VALMAS: THE VALUE OF MARINE ARTIFICIAL STRUCTURES

UKRI / INSITE Aim: To enhance understanding of the ecological, economic and social value of marine artificial structures' (MAS) natural capital to inform decision making and policy solutions for management for all life stages

PI: PROF NICKY BEAUMONT

DEPUTY LEAD: DR STEVE WATSON

SIME 8TH JUNE 2026

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Our Vision:

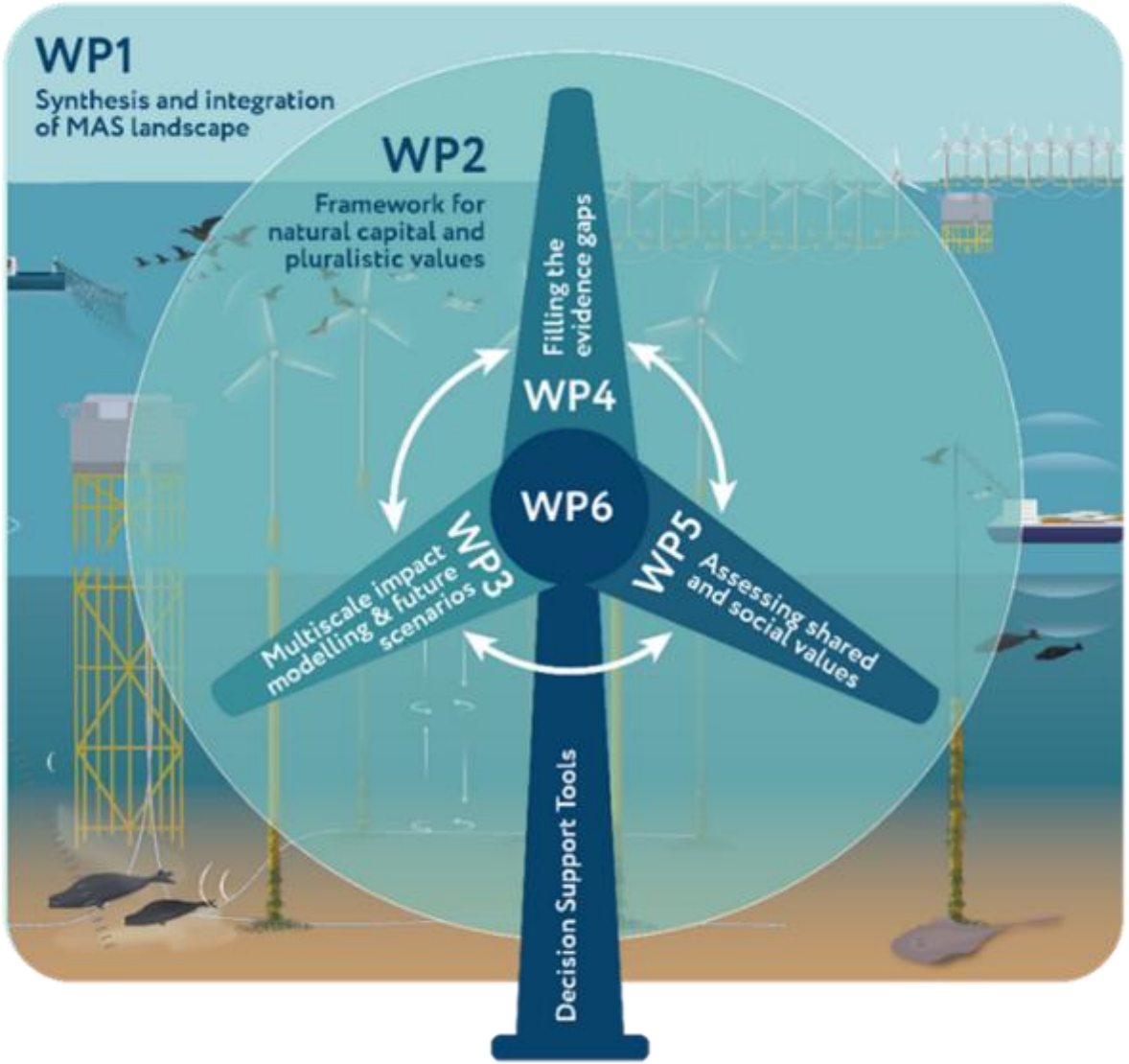
A just, nature-positive, and economically efficient energy transition that enhances biodiversity and safeguards ecosystem services, including fisheries and carbon sequestration

Our Mission:

Empower decision-makers with the evidence-based tools to sustainably manage, operate, and decommission MAS —balancing multiple interconnected environmental, economic, and societal priorities

Our Focus:

- North Sea focus aspiring for transferability
- Priority ecosystem services; carbon, fisheries and biodiversity
- All MAS including pre, active and post decommissioning, compensatory measures and offshore wind.



WP1: SYNTHESIS AND INTEGRATION OF THE MAS LANDSCAPE

LEAD: EMMA MCKINLEY; DEPUTY: SAM SAVILLE

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Task1.1:

Map MAS landscape and gap analysis

Evidence and research; Governance; Stakeholders

Task1.2:

Engagement co-ordination

Task1.3:

Developing MAS management scenarios

Task1.4:

Establish a MAS Community of Practice (CoP)

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Stakeholder mapping – lead Emma McKinley

- Working closely with the Read-ME project, and the stakeholder scoring process has been started
- Collated stakeholder databases from VALMAS database, Comparative Reports and WS1 and WS2 outputs.
- Currently working through a database of over 400 organisations, mapping against:
    - Sector e.g. Industry, NGOs, Government and ALBS
    - Secondary sector e.g. oil and gas, offshore wind, ports and harbours
    - Scale i.e. North Sea, Scotland, UK, International (where possible/ appropriate)
- Workshop with project steering group to agree scoring (planned for mid May)
- Prepare summary of findings and various outputs

Governance mapping for MAS in North Sea , led by Anne Michelle Slater

- Relevant laws, policies, guidance & practices
- Regulatory bodies, their roles & what/ why they regulate
- Next: A visual governance landscape matrix being developed to understand interconnections, silos and gaps.

