clear-felling', whilst coniferous plantations only 25% choose this option, with 66% of conifers being 'thinned or clear-felled' (page 6). This shows that carbon funding, (which is greater for projects that plan 'no thinning or clear-felling'), may be in some cases counterbalanced by the traditional use value from timber production. (For a breakdown of regional planting distributions see page 4)

III. Interviewees expressed a wide variety of different motivations and interests in woodland expansion. Environmental and social considerations were commonly discussed, and it was clear that carbon was one consideration amongst many others (see page 7 for more examples). Just one example we highlight for the wider considerations presented, is the following statement by a landowner:

'….to get that biodiverse focus…returning to life what was a habitat dead area, groundwater terrestrial ecosystems that we left untouched and will be protected, leaving open butterfly areas… encouraging black grouse to come back, and trying to make it accessible to the public…'

(Note that interviews cannot be generalised across all projects in the WCC.) See also the word-cloud (page 8) for a visualisation of the 100 most commonly used words in the Project Design Documents.

IV. When asked about buyer's preferences, there is a perception (N=6) that demonstrating other environmental and social benefits, offering planting days, corporate picnics, etc., as well as having an ethical reputation, (e.g. those of charities), incentivises buyers to purchase carbon from those forest projects. We have so far been unable to interview buyers, which is a limitation, but this was a perception held by interviewees. This is influencing how projects are being advertised, with these other benefits being presented as selling points for corporate investors. (We have examples of these documents provided by participants.)

Conclusions

- Carbon funding so far has facilitated **higher planting rates of predominantly coniferous species. This trend seems to be reverting in favour of mixed woodlands with a higher presence of native broadleaves in the tree mix over the last 3 years. Over this period we have also observed an increase in the area of woodland expansion projects validated, truncated by the pandemic crisis.**
- Preliminary results of the analysis of Project Design Documents suggest that **carbon is only one consideration amongst other factors.** This is demonstrated by **differences in planting and management decisions, which affect the type and uses of the woodland created.** This is corroborated by interviews with developers and landowners, who **expressed a wide range of interests and intentions behind woodland creation.**
- **This research may have wider importance for developing a greater understanding of people's perceptions of the value of woodland and carbon, climate change responses and land-use changes in Scotland, as well as potentially helping in the design of new green recovery policies.**

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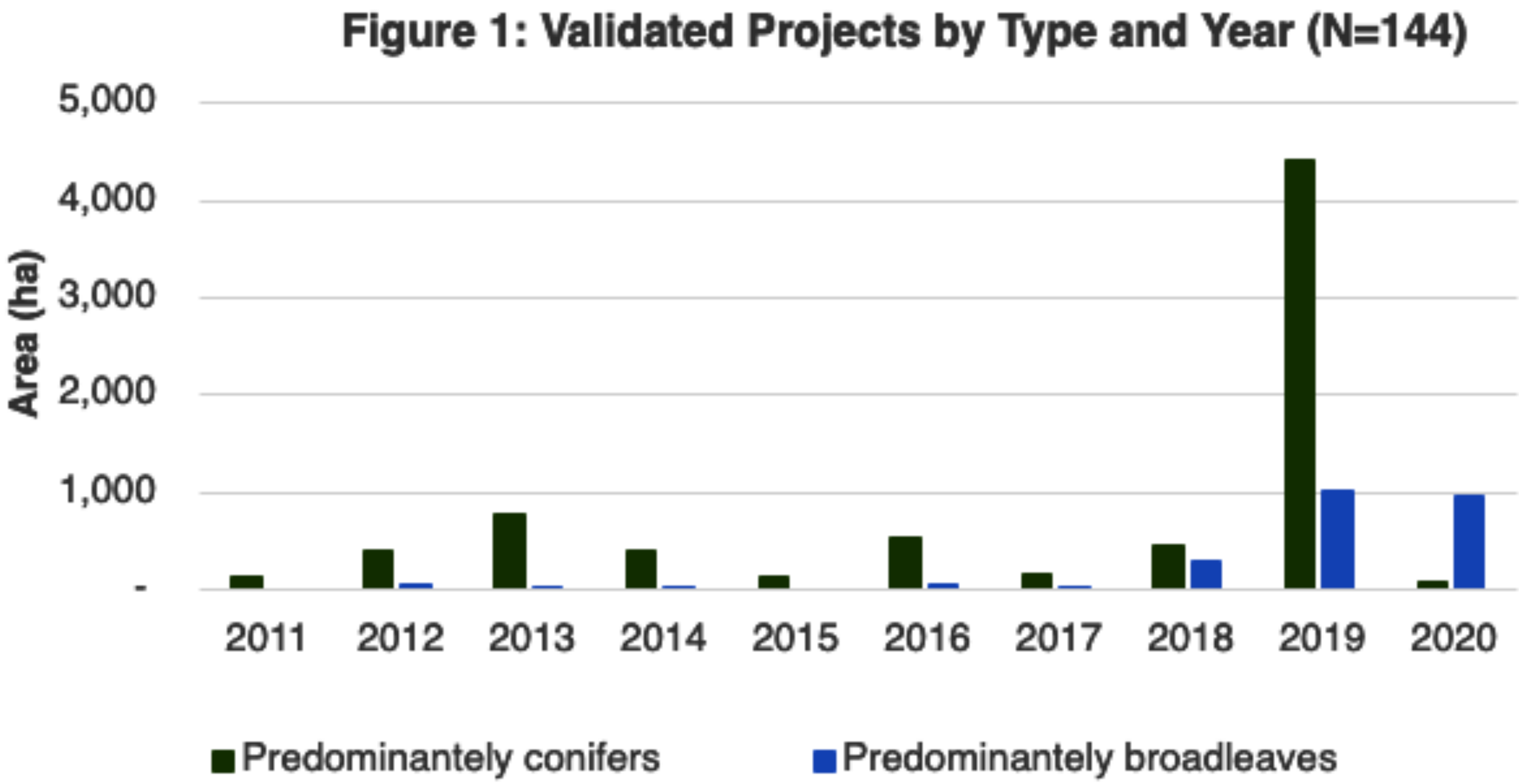

