The Second State of Natural Resources Report (SoNaRR2020)

SoNaRR2020 Register woodlands key pressures and opportunities

Natural Resources Wales

Final Report

Mae'r ddogfen hon hefyd ar gael yn Gymraeg

About Natural Resources Wales

Natural Resources Wales's purpose is to pursue sustainable management of natural resources. This means looking after air, land, water, wildlife, plants and soil to improve Wales's well-being, and provide a better future for everyone.

Evidence at Natural Resources Wales

Natural Resources Wales is an evidence-informed organisation. We seek to ensure that our strategy, decisions, operations and advice to Welsh Government and others are underpinned by sound and quality-assured evidence. We recognise that it is critically important to have a good understanding of our changing environment.

We will realise this vision by:

- Maintaining and developing the technical specialist skills of our staff;
- Securing our data and information;
- Having a well resourced proactive programme of evidence work;
- Continuing to review and add to our evidence to ensure it is fit for the challenges facing us; and
- Communicating our evidence in an open and transparent way.

Title: **SoNaRR2020 Register woodlands key pressures and opportunities**

Peer Reviews: Internal and external peer review

Restrictions: None

The Second State of Natural Resources Report (SoNaRR2020) contents

This document is one of a group of products that make up the second State of Natural Resources Report (SoNaRR2020). The full suite of products are:

Executive Summary. Foreword, Introduction, Summary and Conclusions. Published as a series of webpages in December 2020

The Natural Resource Registers. Drivers, Pressures, Impacts and Opportunities for Action for eight Broad Ecosystems. Published as a series of PDF documents and as an interactive infographic in December 2020

Assessments against the four Aims of SMNR. Published as a series of PDF documents in December 2020:

SoNaRR2020 Aim 1. Stocks of Natural Resources are Safeguarded and Enhanced

SoNaRR2020 Aim 2. Ecosystems are Resilient to Expected and Unforeseen Change

SoNaRR2020 Aim 3. Wales has Healthy Places for People, Protected from Environmental Risks

SoNaRR2020 Aim 4. Contributing to a Regenerative Economy, Achieving Sustainable Levels of Production and Consumption

The SoNaRR2020 Assessment of Biodiversity. Published in March 2021

Assessments by Broad Ecosystem. Published as a series of PDF documents in March 2021:

Assessment of the Achievement of SMNR: Coastal Margins

Assessment of the Achievement of SMNR: Enclosed Farmland

Assessment of the Achievement of SMNR: Freshwater

Assessment of the Achievement of SMNR: Marine

Assessment of the Achievement of SMNR: Mountains, Moorlands and Heaths

Assessment of the Achievement of SMNR: Woodlands

Assessment of the Achievement of SMNR: Urban

Assessment of the Achievement of SMNR: Semi-Natural Grassland

Assessments by Cross-cutting theme. Published as a series of PDF documents in March 2021:

Assessment of the Achievement of SMNR: Air Quality

Assessment of the Achievement of SMNR: Climate Change

Assessment of the Achievement of SMNR: Energy Efficiency

Assessment of the Achievement of SMNR: Invasive Non-native Species

Assessment of the Achievement of SMNR: Land use and Soils

Assessment of the Achievement of SMNR: Waste

Assessment of the Achievement of SMNR: Water Efficiency

Updated SoNaRR evidence needs. Published in March 2021

Acronyms and Glossary of terms. Published in December 2020 and updated in March 2021

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Woodlands
Natural Resource Register

SoNaRR2020

The Natural Resource Registers are an important output of SoNaRR2020.Their purpose is to distil the key pressures and opportunities identified within the chapters and to provide an accessible assessment of SMNR.

The woodlands natural resource register is made up of two additional documents:

1. SoNaRR2020 Register woodlands assessment of SMNR

2. SoNaRR2020 Register woodlands evidence

Table 1 Key Drivers, Pressures and Impacts on the Woodlands Ecosystem

Driver	Pressure	Impact
Climate Change	1. Changing Weather Patterns	1.1. Increased risk from pests and diseases. Confidence Assessment: MEDIUM SMNR Aim 1, 2, 3 and 4
		1.2. Changes in tree species suitability based on tree growth and woodland productivity. Confidence Assessment: MEDIUM SMNR Aim 1,2, 3, and 4
		1.3. Changes in the range, distribution, composition, condition and even survival of native woodland types. Confidence Assessment: MEDIUM SMNR Aim 1 and 2
		1.4. Impacts on woodland flora and fauna. Confidence Assessment: MEDIUM SMNR Aim 1 and 2
		1.5. Changes in carbon sequestration rates. Confidence Assessment: MEDIUM SMNR Aim 3
		1.6. Increased risk from extreme weather and wildfires events. Confidence Assessment: MEDIUM SMNR Aim 1, 2, 3 and 4
		1.7. Changes in land availability and suitability.