<u>Interactive workshops:</u>

1. Gather insights to shape and visualize the governance framework

2. Refine understanding of legal sources, processes & connections (or lack of)

Evidence Mapping (Update): Ecosystem Services

Carbon Sequestration & Storage | Fisheries | Biodiversity

Leads: Steve Watson, Andrew Edwards-Jones (and the VALMAS Team)

Focus: Three Ecosystem Services

Carbon

How offshore and coastal habitats near oil and gas or offshore wind sites — such as **marine biofouling organisms**, **sediments, kelp, seagrass, and saltmarsh** — capture and store carbon, and how disturbance or decommissioning affects this.

Include both **benthic and pelagic carbon** processes.

Also interested in **co-location** e.g. Kelp and blue carbon studies around structures.

Fisheries

Explore how offshore energy infrastructure and exclusion zones affect **fish stocks, spawning grounds, and fisheries productivity** — including any refuge effects, changes in **catch composition**, **or displacement** near oil and gas platforms and wind farms.

Biodiversity

Identify how man-made marine structures — e.g turbine foundations, subsea cables, pipelines, and decommissioned installations — influence **marine biodiversity through direct mortality, colonization, habitat creation, invasive species, or connectivity** between natural and artificial habitats.

Also interested in projects/reports that support **biodiversity recovery and enhancement** locally and at regional scales, including the use of **emerging technologies**

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- Used grey literature, WS1 outputs and updated our Primary Literature ORIES database (based on previous INSITE work) and Watson et al., 2025.

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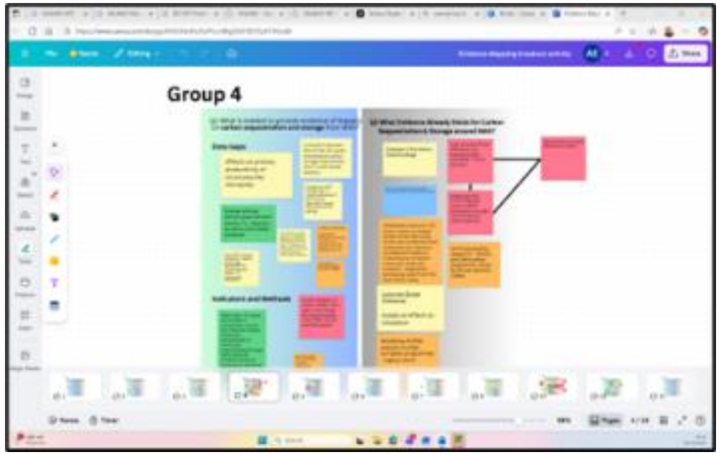
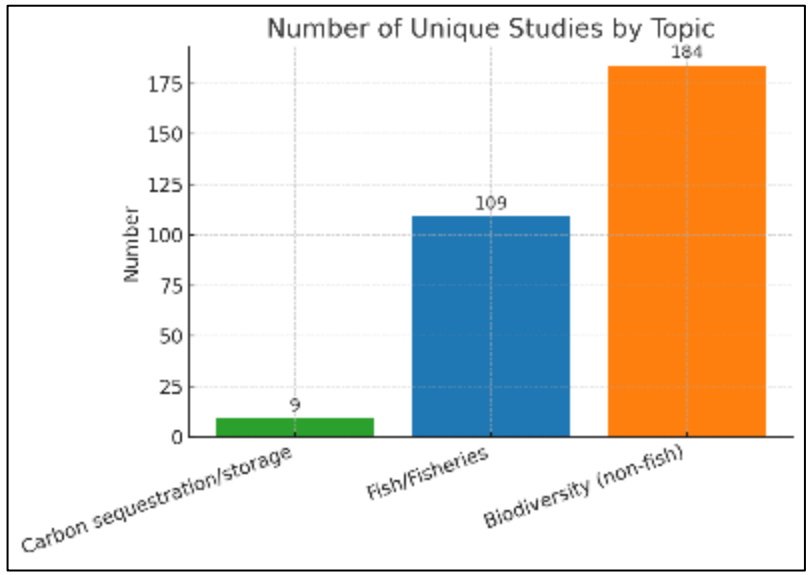


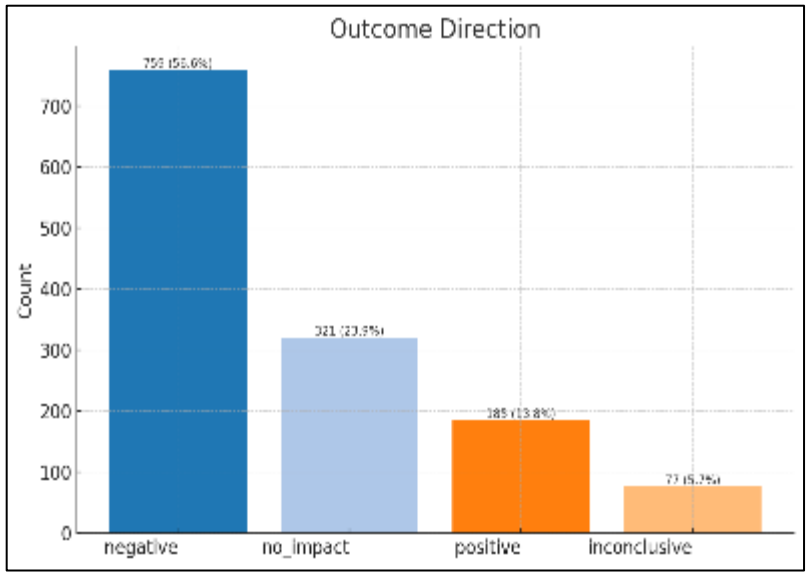
- Completed a Quick Scoping Review (QSR) for Carbon and Fisheries.