This figure shows validated projects by type and by year, with an increase in planting over the 9 year timeframe and a movement from predominately coniferous trees planted towards predominantely broadleaf. Note that the sharp rise in 2019 is partly conditioned by one single and very large project reaching validation. See page 5 for further information.

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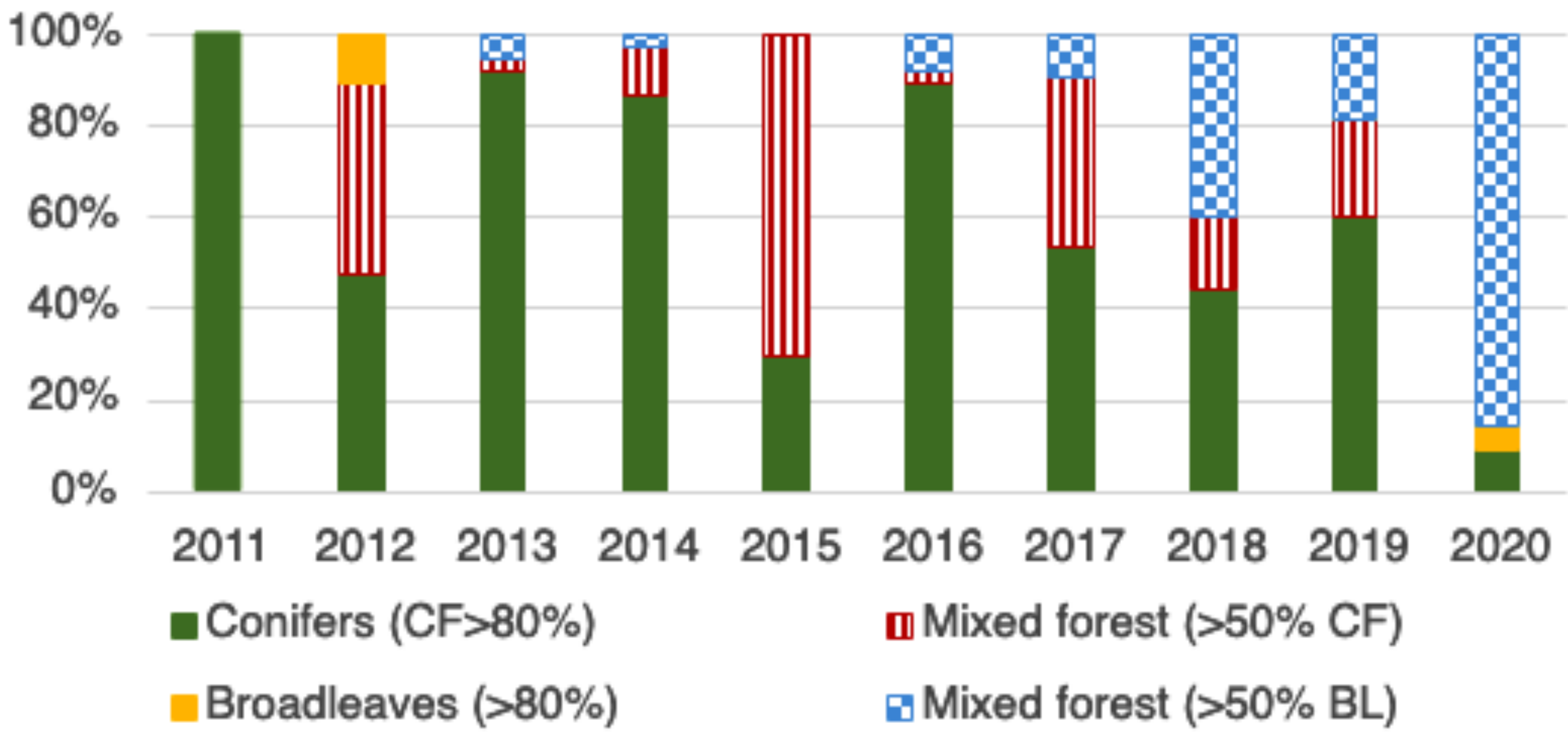
Figure 2: Percentage Share of the Type of Woodland 2011 - 2020 (Validated Projects: N=144)



