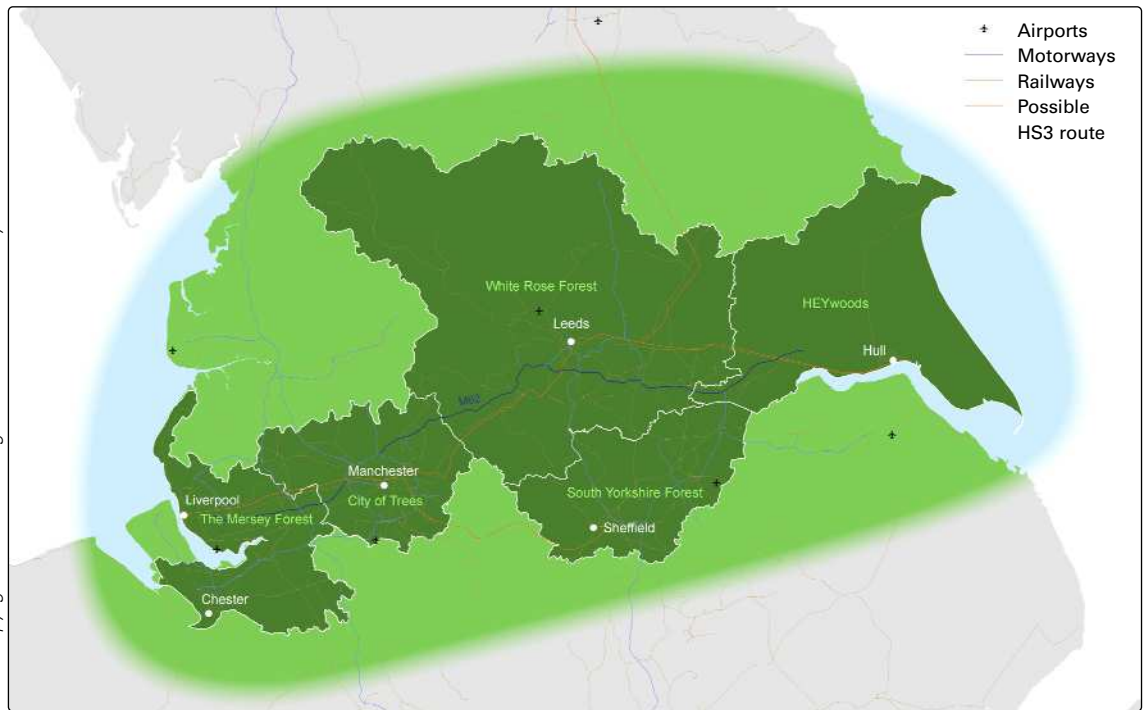


why a new northern forest is worth the investment

A new great, multi-regional ‘Northern Forest’ could not only provide biomass and future timber but also deliver many wider social and environmental benefits, while helping to co-ordinate and align investment in other housing and transport infrastructure, as Paul Nolan explains



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Fig. 1 The Northern Forest's spine of five community forests, shown together with regional transport infrastructure

Over the next 25 years £75 billion worth of investment in housing and transport infrastructure is planned across the M62 corridor from Liverpool to Hull. New investment in cities and strategic investment areas such as Atlantic Gateway, connecting Liverpool and Manchester, is already under way. The new superport in Liverpool is transforming both logistics and the wider landscape across the Liverpool city

region. There are already 13 million people living in the project area. Around 650,000 new homes are projected to be built, and the population is due to rise by 9% over the next 20 years. Currently, over 1 million companies create 18% of England's GDP in the area.

New governance, with city regions and two metro mayors in place, offers significant potential to change

the way in which investment decisions are made across this diverse geography. For example, new planning frameworks are being developed that will set the agenda for strategic investment at the city region level. The government's recent consultation on its Industrial Strategy¹ called for integrated infrastructure investment, including in green infrastructure, to secure increases in natural capital.

Currently there is no single plan or strategy in place for the natural environment that could sit alongside and complement the emerging plans for ports, roads, rail, airports and housing development and population growth at this multi-region scale. The Natural Capital Committee and the National Ecosystem Assessment (NEA) both called for significant new woodland planting to deliver a range of ecosystem services and an increase in natural capital in and around our towns and cities. Woodland cover across the M62 corridor is just 7.6% of the total area, well below the UK average of 13%.