		Confidence Assessment: MEDIUM SMNR Aim 1, 2, 3 and 4
Pollution	2. Air Pollution	2.1 Nutrient enrichment – particularly Nitrogen could cause changes to woodland flora composition. Confidence Assessment: HIGH SMNR Aim 1, 2 and 3
Land Use Change	3. Built Development and Infrastructure	3.1 Reduction in extent. Confidence Assessment: LOW SMNR Aim 1, 2, 3 and 4 3.2 Habitat fragmentation. Confidence Assessment: LOW SMNR Aim 1 and 2
Land Use Change	4. Competing Land Use	4.1 Reduction of extent Confidence Assessment: LOW SMNR Aim 1, 2, 3 and 4 4.2 Habitat fragmentation Confidence Assessment: LOW SMNR Aim 1 and 2 4.3 Reduced opportunity to expand ecosystem Confidence Assessment: MEDIUM SMNR Aim 1, 2, 3 and 4
Land Use Change	5. Insufficient Management	5.1 Reduction in woodland condition Confidence Assessment: HIGH SMNR Aim 1, 2, 3 and 4 5.2 Impacts on woodland flora and fauna. Confidence Assessment: HIGH SMNR Aim 1 and 2
INNS, Pests and Disease	6. Pests and Diseases	6.1 Declining tree health Confidence Assessment: HIGH SMNR Aim 1, 2, 3 and 4
	7. Herbivore Pressure	7.1 Declining tree health Confidence Assessment: HIGH SMNR Aim 1, 2, 3 and 4

Opportunities for Action

Headlines

- Action is needed to improve the resilience of existing woodlands to drivers of change and to secure benefits for both current and future generations. These drivers include climate change, pests and diseases, air pollution, lack of appropriate management and land use change.
- Timber, as a sustainable and natural resource, makes a valuable contribution to the Welsh economy and there is potential for it to contribute more.
- Trees and woodlands have a vital role to play in tackling Wales' declared climate and nature emergencies.

Aim 1: Stocks of Natural Resources are safeguarded and enhanced

We have identified four interrelated areas of focus for action (i.e. across all four Aims):

- Bring more woodland into planned management
- Improve and adapt the management of existing managed woodland
- Compensatory planting for permanent woodland loss associated with renewable energy provision and approved development
- Increase new woodland creation

These will help to:

- safeguard and enhance stocks of natural resources
- improve resilience, including to future climate change and pests and diseases, as well as maintain and enhance woodland biodiversity
- ensure that the benefits from woodlands are sustained and enhanced, contributing more to well-being by supporting a circular economy and the efficient use of resources and providing healthy places for people, protected from environmental risks

[**Trade-offs and synergies**] There are many trade-offs and synergies associated with woodland management and new woodland creation which operate at various temporal and spatial scales (Quine *et al*, 2018; Emmett *et al*, 2020). In relation to Aim 1 (and 2), if existing woodlands are safeguarded and enhanced and more new woodland is created, provisioning, regulating and cultural ecosystem services (linked to Aims 3 and 4) will increase [**synergy**]. However, more woodland creation means less land availability for other land uses such as agriculture, wind or solar energy provision, or expansion of other habitats [**trade-off**].

Specific actions for Aim 1 might include:

- Collect evidence to understand and quantify the ecosystem trade-offs and synergies for land use change to support new woodland creation;
- Adopt a policy and legislative framework to ensure mandatory compensatory planting for any permanent woodland loss associated with renewable energy provision and approved development, as is done for common land under Section 16 of the Commons Act 2006;

- Improve the condition of woodlands, for example through management to achieve appropriate levels of grazing;
- Increase biodiversity, for example through better woodland design and management;
- Improve species and structural diversity (especially in plantation woodlands), to support adaption to climate change and pests and diseases;
- Encourage the restoration of Plantations on Ancient Woodland Sites (PAWS);
- Ensure the right package of incentives and mechanisms exist moving forward to support woodland creation and management.
- Develop a land use change decision making framework (RSA Food, Farming & Countryside Commission, 2019 &2020) (Foresight Land Use Futures Project, 2010)

Aim 2: Resilient Ecosystems

We have identified four interrelated areas of focus for action (i.e. across all four Aims):

- Bring more woodland into planned management
- Improve and adapt the management of existing managed woodland
- Compensatory planting for permanent woodland loss associated with renewable energy provision and approved development
- Increase new woodland creation

These will help to:

- safeguard and enhance stocks of natural resources
- improve resilience, including to future climate change and pests and diseases, as well as maintain and enhance woodland biodiversity
- ensure that the benefits from woodlands are sustained and enhanced, contributing more to well-being by supporting a circular economy and the efficient use of resources and providing healthy places for people, protected from environmental risks

[**Trade-offs and synergies**] There are many trade-offs and synergies associated with woodland management and new woodland creation which operate at various temporal and spatial scales (Quine *et al*, 2018; Emmett *et al*, 2020). In relation to Aim 2, improving ecosystem resilience will safeguard and enhance stocks of natural resources (Aim 1) and the flow of provisioning, regulating and cultural ecosystem services (Aims 3 and 4) [**synergy**]. However, as extent is one attribute of resilience, more woodland creation means less land availability for other land uses such as agriculture, wind or solar energy provision, or expansion of other habitats [**trade-off**].