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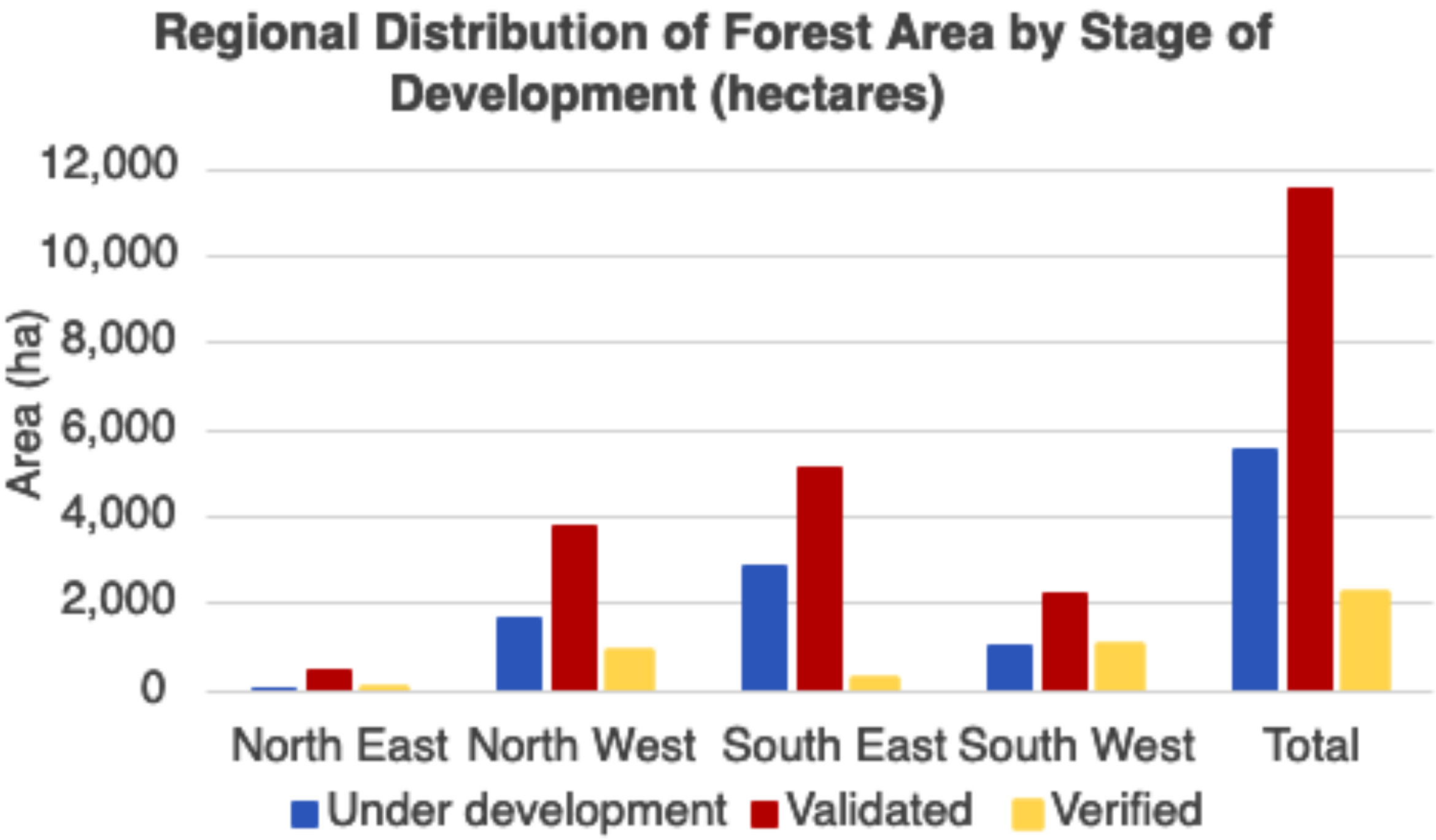