Watson, S.C.L, Szostek, C.L., Edwards-Jones, A., Wills, B., Watson, G.J. and Beaumont, N.J., 2025. Assessing, monitoring and mitigating the effects of offshore wind farms on biodiversity. *Nature Reviews Biodiversity*, *1*(9), pp.581-596.

MAS Evidence Synthesis (so far)

Synthesize what we already know (Primary Evidence):





Szostek, C.L., Edwards-Jones, A.E.J., Beaumont, N.J., O'Driscoll, B., Millard, R., **Mansfield, T., Watson, S.C.L.** (January 2026). Offshore Renewables Impacts on Ecosystem Services (ORIES) version 2.0 Decision Support Tool. Plymouth Marine Laboratory.

Offshore Renewable Impacts on Ecosystem Services (ORIES)

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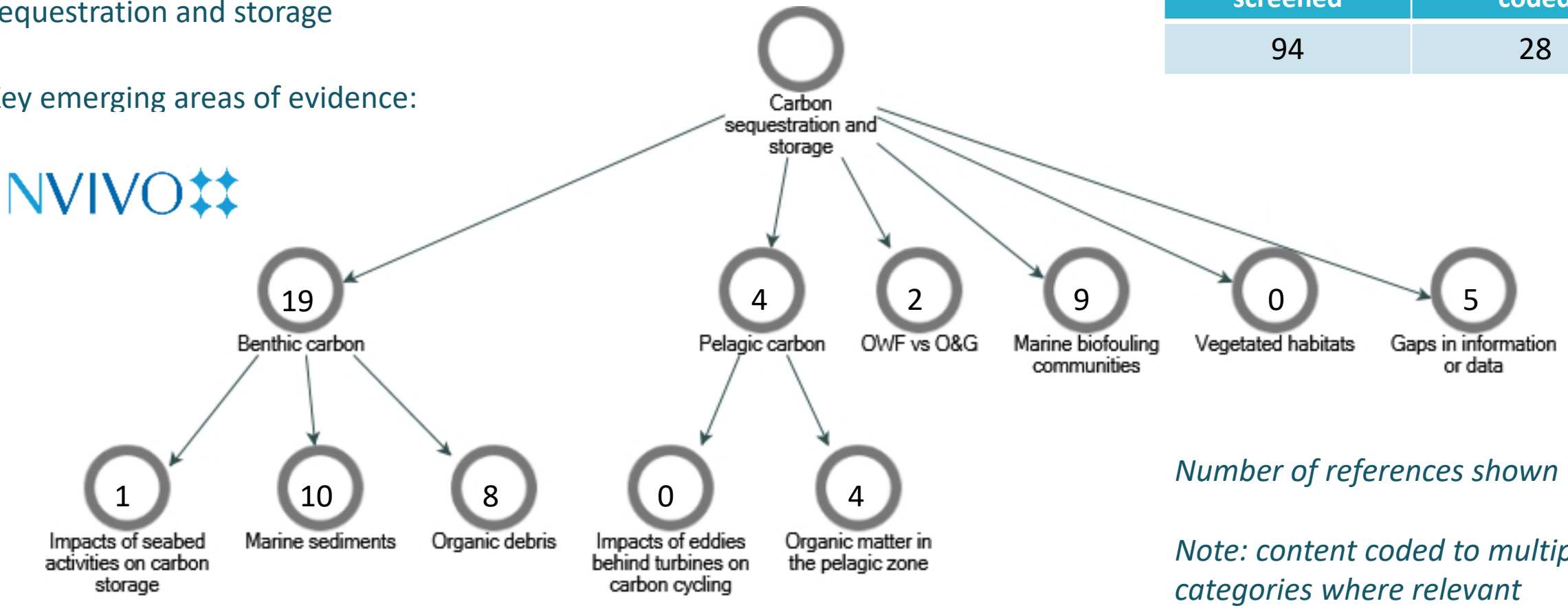
Evidence Mapping: impacts of MAS on carbon sequestration and storage

No. of documents screened	No. of documents coded
94	28

Key emerging areas of evidence:



