Fens 2100+: Glossary

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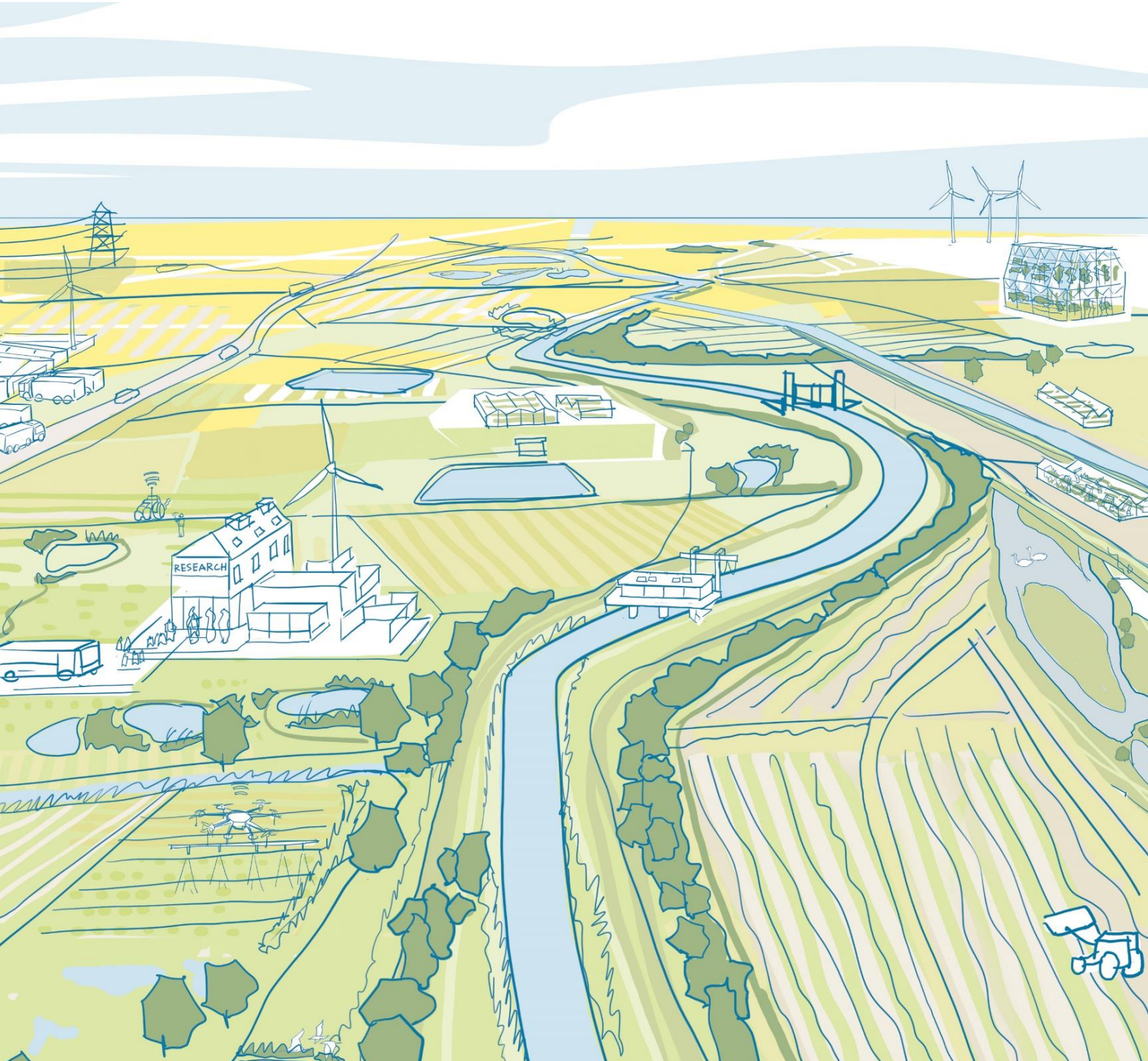

Fens 2100+ Glossary
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Fens 2100+ is an Environment Agency led partnership programme.

Fens 2100+ Glossary

This glossary is designed to provide clear definitions of key terms and concepts that are essential for a common understanding used across the Fens 2100+ programme. It should be noted that this list is not intended to be exhaustive. Each term is listed alphabetically for ease of reference.

Accretion: The build-up of sediment resulting in the seaward movement of the coastline / Mean High Water Springs [1].

