

State of Natural Resources Report (SoNaRR 2025)

Acronyms and Glossary of terms.

Natural Resources Wales

Recommended citation:

Natural Resources Wales. 2025. State of Natural Resources Report (SoNaRR 2025): Acronyms and Glossary of terms. January 2026, 90pp, NRW, Cardiff.

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Table 1 Acronyms and abbreviations used in SoNaRR

Acronym / abbreviation	Full terminology
AD	Anaerobic Digestion
ADHD	Attention Deficit Hyperactivity Disorder
AHDB	Agriculture and Horticulture Development Board
ALC	Agricultural Land Classification
AMPA	Amino-3-Hydroxy-5-Methyl-4-Isoxazolepropionic Acid
ANGST	Accessible Natural Greenspace Standard
AONB	Area of Outstanding Natural Beauty
APHA	Animal and Plant Health Agency
AQMA	Air Quality Management Area
AQS	Air Quality Strategy
ASC	Adaptation Sub-Committee (of the Committee on Climate Change)
B[a]P	Benzo(a)pyrene
BAME	Black and Minority Ethnic
BBC	British Broadcasting Corporation
BBS	Breeding Bird Survey
BECCS	Bioenergy Crops with Carbon Capture and Storage
BEIS	Department of Business, Energy and Industrial Strategy
BMV	Best and Most Versatile
BNF	Biological Nitrogen Fixation
BoCC	Birds of Conservation Concern
BPS	Basic Payment Scheme
BTO	British Trust for Ornithology
CAGR	Compound Annual Growth Rate
CAMS	Catchment Abstraction Management Strategies
CAP	Common Agricultural Policy
CAT	Centre for Alternative Technology
CBA	Cost-Benefit Analysis
CBD	Convention of Biological Diversity

Acronym / abbreviation	Full terminology
CCRA	Climate Change Risk Assessment
CCU	Carbon Capture and Use/Utilisation
CHP	Combined Heat and Power
CIP	Chemicals Investigation Program
CIP	Condition Improvement Project
CLT	Cross-laminated timber
CO₂	Carbon Dioxide
CoP	Conference of the Parties (supreme decision-making body of the United Nations Framework Convention on Climate Change)
COVID-19	Coronavirus Disease 2019
CPRE	Campaign to Protect Rural England
CPRW	Campaign for the Protection of Rural Wales
CSCP	Capability, Suitability and Climate Programme
CuRVe	Current Relative Value of Resilience
dBA	A-Weighted Decibels
DDT	Dichlorodiphenyltrichloroethane
DECCA	Diversity, Extent, Condition, Connectivity and Other Aspects Of Ecosystem Resilience
DEFRA	Department for Environment, Food and Rural Affairs
DIN	Dissolved inorganic nitrogen
DPSIR	Driver Pressure State Impact Response
DWI	Drinking Water Inspectorate
EEA	European Environment Agency
EFI	Environmental Flow Indicators
EfW	Energy from Waste
EIA	Environmental Impact Assessment
EMR	Electricity Market Reform
EPA	Environmental Protection Act
EPR	Environmental Permitting Regulations
EQS	Environmental Quality Standards
ERAMMP	Environmental and Rural Affairs Monitoring and Modelling Programme

Acronym / abbreviation	Full terminology
EU	European Union
FAO	Food and Agriculture Organization
FAQ	Frequently Asked Questions
FCD	Field Capacity Days
FCERM	Flood and Coastal Erosion Risk Management
FCRN	Food Climate Research Network
FPS	Farm Practice Survey
FSC	Forest Stewardship Council
GB	Great Britain
GBNNSS	Great Britain Non-Native Species Secretariat
GDP	Gross Domestic Product
GES	Good Ecological Status
GHG	Greenhouse Gas
GI	Green Infrastructure
GMEP	Glastir Monitoring and Evaluation Programme
GVA	Gross Value Added
GW	Gigawatt
GWfG	Greenland white-fronted goose
GWh	Gigawatt hours
GWR	Grey water recycling
HCC	Hybu Cig Cymru
HoF	Hands off Flow
HRA	Habitats Regulations Assessments
HWS	Habitat Wales Scheme
IAS	Invasive Alien Species
IBERS	The Institute of Biological, Environmental and Rural Sciences
ICA	Important Curlew Area
ICES	International Council for the Exploration of the Sea
IEC	Index of Ecological Continuity
INNS	Invasive Non-native Species

Acronym / abbreviation	Full terminology
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
JNCC	Joint Nature Conservation Committee
ktoe	Kilo tonnes equivalent of oil
LBAP	Local Biodiversity Action Plan
LCA	Life cycle assessment
LDP	Local Development Plan
LERC	Local Environmental Records Centre
LFA	Less Favoured Area
LISS	Low Impact Silvicultural Systems
LNP	Local Nature Partnership
LNR	Local Nature Reserve
LoTox	Low Temperature Oxidation
LSOA	Lower Super Output Area
LULUCF	Land Use, Land Use Change and Forestry
MCA	Multi Criterion Analysis
MCCIP	Marine Climate Change Impacts Partnership
MFTA	Multiple Free Trade Agreements
MMH	Mountain, Moorland and Heath
MPA	Marine Protected Area
MRV	Monitoring, Reporting and Verification
MSFD	Marine Strategy Framework Directive
MSY	Maximum sustainable yield
MW	Megawatt
N2K	Natura 2000
NBN	National Biodiversity Network
NbS	Nature based solutions
NCA	Natural Capital Accounting
NCC	Natural Capital Committee

Acronym / abbreviation	Full terminology
NEA	National Ecosystem Assessment
NEAI	National Atmospheric Emissions Inventory
NFI	National Forest Inventory
NFM	Natural Flood Management
NFU	National Farmers Union
NGO	Non-Governmental Organisation
NHCP	National Habitat Creation Programme
NHS	National Health Service
NIS	Non-Indigenous Species
NNR	National Nature Reserve
NNSIP	Non-Native Species Information Portal
NO	Nitric Oxide
NO₂	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NPK	Nitrogen, Phosphorus, Potassium
NPV	Net Present Value
NRAP	Nature Recovery Action Plan
NRW	Natural Resources Wales
NSIS	National Soil Inventory of Scotland
OECMs	Other Effective Area-Based Conservation Measures
ONS	Office for National Statistics
OPM	Oak processionary moth
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
OTU	Operational Taxonomic Unit
OWF	Offshore Wind Farm
PAAG	Professional Agricultural Analysis Group
PAH	Polycyclic Aromatic Hydrocarbons
PaNS	People and Nature Survey
PAP	Pathway Action Plan
PAS	Publicly Available Specification

Acronym / abbreviation	Full terminology
PAWS	Plantations on Ancient Woodland Sites
PCC	Per capita consumption
PDA	Potash Development Association
PEFC	Programme for the Endorsement of Forest Certification
PES	Payment for ecosystem services
PFAS	Per- and Polyfluoroalkyl Substances
PHW	Public Health Wales
PM2.5	Fine particulate matter less than 2.5 microns in diameter
POPs	Persistent Organic Pollutants
PPE	Personal Protective Equipment
PRoW	Public Right of Way
PSB	Public Service Board
PV	Photovoltaics
RAPID	Regulators' Alliance for Progressing Infrastructure Development
RBMP	River Basin Management Plan
RCP	Representative Concentration Pathway (as presented in UKCP18)
REN	Resilient Ecological Networks
RENs	Resilient Ecological Networks
RIGS	Regionally Important Geodiversity Sites
RSA	RSA Food, Farming and Countryside Commission
RSPB	Royal Society for The Protection Of Birds
RWAS	Royal Welsh Agricultural Show
RWH	Rainwater harvesting
SAC	Special Area of Conservation
SAP	Standard Assessment Procedure
SCOS	Special Committee on Seals
SCP	Species Control Provisions
SEA	Strategic Environmental Assessment
SEEA	System of environmental economic accounting
SEI	Stockholm Environment Institute

Acronym / abbreviation	Full terminology
SEP	Severn Estuary Partnership
SFS	Sustainable Farming Scheme
SINC	Sites of Interest for Nature Conservation
SLM	Sustainable Land Management
SMART	Specific, Measurable, Achievable, Realistic, Timely
SMNR	Sustainable Management of Natural Resources
SMP	Shoreline management plan
SNG	Semi-Natural Grassland
SOC	Soil Organic Carbon
SOM	Soil Organic Matter
SoNaRR	State of Natural Resources Report
SO_x	Sulphur Oxides
SPA	Special Protection Area
SQI	Saproxylic Quality Index
SRF	Short rotation forestry
SSM	Sustainable Soil Management
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
SWIC	South Wales Industry Cluster
TAN	Technical Advice Note
TOWs	Trees outside woodlands
TWh	Terawatt-Hour
UDP	Unitary Development Plan
UK	United Kingdom
UK NEA or UKNEA	UK National Ecosystem Assessment
UK WESSG	UK Water Efficiency Strategic Steering Group
UKCCC	UK Committee on Climate Change
UKCP18	UK Climate Projections 2018
UKFS	UK Forestry Standard
UKWAS	UK Woodland Assurance Standard

Acronym / abbreviation	Full terminology
ULEV	Ultra-Low Emissions Vehicle
UN	United Nations
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UWL	Unified Water Label
WaREN	Wales Resilient Ecological Network
WAVES	Wealth Accounting and Valuation of Ecosystem Services
WBP	Wales Biodiversity Partnership
WCMC	Wales Coastal Monitoring Centre
WFD	Water Framework Directive
WGWE	Welsh Government Woodland Estate
WHO	World Health Organisation
WKW	Woodknowledge Wales
WLMF	Wales Land Management Forum
WNMP	Welsh National Marine Plan
WRMP	Water Resource Management Plan
WWC	Woodland Water Code
WWEG	Wales Water Efficiency Group
WWNP	Working with Natural Processes

Table 2 Description of units used in SoNaRR

Units	Description
°C	Degrees Celsius – temperature
GWh	Gigawatt-hour – energy
g/kg	Grams per kilogram – soil constituents
ha	Hectare(s). 1 ha = 0.01 km ²
keq	Kiloequivalent
kg	Kilogram – mass
kg/year	Kilograms per year – pollutant removal
km	Kilometre(s). 1 km ² = 100 ha
l/p/d	Litres per person per day
ML	Mega litre
m	Million (Aim 1)
m ³	Cubic metre – volume
mg/kg	Milligrams per kilogram – soil contaminants
mg/L	Milligrams per litre – water pollutant concentration
ML	Megalitre – 1000 m ³
ML/d	Megalitres per day – water flow rate
Mt	Million tonnes
MtC	Million tonnes carbon
MtCO ₂ e	Million tonnes CO ₂ equivalent
MW	Megawatt – power
MW/GWh/TWh	Mega Watt hours, Giga Watt hours, Tera Watt hours. Energy units
t	Tonne – 1000 kg mass
tC/ha	Tonnes of carbon per hectare – carbon stock
tCO ₂	Metric tonnes of Carbon Dioxide Equivalent
TWh	Terawatt-hour – large energy unit
µg/m ³	Micrograms per cubic metre – air pollutant concentration

Table 3 Definitions of Natural Resources and ecosystems used in SoNaRR

Category	Term	Definition
Ecosystem	Coastal margins	Habitats around the coastline of Wales including the three most extensive (sand dunes, saltmarsh and sea cliffs) and two others (saline or coastal lagoons and shingle). Other habitats found around Welsh coasts (urban, semi-natural grasslands, enclosed farmland, rocky shores, mudflats and sandflats, estuaries, etc.) are covered under other ecosystems.
Ecosystem	Enclosed farmland	Enclosed farmland comprises the agricultural land in lowland Wales that is surrounded by field boundaries. It includes arable crops, horticulture, orchards and temporary grasslands as well as agriculturally improved permanent grasslands, but excludes areas of enclosed semi-natural grassland, scrub, farm woodland and habitats in the upland fringes (ffridd).
Ecosystem	Freshwater including groundwater	Freshwater-based ecosystems occur wherever rainfall, snowmelt or groundwater collects into flowing channels (rivers and streams), standing waters, or associated bogs, fens, grazing marshes, wetlands and floodplains (UKNEA, 2011, ch. 9). Groundwater is the water stored in soil and rocks. It provides baseflow to springs, rivers and wetlands (freshwater group). This ecosystem includes groundwater, wetlands, rivers and streams, and standing waters (lakes and ponds).
Ecosystem	Marine	The marine ecosystem includes the intertidal and subtidal inshore areas. The intertidal is the area between the high water mark and low water that is inundated with seawater at some stages of the tidal cycle. The subtidal is the area that is permanently immersed in seawater from the low water mark out to 12 nautical miles. (UKNEA, 2011, ch. 12)