In response, the community forests in the North of England have come together with the Woodland Trust to put forward a vision to secure significant green infrastructure and natural capital gains through the creation of a new Northern Forest. The plan for the Northern Forest is still evolving. It is being developed and promoted as a strategic environmental response to the 'Northern Powerhouse', or any future strategic, long-term programmes for the North of England.

A central component of the vision is to plant 50 million new trees over the next 25 years, creating a productive forest across the Northern Powerhouse area that will not only provide biomass and future timber, but will also help to deliver wider social and environmental benefits to improve the population's health, reduce flood risk, tackle poor air quality, improve water quality, provide opportunities for recreation, tourism and leisure, and create attractive places in which to live, work and invest.

A target of 50 million trees equates to a trebling of the rate of planting in the area over the past 25 years, since the community forests were established. The scale of anticipated change in planning, infrastructure, resources, land management, demographics and climate also points to the target and the principle as being proportionate. It is not an overly ambitious response to the challenges ahead – it is an achievable target, with specific beneficial outcomes identified and evaluated.

Initial estimates put the cost of the Northern Forest at around £500 million, an average of £20 million per year over the next 25 years. The projected economic value is over £2.2 billion, with wider economic benefits, such as improvements to health and wellbeing, estimated at over £2.5 billion.² Clearly, a key challenge will be how the Northern Forest will be funded and delivered.

England's community forests

For the past 25 years England's community forests have been delivering new woodland in and around some of the country's major towns and cities. The English community forest programme emerged from a growing urban forestry movement in the late 1980s, and from the desire of government agencies to create urban fringe forests for recreation.³ In the wake of recession in the 1980s, a primary aim for the programme was the restoration and renewal of degraded urban fringe landscapes and increased access for urban populations to local green space, particularly in areas of limited quality and provision.⁴

The 12 original community forests collectively shared four objectives:

- economic regeneration (improving the image of areas);
- economic development (employment and rural diversification);
- social welfare (through education, health and recreation opportunities); and
- environmental improvements (remediating derelict land, creating new habitat, and tackling climate change).

Collectively, over the past three decades the community forests have seen the planting of more than 14 million trees. More recently, stronger links into national planning policy have been established, providing a mechanism to work with and within Local Plans to deliver each forest plan. There is clear potential for a major step forward by extending such links into the Northern Forest. A review of the forests' interaction with the planning system carried out in 2013 highlighted where individual forests were embedded within planning policy locally and identified key issues to be tackled if greater engagement with the planning system was to be achieved.⁵

Together, the Woodland Trust and the community forests across the North of England are developing a plan for a Northern Forest. A spine of five community forests across the M62 corridor provide continuity of approach at a landscape scale from Liverpool and Chester to Hull (see Fig. 1):

- The Mersey Forest;
- City of Trees;
- White Rose Forest;
- South Yorkshire Forest; and
- HEYwoods.

We are not planting enough new woodland

At a time when there is increasing evidence for the importance of trees and woodland in providing a wide range of socio-economic and environmental benefits, tree-planting rates now stand at an all-time low in England. In 2017, 1,100 hectares were planted, compared with an official target of 5,000 hectares. It is likely that England is now deforesting, after decades of growth in woodland cover.⁶

It is difficult to arrive at a definitive figure for net woodland cover, partly because of the way in which cycles of woodland management work. For example, areas that are felled can sometimes be left bare for several years before being replanted. However, a key issue is that there is no nationally collected data on loss of woodland for development or on areas that have been felled and never replanted.

Our urban forests and woodlands and individual trees in the heart of our towns and cities are also being lost. Cuts to local authority spending on non-statutory services and a reluctance to adopt new trees when they are planted by developers, together with an ageing urban tree population, means that in many areas we are losing more trees than we are planting. Again, this is in spite of growing evidence of the benefits of urban trees alongside wider green infrastructure investment, and despite the significant progress that has been made in planting new woodland and new trees in the last few decades.⁷

In 2015 the Natural Capital Committee argued that England needs an additional 250,000 hectares of woodland to be planted around its towns and cities – 625 million new trees: ‘Woodland planting of up to 250,000 additional hectares. Located near towns and cities, such areas can generate net societal benefits in excess of £500 million per annum.’⁸

Furthermore, leaving the European Union creates a huge amount of uncertainty about how agricultural and forestry support might be delivered. There will undoubtedly be changes in priorities and levels of support, although it is extremely difficult at this stage to assess what they might be. This uncertainty strengthens the case for the Northern Forest, as it provides a strategic framework that could contribute to developing a programme for forestry for the future and could help a wide range of landowners to deliver public benefits. For example, it could provide a way to deliver payments for ecosystem services, which, while having a strong logic and evidence base, has been particularly challenging to achieve at scale in practice.