Adaptation pathways: A planned series of adaptation choices involving trade-offs between short-term and long-term goals and values [3]. Adaptation pathways can help create a series of flexible decisions in the context of uncertainty such as climate change, see advance the line; hold the line and retreat as examples of adaptation pathway decisions.

Adaptation: The process of adjustment to actual or expected climate and its effects. In systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities [2].

- **Incremental adaptation**: Adaptation actions where the central aim is to maintain the essence and integrity of a system of process at a given scale.
- **Transformational adaptation:** Adaptation that changes the fundamental attributes of a system in response to climate and its effects.

Adaptive capacity: The ability of a system (or combination of systems) to respond to external stresses and changes, including those induced by climate change [4].

Adaptive management: Process of iteratively planning, implementing and modifying strategic for managing resources in in the face of uncertainty [3].

Advance the line: Build coastal defences seawards of the existing defence line where significant land reclamation is considered [6].

- **Anticipate and adapt:** Taking action to prepare for and adjust to both the current effects of climate change and the predicted impacts in the future, while responding to local place-based needs and ambitions [25] [26].
- **Maintain:** Co-ordinated activity to realise the whole life value from flood risk infrastructure though inspection, operational management, repair, replacement, renewal and decommissioning [25] [26].
- **Protect:** Reducing the risk of flooding and coastal erosion to enhance the safety of communities and places (through investment in physical grey and green infrastructure) [25] [26].
- **Respond:** The ability of places and people to prepare for and react to flooding and coastal erosion in a way that results in minimal impacts to property, the natural environment and health and wellbeing [25] [26].
- **Recover:** The ability of places and people to rebound from flooding and coastal erosion with minimal impacts to property, the natural environment, and health and wellbeing [25] [26].
- **Transform:** To change and improve the way FCERM infrastructure is planned, delivered and operated to be more efficient, sustainable and resilient [25] [26].

Appraisal: The process of assessing the value for money provided by policies, programmes, and projects [7].

Asset utility: For a singular FCERM asset, a description of the relationship between the whole life cost of the asset and benefits delivered by the asset. The benefits can be articulated as a combination of the asset purpose and the SoS [9].

Asset: Physical entity forming part of a network and/or system that has potential or actual value to an organisation and its stakeholders [8].

Benefits: A measurable improvement resulting from an outcome, e.g. reduced economic flood damages, increased productivity (from reduced journey time), improved air quality. This is a long term, positive legacy for society and/or the environment.

Benefits apportionment: The process of deciding on a reasonable and fair distribution of benefits and outcomes when the 'source – pathway' of risk cannot be separated. This will avoid the chance of double-counting benefits and outcomes when drawing down funding aimed at achieving these benefits and outcomes.

Benefits management - The identification, evaluation, optimisation (including minimising disbenefits) and realisation of benefits.

Business case: The justification for an organisational activity (strategic, programme, project or operational which typically contains benefits, outcomes, timescales, costs and risks against which continuing viability is tested [12].

Capacity building: The process of developing and strengthening the skills, instincts, abilities, processes and resources that organisations and communities need to survive, adapt, and thrive [10].

Carbon emissions: (tCO_2e/year): A metric of the carbon dioxide equivalents released into the atmosphere. This includes emissions associated with the seven key greenhouses specified under the Kyoto Protocol [11], using a pollutant's Global Warming Potential to equate their emissions to the equivalent carbon emissions.

Carbon footprint: Measure of the amount of greenhouse gases released to the atmosphere because of our activities over a set period (usually a year). Usually measured in CO2e.

Carbon hierarchy: A framework designed to manage and reduce carbon emissions throughout the lifecycle of buildings and infrastructure projects focusing on three main strategies: Avoid, Switch and Improve.

Carbon hotspot: A stage, process or component within an infrastructure project that contributes significantly to the overall carbon emissions. Carbon hotspots represent not only carbon-intense elements but also quick wins, where measurement data is more easily available and where carbon reductions are possible [12].

Carbon offsetting: A transaction to buy carbon removal credits from outside an organisation's value chain (e.g. on the Voluntary Carbon Market).

Carbon sequestration: The process of capturing and storing greenhouse gases (GHG) from the atmosphere [13].

Carbon sink: A natural or artificial reservoir that absorbs more carbon dioxide from the atmosphere than it releases [13].

Climate mitigation: Reducing or limiting the effect of greenhouse gases that drive climate change [18].