Category	Term	Definition
Ecosystem	Mountain, moorland and heath	Mountainous habitats are those above the climatic tree-line. Moorlands and heaths include upland and lowland heathlands, moorlands, blanket bog, montane habitats (including ffridd), inland rock habitats and stands of bracken in the lowlands. This ecosystem is often interspersed with other ecosystems such as Semi-natural grasslands, Woodlands and Freshwater. Coastal and dune heathlands are covered in the Coastal margins assessment.
Ecosystem	Semi-natural grasslands	Semi-natural grasslands are characterised by mixtures of grasses and herbaceous plants, along with varied amounts of sedges, rushes, mosses and lichens. They fall into five broad categories, developed in response to local climate, soil, hydrology, geology and management: acid, neutral, calcareous, marshy and a very rare type, calaminarian grassland. They occur in both upland and lowland situations. Six forms of SNG are listed as being of “principle importance” (‘priority habitats’) in the Environment (Wales) Act 2016: lowland meadows; lowland dry acid grassland; purple moor-grass and rush pastures; calaminarian grassland; lowland calcareous grasslands; upland calcareous grasslands. They are of particular importance for higher plants, fungi and invertebrates. They also support a range of mammals, birds and other vertebrates.
Ecosystem	Urban	The built environment (UKNEA, 2011, ch. 10). This includes buildings, roads, gardens, parks and informal greenspaces, waste sites and any other structure or space installed for human activities (Office for National Statistics, 2023).

Category	Term	Definition
Ecosystem	Woodlands	Woodlands in Wales can be broadly categorised as native (generally broad-leaved) and non-native (generally coniferous). This assessment covers woodlands that meet the National Forest Inventory definition, which includes a minimum size of land covered (0.5 hectares). This definition will include farm woodlands above the size threshold, although these are not identified separately within the assessment. Small tree groups and Trees outside Woodland (ToW) are covered in other ecosystem assessments, including Enclosed farmland and Urban.
Natural Resource	Air	Refers to the quality of the air around us in Wales and the emissions we produce including pollutants and radioactive substances.
Natural Resource	Animals, plants and other organisms	The species that make up Wales' ecosystems that may or may not be important in the functioning of the ecosystems but nevertheless contribute to the overall biodiversity of Wales.
Natural Resource	Geodiversity	Geodiversity is the range (diversity) of geological (e.g. rocks, minerals, structures, fossils) geomorphological (e.g. landforms, the physical landscape, natural physical processes) and soil features.
Natural Resource	Soil	Formed by the weathering of rocks and minerals and the accumulation of organic materials, which often takes hundreds to thousands of years. Soil formation is a continuous process although rates of loss can be much greater than formation and therefore should be treated as a non-renewable resource. Soils are the foundation of land, ecosystems and habitats.

Category	Term	Definition
Natural Resource	Water	Water is essential to the environment and people. It creates and sustains the ecosystems upon which all life depends, while also providing water for us to drink, run industries, grow food, and generate power.
Natural Resource	Water resources and hydrological processes	Water resources refers to the quantity of our freshwater resource available to support the environment, people and businesses. Hydrological processes are the natural processes of the water cycle, including evaporation, condensation, precipitation, infiltration and run-off. Marine and coastal hydrological processes include both tides and waves.

Table 4 Glossary of terms used in SoNaRR

Term	Definition	Source of definition
Inclusive wealth approach	Inclusive wealth is the social value of all of a country's capital assets (natural, human and produced capital).	United Nations Environment Programme. 2018. Inclusive Wealth Report 2018. Available from: https://www.unenvironment.org/resources/report/inclusive-wealth-report-2018 . [Accessed 27 November 2020].
Acidification	Acidification is a natural process. The term is used to describe the loss of nutrient bases (calcium, magnesium and potassium) through the process of leaching and their replacement by acidic elements (hydrogen and aluminium).	UK NEA. 2011. UK National Ecosystem Assessment – Technical Report. Glossary Cambridge: UNEP-WCMC. Available from: http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx . [Accessed 27 November 2020].
Adaptation	<p>In <i>human systems</i>, the process of adjustment to actual or expected <i>climate</i> and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects.</p> <p>See also mitigation.</p>	IPCC (no date) <i>IPCC Glossary Search</i> . Available at: https://apps.ipcc.ch/glossary/ (Accessed: 13 January 2026).

Term	Definition	Source of definition
Adaptive management	<p>A systematic process for continually improving management policies and practices by learning from the outcomes of previously employed policies and practices. Manage adaptively by planning, monitoring, reviewing and where appropriate, changing action.</p>	<p>UK NEA. 2011. <i>UK National Ecosystem Assessment – Technical Report</i>. Cambridge: UNEP-WCMC.</p> <p>And</p> <p>Environment (Wales) Act 2016.</p>
Agricultural Land Classification	<p>The ALC provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long- term limitations on agricultural use and is the only approved system for grading the quality of agricultural land in England and Wales. The classification can be used at national, regional and local levels.</p>	<p>DEFRA and Welsh Government. 2025. Agricultural Land Classification of England and Wales, Guidelines for grading the quality of agricultural land.</p> <p>Available from: https://publications.naturalengland.org.uk/publication/6257050620264448 [Accessed December 2025].</p>
Agroecology	<p>Study of the relation of agricultural crops and environment.</p>	<p>United Nations. 1997. Glossary of Environment Statistics. Studies in Methods Series F, No. 67. New York: United Nations.</p> <p>Available from: https://unstats.un.org/unsd/publication/seriesf/seriesf_67e.pdf.</p> <p>[Accessed 7 December 2020].</p>

Term	Definition	Source of definition
Agroforestry	<p>Collective term for land-use systems and technologies in which woody perennials (trees, shrubs, palms, bamboos and so forth) are deliberately used on the same land management unit as agricultural crops and/or animals, in some form of either spatial arrangement or temporal sequence.</p>	<p>United Nations. 1997. Glossary of Environment Statistics. Studies in Methods Series F, No. 67. New York: United Nations. Available from: https://unstats.un.org/unsd/publication/seriesf/seriesf_67e.pdf. [Accessed 7 December 2020].</p>
Aichi Biodiversity Targets	<p>United Nations globally recognised set of targets with the aim of halting the loss of biodiversity to ensure ecosystems are resilient and continue to provide essential services.</p>	<p>Secretariat of the Convention on Biological Diversity. 2010. Strategic Plan for Biodiversity 2011–2020 and the Aichi Targets. “Living in Harmony with Nature”. Quebec: CBD and UNEP.</p>

Term	Definition	Source of definition
Annex I features (habitats and species)	<p>These are habitats and species listed in Annex I of the Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora), 1992. The Directive is the means by which the European Union meets its obligations under the Bern Convention. The Directive applies to the UK and to its Overseas Territory of Gibraltar and is transposed into UK legislation through the Habitat Regulations (The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A and The Conservation of Offshore Marine Habitats and Species Regulations 2017(as amended), Regulation 6A).</p>	<p>FAQs – ukhab and https://jncc.gov.uk/our-work/habitats-regulations-reporting/ [Accessed 12 January 2026].</p>
Area Statements	<p>The Environment (Wales) Act 2016 specifies that statements for the purpose of facilitating the implementation of the national natural resources policy must be prepared and published by NRW. Each statement corresponds to a specific area of Wales and includes reference to natural resources in the area, the benefits they provide and the priorities, risks and opportunities for sustainable management that need to be addressed.</p>	<p>Environment (Wales) Act 2016.</p> <p>Natural Resources Wales / Area Statements</p>

Term	Definition	Source of definition
Article 17 (of European Habitats Directive)	<p>Article 17 requires Member States to report every six years about the progress made with the implementation of the Habitats Directive. As the main objective of the directive is on maintaining and restoring a favourable conservation status for habitat types and species of community interest, monitoring and reporting under Article 17 is focusing on capturing the status and trends of these habitat types and species.</p> <p>Note that this reporting has been superseded by Habitats Regulations 9A reporting. See https://jncc.gov.uk/our-work/habitats-regulations-reporting/ [Accessed 12 January 2026].</p>	European Commission. 2020. Habitats directive reporting. Available from: https://ec.europa.eu/environment/nature/knowledge/rep_habitats/index_en.htm . [Accessed 20 November 2020].
Asset	A thing (object or concept) of value that brings benefits or a series of benefits to people. It is a means of carrying forward value from one accounting period to another.	Natural Capital Committee. 2013. The State of Natural Capital: Towards a framework for measurement and valuation. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/516707/ncc-state-natural-capital-first-report.pdf . [Accessed 20 November 2020].

Term	Definition	Source of definition
Benefits	<p>An advantage or profit gained from something. In the context of SoNaRR, a benefit can be described as anything that any component or collective of natural resources does to sustain life and well-being on earth. It could be an environmental, cultural, social or economic benefit, and can be both measurable and non-measurable. We typically use the term “Ecosystem Services” to categorise these benefits, although we may equally think about the many ways natural resources contribute to the well-being goals.</p>	<p>Oxford University Press 2016. Definition of Benefit. Oxford Dictionary. Available from: http://www.oxforddictionaries.com/definition/english/benefit. [Accessed 20 November 2020].</p>
Best buy	<p>Used to describe the best product or service that is available in relation to price.</p>	<p>Cambridge Dictionary. 2020. Definition of best-buy. Available from: https://dictionary.cambridge.org/dictionary/english/best-buy. [Accessed 20 November 2020].</p>
Bio-augmented	<p>Bioaugmentation (the process of adding selected strains/mixed cultures to wastewater reactors to improve the catabolism of specific compounds, e.g. refractory organics, or overall chemical oxygen demand (COD)) is a promising technique to solve practical problems in wastewater treatment plants and enhance removal efficiency.</p>	<p>Herrero M, Stuckey DC. 2015. Bioaugmentation and its application in wastewater treatment: A review. Chemosphere 140: 119-128.</p>

Term	Definition	Source of definition
Biocapacity	The ability of a particular area to support human life in terms of the amount of food, fuel, etc. it can produce and the amount of waste it can deal with.	Cambridge Dictionary. 2020. Definition of biocapacity. Available from: https://dictionary.cambridge.org/dictionary/english/biocapacity . [Accessed 20 November 2020].
Biochar	'Biochar' is a catch-all term describing any organic material that has been carbonised under high temperatures (300-1000°C), in the presence of little, or no oxygen.	Royal Horticultural Society. 2020. Biochar. Available from: https://www.rhs.org.uk/advice/profile?PID=1014 . [Accessed 20 November 2020].
Biodiversity	("biological diversity") The variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems. Includes diversity within and between species, habitats and ecosystems.	UK NEA. 2011. UK National Ecosystem Assessment – Technical Report. Cambridge: UNEP-WCMC.
Biofuel	Liquid fuels derived from biomass and predominantly used in transportation. The dominant biofuels are ethanol and biodiesel.	UK NEA. 2011. UK National Ecosystem Assessment – Technical Report. Glossary. Cambridge: UNEP-WCMC. Available from: http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx . [Accessed 27 November 2020].