Number of references shown

Note: content coded to multiple categories where relevant

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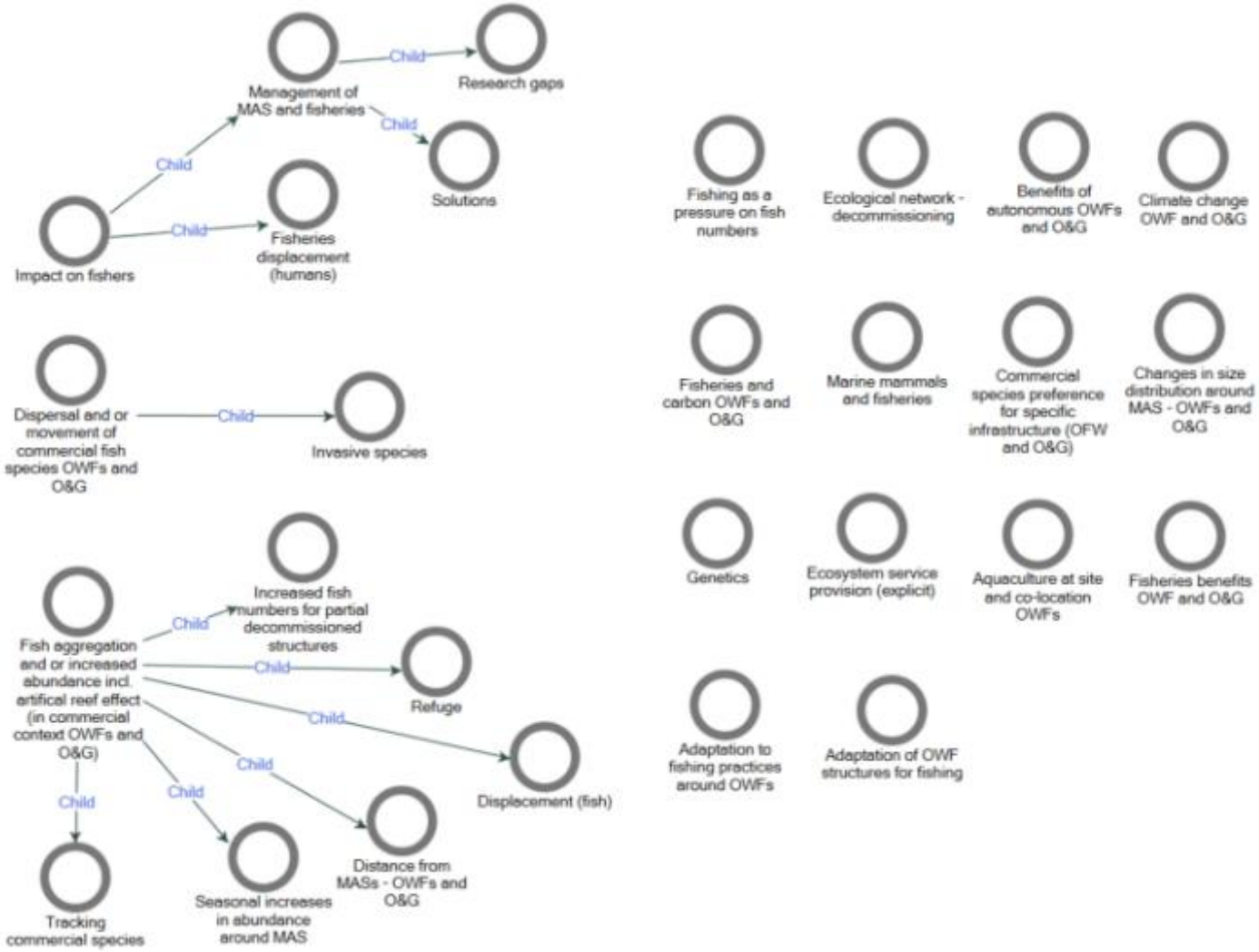
Evidence Mapping: impacts of MAS on fisheries

Key emerging areas of evidence:



No. of documents screened	No. of documents coded
28	22

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Note: content coded to multiple categories where relevant

Biodiversity: Session Day 2 of Cardiff workshop

Next steps (6 months) :

Undertake a SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats)

Gap analysis to inform WP 2,3,4,5 and 6 and external publications

Task 1.2. Engagement coordination

Coordinated stakeholder engagement that complements existing networks and events, maximises impact and time invested, and minimises risk of stakeholder fatigue.
(Links to all WPs)

				Year 1				Year 2				Year 3				Year 4			
Workshops and Meetings	**Lead**	**Location**	**Attendees**	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Team meetings (TM)	PML	Online	Team	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM	TM
Annual meets (AM) (2 days team, 1 day external)	PML	Hybrid	Team plus external	PML				Glasgow				Cardiff				Aberdeen			London
2 VALMAS PAG meetings (date tbc)	PML	Hybrid	Team plus PAG																
WS1 Project framing	WP1	PML / Hybrid	Team plus external	WS1															
WS2 Stakeholder mapping and scenarios	WP1/5/6	Cardiff / hybrid	Team plus external			WS2													
WS3 Draft Natural Capital Framework	WP2	Cardiff / hybrid	Team plus external			WS3													
WS4 Synthesis and gap analysis	WP1/4	Glasgow / hybrid	Team plus external					WS4											
WS5 Stakeholder visions	WP5	TBC	Invited stakeholders					WS5											
WS6 Modelling	WP3	Online	Team plus external							WS6									
WS7 Decision support tools	WP5	Cardiff/ hybrid	Team plus external									WS7							
WS8 Citizen panels	WP5	In person tbc	Team plus external													WS8			
WS9 Synthesis	WP6	London/ hybrid	Team plus external																WS9

WORK PACKAGE 1 TASKS: AN OVERVIEW

Task1.3:Developing MAS management scenarios

A series of potential future scenarios, integrating:

- Climate projections
- Development of different sectors
- Time Frames
- Policy drivers and responses to changing conditions
- Nature inclusive design
- Potential compensation packages

Further developed at the Cardiff workshop in May, finalised end of June

VALMAS THE TRICKY ONES....BELIEVE IT OR NOT.....

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Nature Inclusive Design for MAS....

- Enhanced scour / artificial reef features
- Textured foundations and habitat complexity
- Habitat modules (reef, shell, etc.)
- Fish spawning / nursery features
- Crustacean refugia
- Integration with cable protection
- Co-location with restoration pilots
- Adaptive management / decommissioning retention