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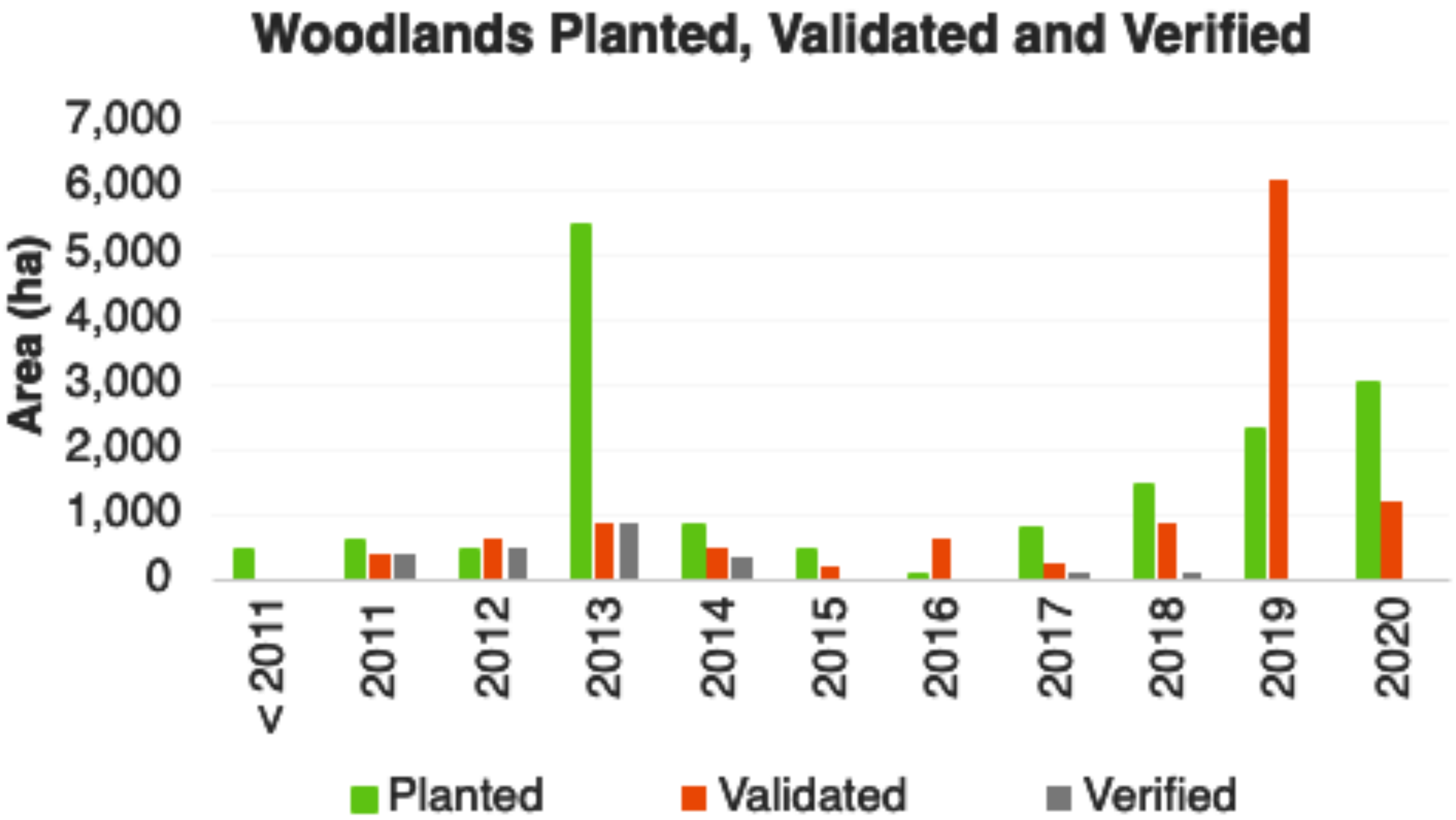

