

RESILIENT COASTS: OPTIMISING CO-BENEFIT SOLUTIONS (CO-OPT)

In the Co-Opt project we are interested in transitions to nature-based solutions (Nbs) for coastal defence to manage flooding and erosion risk. We want to understand what affects the decision-making around putting in place coastal defences as part of a coastal scheme, and what might be needed to increase the use of Nbs, where this would optimise benefits to people and nature. In work package 1, we brought together experts from different disciplines to explore a range of perspectives on these issues and to increase shared understanding of the issues using two methodologies as described below. Our recommendations, based on the main findings of undertaking this work, are given on the 2nd page. More details can be found on the project following this QR code.



USE THE SOFT SYSTEMS METHODOLOGY TO UNDERSTAND THE DECISION MAKING PROCESS FOR COASTAL SCHEMES PUT IN PLACE TO MANAGE FLOODING AND EROSION RISK ON UK COASTS

USE THE FUZZY COGNITIVE MAPPING METHODOLOGY TO IDENTIFY THE COMPONENTS OF THE SOCIAL-ECOLOGICAL SYSTEM (HUMANS AND NATURE) THAT AFFECT HOW WE MANAGE FLOODING AND EROSION RISK



ONLINE WORKSHOP

3 GROUPS with a combination of public agencies, private sector organisations, non-governmental organisations (NGOs) and academics.(20 participants) we ran through exercises to describe decision-making.



ONLINE WORKSHOP

3 GROUPS 1) decision makers, advisors and industries, 2) Coastal groups and forums, 3) Researchers. (23 participants) developed the first draft of a fuzzy cognitive map.



PQR+T EXERCISE

Participants were asked to describe the coastal system related to flood and erosion risk management, with a focus on the aims and means by which decision-making takes place.



INDIVIDUAL CHECK OF NODES AND DRIVERS

Participants were asked to review, edit, delete and/or add nodes and drivers to the list that were built in each group during the online workshop.



CATWOE EXERCISE

In this exercise, participants were asked to recognise the human activities that take place in a wider context that can constrain or enable the decision-making system functioning.



ONLINE INTERVIEWS

During this 1:1 or in sub group interviews, participants added links (arrows) between the nodes present in the map.