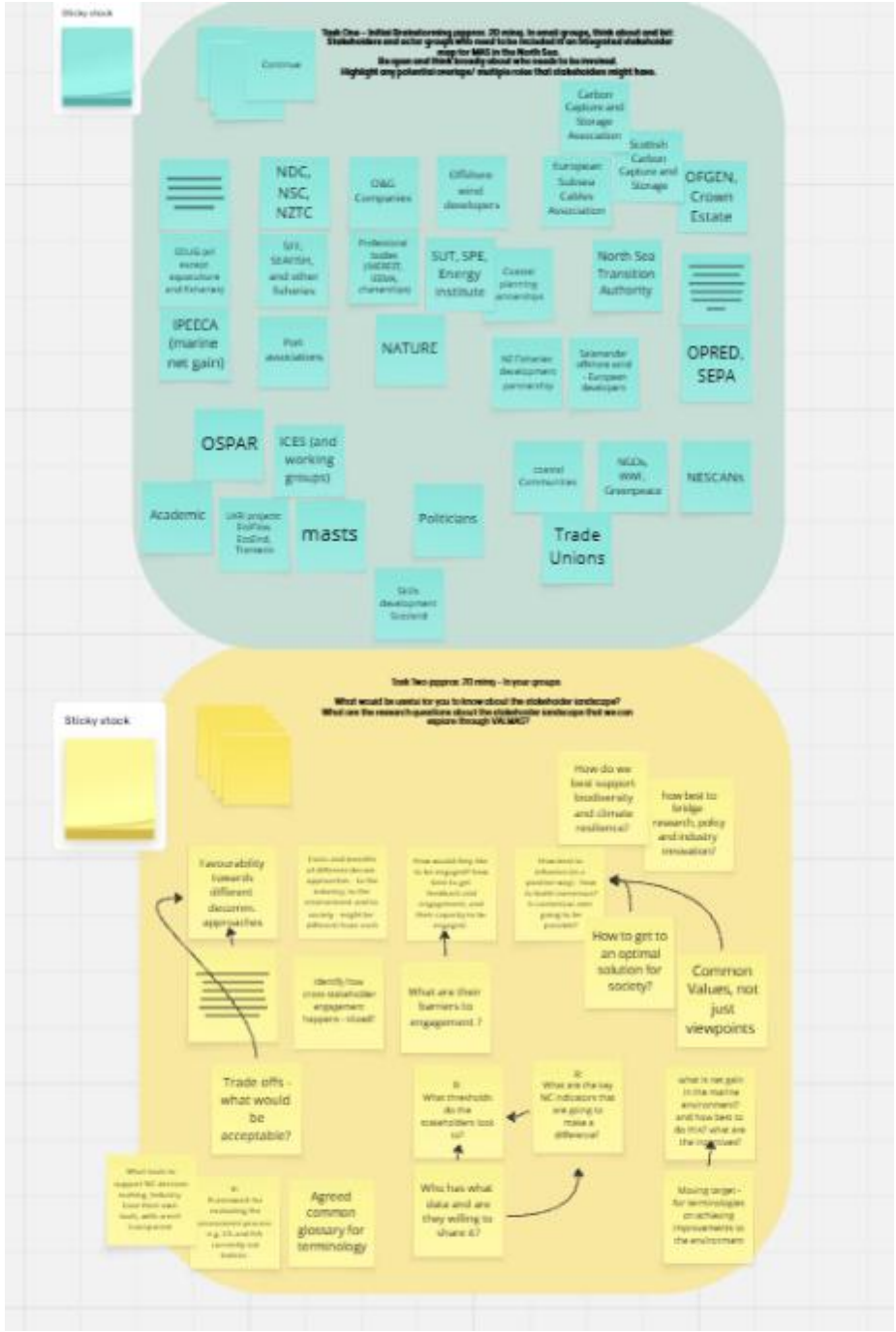
Options for Compensation Measures for MAS

- Seabird predator control / biosecurity
- Artificial nesting structures
- Habitat restoration (reef, seagrass, saltmarsh)
- MPA designation / enhanced management / other area-based measures (OECMs)
- Fisheries pressure reduction
- Strategic ecosystem-scale programmes
- Delivery via Marine Recovery Fund / pooled funds
- Potential economic compensation for fishers

Task 1.4:
Establishing a VALMAS Community of Practice
Looking back to WS1/ KOM November 2025

- MAS landscape ***is/ should be*** made up for diverse mix of actors:
  - Government departments and Arm's Length Bodies (ALBs) e.g. Defra (with policy teams specifically highlighted), Cefas, JNCC, Natural England, Nature Scot, NRW, Welsh Government, Marine Directorate Scottish Government, DESNZ, NSTA, Marine Management Organisation, IFCAs, Opred, DAERA etc.
  - Academia – with reference to relevant projects e.g. INSITE, DREAMS, EcoFlow, EcoEind, Transects.
  - Industry groups – Fisheries, industry (NFFO, inshore and offshore fisheries groups), Industry representative bodies (BMAPA, ESCA, SUDG, OEUK, etc.
  - NGOs - Wildlife Trusts, RSPB, BTO, Dolphin Projects, etc.
  - Public and community groups, coastal partnerships, marine planning areas, local authorities.

Feeding directly into the stakeholder and landscape mapping exercises



Task 1.4:
Establishing a VALMAS Community of Practice
Progress to Date

- Co-designed development of a programme for July to December 2026. Review of WS1 discussions and asks, Cardiff Co-design session, plus additional ideas welcome
- Focused discussion with HMC/ INSITE teams and monthly meetings
- Launch of the VALMAS newsletter in April 2026
- Planned launch of VALMAS Online Panel Series – expected launch date July 2026

If there is anything you think a CoP can offer, or that you/ your organisation can deliver in the CoP programme of activities?

VALMAS NEWS

Edition 1: April 2026

If you are receiving this email again, we'd like to apologise for the error in our previous newsletter which included an incorrect link to our survey. We have corrected this below. Please do take a moment to share your views.
Thank you to those who spotted the error and let us know, and thank you for your patience.

Welcome to the first edition of the VALMAS quarterly newsletter

We are pleased to introduce this publication as a dedicated resource for sharing progress, developments, and insights from VALMAS, delivered as part of the wider INSITE programme.
Each issue will provide an overview of key activities, research advancements and publications, and forthcoming events, ensuring you, as our stakeholders, remain fully informed as VALMAS and other relevant projects progress.
If you know colleagues or partners who may also benefit from receiving these updates, we encourage you to share the subscription link so they can also receive future editions.

About VALMAS

VALMAS (Value of Marine Artificial Structures) is a four-year, transdisciplinary research initiative led by the National Oceanography Centre (NOC) and co-funded by NERC and the INSITE Programme.
The project, which began in August 2025, aims to generate robust scientific evidence on how marine artificial structures, ranging from offshore oil, gas, and wind installations to shipwrecks, affect the ocean environment, the economy, and society. By developing natural capital frameworks, modelling future environmental scenarios, and creating decision support tools for policymakers and industry, VALMAS supports a just, nature positive, and economically efficient transition to low carbon offshore infrastructure.

EXPLORE OUR WEBSITE TO DISCOVER MORE

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VALUE OF MARINE ARTIFICIAL STRUCTURES

Communications Lead

Eleanor Frost (External Communications Officer, NOC)

In addition to the newsletter, where are we at?