Term	Definition	Source of definition
Biogenic reefs	Habitats created by the animals themselves. Includes reefs created by corals, worms and mussels.	JNCC. 2014. <i>Annex 1 Reefs [online]</i> . Available from: http://jncc.defra.gov.uk/page-1448 . [Accessed 14 July 2016]
Biogenic secondary organic aerosols	Are formed from the biogenic volatile organic compounds that are produced by plants. They are emitted from vegetation into the atmosphere and can have significant effects on other organisms and on atmospheric chemistry.	Peñuelas J, Staudt M. 2010. BVOCs and global change. Trends in plant science 15, 133-144.
Biomass	The mass of tissues in living organisms in a population, ecosystem, or spatial unit.	UK NEA. 2011. UK National Ecosystem Assessment – Technical Report. Glossary Cambridge: UNEP-WCMC. Available from: http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx [Accessed 27 November 2020].
Biosphere	The part of the earth's environment where life exists.	Cambridge Dictionary. 2020. Definition of biosphere. Available from: https://dictionary.cambridge.org/dictionary/english/biosphere . [Accessed 20 November 2020].

Term	Definition	Source of definition
Blue carbon	The carbon stored and sequestered by marine habitats.	Armstrong S, Hull S, Pearson Z, Wilson R, Kay S. 2020. Estimating the Carbon Sink Potential of the Welsh Marine Environment. Cardiff: NRW.
Blue Flag Award	An internationally recognised ecolabel, awarded to beaches and marinas for cleanliness, safety and high quality amenities.	Visit Wales. Award winning beaches [online]. Available from: https://www.visitwales.com/things-to-do/nature-and-landscapes/beaches/blue-flag-award-winning-beaches . [Accessed 12th January 2026].
Blue space	Visible water. Harbour front parks, rivers, ponds, lakes, ports, canals, fountains, etc. are all counted as blue spaces.	Tang K. 2017. Urban Design and Public Health – What is Blue Space? [online] Newcastle University. Available from: https://2016-2017.nclurbandesign.org/2017/01/urban-design-public-health-blue-space/ . [Accessed: 24 November 2020].

Term	Definition	Source of definition
Broad habitat	<p>Used to classify different ecosystems for reporting.</p> <p>[In SoNaRR, these are the same as the SoNaRR ecosystems and consist of: Mountain, moorland and heath; Semi-natural grassland; Enclosed farmland; Woodlands; Urban; Freshwater; Coastal margins; Marine]</p>	UK NEA. 2011. UK National Ecosystem Assessment – Technical Report. Cambridge: UNEP-WCMC.
Brominated diphenyl ethers	<p>A group of man-made compounds that have been used as flame retardants. They have potential adverse effects on humans and aquatic life, persist in nature and bioaccumulate leading to some of them being classed as persistent organic pollutants.</p>	<p>Environment Agency. 2019. Polybrominated diphenyl ethers (PBDEs): sources, pathways and environmental data. Available from: https://consult.environment-agency.gov.uk/environment-and-business/challenges-and-choices/user_upload/s/polybrominated-diphenyl-ethers-pressure-rbmp-2021.pdf. [Accessed 24 November 2020].</p>

Term	Definition	Source of definition
Capital	<p>There are various forms of capital. This includes natural, human, produced, financial and social capital. All are stocks that have the capacity to produce flows of economically desirable outputs. The maintenance of all five kinds of capital is essential for the sustainability of economic development.</p> <p>Financial capital facilitates economic production, though it is not itself productive, referring rather to a system of ownership or control of physical capital.</p> <p>Natural capital is made up of the resources and ecosystem services of the natural world.</p> <p>Produced capital consists of physical assets generated by applying human productive activities to natural capital and capable of providing a flow of goods or services.</p> <p>Human capital refers to the productive capacities of an individual, both inherited and acquired through education and training.</p> <p>Social capital, the most controversial and the hardest to measure, consists of a stock of trust, mutual understanding, shared values and socially held knowledge.</p>	Goodwin NR. 2003. Five Kinds of Capital: Useful Concepts for Sustainable Development. Global development and environment institute Working paper no. 03-07. Available from: https://core.ac.uk/download/pdf/7051857.pdf . [Accessed 24 November 2020].

Term	Definition	Source of definition
Carbon farming	Involves implementing practices that are known to improve the rate at which CO ₂ is removed from the atmosphere and converted to plant material and/or soil organic matter.	Carbon Cycle Institute. 2020. Carbon farming [online]. Available from: https://www.carboncycle.org/carbon-farming/ . [Accessed 30 November 2020].
Carbon footprint	Measures the total greenhouse gas emissions caused directly and indirectly by a person, organisation, event or product.	Carbon Trust. 2018. Carbon footprinting guide [online]. Available from: https://www.carbontrust.com/resources/carbon-footprinting-guide . [Accessed 24 November 2020].
Carbon sequestration (also storage and capture)	(also sequestering carbon, carbon storage, carbon capture) The uptake of carbon-containing substances, in particular carbon dioxide, to a storage reservoir (e.g. trees, soils) so reducing atmospheric carbon dioxide.	Allwood JM, Bosetti V, Dubash NK, Gómez-Echeverri L, von Stechow C. 2014. Glossary. In: IPCC. 2014. Climate Change, 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Term	Definition	Source of definition
Circular economy	<p>A circular economy is an alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life.</p>	<p>WRAP. 2016. WRAP and the circular economy [Online]. Available from: http://www.wrap.org.uk/about-us/about/wrap-and-circular-economy. [Accessed 24 November 2020].</p>
Climate change	<p>A change in the state of the climate that can be identified by changes in the mean and/or variability of its properties, and that persists for an extended period, typically decades or longer.</p>	<p>Allwood JM, Bosetti V, Dubash NK, Gómez-Echeverri L, von Stechow C. 2014. Glossary. In: IPCC. 2014. Climate Change, 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.</p>

Term	Definition	Source of definition
Coastal Squeeze	<p>Coastal squeeze is one form of coastal habitat loss, where intertidal habitat is lost due to the high-water mark being fixed by a defence or structure (i.e. the high-water mark residing against a hard structure such as a seawall) and the low water mark migrating landwards in response to sea level rise.</p>	<p>Pontee N. 2011. Reappraising coastal squeeze: A case study from North-West England. Proceedings of the Institution of Civil Engineers: Maritime Engineering. https://www.icevirtuallibrary.com/doi/abs/10.1680/maen.2011.164.3.127. [Accessed 7 December 2020].</p> <p>As quoted in: Oaten J, Brooks A. and Frost N. 2018. Coastal Squeeze Evidence and Monitoring Requirement Review. NRW Report No: 307, 188pp, Natural Resources Wales, Cardiff.</p>
Co-benefits	<p>Co-benefits implies a 'win-win' strategy to address two or more goals with a single policy measure.</p>	<p>Mayrhofer JP, Gupta G. 2016. The science and politics of co-benefits in climate policy. Environmental Science and Policy 57, 22-30.</p>

Term	Definition	Source of definition
Communities First Cluster Areas	<p>Communities First is a Community focussed programme that supports the Welsh Government's Tackling Poverty agenda. The programme concentrated on the 10% most deprived communities in Wales, as defined by the Welsh Index of Multiple Deprivation 2011. Each cluster was based on these areas and criteria have been established to determine which other, somewhat less deprived areas, are also included. There were 52 clusters in total. The Communities First program has since evolved, with a focus shifting towards more integrated, participant-focused poverty reduction programs that target need regardless of postcode, building on lessons from the cluster model.</p>	<p>Welsh Government. Key Indicators by Communities First Cluster Available from: Key Indicators by Communities First Cluster/faqs/?lang=en. [Accessed 12th January 2026]</p>
Compaction	<p>Changing the nature of the soil such that there is a decrease in the volume of voids between soil particles or aggregates; it is manifest as an increase in bulk density and a severely compacted soil can become effectively impermeable. Some soils are naturally compacted, e.g. very heavy textured soils (fine textured). Man-made compaction is caused by the passage of heavy machinery and very intensive soil exploitation.</p>	<p>RE CARE Hub. 2018. Soil compaction definition [Online]. Available from: http://www.recare-hub.eu/glossary/89:soil-compaction. [Accessed 26 November 2020].</p>

Term	Definition	Source of definition
Composite Material	A material made from two or more constituent materials with significantly different physical or chemical properties.	TWI. 2020. What is a composite material? (a definitive guide) [online]. Available from: https://www.twi-global.com/technical-knowledge/faqs/what-is-a-composite-material . [Accessed 30 November 2020].
Condition	(of a species or habitat) The capacity to yield services relative to its potential capacity. This is usually described in relation to a desired reference state (good or favourable condition) and is typically defined in terms of extent, distribution, structures and functions, and species composition for habitats and population size structure and habitat quality for species.	UK NEA. 2011. UK National Ecosystem Assessment – Technical Report. Cambridge: UNEP-WCMC.
Connectivity	The degree to which the landscape facilitates or impedes movement among resource patches.	Taylor PD, Fahrig L, Heinen K, Merriam G. 1993. Connectivity is a vital element of landscape structure. Oikos 68, 571-572.

Term	Definition	Source of definition
Contaminated land	<p>Under section 78A (2) of Part 2A of the Environmental Protection Act (1990), contaminated land is defined as:</p> <p>“any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land that –</p> <ul style="list-style-type: none"> (a) significant harm is being caused or there is a significant possibility of such harm being caused; or (b) significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution being caused;” <p>“Contaminated land” is used to mean land which meets the Part 2A definition of contaminated land. Other terms, such as “land affected by contamination” or “land contamination”, are used to describe the much broader categories of land where contaminants are present but usually not at a sufficient level of risk to be contaminated land.</p>	<p>NRW (2016) <i>The State of Contaminated Land in Wales</i>. Cardiff: Natural Resources Wales. Available at: https://naturalresources.wales/evidence-and-data/research-and-reports/state-of-the-environment-reports/the-state-of-contaminated-land-in-wales/?lang=en (Accessed: 18 March 2024).</p>
Cost-benefit analysis	<p>A technique designed to determine the feasibility of a project or plan by quantifying its costs and benefits.</p>	<p>UK NEA. 2011. UK National Ecosystem Assessment – Technical Report. Glossary Cambridge: UNEP-WCMC. Available from: http://uknea.unep-wcmc.org/Resources/taid/82/Default.aspx. [Accessed 27 November 2020].</p>

Term	Definition	Source of definition
Critical load	Thresholds for the deposition of pollutants causing acidification and/or eutrophication above which significant harmful effects on sensitive UK habitats may occur.	JNCC. 2015. JNCC Biodiversity indicators. B5a Air pollution, part of B5 Pressure from pollution. Pressure indicator [online]. Available from: https://jncc.gov.uk/our-work/ukbi-b5a-air-pollution/ . [Accessed 26 November 2020].
Crop wild relatives	Crop Wild Relatives (CWRs) are an important genetic resource for crop breeding used, for example, to improve pest and disease resistance, increase tolerance to environmental stress, and improve yield. Such species have increased importance as climate change increases the need for crops to be resilient to extreme environmental conditions.	SoNaRR 2025

Term	Definition	Source of definition
Decarbonisation / Decarbonise	<p>The process by which countries or other entities aim to achieve a low-carbon economy, or by which individuals aim to reduce their consumption of carbon.</p>	<p>IPCC. 2014. Annex II: Glossary [Mach KJ, Planton S and von Stechow C (eds.)] In: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri RK, Meyer LA. (eds.)]. IPCC, Geneva pp. 117-130. Available from: https://www.ipcc.ch/site/assets/uploads/2018/02/AR5_SYR_FIN_AL_Annexes.pdf. [Accessed 30 November 2020].</p>

Term	Definition	Source of definition
Degenerative	Of, relating to, involving, or causing a lowering of effective power, vitality, or essential quality to a worsened state.	<p>Merriam-Webster. 2020. Definition of degenerative. Available from: https://www.merriam-webster.com/dictionary/degenerative. [Accessed 30 November 2020].</p> <p>Merriam-Webster. 2020. Definition of degeneration. Available from: https://www.merriam-webster.com/dictionary/degeneration. [Accessed 30 November 2020].</p>
Degradation	(of an ecosystem) A persistent reduction in the capacity to provide ecosystem services.	<p>UK NEA. 2011. UK National Ecosystem Assessment – Technical Report. Glossary Cambridge: UNEP-WCMC. Available from: http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx. [Accessed 27 November 2020].</p>
Diffuse pollution	Pollution resulting from scattering or dispersed sources that are collectively significant but to which effects are difficult to attribute individually.	<p>Natural Resources Wales. 2015. River Basin Management Plan Overview Annex.</p>

Term	Definition	Source of definition
Digestate	Remaining part of organic matter treated by anaerobic digestion, rich in nutrients and nitrogen, commonly used as an organic fertilizer in agriculture.	European Biogas Association. 2015. Digestate Factsheet [online]. Available from: http://europeanbiogas.eu/wp-content/uploads/2015/07/Digestate-paper-final-08072015.pdf . [Accessed 30 November 2020].
Directives	A "Directive" is a legislative act that sets out a goal that all EU countries must achieve. However, it is up to the individual countries to devise their own laws on how to reach these goals. E.g. Water Framework Directive, Bathing Waters Directive, Habitats Directive (Habitats Directive - Annex I habitats, Annex II species). EU Directives no longer directly apply in the UK post-Brexit (after Dec 31, 2020), but the UK retained the domestic laws that implemented them as <u>Retained EU Law</u> .	Europa EU. 2016. European Union - Regulations, Directives and other acts [online]. Available from: https://europa.eu/european-union/law/legal-acts_en . [Accessed 27 November 2020].
Disbenefit	Any negative consequence (negative impact, cost, trade-off) which society and/or natural resources will bear. In SoNaRR 2025 we use the term to describe negative impacts on human wellbeing from the state of natural resources.	SoNaRR 2025

Term	Definition	Source of definition
Diversity	The variety and relative abundance of different entities in a sample.	UK NEA. 2011. UK National Ecosystem Assessment – Technical Report. Glossary Cambridge: UNEP-WCMC. Available from: http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx [Accessed 27 November 2020].
Ecological footprint	An indicator of the total environmental burden that society places on the planet. It represents the area of land needed to provide raw materials, energy and food, as well as absorb pollution and waste created and is measured in global hectares.	Stockholm Environmental Institute and GHD. 2015. Ecological and Carbon Footprints of Wales. Update to 2011. July 2015.