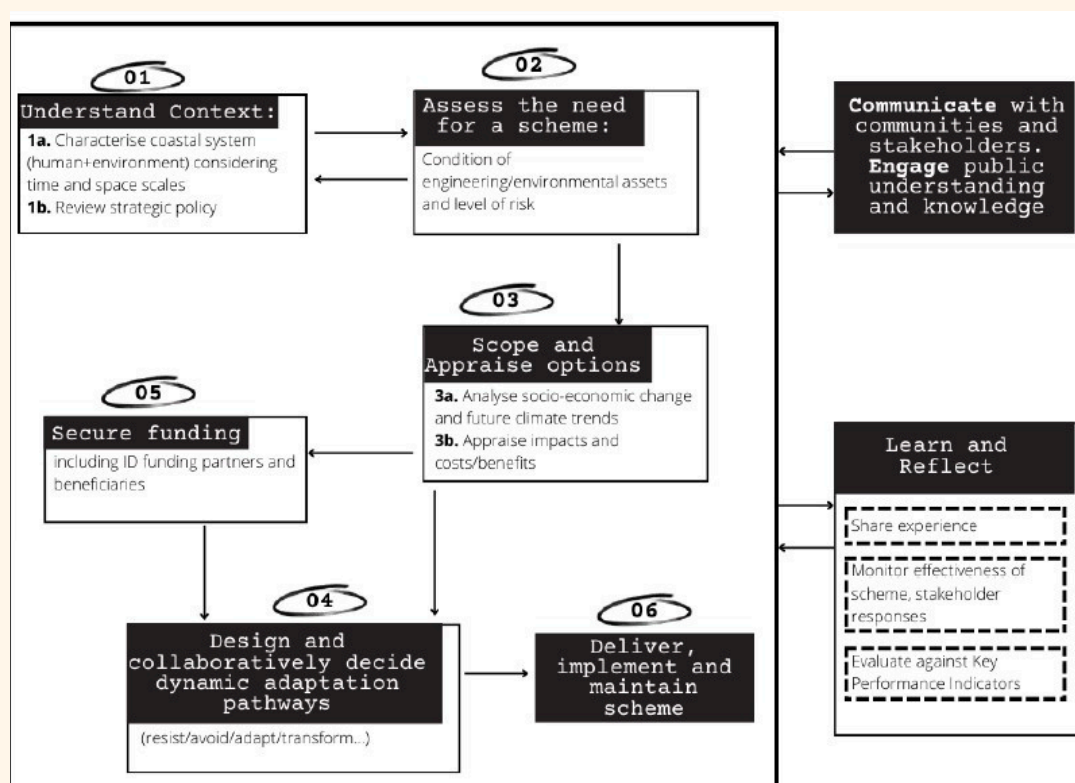
HUMAN ACTIVITY SYSTEM MODEL

In this exercise participants were asked to develop an individual and a group idealised model of the decision-making system affecting coastal schemes to manage flooding and erosion risk.

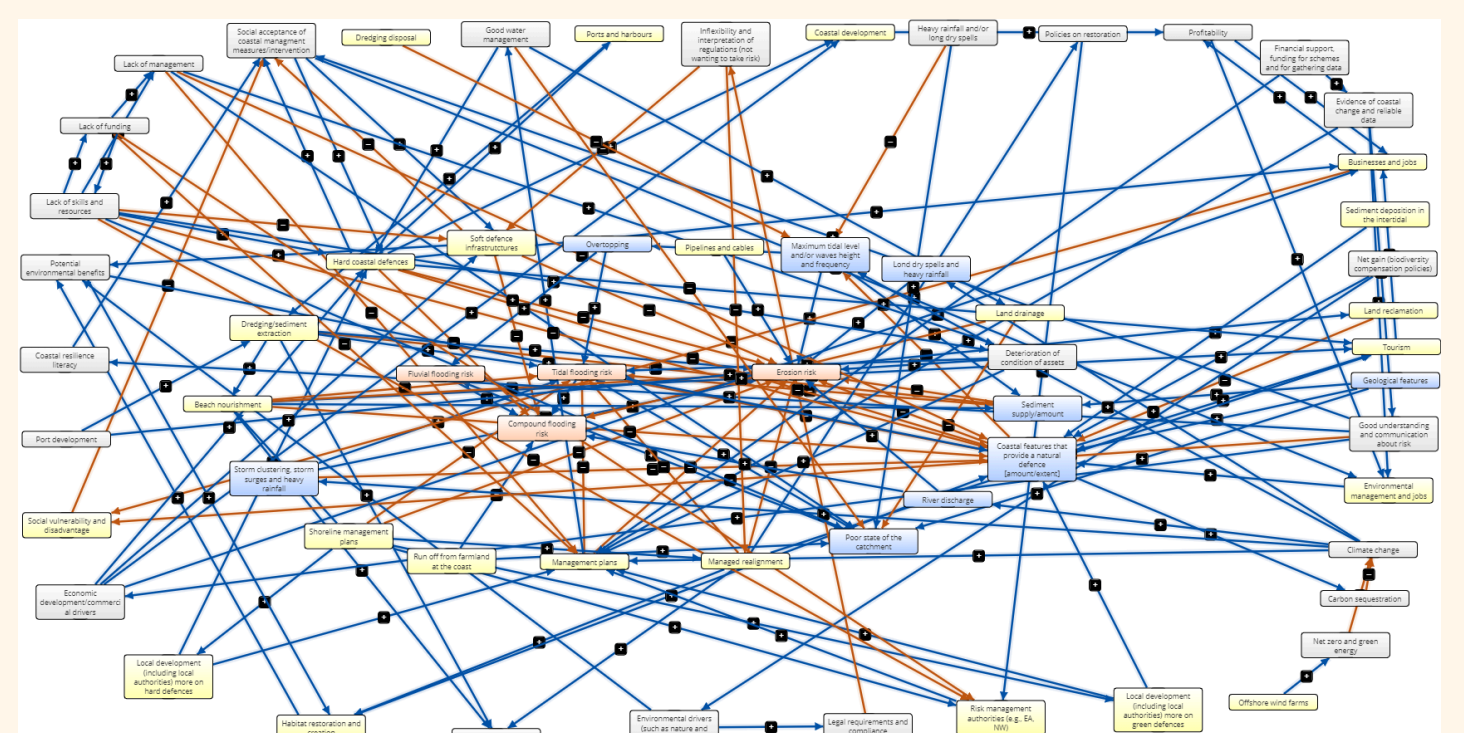


AGGREGATION OF DIFFERENT MAPS

We have aggregated the different maps of participants belonging to the same group following a set of aggregation rules.