This graph helps to interpret the large spike in validated projects in 2019. Typically, on average, we calculate it takes between 1 and 2 years for a project to be 'validated' from the beginning of the project's entry to the scheme. However, in some cases this may be a significantly longer time. As can be seen by this graph, in 2013 there was a spike in planting which corresponds to one single and very large project, which took until 2019 to be validated. Thus, this lag of 6 years between planting and validation, gives the impression of a very significant increase in planting in 2019, but it actually occurred in 2013. Nevertheless, even removing this project from the data, we still see an increase in projects in 2019 over 2018.

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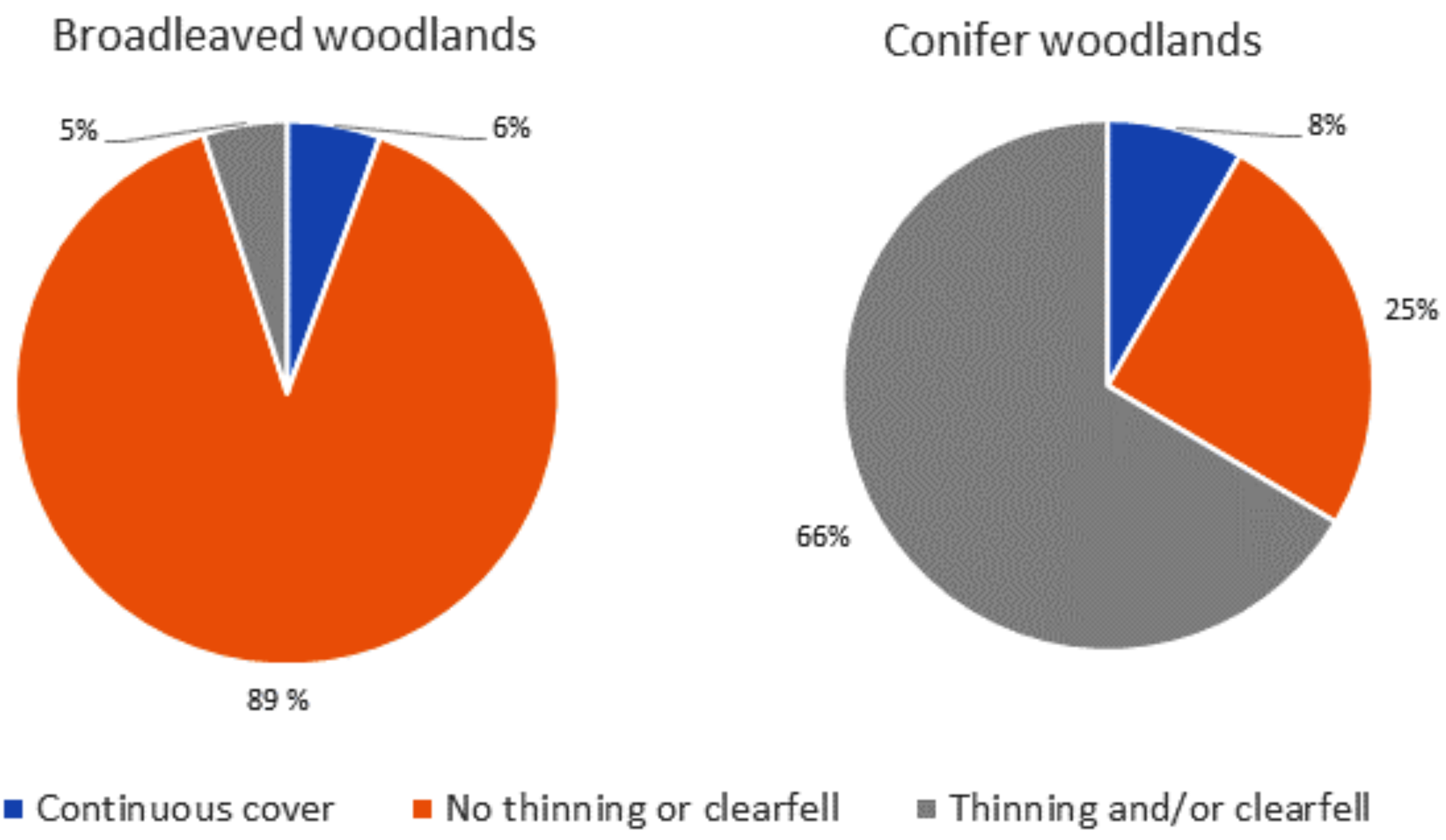
Management Regimes of Predominantely Broadleaf and Predominantely Coniferous Woodlands (Percentage)