Term	Definition	Source of definition
Ecosystem	Communities of interacting animals, plants and other organisms and their non-living (physical and chemical) environment.	UK NEA. 2011. UK National Ecosystem Assessment – Technical Report. Cambridge: UNEP-WCMC. EEA. 2015. European ecosystem assessment - concept, data and implementation. Contribution to Target 2 Action 5 Mapping and Assessment of Ecosystems and their Services (MAES) of the EU Biodiversity Strategy to 2020. European Environment Agency Technical Report no. 6/2015. ISSN 1725-2237.
Ecosystem services	The benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services such as nutrient cycling that maintain the conditions for life on Earth. The concept “ecosystem goods and services” is synonymous with ecosystem services.	UK NEA. 2011. UK National Ecosystem Assessment – Technical Report. Glossary Cambridge: UNEP-WCMC. Available from: http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx [Accessed 27 November 2020].

Term	Definition	Source of definition
Eutrophication	<p>The enrichment of water by nutrients, especially compounds of nitrogen and/or phosphorus, causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned.</p>	Urban Waste Water Treatment Directive (91/271/EEC)
Extent	<p>The scale, or area covered, by a natural resource, ecosystem or habitat.</p>	Environment (Wales) Act 2016.
Extinction debt	<p>In ecological communities, the number or proportion of specialist species of a habitat expected to eventually become extinct after environmental disturbance such as habitat destruction, climate change or invasion of exotic species. In single species, the number or proportion of populations expected eventually to become extinct after habitat change.</p>	<p>Kuussaari M, Bommarco R, Heikkinen RK, Helm A, Krauss J, Lindborg R, Öckinger E, Pärtel M, Pino J, Rodà F, Stefanscu C, Teder T, Zobel M & Steffan-Dewenter I. 2009. Extinction debt: a challenge for biodiversity conservation. <i>Trends in Ecology and Evolution</i>, 24 (10), 564-571.</p>

Term	Definition	Source of definition
Field Capacity (of soils)	<p>The point at which the soil moisture deficit is zero, i.e. when all soil pores other than those that drain under gravity are full of water. Soils usually return to field capacity during the autumn or early winter during periods when rainfall exceeds evapotranspiration. The field capacity period, measured in days, ends in the spring when evapotranspiration exceeds rainfall and a moisture deficit begins to accumulate.</p>	<p>Welsh Government (2022). <i>Agricultural Land Classification Technical Review Part 3: Droughtiness</i>. Available from: https://www.gov.wales/sites/default/files/publications/2022-01/agricultural-land-classification-technical-review-part-3-srep2020-21-02.pdf [Accessed 21 October 2025].</p>
Flotsam and jetsam	<p>Small or unimportant items that are found together, especially ones that have no connection with each other.</p>	<p>Collins Dictionary. 2020. Definition of flotsam and jetsam. Available from: https://www.collinsdictionary.com/dictionary/english/flotsam-and-jetsam. [Accessed 30 November 2020].</p>
Fluvial	<p>Of, relating to, or living in a stream or river.</p>	<p>Merriam-Webster. 2020. Definition of fluvial. Available from: https://www.merriam-webster.com/dictionary/fluvial. [Accessed 30 November 2020].</p>

Term	Definition	Source of definition
Fly-camping	Camping in a place that is not a campsite for a brief time using minimal equipment, which is illegal in much of the UK.	Macmillan dictionary. 2020. Definition of fly camping [online]. Available from: https://www.macmillandictionary.com/dictionary/british/fly-camping . [Accessed 30 November 2020].
Fly-tipping	The illegal deposit of any waste onto land that does not have a licence to accept it.	Keep Britain Tidy. 2020. Fly-tipping and the law [online]. Available from https://www.keepbritaintidy.org/faqs/advice/fly-tipping-and-law . [Accessed 30 November 2020].
Fragmentation	(habitat fragmentation) Fragmentation is the result of transforming large habitat patches into smaller, more isolated fragments of habitat.	EEA. 2011. Landscape fragmentation in Europe. Joint EEA-FOEN report. European Environment Agency Report No 2/2011.
Geomorphological	Describes the physical characteristics of landforms and their processes, which influence habitat structure, water flow, sediment transport, and nutrient availability in river ecosystems.	ScienceDirect. Geomorphology - an overview ScienceDirect Topics

Term	Definition	Source of definition
Geospatial	Of or relating to the relative position of things on the earth's surface.	Collins Dictionary. 2020. Definition of geospatial. Available from: https://www.collinsdictionary.com/dictionary/english/geospatial . [Accessed 12 January 2026].
Green engineering	The design, commercialisation, and use of processes and products in a way that reduces pollution, promotes sustainability, and minimises risk to human health and the environment without sacrificing economic viability and efficiency.	United States Environmental Protection Agency. 2019. About Green Engineering [online]. Available from: https://www.epa.gov/green-engineering/about-green-engineering . [Accessed 30 November 2020].
Green Flag Award	UK-wide partnership, delivered in Wales by Keep Wales Tidy with support from the Welsh Government. The award recognises and rewards the best parks and green spaces in the country.	Keep Wales Tidy. 2025. <i>Green Flag Awards</i> [online]. Available from: Green Flag for Parks - Keep Wales Tidy [Accessed 12 January 2026]
Green infrastructure / greenspace	Green and blue natural and semi-natural spaces in and around urban areas. Component elements include parks, private gardens, agricultural fields, hedges, trees, woodland, green roofs, green walls, canals, rivers and ponds. The term covers all land containing these features, regardless of ownership, condition or size.	Landscape Institute 2013. Green Infrastructure An integrated approach to land use. Landscape Institute Position Statement. London.

Term	Definition	Source of definition
Greenhouse gases	A group of gases that contribute either directly to climate change (including global warming) owing to their positive radiative forcing effect, or indirectly because they can produce increases in tropospheric ozone concentrations and this increases radiative forcing (warming of the atmosphere).	National Atmospheric Emissions Inventory. 2016. Overview of Greenhouse Gases [Online]. Available from: https://naei.beis.gov.uk/overview/ghg-overview . [Accessed 27 November 2020].
Groundwater	All water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil. It provides baseflow to springs, rivers and wetlands and contributes to drinking water supplies	Water Framework Directive (Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000)
Habitat	An ecological or environmental area that is inhabited by a particular animal or plant species. 'Broad Habitats' are used to classify different ecosystems for reporting.	UK NEA. 2011. UK National Ecosystem Assessment – Technical Report. Glossary Cambridge: UNEP-WCMC. Available from: http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx . [Accessed 27 November 2020].

Term	Definition	Source of definition
Healthy life years (or disability adjusted life years)	<p>Healthy life years, also called disability-free life expectancy, is defined as the number of years that a person is expected to continue to live in a healthy condition.</p> <p>Disability adjusted life years are a time-based measure that combines years of life lost due to premature mortality (YLLs) and years of life lost due to time lived in states of less than full health, or years of healthy life lost due to disability.</p>	<p>Eurostat. 2020. Statistics explained [online]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Healthy_life_years_(HLY). [Accessed 27 November 2020].</p> <p>World Health Organisation Data Platform. 2020. Indicator Metadata Registry List [online] Available from: https://www.who.int/data/gho/indicator-metadata-registry/imr-details/158#:~:text=The%20overall%20burden%20of%20diseases.due%20to%20disability%20(YLDs). [Accessed 27 November 2020].</p>
Heat island	<p>(and heat island effect) The tendency for urban areas to be hotter than surrounding rural, vegetated areas, especially at night in low-wind conditions. This is caused by hard surfaces absorbing heat during the day and releasing it at sunset – exacerbated where there is a lack of vegetation to cool the local atmosphere through evapo-transpiration.</p>	<p>Landsberg H. 1981. The Urban Climate. London: Academic Press.</p>

Term	Definition	Source of definition
Honeypot	Very desirable or very popular.	Collins Dictionary. 2020. Definition of honeypot. Available from: https://www.collinsdictionary.com/dictionary/english/honeypot [Accessed 30 November 2020].
Improved grassland	A habitat that covers half of Wales land surface. It is part of the enclosed farmland ecosystem. Improved grasslands have undergone high modification or intensive agriculture, and typically have fewer species with a limited variety of grasses and flowering plants	SoNaRR 2020
Indicator	Indicators quantify information by synthesising different and multiple information into an observed value.	EEA. 2015. European ecosystem assessment - concept, data and implementation. Contribution to Target 2 Action 5 Mapping and Assessment of Ecosystems and their Services (MAES) of the EU Biodiversity Strategy to 2020. European Environment Agency Technical Report no. 6/2015. ISSN 1725-2237

Term	Definition	Source of definition
Industrial symbiosis	A form of brokering to bring companies together in innovative collaborations to find ways to use the waste of one company as a raw material for another.	European Circular Economy Stakeholder Platform. 2020. Sharing Materials to Minimize Waste: Industrial Symbiosis Project [online] Available from https://circulareconomy.europa.eu/platform/en/good-practices/sharing-materials-minimize-waste-industrial-symbiosis-project . [Accessed 30 November 2020].
Intensive agriculture	Farming that uses a lot of machinery, labour, chemicals, etc. in order to grow as many crops or keep as many animals as possible on the amount of land available.	Cambridge Dictionary. 2020. Definition of intensive agriculture. Available from: https://dictionary.cambridge.org/dictionary/english/intensive-agriculture . [Accessed 30 November 2020].
Internet of Things	Connections between objects of all kinds via the internet that enable them to communicate with people and with each other.	Macmillan dictionary. 2020. Definition of internet of things [online]. Available from: https://www.macmillandictionary.com/dictionary/british/internet-of-things . [Accessed 30 November 2020].

Term	Definition	Source of definition
Intervention	See Response.	UK NEA. 2011. UK National Ecosystem Assessment – Technical Report. Glossary Cambridge: UNEP-WCMC. Available from: http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx [Accessed 27 November 2020].
Invasive non-native species	(INNS) Plants, animals, fungi and microorganisms whose introduction and/or spread outside their natural past or present ranges pose a risk to biodiversity or have other unforeseen negative consequences.	EEA. 2012. Invasive alien species indicators in Europe. A review of streamlining European biodiversity (SEBI) Indicator 10. European Environment Agency Technical Report No. 15/2012.
Land bank	An area of land owned by a person or organization that is considered as an asset because it could be used for building property on in the future.	Cambridge Dictionary. 2020. Definition of land bank. Available from: https://dictionary.cambridge.org/dictionary/english/land-bank . [Accessed 30 November 2020].