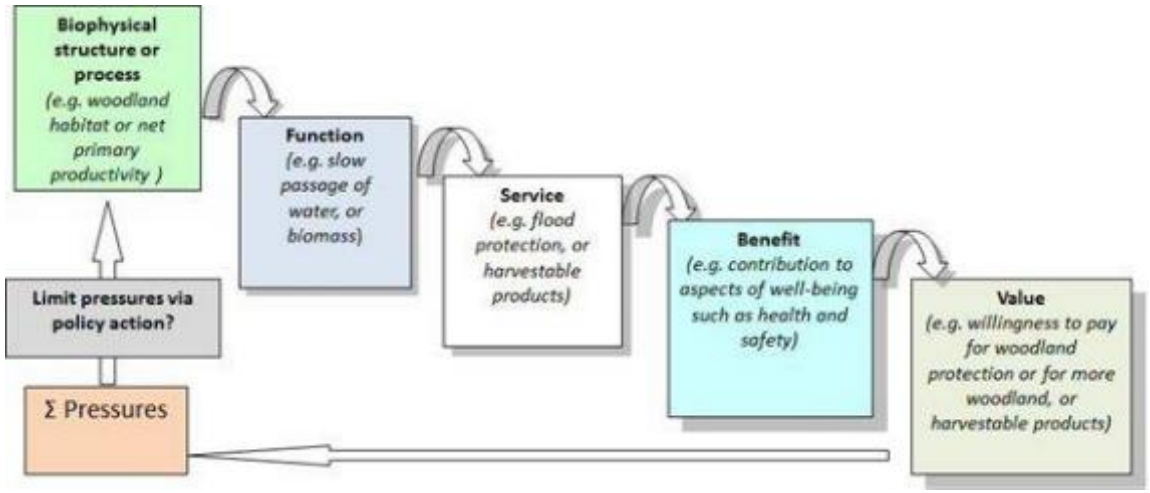
- Website launched (www.valmas.ac.uk) – an ongoing project and some refinements are being made, and we would welcome your comments
- LinkedIn launched – please do follow us, engaging with our posts and tag us in relevant posts to help amplify our messages: https://www.linkedin.com/company/project-valmas/

WP2: Natural Capital Frameworks

LEAD: JUSTINE SAUNDERS; DEPUTY: STEVE WATSON

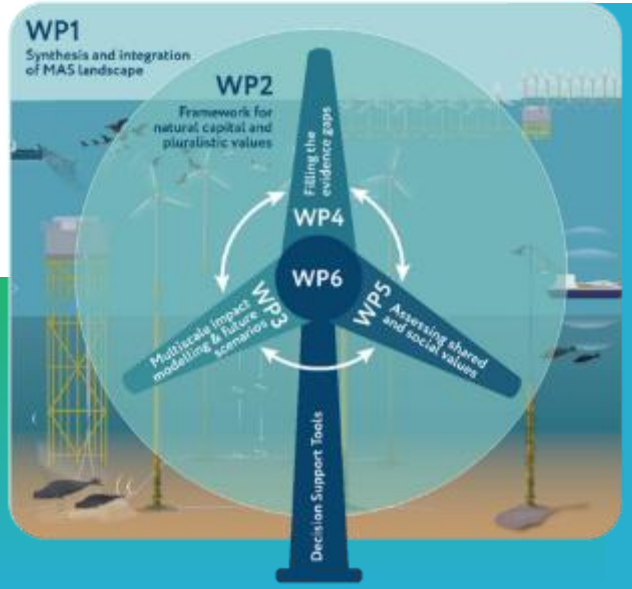
WHAT IS A "NATURAL CAPITAL" FRAMEWORK?

Simply a system that contains information about **the stock** of renewable and non-renewable resources (e.g. plants, animals, air, water, soils, minerals), the **flows** of ecosystem services generated by them, and where possible, the **values** associated with the **benefits/disbenefits** to people.



But … "using a stock / flow concept expresses a particular worldview - of nature and people being discrete entities and nature being conceived of as a set of resources that we use" (i.e. instrumental values)