Climate risk: Climate risk results from the interaction of a climate-related hazard (and its likelihood of occurrence) with an asset or system defined by its vulnerability and its exposure to the hazard. [27].

Coping capacity: The ability of people, institutions, organisations and systems, using available skills, values, beliefs, resources and opportunities, to address, manage and overcome adverse conditions in the short to medium term [14].

Demolition carbon: End-of-life emissions for an asset, including the deconstruction and demolition emissions and transport emissions.

Ecosystem services: Services provided by the natural environment that benefit people. They provide outputs or outcomes that directly and indirectly affect human wellbeing.

Embodied carbon: Carbon and other GHG emissions specifically associated with the creation of construction materials and products; from harvesting raw materials, processing and manufacture. Typically, embodied carbon is defined up to the point that product(s) leave the manufacturer's factory (cradle-to-gate).

Endorsement: A form of public support, approval of a collective compromise, or buy in, given only when both (or all) parties have publicly agreed to share a position.

Engagement: A process of reaching out with purpose to share information and increase understanding of either or both parties. This is intended as a two-way exchange.

Fenland: A marsh or area of land covered by shallow water. Used to define the land type across the Fens, not an interchangeable term for the area ('the Fens').

Flood and Coastal Erosion Risk Management: Managing the risks of flooding and coastal erosion to people, property and the natural environment through minimising, predicting and managing the risk [18].

Flood defence assets: Structures, buildings or parts of buildings used to prevent or control the extent of flooding e.g., earth banks, sea walls, or sheet-piling [16].

Flood risk: A combination of the probability and the potential consequences of flooding. This includes risks from various sources such as rivers, the sea, direct rainfall, rising groundwater, overwhelmed sewers, and reservoirs. [17]

Green finance: Investment in environmental technology, infrastructure and services [18].

Hold the line: Maintain or upgrade shoreline protection provided by existing defences or natural coastline [6].

Integrated Land Use Framework: Helps decision-makers to understand the current state of the land and utilising the natural processes that govern landscapes to make better, more informed decisions on land use and agricultural practices.

Internal Drainage Board: An internal drainage board (IDB) is a type of local public authority that managed water levels where there is particular need to ensure effective drainage.

Just Transition: An approach that is inclusive and fair to anyone who may be impacted by decision making, both now and in the future. The needs and perspectives of different

communities, stakeholders and businesses alike are taken into consideration at the local, regional and national scale to maximise benefits for people, nature and climate [19].

Landscape scale: For the Fens, the term 'landscape scale' refers to the collective catchments within the Fens2100+: Steeping, Lower Witham East and West Fens, South forty foot, Lower Witham, Welland, Lower Nene, and Great Ouse.

Landscape-led approach: An approach that applies systems thinking, focusing on existing use, character and features that make a place special or unique. An in-depth understanding of the landscape is required to inform appropriate and sensitive solutions that will provide multiple benefits to a particular place or stakeholder group.

Level of Service (LoS): Parameters, or combinations of parameters, which reflect social, political, environmental and economic outcomes that an organisation delivers. The parameters can include safety, customer satisfaction, quality, quantity, capacity, reliability, responsiveness, environment acceptability, cost and availability [21].

Maladaptation: A process that results in increased vulnerability to climate variability and change, directly or indirectly, and/or significantly undermines capabilities or opportunities for present and future adaptation [20].

Managed realignment: Realign the 'natural' coastline, either seaward or landward, to create a sustainable shoreline [6].

Monitoring indicators: Specific, measurable and observable data points that can be used to monitor and evaluate progress against stated goals or objectives [24].

Monitoring, Evaluation and Learning:

- **Monitoring:** The collection of data, both during and after implementation to improve current and future decision making.
- **Evaluation:** The systematic assessment of an action or intervention's design, implementation and outcomes at certain milestones [15].
- **Learning:** Taking information from monitoring and evaluation, reflecting upon, and using outputs to make recommendations and changes in order to improve a project / programme's ability to achieve results.

Natural capital: The world's stock of natural assets which include geology, soil, air, water and living things [18].

Natural flood management: The use of natural processes to reduce the risk of flooding or coastal change e.g. restoring bends in rivers, changing the way land is managed so soil can absorb more water and creating saltmarshes on the coast to absorb wave energy [18].

Nature-based Solutions - According to the International Union for the Conservation of Nature, Nature-based Solutions (NbS) are "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 [25].