Term	Definition	Source of definition
Leachate / Leaching	Liquid that has seeped through solid waste in a landfill and has extracted soluble dissolved or suspended materials in the process. Leaching is the process of this happening.	European Environment Agency. 2004. EEA Glossary. Available from: https://www.eea.europa.eu/help/glossary/eea-glossary/landfill-leachate#:~:text=Liquid%20that%20has%20seeped%20through,suspended%20materials%20in%20the%20process. [Accessed 27 November 2020].
Life-span adjusted deaths	The overall reduction in life expectancy, not direct, actual deaths. Usually in relation to air pollution.	ONS (2025). National life tables – life expectancy in the UK: 2022 to 2024. Available from National life tables – life expectancy in the UK - Office for National Statistics
Local Authority municipal waste	Includes household and non-household waste that is collected and disposed of by local authorities. It includes regular household collections, specific recycling collections, special collections of bulky items, waste received at civic amenity sites and waste collected from non-household sources.	Local authority municipal waste management GOV.WALES

Term	Definition	Source of definition
Lower Super Output Area	<p>Lower layer Super Output Areas (LSOAs) are made up of groups of Output Areas (OAs), usually four or five. They comprise between 400 and 1,200 households and have a usually resident population between 1,000 and 3,000 persons.</p> <p>Using Census 2021 data, some changes were made to 2011 LSOAs as a result of population and household changes since 2011. New 2021 LSOAs were created by merging or splitting 2011 LSOAs to ensure that population and household thresholds were met.</p>	<p>Office for National Statistics. Statistical geographies Available from: Statistical geographies - Office for National Statistics</p>
Marl lakes	<p>Marl lakes are found in limestone areas and are superbly clear, with a rich diversity of plant life including stoneworts (a kind of whorled freshwater seaweed encrusted with lime and crunchy to the touch).</p>	<p>The Wildlife Trust. Available from: Lakes The Wildlife Trusts [Accessed 5 August 2025]</p>
Material footprint	<p>The attribution of global material extraction to domestic final demand of a country. The total material footprint is the sum of the material footprint for biomass, fossil fuels, metal ores and non-metal ores.</p>	<p>United Nations Environment Programme. 2018. SDGS Goal 8 Target 8.4 Metadata. Available from: https://unstats.un.org/sdgs/metadata/files/Metadata-08-04-01.pdf [Accessed: 30 November 2020].</p>

Term	Definition	Source of definition
Maximum sustainable yield	Catching the maximum quantity that can safely be removed from the stock while maintaining its capacity to produce sustainable yields in the long term.	<p>Lart, W. (2022) 'Guide to fishing at Maximum Sustainable Yield'. Sea Fish Industry Authority. Available at: https://www.seafish.org/media/0iwd101/guide-to-fishing-at-maximum-sustainable-yield-msy.pdf (Accessed: 12 November 2025).</p> <p>guide-to-fishing-at-maximum-sustainable-yield-msy.pdf</p>
Mitigation (Climate change)	<p>Climate change mitigation refers to actions or activities that limit emissions of greenhouse gases (GHGs) from entering the atmosphere and/or reduce their levels in the atmosphere.</p> <p>Mitigation includes reducing the GHGs emitted from energy production and use (e.g., that reduces use of fossil fuels), and land use, and methods to mitigate warming, for example, by carbon sinks which remove emissions from the atmosphere through land-use or other (including artificial) mechanisms</p>	<p>IPCC Frequently asked questions. Available at: IPCC AR6 WGIII FAQ Chapter 01.pdf</p>

Term	Definition	Source of definition
Natural Resource Management	<p>Also known as NRM. An approach to maintaining or restoring the composition, structure, function, and delivery of services of natural and modified ecosystems for the goal of achieving sustainability. Based on an adaptive vision for future conditions taking ecology, socio-economics and cultural needs into account.</p>	<p>UK NEA. 2011. <i>UK National Ecosystem Assessment – Technical Report</i>. Cambridge: UNEP-WCMC.</p>
Natural resources	<p>The living and non-living components of ecosystems. Including: animals, plants and other organisms; air, water and soil; minerals; geological features and processes; physiographical features; climatic features and processes.</p>	<p>Environment (Wales) Act 2016.</p>
Natural Resources Policy	<p>(NRP) A document setting out the Welsh Ministers' general and specific policies for contributing to achieving sustainable management of natural resources in relation to Wales. The NRP uses SoNaRR as the main evidence base.</p>	<p>Environment (Wales) Act 2016.</p>
Nature-based solutions	<p>Actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.</p>	<p>IUCN. 2020. Nature-based solutions [online]. Available from: 2nd CEM Dialogue: IUCN Global Standard for Nature-based Solutions November 23rd, 2020 [Accessed 12 January 2026].</p>

Term	Definition	Source of definition
Olsen-phosphorus (Olsen-P) levels	A measure of the amount of soil phosphorus available to plants as measured using the Olsen-phosphorus test method.	soil_Phosphorus.pdf UK CEH Henrys, P.A.; Keith, A.M.; Robinson, D.A.; Emmett, B.A. (2012). Model estimates of topsoil nutrients [Countryside Survey]. NERC Environmental Information Data Centre. http://doi.org/10.5285/7055965b-7fe5-442b-902d-63193cbe001c
Overexploitation	To exploit (something, such as a natural resource) to an excessive degree.	Merriam-Webster. 2020. Definition of overexploitation. Available from: https://www.merriam-webster.com/dictionary/overexploitation . [Accessed 30 November 2020].
Overgrazing	To allow animals to graze (an area, such as a pasture) to the point of damaging vegetational cover.	Merriam-Webster. 2020. Definition of overgrazing. Available from: https://www.merriam-webster.com/dictionary/overgrazing . [Accessed 30 November 2020].

Term	Definition	Source of definition
Ozone	<p>Ozone (O_3) is not emitted directly from any man-made source in any significant quantities. In the lower atmosphere, O_3 is primarily formed by a complicated series of chemical reactions initiated by sunlight. These reactions can be summarised as the sunlight-initiated oxidation of volatile organic compounds (VOCs) in the presence of nitrogen oxides (NOx).</p>	<p>Air Quality in Wales. <i>Pollutants</i>. Website of the Welsh air quality forum. Available from: Pollutants Air Quality In Wales [Accessed 12 January 2026]</p>
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Particulate Matter (PM)	<p>(also known as particulate or particulate pollution) Airborne particulate matter is made up of a collection of solid and/or liquid materials of various sizes. It consists of both primary components released directly (from source) into the atmosphere, and secondary components, which are formed in the atmosphere from chemical reactions. Particulate matter equal to or less than $10\mu\text{m}$ in diameter is known as PM₁₀, particulate matter equal to or less than $2.5\mu\text{m}$ in diameter is known as PM_{2.5}.</p>	<p>Air Quality Expert Group. 2005. Particulate Matter in the United Kingdom: Summary. Defra, London. Available from: https://uk-air.defra.gov.uk/assets/documents/reports/aqeg/pm-summary.pdf. [Accessed 27 November 2020].</p>

Term	Definition	Source of definition
Phenology	<p>Phenology is the study of seasonal changes in plants and animals from year to year, such as flowering of plants, emergence of insects and migration of birds, especially their timing and relationship with weather and climate.</p>	<p>Woodland Trust What is phenology - Nature's Calendar</p>
Photovoltaic panels	<p>Also known as solar electricity panels. Capture the sun's energy and convert it into electricity.</p>	<p>Energy savings trust. 2020. Solar panels [online]. Available from: https://energysavingtrust.org.uk/advice/solar-panels/. [Accessed 30 November 2020].</p>
Placemaking	<p>An overarching idea and a hands-on approach for improving a neighbourhood, city, or region. It is a collaborative process by which the public realm can be shaped in order to maximize shared value.</p>	<p>Project for Public Spaces. 2010. What is placemaking? [online] Available from: https://www.pps.org/article/what-is-placemaking. [Accessed 30 November 2020].</p>

Term	Definition	Source of definition
Poaching	(of fields and river banks - related to trampling) Destruction of soil structure by livestock causing compaction and destroying parts of a field that they tread most often.	Whitmore AP. 2016. <i>Impact of livestock on soil. Sustainable Animal Production: Workshops, Discussions, Online resources [online]</i> . Available from: Livestock Farming and the Environment : proceedings of Workshop 4 on Sustainable Animal Production, held at Hannover, September 28, 2000 [Accessed 12 January 2026].
Pollination	A process in the sexual phase of reproduction in some plants caused by the transportation of pollen. In the context of ecosystem services, pollination generally refers to animal assisted pollination, such as that done by bees, rather than wind pollination.	UK NEA. 2011. UK National Ecosystem Assessment – Technical Report. Glossary Cambridge: UNEP-WCMC. Available from: http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx . [Accessed 27 November 2020].
Pollinators	Something, such as an insect, that carries pollen from one plant or part of a plant to another	Cambridge Dictionary. 2020. Definition of pollinator. Available from: POLLINATOR English meaning - Cambridge Dictionary [Accessed 27 November 2020].

Term	Definition	Source of definition
Pollution	<p>(also pollutant) The direct or indirect introduction, as a result of human activity, of substances or heat into the air, water or land which: (i) may be harmful to human health or the quality of aquatic ecosystems or terrestrial ecosystems directly depending on aquatic ecosystems; (ii) result in damage to material property; or (iii) impair or interfere with amenities and other legitimate uses of the environment. See Drivers of change</p>	<p>Natural Resources Wales. 2015. River Basin Management Plan Overview Annex.</p>
Pollution incidents	<p>Occurrences of pollution entering the air, land or water that are reported to NRW and cause an environmental impact.</p>	<p>NRW. 2025. Wales Environmental Pollution Incidents Wales Environmental Information Portal</p>

Term	Definition	Source of definition
Pressure	Pressures resulting from human activities which bring about changes in the state of the environment See SoNaRR Pressures	Food and Agriculture Organization of the United Nations (2025) <i>Driver-Pressure-State-Impact-Response Framework (DPSIR) Land & Water Food and Agriculture</i> Organization of the United Nations Land & Water Food and Agriculture Organization of the United Nations. Available at: https://www.fao.org/land-water/land/land-governance/land-resources-planning-toolbox/category/details/en/c/1026561/ (Accessed: 20 June 2024).
Protected sites	(or protected areas) Areas that have been designated under EU and/or UK legislation for specific biological or geological features.	Environment Agency. 2015. Water for life and livelihoods. River Basin Management Plans Glossary. DEFRA.
Psychophysiological	Combining or involving mental or bodily processes – of or relating to physiological psychology.	Merriam-Webster. 2020. Definition of psychophysiological. Available from: https://www.merriam-webster.com/dictionary/psychophysiological [Accessed 26 November 2020].