THE BEGINNING OF A SOCIAL-ECOLOGICAL-TECHNOLOGICAL SYSTEM



Stakeholders

Other Capital Inputs or Complementary Goods & Services

Human Capital

Social Capital

Financial Capital

Manufactured Capital

Social values and demand, perceptions

£s

Preferences

Narratives

Institutional drivers and power dynamics

MAS Ecosystem

Ecosystem assets

Typology of species, habitats

Ecosystem processes

List of ecosystem processes modelled

Ecosystem Services

Typology of ecosystem services

Final ES

Pluralistic Values

Living From Nature

Living In Nature

Living With Nature

Living As Nature

Decommissioning Scenarios

Technology & Safety

Impact

Decision-making

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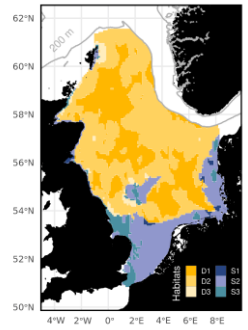
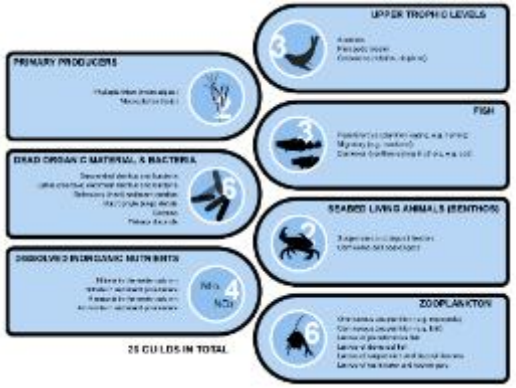
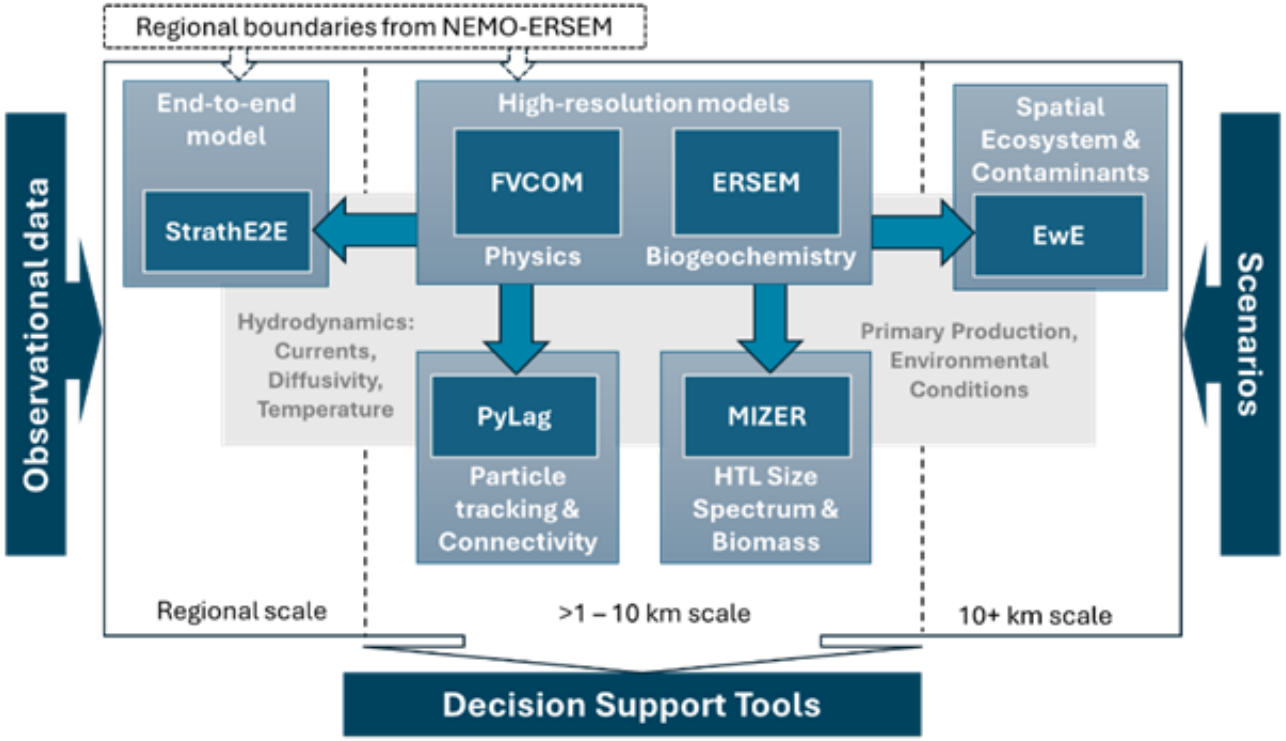
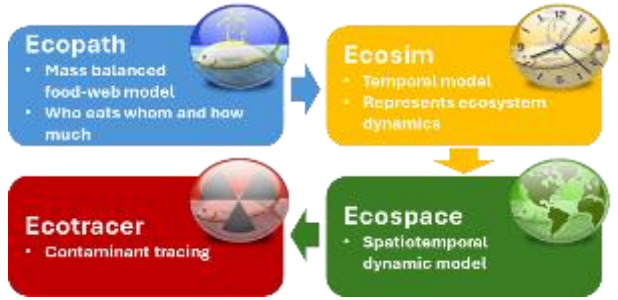
WP3: Multiscale impact modelling and future scenarios to assess comprehensive impacts of MAS across scales (Lead Lessin, Deputy James)