Planning for the Northern Forest

Two scenarios have been developed for the creation of the new Northern Forest. The first has been labelled ‘Nature@work’, as a direct reference to the UK NEA ‘Nature@Work’ scenario.⁹ This scenario is based on the belief that there is wide acceptance of the argument that the promotion of ecosystem services through the creation of multi-functional landscapes is essential for maintaining the quality of life in the UK. In the economic assessment of six possible NEA scenarios it was ranked first in terms of total economic value.

In developing this scenario those of us working on the plan to create the Northern Forest followed a very similar methodology to the one that has been used by the Mersey Forest for many green infrastructure plans, and in strategies such as the

Liverpool City Region Green Infrastructure Framework and the Telford Green Infrastructure Framework document. The approach can be broken down as follows:

- **Identifying key issues:** Rather than starting with a focus on the forests and trees, we began with an assessment of the issues for which there is evidence that green infrastructure can make a positive impact. For example, such issues include:
 - reducing flood risk;
 - helping to adapt to and mitigate risks from projected climate change;
 - improving health and wellbeing;
 - increasing opportunities for access and recreation;
 - improving the quality of place; and
 - enabling increases to biodiversity and providing ecological networks.
- **Assessing policy:** Does existing policy support a green infrastructure approach and so support the delivery of the Northern Forest? Local, regional and national policy was assessed to address this question. Overall, we found that the policy framework is positive if the various terms and definitions used to describe environmental improvement are translated into common language. For example, we took any reference to green infrastructure, natural capital, ecosystem services, biodiversity, landscape quality, natural environment, and even nature-based solutions to be supportive of our proposals for a Northern Forest.
- **Gathering evidence:** We gathered evidence that a Northern Forest could help to tackle some of the key issues identified, supported by policy. This helped to develop a more robust case for investment in a Northern Forest, and provided robust evidence that a Northern Forest will help us to target interventions more tightly.
- **Identifying areas where planting should not take place – ever!** Using data on Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs) and other national and international protections, regulations and designations, we identified areas where tree planting would not be appropriate. We also omitted any area more than 400 metres above sea level, as this we considered to be our tree line.
- **Mapping areas of need:** We can identify broad areas of intervention to create a Northern Forest, in both urban and rural areas across the M62 corridor. To do this we have used GIS to map areas of, for example, flood risk. By combining a number of layers of need, and where appropriate adding specific locations for strategic investment based on policy and strategy documents, we can develop a Northern Forest strategy map.

Landscape character was also an important consideration in developing plans for the Northern Forest. Using the National Character Area (NCA)

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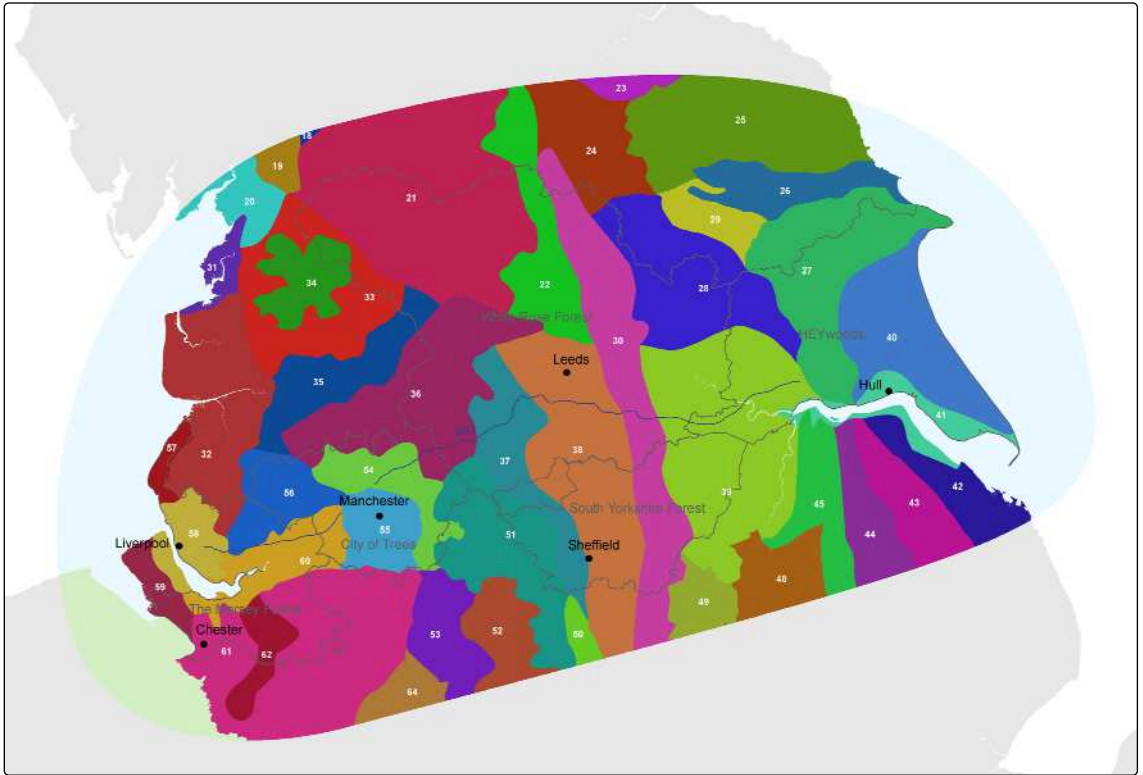