Term	Definition	Source of definition
Public Service Boards	<p>A group (board) set up in each local authority area as defined in the Well-being of Future Generations (Wales) Act. The boards comprise of the local authority, the local health board for an area any of part of which falls within the local authority area, the Welsh fire and rescue authority for an area any part of which falls within the local authority area, and the Natural Resources Body for Wales (Natural Resources Wales, NRW).</p>	<p>Well-being of Future Generations (Wales) Act 2016.</p>
Ramsar	<p>A wetland area designated for its conservation value under the 1971 Convention on Wetlands of International Importance, especially as Waterfowl Habitat. The Ramsar Convention seeks to promote the conservation of listed wetlands and their wise use.</p>	<p>JNCC. Convention on Wetlands Advisor to Government on Nature Conservation JNCC</p>
Rate of return	<p>The gain or loss of an investment over a certain period of time.</p>	<p>Corporate Finance Institute. 2020. Rate of return. Available from: https://corporatefinanceinstitute.com/resources/knowledge/finance/rate-of-return-guide/. [Accessed 26 November 2020].</p>

Term	Definition	Source of definition
Recyclate	<p>Material that is recyclable. Usually sent to, and processed in, a waste recycling plant or materials recovery facility.</p>	<p>Collins Dictionary. 2020. Definition of recyclate. Available from: https://www.collinsdictionary.com/dictionary/english/recyclate. [Accessed 26 November 2020].</p> <p>Your Dictionary. 2020. Definition of recyclate. Available from: https://www.yourdictionary.com/recyclate. [Accessed 26 November 2020].</p>
Reen	<p>A ditch, especially a drainage channel</p>	<p>Collins. 2021. Definition of reen. Available from: https://www.collinsdictionary.com/dictionary/english/reen [Accessed 26 March 2021]</p>

Term	Definition	Source of definition
Regeneration	<p>Of, relating to, or marked by being formed or created again</p>	<p>Merriam-Webster. 2020. Definition of degenerative. Available from: https://www.merriam-webster.com/dictionary/regenerative. [Accessed 30 November 2020].</p> <p>Merriam-Webster. 2020. Definition of degeneration. Available from: https://www.merriam-webster.com/dictionary/regenerate. [Accessed 30 November 2020].</p>
Regulation(s)	<p>(in a legal sense, not the same as regulation of processes and services) A "regulation" is a binding legislative act. It must be applied in its entirety across Wales, the UK or EU (depending on the scale the regulation applies to).</p>	<p>Europa EU. 2016. European Union - Regulations, Directives and other acts. Available from: EU regulation Definition Legal Glossary LexisNexis [Accessed 12 January 2026].</p>

Term	Definition	Source of definition
Remediation / Remediate	(of contaminated land sites) A broad range of actions which can be used to reduce the risk from contaminated land.	NRW (2016) <i>The State of Contaminated Land in Wales</i> . Cardiff: Natural Resources Wales. Available at: https://naturalresources.wales/evidence-and-data/research-and-reports/state-of-the-environment-reports/the-state-of-contaminated-land-in-wales/?lang=en (Accessed: 18 March 2024).
Representative Concentration Pathways (RCPs)	Climate change scenarios that include time series of emissions and concentrations of the full suite of greenhouse gases (GHGs) and aerosols and chemically active gases, as well as land use/land cover. The word representative signifies that each RCP provides only one of many possible scenarios that would lead to the specific radiative forcing characteristics. The term pathway emphasises that not only the long-term concentration levels are of interest, but also the trajectory taken over time to reach that outcome	IPCC. Data Distribution Centre. https://www.ipcc-data.org/guidelines/pages/glossary/glossary_r.html

Term	Definition	Source of definition
Resilience	(of ecosystems) The capacity of ecosystems to deal with disturbances, either by resisting them, recovering from them, or adapting to them, whilst retaining their ability to deliver services and benefits now and in the future.	NRW. 2016. Chapter 4: State of Natural Resources Report (SoNaRR): Assessment of the Sustainable Management of Natural Resources. Technical Report. Natural Resources Wales. Available from: https://naturalresources.wales/evidence-and-data/research-and-reports/the-state-of-natural-resources-report-assessment-of-the-sustainable-management-of-natural-resources/?lang=en . [Accessed 26 November 2020].
Response	(management responses) Human action, including policies, strategies and interventions, to address specific issues, needs, opportunities or problems. These may be legal, technical, institutional, economic or behavioural operating at various spatial and time scales.	UK NEA. 2011. UK National Ecosystem Assessment – Technical Report. Cambridge: UNEP-WCMC.

Term	Definition	Source of definition
Rilling and gullying	<p>Creation of deep ditches, channels or “rills” usually from erosion by water, a common form of erosion.</p>	<p>The Free Dictionary. 2020. Definition of gullying. Available from: https://www.thefreedictionary.com/gullying. [Accessed 26 November 2020].</p> <p>The Free Dictionary. 2020. Definition of rill erosion. Available from: https://encyclopedia2.thefreedictionary.com/rill+erosion. [Accessed 26 November 2020].</p>
Semi-natural habitats or features	<p>Habitats in which the vegetation is mostly composed of native plant taxa, but where human land use and other activities play a key role in community development and maintenance. Examples are numerous, ranging across the spectrum of major habitat classes in Wales, including most forms of deciduous woodland, dwarf-shrub heathland, and many coastal formations. Habitat expressions least influenced by human activities are sometimes called ‘near-natural’; at the other end of the spectrum certain degraded habitats, such as modified bog, are also treated as semi-natural.</p>	<p>Blackstock TH, Howe EA, Stevens JP, Burrows CR & Jones PS. 2010. Habitats of Wales: a comprehensive field survey 1979-1997. Cardiff: University of Wales Press.</p>

Term	Definition	Source of definition
Servitisation	Industry using their products to sell “outcome as a service” rather than as a one-off sale.	K3 Syspro. 2023. Jargon buster: Servitization explained. Available from: Jargon Buster: Servitization Explained NexSys [Accessed 12 January 2026].
Silviculture	Management of forest land for timber.	United Nations. 1997. Glossary of Environment Statistics. Studies in Methods Series F, No. 67. New York: United Nations. Available from: https://unstats.un.org/unsd/publication/seriesf/seriesf_67e.pdf [Accessed 7 December 2020].
Smart grids	Smart grids are energy networks that can automatically monitor energy flows and adjust to changes in energy supply and demand accordingly.	European Commission. 2020. Smart grids and meters. Available from: https://ec.europa.eu/energy/topics/market-s-and-consumers/smart-grids-and-meters/overview_en [Accessed 24 November 2020].

Term	Definition	Source of definition
Soil Sealing	<p>Soil sealing means the permanent covering of an area of land and its soil by impermeable artificial material (e.g. asphalt and concrete), for example through buildings and roads. Only part of a settlement area is actually sealed, as gardens, urban parks and other green spaces are not covered by an impervious surface.</p>	<p>European Environment Agency. <u>What is soil sealing and why is it important to monitor it? Frequently asked questions (FAQs) European Environment Agency (EEA)</u> [Accessed 12 January 2026].</p>
Stack emissions	<p>Stack emissions are those gases and solids that come out of the smoke stack (flue or chimney) after the incineration process.</p>	<p>Encylopedia.com. 2019. Explanation of stack emissions. Available from: https://www.encyclopedia.com/environment/encyclopedias-almanacs-transcripts-and-maps/stack-emissions#:~:text=Stack%20emissions%20are%20those%20gases,wastes%20that%20contain%20organic%20compounds. [Accessed 24 November 2020].</p>

Term	Definition	Source of definition
State	<p>In the context of SoNaRR, state refers to (collectively) the current quality and quantity of natural resources and the current diversity, extent, condition and connectivity of an ecosystem.</p>	<p>Food and Agriculture Organization of the United Nations (2025) <i>Driver-Pressure-State-Impact-Response Framework (DPSIR) Land & Water Food and Agriculture Organization of the United Nations Land & Water Food and Agriculture Organization of the United Nations</i>. Available at: https://www.fao.org/land-water/land/land-governance/land-resources-planning-toolbox/category/details/en/c/1026561/ (Accessed: 20 June 2024).</p> <p>Defined within SoNaRR.</p>
Status	<p>(e.g. ecological/biological/conservation/chemical status) A specified way of classifying environmental condition. Status is usually specified within Directives against certain environmental standards for that Directive and using specific methodologies e.g. Water Framework Directive and Habitats Directive.</p>	<p>Environment Agency. 2015. Water for life and livelihoods. River Basin Management Plans Glossary. DEFRA.</p>

Term	Definition	Source of definition
Stratification (Ocean or thermal)	<p>Stratification of the ocean can be thought of as the vertical structuring of the water column by density. The density of seawater is primarily controlled by its temperature and salinity; thus, stratification can be a combination of thermal (warmer water above cooler water) and saline (fresher water above saltier water). In simple terms the water column in any location is either mixed or stratified and whether it is one or the other has profound impacts on the ecosystem.</p>	<p>Dye, S. 2006. <i>Impacts of Climate Change on Shelf-Sea Stratification in Marine Climate Change Impacts Annual Report Card 2006</i> (Eds. Buckley PJ, Dye SR, Baxter JM). Summary Reports, MCCIP, Lowestoft [online] Available from: www.mccip.org.uk. [Accessed 2nd August 2016].</p>
Sustainable agriculture	<p>Sustainability refers to the maintaining and conserving resources for future use, and to avoid depleting them. In relation to agriculture, this includes economic, environmental, cultural and social aspects. All of which needs to be balanced in order to protect future food production capacity.</p>	<p>Welsh Government. 2025. Sustainable Farming Scheme 2026: scheme description. Available from: Sustainable Farming Scheme 2026: scheme description [HTML] GOV.WALES</p>

Term	Definition	Source of definition
Sustainable development	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.	United Nations. 2020. What is sustainable development? Sustainable development goals. Available from: https://www.un.org/sustainabledevelopment/development-agenda/#:~:text=Sustainable%20development%20has%20been%20defined,to%20meet%20their%20own%20needs. [Accessed 24 November 2020].
Sustainable drainage systems	Sustainable drainage systems (SuDS) are designed to mimic natural drainage by managing surface water run-off as close to source as possible.	NRW. 2020. Sustainable Drainage Systems (SuDS). Available from: https://naturalresources.wales/guidance-and-advice/business-sectors/planning-and-development/advice-for-developers/sustainable-drainage-systems-suds/?lang=en . [Accessed 24 November 2020].

Term	Definition	Source of definition
Sustainable management of natural resources	(SMNR) Using natural resources in a way and at a rate that maintains and enhances the resilience of ecosystems and the benefits they provide, in doing so, meet the needs of current generations without compromising the ability of future generations to meet their needs, and contribute to the achievement of the well-being goals set out in the Well-being of Future Generations Act. Also referred to as sustainable management.	Environment (Wales) Act 2016.
Targets	A target is a clear expression of a policy priority, setting out exactly what the Government wants to have done and by when. Targets let those responsible for delivery know what needs to happen, so that they can plan, monitor and deliver the specified change.	Parliament 2010. Targets as a policy tool: key issues for the 2010 Parliament [online]. Available from: http://www.parliament.uk/business/publications/research/key-issues-for-the-new-parliament/value-for-money-in-public-services/targets-as-a-policy-tool/ . [Accessed 24 November 2020].
Taxonomic	Relating to a system for naming and organizing things, especially plants and animals, into groups that have similar qualities.	Cambridge University Press. 2020. Definition of taxonomic. Available from: https://dictionary.cambridge.org/dictionary/english/taxonomic . [Accessed 24 November 2020].

Term	Definition	Source of definition
Third sector	Another name for the voluntary sector. The part of the economy that consists of non-profit-making organizations, as opposed to the public and private sectors.	Collins Dictionary, 2020. Definition of third sector. Available from: https://www.collinsdictionary.com/dictionary/english/third-sector . [Accessed 24 November 2020].
Threshold	(or tipping point) The point at which a small change in environmental conditions can result in a rapid change in an ecosystem. This is the point at which the change is likely to be irreversible.	UK NEA. 2011. UK National Ecosystem Assessment – Technical Report. Cambridge: UNEP-WCMC.
Tranquillity	An untroubled state, which is peaceful, calm and free from unwanted disturbances. This can refer to a state of mind or a particular environment. Tranquillity can be measured in terms of the absence of unwanted intrusions, or by a balancing of positive and negative factors. These include the presence of nature, feeling safe, visually pleasing surroundings and a relaxing atmosphere.	Welsh Government. 2018. Noise and soundscape action plan 2018 to 2023. Available from: https://gov.wales/noise-and-soundscape-action-plan-2018-2023-0 . [Accessed 24 November 2020].
Trends	A general direction in which something is developing or changing. In SoNaRR this refers to changes (positive or negative) seen over specified time periods in relation to extent and condition.	Oxford University Press 2016. Definition of Trend Oxford Dictionary [online]. Available from: http://www.oxforddictionaries.com/definition/english/trend . [Accessed 24 November 2020].