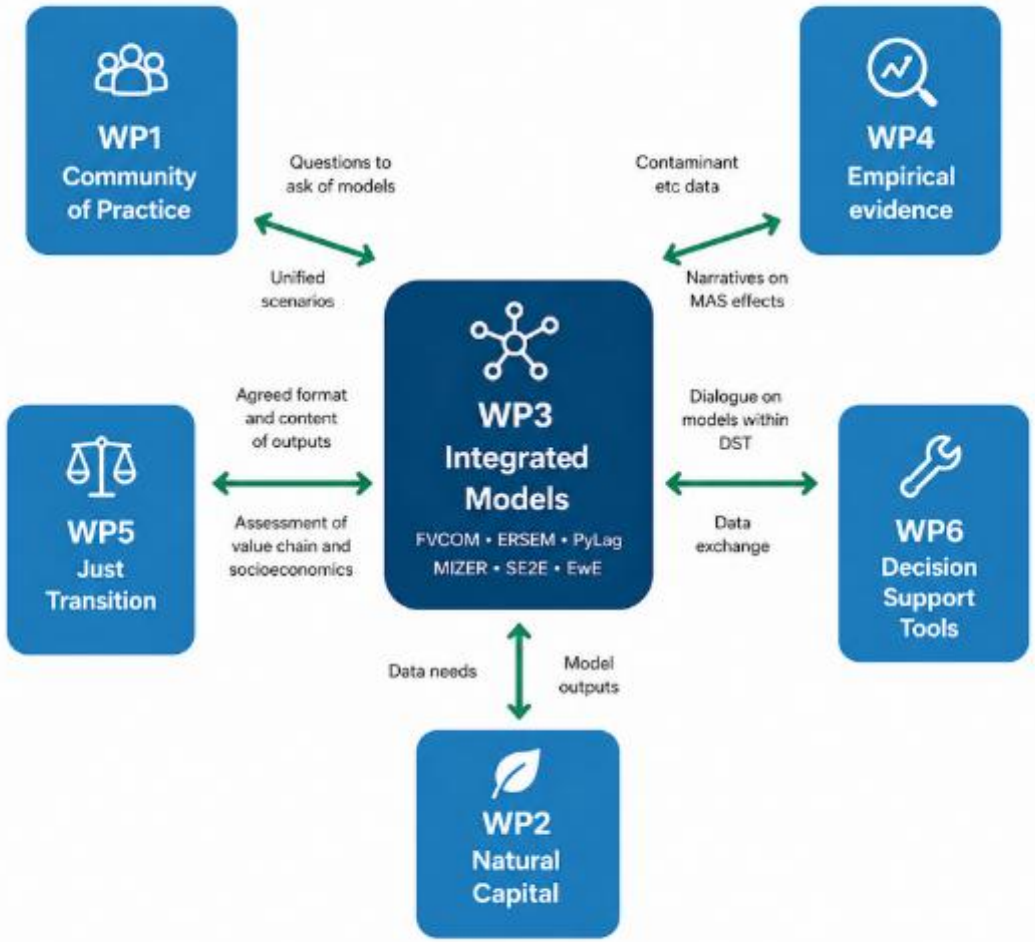




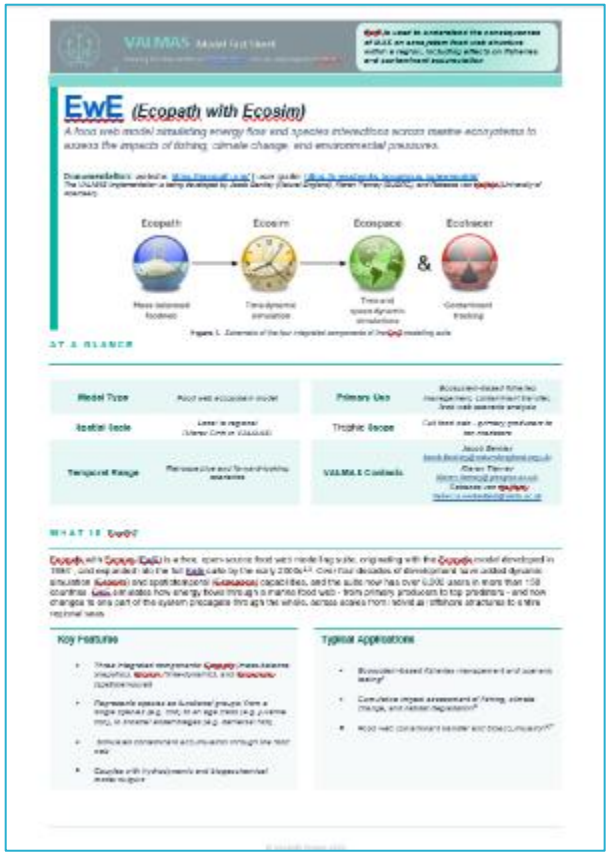


Model ensemble incorporating MAS effects

WP3 INTEGRATION WITHIN VALMAS AND BEYOND



Model fact sheets



… Available on stand and on VALMAS website

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WP4: Filling evidence gaps with new analysis, observations and field data (Lead: Hastings; deputy von Hellfeld)

1. Biodiversity and carbon value of MAS

Investigating potential net-gain effects of co-located activities within windfarms as case study for UK policy development.

2. Contaminant fluxes Hg and HC

Investigating leaching rate of Hg and HC for cuttings piles and operations using DGT passive samplers and marine growth *CORRODE ecotox; ANSTO and AIMS – NORM and heavy metals*

Scenarios of interest:
O&G platforms: active, in decommissioning, already decommissioned
Windfarms: in installation phase, active
Further: Mariculture site (seaweed farm)

3. Acoustic monitoring

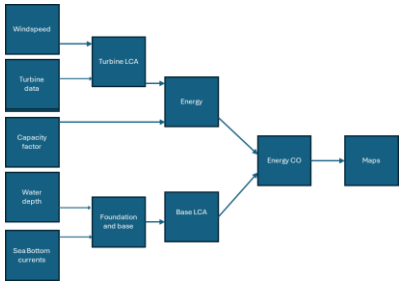
Using anchored 4D hydrophones PAM.
Cromarty Lighthouse Field station
Existing marine acoustics monitoring from Marine Directorate

Inner Moray Firth operational and construction of wind farms

Also decommissioning
Beatrice wind and oil and gas

4. Life Cycle Impacts

Create a spatial marine wind turbine characterization model, including foundation structure, to evaluate life cycle impacts
Data mining from NDC simulator,
Turbine manufacturers and hydrological
And heterological data bases



Development of 3D visualisations of marine growth for stakeholder engagement (Lead supervisor: Kate Gormley, PhD student: Megan Squire)

Currently finalising initial version of risk and mitigation document
→ **Stakeholder engagement events planned**

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WP5 – Assessing shared and social values to enable a just transition across and within sectors

5.1 What is the North Sea for anyway?

Identifying key conditions for sustainable and just pathways and outcomes

‘Three horizons’ approach:

Horizon 1: Current management, positives and problems

Horizon 3: Visions of desirable futures

Horizon 2: Concrete measures and initiatives that bridge H1 and H3

5.2 Economic valuation of biodiversity, fisheries, carbon

Carbon: coupling WP3 with LCA including embedded carbon

Fish: Displacement, interactions, and compensating impacts

Input-output models

Biodiversity: WP3 and value transfer

5.3 Sociocultural and 5.4 Shared values of MAS

Questionnaires, ethnographic interviews, and a National Citizen Panel to understand how MAS management affects, winners and losers and procedural justice, and inform potential socially/politically acceptable compensation solutions.

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WP6:Co-development of Decision Support Tools (DST)
Watson Lead, deputy Laverick

1. Development of decision support tools

Evaluate User Requirements
- Content
- Accessibility
- Future needs

User testing and evaluation
Stakeholder workshop
Feedback and reconfiguration
Final products released

2. Develop a federated data architecture

Combined Visual Interface
Host Decision Support Tools
Outputs for decision-making
FAIR data

3. Exploration of a digital twin

Create opportunities for coupling VALMAS with digital twin frameworks

ANY QUESTIONS, IDEAS AND SUGGESTIONS?

If there is anything you think a CoP can offer, or that you/ your organisation can deliver in the CoP programme of activities?