Fig. 2 National Character Areas within the Northern Forest area

mapping resource¹⁰ we evaluated the landscape capacity for new woodland and tree cover in each of the 55 NCA areas across the Northern Forest (see Fig. 2). Using the Forestry Commission's national woodland inventory¹¹ and Bluesky¹² National Tree Map data which provide the most up-to-date, high-resolution aerial imaging for the UK on individual tree canopy cover, we were able to identify the existing percentage of woodland cover in each NCA – and from this the capacity within each NCA for additional planting.

This long process of data analysis resulted in a target map for the first 'Nature@work' scenario for the Northern Forest (see Fig. 3).

Of particular interest in this scenario is the impact on reducing flood risk from increasing woodland cover in key catchment basins or areas of less than 100 square kilometres that are upstream of communities at risk (see Fig. 4). Detailed assessments of these catchments identified over 190,000 homes downstream of catchments where forest planting could play a valuable role in natural flood management. Reducing flood risk by as little as 1% in these catchments could cut costs associated with flooding by £60 million annually.¹³

Delivering a better quality of life is another central aim of the Northern Forest mission. Planting plans will specifically target areas where trees and woodlands can have a direct impact on health and

wellbeing. By facilitating improved air quality and increased physical activity, and through social prescribing and other mechanisms, the Northern Forest will develop specific interventions that target chronic health conditions. The Northern Forest research base has now amassed significant amounts of evidence showing that, for air quality in particular, street trees could make a major difference to the troubling levels of childhood asthma and respiratory disease¹⁴ found across the North of England.

In setting out plans for the Northern Forest, the community forests and the Woodland Trust have also established specific ways that the project can provide a boost for biodiversity and natural capital. Increases in woodland cover will reduce habitat fragmentation, improve the management of existing woodland areas, and help to link into the wider landscape to provide both space and networks for nature to thrive (see Fig. 5). In placing ancient and semi-natural woodlands and heritage trees at its heart, the Northern Forest will enhance and extend the existing ecological network as it develops. 'Condati'¹⁵ is a relatively new assessment tool that has been used to help to identify ecological network bottlenecks and show where the Northern Forest can help to reconnect existing woodlands.

A second scenario, which looked at how the Northern Forest might respond to a UK policy need to rapidly increase the sequestration of carbon, was