Term	Definition	Source of definition
Urban cohesion	A set of factors with direct influence on urban development including planning processes, socio-economic and cultural factors.	Pinto AJ, Ramesar A. 2012. Urban cohesion: a guiding concept for new urban realities. In Ambivalent Landscapes. Sorting out the present by designing the future. Faculdade de Arquitectura UTL. C.Dias Coelho (Ed.).
Well-being / wellbeing	A context- and situation-dependent state, comprising basic material for a good life, freedom and choice, health and bodily well-being, good social relations, security, peace of mind, and spiritual experience.	UK NEA. 2011. UK National Ecosystem Assessment – Technical Report. Cambridge: UNEP-WCMC.
Well-being of Future Generations (Wales) Act	This Act is about improving the social, economic, environmental and cultural well-being of Wales. It will make the public bodies listed in the Act think more about the long-term, work better with people and communities and each other, look to prevent problems and take a more joined-up approach. This will help us to create a Wales that we all want to live in, now and in the future. To make sure we are all working towards the same vision, the Act puts in place seven well-being goals. Public Service Boards are required to put together Well-being Assessments to help implement action to improve well-being. Well-being Indicators will be used to measure success of actions.	Welsh Government 2015. Well-being of Future Generations (Wales) Act: The essentials. Available from: https://www.futuregenerations.wales/wp-content/uploads/2017/02/150623-guide-to-the-fg-act-en.pdf . [Accessed 23 November 2020].

Term	Definition	Source of definition
Welsh Index of Multiple Deprivation	Welsh Government's official measure of relative deprivation for small areas in Wales. It is designed to identify those small areas where there are the highest concentrations of several different types of deprivation. It is a National Statistic and is produced by statisticians at the Welsh Government.	Welsh Index of Multiple Deprivation 2025 GOV.WALES
Whole systems approach	Considering the interrelatedness of both problems and solutions. In the context of SoNaRR, this considers all the main social systems together – food, energy mobility and built systems – that contribute most to environmental pressures.	SoNaRR 2020
Wider upland matrix	Used as a habitat type within mountain, moorland and heath ecosystem in SoNaRR. It includes areas of for example bracken and semi-natural grasslands	SoNaRR

Term	Definition	Source of definition
Zero-carbon	The reduction of carbon emissions to zero. Net zero carbon emissions are achieved when anthropogenic CO ₂ emissions are balanced globally by anthropogenic CO ₂ removals over a specified period.	IPCC, 2018: Annex I: Glossary [Matthews, JBR (ed.)]. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte V, Zhai P, Pörtner H-O, Roberts D, Skea J, Shukla PR, Pirani A, Moufouma-Okia W, Péan C, Pidcock R, Connors S, Matthews JBR, Chen Y, Zhou X, Gomis MI, Lonnoy E, Maycock T, Tignor M, Waterfield T (eds.)]. In Press
Zero-waste	Zero Waste is where all waste that is produced is re-used or recycled as a resource, without the need for any landfill or energy recovery	Beyond recycling GOV.WALES

SoNaRR 2025 Driver and pressure definitions

In SoNaRR we use the five principal direct drivers used by the UK NEA. The UK NEA defines a direct driver as “unequivocally influences ecosystem processes and can therefore be identified and measured to differing degrees of accuracy” (Table 5)

The influence of direct drivers on ecosystem processes manifest themselves as specific pressures. The European Environment Agency defines environmental pressures as “Pressures resulting from human activities which bring about changes in the state of the environment” (GMET, 2025). The pressures that are exerted by direct drivers manifest as changes in ecosystem and natural resource condition (United Nations, 2021). (Table 6))

Describing something as a pressure does not in itself mean it is not legitimate to do that activity, just that it will affect the state of (local) ecosystems and this needs to be recognised and the effects mitigated against.

Table 5 The SoNaRR 2025 Drivers of change

Direct Driver	Definition	Source
Climate change	Long-term shifts in temperatures and weather patterns. Such shifts can be natural, due to changes in the sun's activity or large volcanic eruptions. But since the 1800s, human activities have been the main driver of climate change, primarily due to the emission of greenhouse gases from the burning of fossil fuels like coal, oil and gas.	What Is Climate Change? United Nations
Direct exploitation	The use of natural resources, including living organisms, for food and materials. The pressures caused relate to the manner in which they are removed for our use as well as the direct removal and reduction of a renewable or non-renewable natural resource.	Based on definitions of pressures below.

Direct Driver	Definition	Source
INNS, pests and diseases	<p>Organisms that can cause damage to human health and well-being, non-human species and ecosystems. These may be native or non-native organisms.</p>	<p>Based on definitions of pressures below.</p>
Land and sea use management and change	<p>Land use change refers to a change in the use or management of land by humans. In Wales this can include management practices which cause changes in land use and land cover. Examples include intensification of agriculture, converting land from semi-natural grassland to enclosed farmland; or building of human settlements converting land from one ecosystem to urban ecosystem; or afforestation converting land to forestry use and woodland ecosystem land cover.</p> <p>Sea use change refers to a change in the use or management of the sea by humans. In Wales this can include building infrastructure in the marine environment which can lead to loss or degradation of habitat; construction of coastal defences which could lead to coastal squeeze; and unmanaged recreational activities which can cause disturbance and physical impacts.</p>	<p>Adapted from IPCC Glossary Search (Land use)</p> <p>(first sentence is from IPCC, following sentences drafted by SoNaRR team)</p>

Direct Driver	Definition	Source
Pollution	<p>Contaminants and other nuisances in the environment which can harm human health, living organisms or the natural or built environment. These contaminants may be in the form of substances (e.g. chemicals) or energy (e.g. light, noise, radioactivity, heat). These contaminants can directly or indirectly change the biological, thermal, chemical, physical, or radioactive properties of the medium they are in (e.g. water, air, land) in a way that can create a hazard. These may be produced by natural processes and human activity.</p>	<p>Adapted from GMET (2025) General Multilingual Environmental Thesaurus. Available at: https://www.eionet.europa.eu/gemet/en/themes/ (Accessed: 13 January 2026).</p> <p>and NRW corporate plan.</p>

Table 6 The SoNaRR 2025 Pressures

Pressure name	Definition	Source
Access, sport and recreational activity (Land and sea use change)	Use of natural resources and ecosystems by humans for sports, tourism and leisure can damage habitats through physical damage and pollution at a rate or scale that can not be recovered from naturally.	SoNaRR team
Afforestation (Land and sea use change)	<p>Planting of forests on land that has historically not contained forest.</p> <p>Note: historic afforestation is considered within the state of the ecosystem, rather than being classified as a pressure.</p>	LinkClick.aspx (unep-wcmc.org)

Pressure name	Definition	Source
Agricultural intensification (Land and sea use change)	<p>The process of increasing capital, labour and inputs per unit of land area, with the intention to increase agricultural productivity. Inputs may include fertilisers, agrochemicals for pest suppression, and mechanization. This pressure does not refer to situations where output is increased without additional inputs.</p> <p>For over-grazing, increased stocking rates, and unsustainable use of agricultural soils, see 'Direct exploitation: overuse of renewable natural resources'.</p>	<p>Adapted from SoNaRR2020 and Louise E. Jackson, ... K. Bawa, in Encyclopedia of Biodiversity (Second Edition), 2013</p>
Air pollution	<p>Contaminants in the atmosphere which can harm human health, living organisms or the natural or built environment or be a nuisance (e.g., unpleasant odour). These contaminants can directly or indirectly change the biological, thermal, chemical, physical, or radioactive properties of the air in a way that can create a hazard. These substances can be divided into primary pollutants, which have a directly harmful effect, and secondary pollutants which have an indirectly harmful effect.</p>	<p>Adapted from GMET (2025) General Multilingual Environmental Thesaurus. Available at: https://www.eionet.europa.eu/gemet/en/themes/ (Accessed: 13 January 2026).</p> <p>and Annex VII: Glossary (ipcc.ch)</p>

Pressure name	Definition	Source
Built development and infrastructure (Land and sea use change)	<p>This pressure includes the construction and presence of human-made structures such as houses, factories, roads, energy infrastructure, golf courses, caravan parks. This pressure can result in habitat loss, and fragmentation/loss of connectivity, loss of high-grade soils, GHGs emissions, increased flood risk, increased risk of pollution (such as, increased sewage load), consumption of natural resources, soil sealing, contributes to landfill and waste.</p> <p>For coastal defences and modifications to water-ways, see 'physical modifications (freshwater and coastal)'.</p>	Adapted from SoNaRR2020 natural resource registers
Changes in air temperature (includes rainfall trends) (Climate Change)	<p>Long-term changes in air temperature that can be identified (e.g., by using statistical tests). This is also the main cause of changes in longer-term rainfall trends. Therefore, any impacts to ecosystems from changes in rainfall trends such as seasonal shifts are included under this pressure.</p>	Adapted from SoNaRR2025 climate change evidence.
Changes in intensity and frequency of weather events (Climate Change)	<p>Changes in frequency and intensity of rainfall, droughts, inland and coastal floods, heatwaves, storms and high wind events. Some of these weather events can cause increased intensity and frequency of related events such as wildfires.</p>	Adapted from SoNaRR2025 Climate change evidence.

Pressure name	Definition	Source
Changes in water temperature (Climate Change)	<p>Long-term changes in water temperatures that can be identified (e.g., by using statistical tests). Changes in water temperature can alter the concentration of dissolved oxygen in the water; therefore, effects on ecosystems due to changes in dissolved oxygen due to temperature change are included under this pressure. Changes to water temperature can also alter ocean currents; therefore, effects on ecosystems due to changes in ocean currents due to temperature change are included under this pressure.</p>	<p>Adapted from SoNaRR2025 climate change evidence.</p>
Drainage (Direct exploitation)	<p>Removal of groundwater or surface water by gravity or pumping. Drainage of peatlands can include internal drainage channels within peatland, marginal drains where peatlands abut agricultural land, and 'moor-gripping' (drainage ditches dug into the moors, largely in the 1960s and 70s).</p> <p>For drainage in enclosed farmland see 'agricultural intensification'. For highways and urban drainage see 'built development and infrastructure'.</p>	<p>GMET (2025) <i>General Multilingual Environmental Thesaurus</i>. Available at: https://www.eionet.europa.eu/gemet/en/themes/ (Accessed: 13 January 2026).</p> <p>and adapted from SoNaRR2020 MMH natural Resources register</p>
Fisheries (Direct exploitation)	<p>Fisheries includes the capture of wild fish or shellfish. Fisheries can affect fish population levels (stocks), populations of non-target species (by-catch) and other impacts on habitats due to fishery activities. Unsustainable fisheries are those which cause damage to populations and ecosystems at a rate faster or on a greater scale than natural populations or habitats can recover.</p>	<p>Adapted from <u>Glossary IPBES secretariat</u> and discussions with stakeholders</p>

Pressure name	Definition	Source
INNS (Invasive Non-Native Species) (INNS, pests and diseases)	<p>(Also referred to as invasive alien species) Animals, plants or other organisms introduced directly or indirectly by people into places out of their natural range of distribution, where they have become established and dispersed, and generate an impact on local ecosystems and species (Roy et al., 2023). These impacts can be 'costly to the economy and can even impact on our health and way of life' (GB Non-Native Species Secretariat, 2024).</p>	<p>Roy, H.E. et al. (2023) <i>IPBES Invasive Alien Species Assessment: Full report</i>. Bonn, Germany: IPBES secretariat. Available at: https://doi.org/10.5281/zenodo.10127795.</p> <p>GB Non-native Species Secretariat (2024) <i>Invasive non-native species - webpage</i>. Available at: https://www.nonnativeSpecies.org/non-native-species/.</p>
Land pollution	<p>Contaminants upon or within the land which can harm human health, living organisms or the natural or built environment. These contaminants can directly or indirectly change the biological, thermal, chemical, physical, or radioactive properties of the land in a way that can create a hazard. These may be produced by natural processes and human activity. Land pollution can be an indirect source of water pollution.</p>	<p>Adapted from EEA GMET (2025) <i>General Multilingual Environmental Thesaurus</i>. Available at: https://www.eionet.europa.eu/gemet/en/themes/ (Accessed: 13 January 2026).</p>