Net zero carbon: A system or process in which any greenhouse gas emissions are offset by associated carbon-reducing activities [8].

Network: A combination of interconnected assets (buildings and infrastructure) that provide services to society [8].

Objectives: The intended results and impacts of a project or programme. Where possible, these should be clearly defined and measurable.

Offsetting: Discrete GHG reductions used to compensate for (i.e. offset) GHG emissions elsewhere, for example to meet a voluntary or mandatory GHG target or cap.

Outcome: An intended future state, or condition which does not currently exist. An outcome may represent a change in a group of people, organisations, or places. Outcomes are the building blocks of a Theory of Change [21].

Paludiculture: Farming on rewetted peat. Paludiculture is a system of agriculture for the profitable production of wetland crops under conditions that support the competitive advantage of these crops. In the context of lowland peat soils, paludiculture is usually achieved through raising of the water table to achieve wetland conditions.

Partnership funding: Sharing of the costs between national and local sources of funding. This approach allows any worthwhile project (where benefits are greater than costs) to qualify for government money, known as grant-in-aid (GiA) [22].

Pathway: A sequence of outcomes which provides an anticipated route to a long-term goal. There may be multiple pathways which lead to the same goal [21].

Performance: The ability of an asset, network or system to fulfil its requirements or objectives. See also 'Level of Service' [23].

Place-based: An approach that targets the specific circumstances of a place and engages local people from different sectors as active participants in development and implementation to understand how to deliver multiple benefits.

Portfolio level: The new operating space focusing long-term to 2100+, that sets up the Environment Agency and Risk Management Authorities programmes, project and asset delivery for success by delivering key enabling activities and connecting the system-wide to the local. This enables partners to coalesce around a common, unified view of what success for a place looks like.

Programme level: The strategy development space, operating on a medium-term horizon, defined as a 20-25-year period.

Project level: The well-defined delivery space for FCERM projects, operating on a short-term six-year cycle.

Regenerative agriculture: A farming practice which focuses on improving the health of soil which has been degraded by the use of heavy machinery, fertilizers and pesticides in intensive farming [24] .

Representative Concentration Pathways (RCPs): Different levels of greenhouse gas concentrations and their potential impacts on the climate. RCPs are defined by the Intergovernmental Panel on Climate Change and present different ranges of global mean temperature increases that have the potential to occur over the 21st century dependent on future greenhouse gas emissions.

Resilience[1]: The capacity of people and places to plan for, protect, respond to, and positively recover from flooding and coastal change. Resilience has been considered in the context of Fens 2100+ as follows:

Standard of Protection (SoP): At a given point in time, the return period of a flood event which an FCERM asset is able to withstand. SoP will vary over time.

Standards of Service (SoS): Defined physical characteristics that an flood risk infrastructure asset is required to achieve. For example, the height of a protective barrier or the throughput of a pump [28].

System: The collection and interconnection of all physical facilities and human interactions that are operated in a coordinated way to provide a particular service [8].

Systems thinking: An approach to problem solving that involves identifying and understanding how different components of a system interact and influence each other to understand the system as a whole.

Tactical handshake: Clarity of intent between two parties where the delivery mechanisms may not currently exist.

Theory of Change (ToC): A process which connects a problem statement to a goal, and maps causal pathways between the two in order to lay out the steps or outcomes that must be met in order to achieve the end goal systematically [29].

Threshold: In the context of an adaptation pathway a threshold is the point beyond which a system is deemed to be no longer effective (economically, socially, technologically or environmentally) [3].

Tipping point: A level of change in system properties beyond which a system reorganises, often abruptly, and does not return to the initial state even if the drivers of the change are abated [2].

Triggers: Conditions of a system that indicate that its properties will change or are likely to change to pass a threshold or tipping point. Triggers may be used for monitoring to initiate responsive actions in an attempt to prevent the system reaching or crossing a threshold or tipping point. [30].

Vulnerability: The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt [2].

Whole life carbon: A quantification representing the estimated carbon emissions associated with the creation, operation, maintenance, repair, refurbishment, replacement and end of life of an asset, or set of assets that make up a project. [31].

Whole life cycle: The entire lifespan of an asset. It includes all phases of the asset life, including planning, design, construction, operation, maintenance and eventually decommissioning or disposal.

[1]There are many definitions of resilience used in different contexts from health and wellbeing to the built environment - Fens 2100+ has directly adopted the Environment Agency's definition which is focused on flooding and coastal change

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