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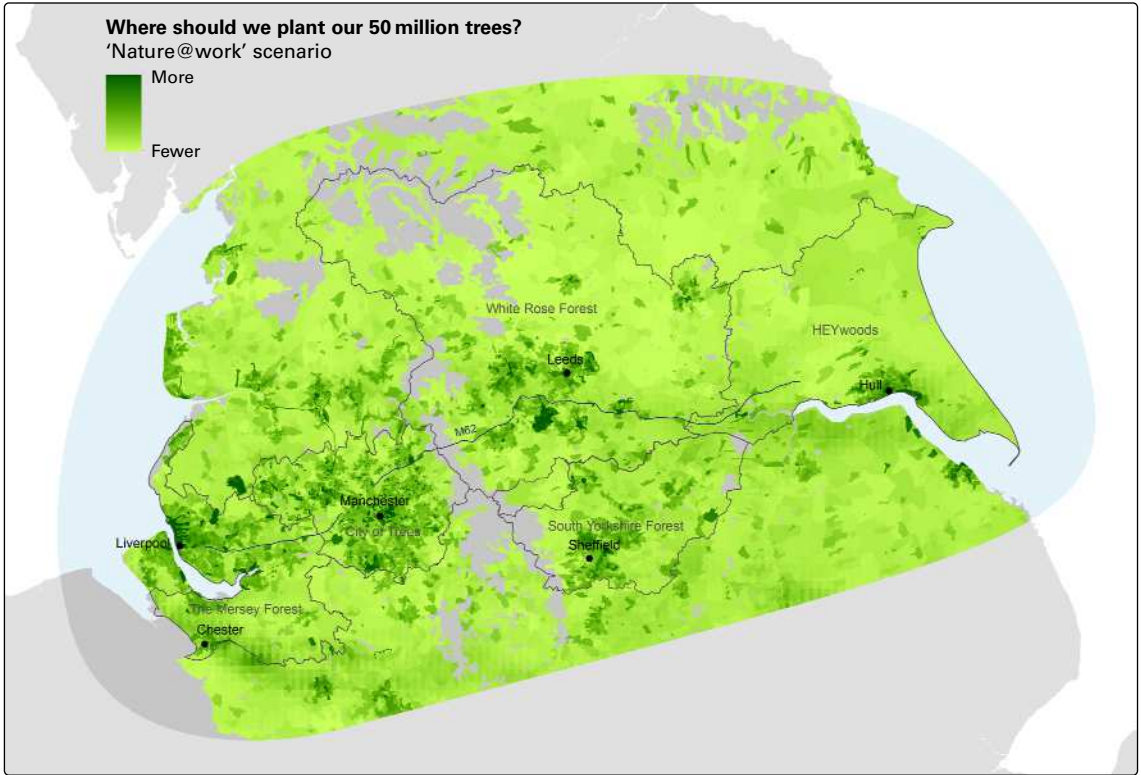


Fig. 3 Targeting new tree planting – the ‘Nature@work’ scenario

also considered – the ‘Dash for carbon’ scenario, in which the criteria used for spatial targeting were very different from those used in the ‘Nature@work’ scenario.

In the ‘Dash for carbon’ scenario, lower-value land with potential for the planting of fast-growing species across large areas was established as the principal driver. The resulting map (see Fig. 6) is very different from that for ‘Nature@work’. The focus moves away from people, towns and cities, and the Northern Forest becomes a rural programme – in the main. Landscape capacity, again using National Character Area mapping, was also used to develop this strategy. Even with this dramatic focus on rural areas, the landscape character of the Northern Forest is sustained.

Which trees?

The forester’s and arboriculturalist’s response to the question ‘Which trees will be planted?’ is likely to be: ‘The right tree in the right place.’ While this has to be a guiding principle, it may also dodge the question.

The Northern Forest should be a productive forest; a mix of native and non-native broadleaves, and a mix of high-yield coniferous species, well planned and managed to produce a flexible array of products and services. Biodiversity increase and sound ecological principles can underpin the

delivery of the forest. The Northern Forest can supply the wood processing industry as well as deliver all the services that have been identified in, for example, the ‘Nature@work’ scenario.

At a local level, there will always be debate about what types of trees ought to be planted where and for what purpose. Using tools such as the Forestry Commission’s Ecological Site Classification Decision Support System (ESC-DSS), we can make good choices about which trees to plant – choices that take into account projected climate change.¹⁶

The UK Forestry Standard¹⁷ provides the framework for new woodland planting and ensures that species choice, woodland design, delivery and management, as well community engagement, all contribute to sustainable forest management.

Our work to date sets out a high-level strategy. A transparent and inclusive approach to local delivery is a core value for community forests and the Woodland Trust, and we see that as forming a critical element of the delivery of the Northern Forest.

Making it happen

The £500 million price tag that has been estimated for delivering the Northern Forest poses a significant challenge, but with a benefit-cost ratio of 5:1 it compares favorably with the 2.3:1 calculated for HS2, for example.¹⁸

