

The Second State of Natural Resources Report (SoNaRR2020)

SoNaRR2020 Register enclosed farmland key pressures and opportunities

Natural Resources Wales

Final Report

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 enclosed farmland 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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Enclosed Farmland 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 Enclosed Farmland Natural Resource Register is made up of two additional documents:

1. SoNaRR2020 Register enclosed farmland assessment of SMNR
2. SoNaRR2020 Register enclosed farmland evidence

Table 1 Key Drivers, Pressures and Impacts on the Enclosed Farmlands Ecosystem

Drivers	Pressures	Impacts
Climate Change	1. Changing Weather Patterns	<p>1.1 Will increase the risk of flooding in Wales. Confidence Assessment: High SMNR Aim3</p> <p>1.2 More frequent prolonged period of dry weather could lead to increased pressure on water resources, soils and the natural environment. Some areas will see an increase in productivity and others a decrease. Confidence Assessment: High SMNR Aim3</p> <p>1.3 Area for best most versatile land predicted to substantially decrease from 2050 (high emissions scenario) Confidence Assessment: Low SMNR Aim4</p>
	2. Sea Level Rise	<p>2.1 Will increase the risk of flooding in Wales. Confidence Assessment: High SMNR Aim3</p>

Drivers	Pressures	Impacts
Pollution	3. Air Pollution	<p>3.1 Likely to cause a detrimental impact upon the ecosystem and its services Confidence Assessment: High SMNR Aim2 and 3</p> <p>3.2 Resulting in acidifying and adding nitrogen to systems and negative impacts on biodiversity across all ecosystems. Confidence Assessment: High SMNR Aim1, 2 and 3</p>
Pollution	4. Water Pollution	<p>4.1 Resulting in less diverse plant communities Confidence Assessment: High SMNR Aim2</p> <p>4.2 Causing eutrophication of both freshwater and terrestrial ecosystems from both artificial and organic fertilisers. Confidence Assessment: High SMNR Aim2</p> <p>4.3 Affecting soil condition Confidence Assessment: Medium SMNR Aim1</p>
Pollution	5. Land Pollution	<p>5.1 Resulting in less diverse plant communities Confidence Assessment: High SMNR Aim2</p> <p>5.2 Causing eutrophication of both freshwater and terrestrial ecosystems from both artificial and organic fertilisers. Confidence Assessment: High SMNR Aim2</p> <p>5.3 Affecting soil condition Confidence Assessment: Medium SMNR Aim1</p>

Drivers	Pressures	Impacts
Land Use Change	6. Agricultural Intensification	<p>6.1 Results in loss of habitats Confidence Assessment: High SMNR Aim1 and 2</p> <p>6.2 The largest GHG emission sources in 2018 in the Land Use, Land Use Change & Forestry (LULUCF) sector are from grassland conversion to cropland (27%) and existing cropland (24%). Confidence Assessment: Medium</p> <p>6.3 Results in declines in species populations. Specialist farmland species are the most rapidly declining among all the ecosystems. Confidence Assessment: High SMNR Aim1</p> <p>6.4 Results in habitat loss and increased fragmentation. Confidence Assessment: High SMNR Aim2</p>
Land Use Change	7. Built Development and Infrastructure	<p>7.1 Urban expansion leads to the loss of high-grade soils and was a main source of GHGs emissions in the LULUCF sector in 2018 (21%). Confidence Assessment: Medium SMNR Aim1, 3 and 4</p>
Land Use Change	8. Competing Land Use	<p>8.1 Woodland Creation leads to the possible loss of improved agricultural land. Confidence Assessment: Medium SMNR Aim4</p> <p>8.2 Renewable energy generation including bioenergy has created a new pressure on productive land area. Confidence Assessment: Low SMNR Aim4</p>
INNS, Pests and Disease	9. Pests and Diseases	<p>9.1 Tree losses are on the cusp of accelerating due to Ash Dieback (Chalara). Individual trees will be lost and gaps created in hedgerows and riverine corridors, reducing their connectivity and changing the landscape. Confidence Assessment: High SMNR Aim2</p>

Drivers	Pressures	Impacts
Over-exploitation	10. Agricultural Intensification	10.1 Habitat change, diffuse pollution to water, Greenhouse Gas and Ammonia emissions. Confidence Assessment: High SMNR Aim2, 3 and 4

Opportunities for Action

Aim 1: Stocks of Natural Resources are Safeguarded and Enhanced

Retain and increase areas of semi-natural habitat within and around production systems. These areas will benefit biodiversity and other ecosystem service, including improved services for landowners such as drought tolerance and disease control.

Maintain and enhance the small remaining areas that support arable plants.

Maintain and improve soil condition and natural soil fertility through the prevention of soil compaction and preservation or enhancement of soil organic matter within integrated systems.

Conserve soil through actions such as cover crops, intercropping, well timed farming operations and buffer strips.

Provide effective knowledge transfer mechanisms to promote the practises and benefits of sustainable farming systems.

Aim 2: Resilient Ecosystems

Create resilient ecological networks by restoring and creating habitats within and around production systems.

Agroforestry and hedgerow expansion. Increase the numbers of trees and hedges to sequester carbon and increase ecosystem services while maintaining the primary purpose of food production.

Promote nature-friendly land management with horse owners. Approximately 6% of Enclosed Farmland is managed for equines. Currently this land is not considered in land use policy and is often poorly managed.

Sustainable use and management of nutrients. Use soil analysis, nutrient planning and precise application methods to minimise artificial inputs and meet crop requirements.

Promote interventions to prevent ammonia release to the air including covering slurry stores, restricting urea-based fertilisers and injecting slurry.

Aim 3: Healthy Places for People

Reduce food waste and promote sustainable and healthy diets. Decrease the resource demand for food production by wasting less food and changing diets to foods that can be produced more efficiently and sustainably.

Adapt land management systems and practices to reduce green-house emissions by adopting low impact systems such as agroecology.

Improve land use change decision making framework to help support place-based delivery for our Public Services Boards and Area Statements.

Catchment management solutions. Maintain, enhance and restore floodplains and hydrological systems to deliver ecosystem resilience and multiple benefits such as reduced risk of flood and drought and improved water quality and supply.

Aim 4: Regenerative Economy

Change diets and increase efficiency to enable increased levels of food production from a smaller area of land. This is a key option to enable changing practises for climate change and biodiversity.

Integrated options that allow for continued food production, alongside environmental benefits will decrease the pressure on food production. Of these, sustainable farming practises and expanding the woody components within farmland provide multiple benefits across ecosystem services.

Sustainable use and management of soils. Use precision farming, agro-ecological systems such as, agroforestry, low-impact silvicultural systems and innovative horticultural systems.

Encourage integrated crop production and animal farming to ensure efficient use of animal waste and improved soil carbon content in arable soils.

Develop sustainable standards for agriculture that balance the improvement of the structure and functioning of our ecosystems alongside the provision of food, fibre and other services.

Improve water use efficiency to reduce water demand during periods of dry weather. Encourage off-line storage, rain water harvesting and grey water recycling.

Provide effective knowledge transfer mechanisms to promote the practises and benefits of sustainable farming systems.

Support innovation in practises and technology the increase food production efficiency and farm business profitability while preserving and enhancing ecosystem resilience and services.

[Trade-off] By growing more bioenergy Crops. This would take land out of food production. Without careful management, bioenergy crops could have negative impacts on biodiversity, soil health and water quality (UKCCC, 2020)