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Excerpts from interviews highlighting some of people's thoughts and feelings towards woodland and carbon.

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One landowner's environmental considerations:

'I love woods for their own sake, but if you think that in lots of ways they're helping the planet, not just over here but all the way around the globe, and if in a tiny way you're helping to save the environment of a pangolin or a monkey somewhere that's becoming extinct as a result of climate change, then that's a good thing in itself. You're also creating a habitat for lots of creatures from elsewhere that are under pressure from habitat loss. The more people getting involved, the forest will inspire them and they will help to look after the environment hopefully in the rest of the country and around the world.'

'Carbon's quite a buzzword at the minute, biodiversity, natural capital that's all everyone's talking about and forestry plays a big part in that, so I think carbon sequestration is valuable in terms of money and from an ecosystem services point of view.'

One developer's comments on value and woodland.

Landowner commenting on the involvement of local school children in the planting of a broadleaf forest:

'…to get them to understand the magic of woodlands. That's really important, and you would never dream of doing that with a sitka spruce wood.'

'….to get that biodiverse focus…returning to life what was a habitat dead area, groundwater terrestrial ecosystems that we left untouched and will be protected, leaving open butterfly areas… encouraging black grouse to come back, and trying to make it accessible to the public…'

- One landowner's description of their aims and objectives.

'…because we're a charity and because our objectives are quite simple and clear I think a lot of corporations find us an attractive charity to work with, so you kind of get… all the beneficial loveliness that comes from that association, so I think we have an advantage that the private sector sadly don't enjoy because we're seen as being ethical and wholly conservation minded rather than profit minded…'

- One interviewee's description of the advantages that charities enjoy over the private sector.

One developer's views on woodland's importance to carbon value:

'…the woods are of a very high standard in this country and they are very accessible, and that gives them added value, which we call 'charisma', we talk slightly tongue in cheek of 'charismatic carbon'…'

'…it's that bigger picture of thinking about lifestyles but also the benefits of outdoor spaces for people, mentally and physically… all the benefits for health and well-being and we also find that getting out is a social activity…'

Social benefits of forests and tree planting according to a charity representative.

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This word-cloud shows the top 100 words used in PDDs (Project Design Documents), this information can be difficult to interpret, and must be taken as principally a visual aid to some of people's considerations. For example, words like 'clearfell' can be either interpreted as 'we intend to clearfell', or the reverse, and so do not offer much that is valuable analytically, (except they are mentioning clear-felling). However, words like biodiversity are only ever used positively e.g. 'we intend to plant a forest to strengthen local biodiversity', etc. This means we can interpret some of these words as evidence of interest in positively pursuing these values. (N=236).

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