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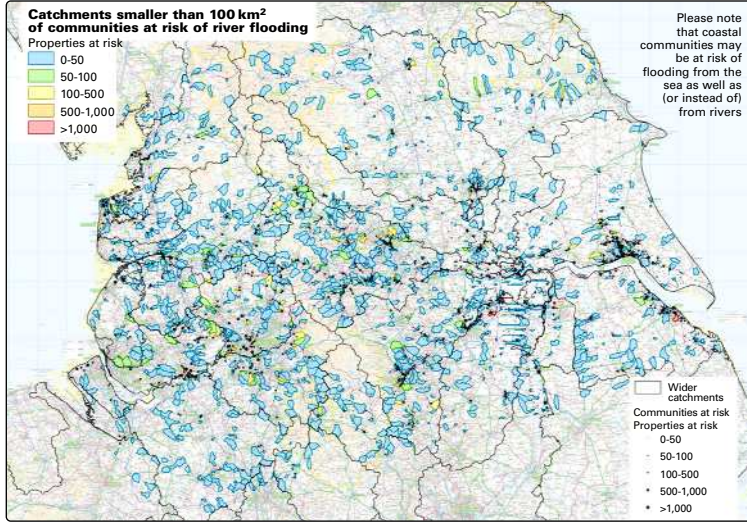


Fig. 4 Communities at risk, smaller catchments (by number of properties immediately downstream)

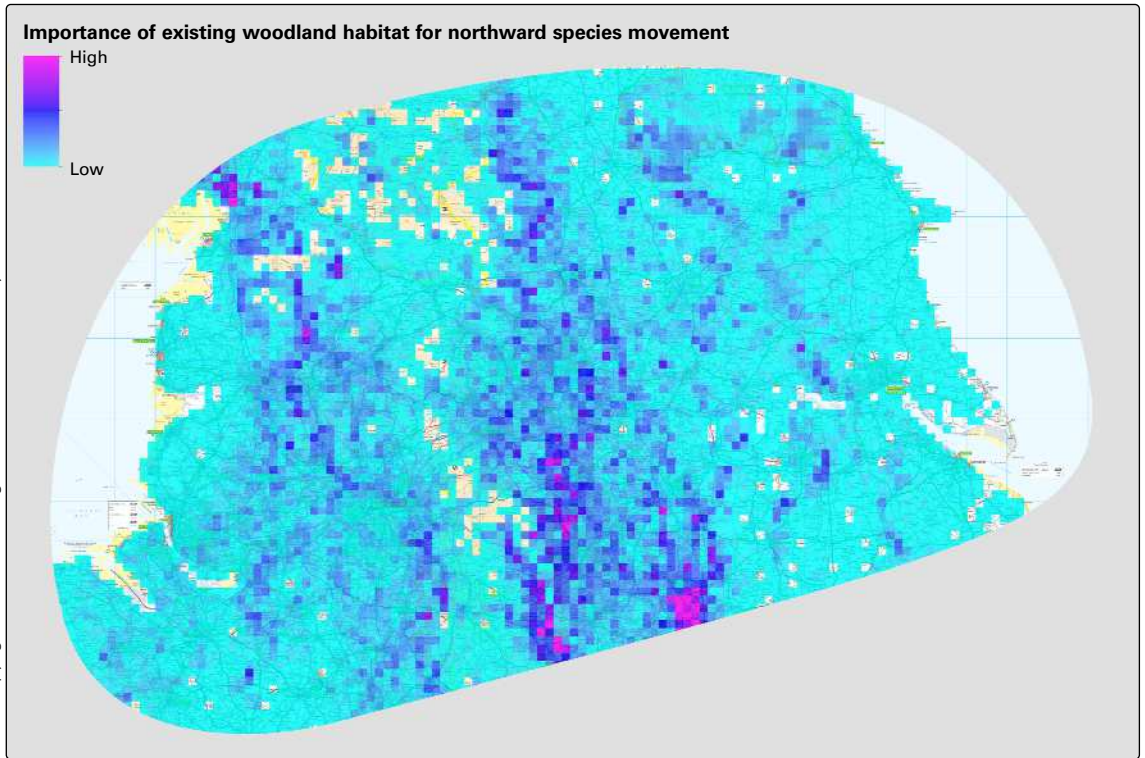


Fig. 5 The importance of existing woodland habitat for northward species movement

A mix of traditional and new funding mechanisms and resources will be required. It will also be important to sustain the skills and knowledge that exist within the Woodland Trust and the community forests to develop, manage and deliver projects and programmes.

Arrangements for land use support, forestry and sustaining or enhancing natural capital will be crucial for the success or otherwise of the Northern Forest. An estimated £15 million per annum is

currently spent from EU pillar I and pillar II agri-environment funding payments across the Northern Forest area – a significant amount of this is on agri-environment schemes under pillar II, with pillar I basic payments also including ‘greening’ measures. Can the Northern Forest act as a long-term plan to help shape the new arrangements for natural capital spending in these areas when the UK leaves the EU?