Specific actions for Aim 2 might include:

- Improve connectivity to reverse the fragmentation of native woods;
- Increase biodiversity, for example through better woodland design and management;
- Improve species and structural diversity (especially in plantation woodlands);
- Support adaptation to climate change and pests and diseases to improve ecological function;
- Encourage the restoration of Plantations on Ancient Woodland Sites (PAWS);
- Promote and develop functional woodland habitat networks as part of wider resilient ecological networks, ensuring the potential risks to biosecurity are addressed;
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- Promote and develop functional woodland habitat networks as part of wider resilient ecological networks, ensuring the potential risks to biosecurity are addressed;
- Improve the condition of designated woodlands and achieve Favourable Conservation Status.
- Collect evidence to understand and quantify the ecosystem trade-offs and synergies for land use change to support new woodland creation;

Aim 3: Healthy Places for People

We have identified four interrelated areas of focus for action (i.e. across all four Aims):

- Bring more woodland into planned management
- Improve and adapt the management of existing managed woodland
- Compensatory planting for permanent woodland loss associated with renewable energy provision and approved development
- Increase new woodland creation

These will help to:

- safeguard and enhance stocks of natural resources
- improve resilience, including to future climate change and pests and diseases, as well as maintain and enhance woodland biodiversity
- ensure that the benefits from woodlands are sustained and enhanced, contributing more to well-being by supporting a circular economy and the efficient use of resources and providing healthy places for people, protected from environmental risks

[**Trade-offs and synergies**] There are many trade-offs and synergies associated with woodland management and new woodland creation at various temporal and spatial scales (Quine *et al*, 2018; Emmett *et al*, 2020). In relation to Aim 3, the flow of regulating and cultural ecosystem services from woodlands is a function of progress against Aims 1 and 2. There are synergies and trade-offs within Aim 3. For example, restoration of riparian woodland to aid flood regulation may enhance landscape and opportunities for recreation [**synergy**]. but novel crops that are not familiar or liked by some stakeholders, thereby reducing their mental well-being, may offer the most efficient carbon capture [**trade-off**].

Specific actions for Aim 3 might include:

- Create 'space for trees' zones around towns and cities and woodland habitat networks, delivered through Unitary Development Plan (UDP) and Area Statements;
- Communicate the multi-purpose benefits of woodlands;
- Promote woodlands as a nature-based solution to climate change mitigation, flood and drought risk mitigation and air pollution;
- Support the identification of place-based opportunity spaces for woodland creation, working closely with PSBs, local landowners and communities;
- Collect evidence to understand and quantify the ecosystem trade-offs and synergies for land use change to support new woodland creation;

Aim 4: A Regenerative Economy

We have identified four interrelated areas of focus for action (i.e. across all four Aims):

- Bring more woodland into planned management

- Improve and adapt the management of existing managed woodland
- Compensatory planting for permanent woodland loss associated with renewable energy provision and approved development
- Increase new woodland creation

These will help to:

- safeguard and enhance stocks of natural resources;
- improve resilience, including to future climate change and pests and diseases, as well as maintain and enhance woodland biodiversity; and
- ensure that the benefits from woodlands are sustained and enhanced, contributing more to well-being by supporting a circular economy and the efficient use of resources and providing healthy places for people, protected from environmental risks.

[**Trade-offs and synergies**] There are many trade-offs and synergies associated with woodland management and new woodland creation at various temporal and spatial scales (Quine *et al*, 2018; Emmett *et al*, 2020). In relation to Aim 4, the flow of provisioning ecosystem services from woodlands is a function of progress against Aims 1 and 2. There are synergies and trade-offs associated with Aim 4. The **trade-off** between provisioning and regulating services is complex and sometimes contentious (in relation to biomass and the importance of different Bioenergy Crops with Carbon Capture and Storage [BECCS] scenarios). Also, softwood is currently the mainstay of the timber industry in Wales and the UK (and it accounts for most imports). There is potential for timber to contribute more to a regenerative economy and reduce carbon costs associated with importing timber from around the world, but productive conifer woodlands must be part of the mix of new woodland creation in Wales. Currently, most new woodland creation is broadleaf. Planting new conifer woodlands instead of broadleaves may require some **trade-offs** in terms of potential levels of biodiversity and for landscape.

Specific actions for Aim 4 might include:

- Ensure productive conifer woodlands are part of the mix of new woodland creation in Wales;
- Ensure productive conifer woodlands are part of the mix of new woodland creation in Wales;
- Identify incentivised 'woodland enterprise zones' with a focus on the planting of productive conifer woodlands;
- Identify incentivised 'woodland enterprise zones' with a focus on the planting of productive conifer woodlands;
- Develop and improve supply chain capacity, for example to accommodate non-mainstream species or new technologies;
- Develop and improve supply chain capacity, for example to accommodate non-mainstream species or new technologies;
- Increase market opportunities for hardwood timber;
- Increase market opportunities for hardwood timber;
- Promote the use of more timber in construction applications
- Consider whether more timber can be grown that is specifically targeted at biomass production;
- Improve confidence in the whole timber supply chain to support and encourage investment in developing ways of adding value to the existing resource.
- Collect evidence to understand and quantify the ecosystem trade-offs and synergies for land use change to support new woodland creation.