Pressure name	Definition	Source
Large mammal herbivore activities (INNS, pests and diseases)	<p>The activities of large mammal herbivores include biomass consumption, trampling, dunging, bark stripping, differential feeding (eating some types of vegetation more than others which can effect composition and structure of the habitat). At inappropriate levels (too much or too little) herbivore activity can damage ecosystems. In Wales this can include deer (native and non-native), feral goats, feral wild boar, and trespassing livestock.</p> <p>For grey squirrel see 'INNS'. For rabbits see 'pests and diseases'. For over-grazing see 'overuse of renewable natural resources'.</p>	SoNaRR team and subject leads
Light pollution	<p>Artificial light that alters the natural patterns of light and dark in ecosystems. It comprises direct glare, chronically increased illumination and temporary, unexpected fluctuations in lighting. The sources of ecological light pollution include sky glow, illuminated buildings, streetlights, fishing boats, security lights, lights on vehicles. Harmful effects involve the animal kingdom, the vegetable kingdom and mankind. While light pollution is eminently detrimental to nocturnal and migratory animals and to animals in flight, it also produces harmful effects on plants.</p>	<p>Adapted from</p> <p><u>LONGCORE, T., RICH, C. 2004. Ecological light pollution. Front Ecol Environ 2004; 2[4]: 191-198 light pollution UNEP Law and Environment Assistance Platform</u></p>
Noise pollution	<p>Harmful or unwanted sounds in the environment, which in specific locals, can be measured and averaged over a period of time.</p>	<p>GMET (2025) <i>General Multilingual Environmental Thesaurus</i>. Available at: https://www.eionet.europa.eu/gemet/en/themes/ (Accessed: 13 January 2026).</p>

Pressure name	Definition	Source
Non-efficient use (Direct exploitation)	Non-efficient use of natural resources, including water. This places increased demands on ecosystem services without providing well-being benefits to humans and can increase disbenefits such as financial costs. This pressure often combines with the pressure 'overuse of renewable natural resources'.	SoNaRR team
Ocean acidification (Climate Change)	Increased acidity (decreased pH) of marine waters, caused mostly by increased uptake of carbon dioxide from the atmosphere. Dissolved CO ₂ forms a weak acid, so as human activity puts more carbon into the atmosphere the ocean becomes more acidic.	Adapted from 5.4.2.3 Ocean Acidification by Carbon Dioxide - AR4 WGI Chapter 5: Observations: Oceanic Climate Change and Sea Level (ipcc.ch)
Overuse of renewable natural resources (Direct exploitation)	<p>Using renewable natural resources at a rate or intensity greater than that at which they can regenerate. This includes harvesting species from the wild at rates faster than natural populations can recover. Overuse and nonefficient use often combine as pressures on natural resources.</p> <p>For overuse of fish and shellfish, see pressure 'fisheries'.</p>	Based on IPBES: overexploitation IPBES secretariat

Pressure name	Definition	Source
Pests and diseases (INNS, pests and diseases)	<p>A pest is any organism that can cause damage to other organisms or human-built infrastructure, resulting in negative impacts on human health and well-being, ecosystem health or economic activity. In SoNaRR, pests usually refers to insect pests although rabbits are included here (grey squirrels are covered within INNS). Diseases, in this context, are illnesses of any organism caused by infection by microorganisms.</p> <p>For deer, see 'Large mammal herbivore activities'. For grey squirrel, see 'INNS'.</p>	SoNaRR team and subject leads
Physical modifications (freshwater and coastal) (Land and sea use change)	<p>Physical modifications are changes made to the natural physical and hydrological characteristics of rivers, lakes, estuaries and coastal waters. These changes include activities and artificial structures such as dredging, flood defence embankments, drinking water supply reservoirs, sluices and weirs which in turn modify natural processes and physical habitat features.</p> <p>For drainage see 'drainage'. For land-based structures see 'built development and infrastructure'.</p>	Adapted from: Physical Modifications - Sustainable Water Network (swanireland.ie)

Pressure name	Definition	Source
Reduced land use / management intensity (Land and sea use change)	<p>Human use and management of ecosystems in Wales has shaped their state over many years. This pressure describes what happens when intensity of established use or management reduces or land is abandoned. Examples include situations of under-grazing, reduced levels of coppicing, cutting and/or burning. It also includes reduction in nature conservation type activities. This will lead to a change in the established condition and state of ecosystems.</p> <p>Note: the overuse of renewable natural resources and provisioning services (such as livestock and crops) are covered in pressures under the driver 'Direct Exploitation'.</p>	SoNaRR team inspired from Glossary IPBES secretariatt
Sea level rise (Climate Change)	Increase in water level of the sea – this can be different globally and locally. It is caused by thermal expansion of warming water, and increased melting of land-based ice.	SoNaRR team
Water abstraction and demand (Direct exploitation)	Water abstraction is the process of taking water from natural sources (such as rivers and underground) and reservoirs. Water demand is defined as the volume of water used. These quantities are not the same, as some water is usually lost during conveyance due to leakage and/or evaporation.	SoNaRR2025 subject expert
Water pollution	Water pollution is the direct or indirect introduction of substances, or heat to water as a result of human activity. These may be harmful to human health, aquatic ecosystems, result in damage to property, or impact on amenity use of water.	Adapted from The Environmental Permitting (England and Wales) Regulations 2016 (legislation.gov.uk)

Ecosystem services and benefits for SoNaRR 2025

The following four tables present the System of environmental economic accounting ecosystem accounting (SEEA EA) terminology, incorporating the UK NEA terminology where possible, alongside example benefits for different types of beneficiaries.

Table 7 Provisioning services

Provisioning services (SEEA EA Ecosystem Service Reference List and UK NEA)	Example benefits for people and households	Example benefits for wider economy (businesses and government)
Aquaculture provisioning services	Harvested fish, shellfish and aquatic plants from aquaculture facilities for household producers	Harvested fish, shellfish and aquatic plants for aquaculture industry
Crop provisioning services (UK NEA Crops)	Harvested crop and related products (e.g. fruit) for household producers	Harvested crop and related products (e.g. harvested wheat, fodder for livestock, fruit, flowers) for agricultural producers
Genetic material services (Wild species diversity UK NEA)		Product development (new breeds, gene synthesis etc) by agricultural, pharmaceutical and other businesses
Grazed biomass provisioning	Livestock and livestock products (e.g. meat, milk, eggs, wool) for household producers	Livestock and livestock products (e.g. meat, milk, eggs, wool) for agricultural producers
Renewable energy	Reduced dependence on fossil fuel markets, and increased energy independence, while also improving public health by cutting air pollution and lowering carbon emissions for a healthier environment,	Reduced dependence on fossil fuel markets, and increased energy independence,

Provisioning services (SEEA EA Ecosystem Service Reference List and UK NEA)	Example benefits for people and households	Example benefits for wider economy (businesses and government)
Water Supply (Water supply UK NEA)	Water for direct household consumption;	Water for consumption by water supply utilities; Agricultural production; Industry and other government and business use
Wild animals, plants and other biomass provisioning services (excludes aquatic and wood products)	Products harvested by households for own consumption	Products harvested by businesses for sale and processing
Wild fish and other natural aquatic biomass provisioning services (UK NEA Fish)	Aquatic products harvested by household for own consumption	Harvested aquatic products for fishing industry
Wood provisioning services (Trees, Standing Vegetation, Peat UK NEA)	Timber harvested by households for own consumption	Harvested timber for forestry industry

Table 8 Regulating and maintenance services

Regulating and maintenance services (SEEA EA Ecosystem Service Reference List and UK NEA)	Example benefits for people and households	Example benefits for wider economy (businesses and government)
Air filtration services (UK NEA Regulation of Air quality)	Reduced concentrations of air pollutants and less damage to peoples health	Reduced concentrations of air pollutants and less damage to buildings. Reduced lost days to poor health of employees
Biological control services (pest and disease control) (UK NEA Disease and pest regulation)	Reduction in hazards to peoples health from pests and diseases; Improved household production of crops and flowers.	Reduced impacts of pests and disease on agricultural / biomass production and other human and economic activities Reduced costs on alternative forms of pest and disease control, including chemical pesticides;
Coastal protection services (UK NEA Hazard regulation)	Reduced risk of flooding to households in coastal areas	Reduced risk of flooding damaging infrastructure in coastal areas; on agricultural land and impacting on other businesses
Global climate regulation services (UK NEA Global Climate regulation)	Reduced concentrations of GHG in the atmosphere leading to less climate change impacts on people.	Reduced concentrations of GHG in the atmosphere leading to less climate change impacts on businesses, the economy and government activities
Local (micro and meso) climate regulation services (UK NEA Local Climate regulation)	Mitigation of local temperatures leading to reduced heat stress on people	Mitigation of local temperatures leading to reduced air conditioning costs for businesses and government buildings

Regulating and maintenance services (SEEA EA Ecosystem Service Reference List and UK NEA)	Example benefits for people and households	Example benefits for wider economy (businesses and government)
Noise attenuation services (UK NEA Noise regulation)	Reduced noise disturbance to residents and visitors. Quieter more tranquil areas, reduced impact on mental health (not in SEEA)	Reduced noise disturbance to businesses
Nursery population and habitat maintenance services	Increase in the supply of relevant species for provisioning and cultural ecosystem services used by people	Increase in the supply of economically important relevant species for provisioning and cultural ecosystem services (e.g., marine fish stocks and iconic species for tourism)
Pollination services (UK NEA Pollination)	Increase in fertilisation and production of household crops and flowers.	Increase in fertilisation and production of agricultural crops and commercial horticulture Reduced businesses costs for alternative forms of non-wild pollination
Soil and sediment retention services (UK NEA Hazard Regulation)	Reduced risk to people from landslide hazards	Avoided sedimentation of water and treatment costs for water utilities; Reduced risk to infrastructure from landslide hazards
Soil quality regulation services (UK NEA Regulation of Soil quality)	Fertile soils for household production (e.g., vegetable gardens) and carbon sequestration	Fertile soils for agricultural, silvicultural and horticultural production
Storm mitigation services (UK NEA Hazard regulation)	Reduced risk to people and damage to houses from non-water related storm events (e.g., wind, sand, etc.)	Reduced risk of damage to infrastructure and business property from non-water related storm events (e.g., wind, sand, etc.).

Regulating and maintenance services (SEEA EA Ecosystem Service Reference List and UK NEA)	Example benefits for people and households	Example benefits for wider economy (businesses and government)
Waste remediation services (UK NEA Waste breakdown and detoxification)	Reduced costs of alternative methods of waste disposal to people	Reduced costs of alternative methods of waste disposal to businesses
Water flow regulation services (UK NEA Hazard Regulation)	Lower peak flows in wet periods reducing risk of flooding to households	Lower peak flows in wet periods reducing risk of flooding to businesses; reduced flood defence cost to business and government Increased water flow in dry periods reducing water storage / reservoir costs and maintenance to water utility companies; increasing water available for agriculture and other uses
Water purification services (water quality regulation) (UK NEA Regulation of Water quality)	Less pollutants in water leading to cleaner water for people to consume and use for recreation	Reduced water treatment costs for water utility companies and industries that abstract water direct from rivers and the sea

Table 9 Cultural services

Cultural services (SEEA EA Ecosystem Service Reference List and UK NEA)	Example benefits for people and households	Example benefits for wider economy (businesses and government)
Amenity services (UK NEA Landscape, UK NEA Aesthetic & UK NEA Local places)	Local sensory benefits enjoyed by people, especially visual; Enfranchisement and neighbourhood development for people	Business opportunities linked to better more enjoyable local sensory benefits, such as higher property prices, increased customer footfall, etc.
Education, scientific and research services (UK NEA Education/ecological knowledge)	Intellectual development, advancement of knowledge and understanding for people from interactions with ecosystems	Opportunities for schools, businesses and research organisations to use the environment for intellectual interactions
Recreation-related services (UK NEA Recreation/tourism)	Opportunities for people to enjoy in-situ interactions with nature and associated physical and mental health benefits	Opportunities for businesses from nature-related tourism and outdoor leisure activities
Spiritual, artistic and symbolic services (UK NEA Religious, spiritual, cultural heritage, media & UK, inspirational)	Contributions of ecosystems to cultural and spiritual identity and as a source of inspiration for expression (e.g., through art) leading to well-being benefits and enjoyment	Opportunities for businesses from nature-based spiritual, cultural and arts-based activities

Additional References

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