Aligning the Northern Forest with planned investment in housing and transport infrastructure

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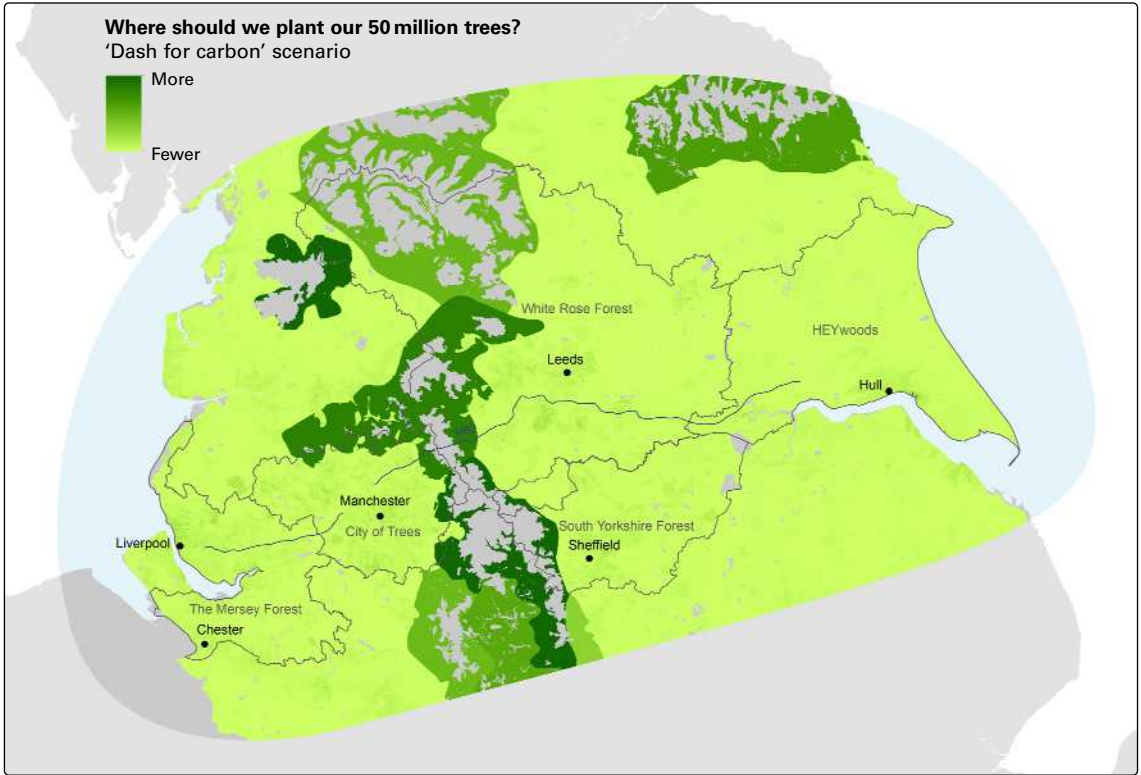


Fig. 6 Targeting new tree planting – the ‘Dash for carbon’ scenario

can also play an important role. A 0.5% investment in natural capital, as part of the £75 billion of planned investment in built infrastructure, has the potential to secure 70% of the funding required – and the approach is supported by the National Planning Policy Framework (NPPF).¹⁹

New funding for forestry schemes that have a focus on locking up carbon (carbon sequestration) has already been launched by the Forestry Commission.²⁰ These targeted programmes may continue and develop if, as seems likely, there is concern that the national targets for carbon reduction will not be met.

New mechanisms and ideas are also being explored to bring in new long-term funding to help deliver the Northern Forest. Ideas and mechanisms for ‘natural capital bonds’ and even ‘natural capital investment zones’ are being investigated.

We have also considered the technological changes that are taking place or which are likely to take place in the future. The use of drone technology to appraise land, plant and maintain trees, and even monitor and measure natural capital is within reach. A commitment to a long-term plan to create a new Northern Forest would enable investment in development to help test and pilot this technology.