Human Activity System Model for decisions about Coastal Schemes developed using Soft System Methodology. This shows the key stages of decision-making that were agreed on by participants for developing schemes to management of flooding and erosion risk. For illustration - for further details please see the QR code.









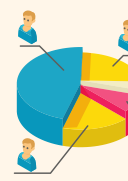

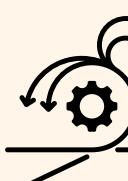




Example of a map developed with participants using Fuzzy Cognitive Mapping method. In the centre, the orange nodes are the flooding and erosion risks and around these are the natural (blue) and human (yellow) features that can affect this risk, with grey nodes showing key drivers of change in this system. This is for illustration - if you are interested please see further details through the QR code.

SET OF RECOMMENDATIONS




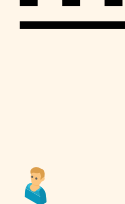

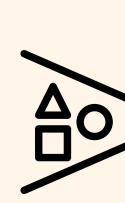
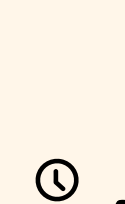


based on the work developed within work package I



SOFT SYSTEM METHODOLOGY

-  Overall financing is a constraining factor on the potential to put in place more nature-based solutions (NbS).
-  There is a need for a proper funding mechanism for coastal re-location, if needed.
-  Austerity in local authorities often means there is a lack of staff, skills and training in this area of coastal management.
-  There is a need to better engage, include and educate local councillors and coastal engineers about the benefits of NbSs.
-  There is a need to raise awareness of what is valued by local communities about the use of coastal land, when considering risk management. The current flooding and erosion risk model is focused more on housing and infrastructure risk.
-  Effort is still needed to add more tools and well-developed methodologies to quantify the full benefits of NbS.
-  There is a need for a more integrated approach and less siloed thinking for this kind of decision-making.
-  Key Performance Indicators for coastal schemes need to be changed to better account for NbS.
-  Approaches need to be flexible enough to deal with the variation in contexts at the local scale.
-  Community engagement is key in promoting NbS.
-  Short term (5 year) agendas work against NbS.
-  Long-term planning is needed to incorporate NbSs into coastal schemes.
-  A broader consideration of the whole coastal social-ecological system is required.

FUZZY COGNITIVE MAPPING

-  Local authorities often lack the financial resources and expertise to implement nature-based solutions (NbS). There is a need for more innovative finance solutions and/or more emphasis of public funding in this area.
-  An iterative process with participants can enable a mutual learning process and give people space to debate and consider each other's perspective on the same system.
-  Many decision-making features (e.g. political factors, coastal alignment, sediment transport) are context-specific and need to be examined in each scheme.
-  Most participants tended to focus on features related to their field/job role in the exercises. By sitting together they learnt about each other's perspectives. This illustrated the benefits of collaborative and adaptive decision-making.
-  There are differences in how participants perceive the system and what needs to be considered. These differences may depend not only on job role, but also on personal views and previous experiences. Again, this emphasises the importance of involving different people in decision-making.
-  There is no clear division of responsibilities in the decision-making process and in the maintenance of implemented coastal schemes. This needs to be clearly set out but may vary from place to place.
-  Communities are mostly seen as recipients and not as actors in the decision-making process in the coastal management system. This will need to change to meet collaborative management policy aims.
-  Collecting the views of different stakeholders about the same system allows for a more complete view of that system.
-  The term resilience in the context of coastal flood and erosion risk is understood in different ways, and there is no single definition of it. In some cases, it means, for example, adaptation, in others resistance to change.



More info here

Further info will be published here



OVERALL CONCLUSIONS

- A system-based approach to planning and management, as promoted by Soft System Methodology and Fuzzy Cognitive Mapping, is helpful. It draws on the expertise and strengths of many minds. It seems to capture most of the messy details and complexity of the system under study.
- Engagement, especially of decision-makers, is often a challenge due to their lack of time and funding for taking part in projects like this.
- Iterative processes are challenging because they require more effort and time from participants. When this includes government there can be an associated risk due to turnover of staff in relevant roles. However, participants involved in these exercises were overwhelmingly positive about what they learnt from working in this iterative and inclusive way, suggesting that overall there are benefits to approaches such as these.