There is an array of new biomass installations that are already on stream or in development across the

M62 corridor. Collectively, these have an annual requirement for 7 million-10 million tonnes of biomass, generating around 10% of the UK’s energy. A Northern Forest could make a significant local contribution to the supply of these installations in the transition to 100% zero-carbon energy, creating new jobs and supporting long-term sustainable forest management. The aim for the Northern Forest will be to have all woodlands in some form of active management, including management for biodiversity increases, and to make use of the principles of ‘more, bigger, better and joined’ habitats laid out in the Lawton Report.²¹

The transition to autonomous-drive vehicles over the next 15 years may also have profound implications for our road transport network. Recent work undertaken by WSP and Farrells²² shows how the transport network might be transformed to include more green infrastructure, creating areas for wildlife, water management, and a much improved aesthetic. Plans for the Northern Forest can play a role in helping to shape and deliver the changes to the transport network over the next few decades.

At the heart of the delivery of the Northern Forest has to be the community forest principle of working with local communities and creating high-value places that people will cherish; places that can become attractors for people to live and work, that support rich biodiversity, and that provide the natural

capital to enable sustainable growth to start to be a possibility. While technology, economies and social norms will all change over the next 25 years, as a species we continue to have an innate need for a good-quality natural environment – Northern Forest: it's in our genes!

● **Paul Nolan** is Director of the Mersey Forest Team. The views expressed are personal.

Notes

- 1 See the government's Industrial Strategy webpage, at www.gov.uk/government/policies/industrial-strategy
- 2 Economic valuation has been carried out as part of the Northern Forest evidence and scoping work which will be published later in 2017
- 3 M Johnston and BS Rushton: *A Survey of Urban Forestry in Britain*. Faculty of Science, University of Ulster, Jun. 1999. www.users.globalnet.co.uk/~skellern/download/aie_sb1.pdf
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- 7 *Our Vision for a Resilient Urban Forest*. Urban FWAC (Forestry and Woodlands Advisory Committees) Network, Oct. 2015. [www.forestry.gov.uk/pdf/urban-forest-final-v4.pdf/\\$FILE/urban-forest-final-v4.pdf](http://www.forestry.gov.uk/pdf/urban-forest-final-v4.pdf/$FILE/urban-forest-final-v4.pdf)
- 8 *The State of Natural Capital: Protecting and Improving Natural Capital for Prosperity and Wellbeing*. Third Report to the Economic Affairs Committee. Natural Capital Committee, Sept. 2015, p.3. www.gov.uk/government/uploads/system/uploads/attachment_data/file/516725/ncc-state-natural-capital-third-report.pdf
- 9 *UK National Ecosystem Assessment: Understanding Nature's Value to Society. Technical Report*. UK National Ecosystem Assessment Secretariat. United Nations Environment Programme World Conservation Monitoring Centre (UNEP WCMC), Jun. 2011, Chap. 25. <http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx>
- 10 See Natural England's 'National Character Area profiles' webpage, at www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making/national-character-area-profiles
- 11 *National Inventory of Woodland and Trees: England*. Forestry Commission, Nov. 2001. www.forestry.gov.uk/fr/hcou-54pg9u
- 12 See Bluesky's National Tree Map website, at www.bluesky-world.com/ntm?id=78
- 13 This calculation will be included in the published version of the Northern Forest evidence and scoping document
- 14 'Trees help prevent asthma, respiratory diseases, study says'. *Phys.org*, 3 Sept. 2014. <https://phys.org/news/2014-09-trees-asthma-respiratory-diseases.html>

- 15 See the Condatis website, at <http://wordpress.condatis.org.uk/>
- 16 See the Forestry Commission's Ecological Site Classification Decision Support System (ESC-DSS) webpages at www.forestry.gov.uk/esc
- 17 *The UK Forestry Standard: The Government's Approach to Sustainable Forestry*. Forestry Commission, Jul. 2017 (Fourth Edition). www.forestry.gov.uk/ukfs
- 18 *High Speed Two Phase Two: Economic Case*. Department for Transport, Jul. 2017. www.gov.uk/government/publications/hs2-phase-two-economic-case
- 19 *National Planning Policy Framework*. Department for Communities and Local Government, Mar. 2012, para. 92. www.gov.uk/government/uploads/system/uploads/attachment_data/file/60777/2116950.pdf
- 20 Details of the Forestry Commission's 'Project Carbon Sequestration' are given within the Forestry Commission's 'Standard and guidance' webpages, at www.forestry.gov.uk/forestry/infd-8jue9t
- 21 J Lawton: *Making Space for Nature: A Review of England's Wildlife Sites and Ecological Network*. Lawton Review. Submitted to the Secretary of State for Environment, Food and Rural Affairs. Sept. 2010. <http://webarchive.nationalarchives.gov.uk/20130402170324/http://archive.defra.gov.uk/environment/biodiversity/documents/201009space-for-nature.pdf>
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