Environmental issues

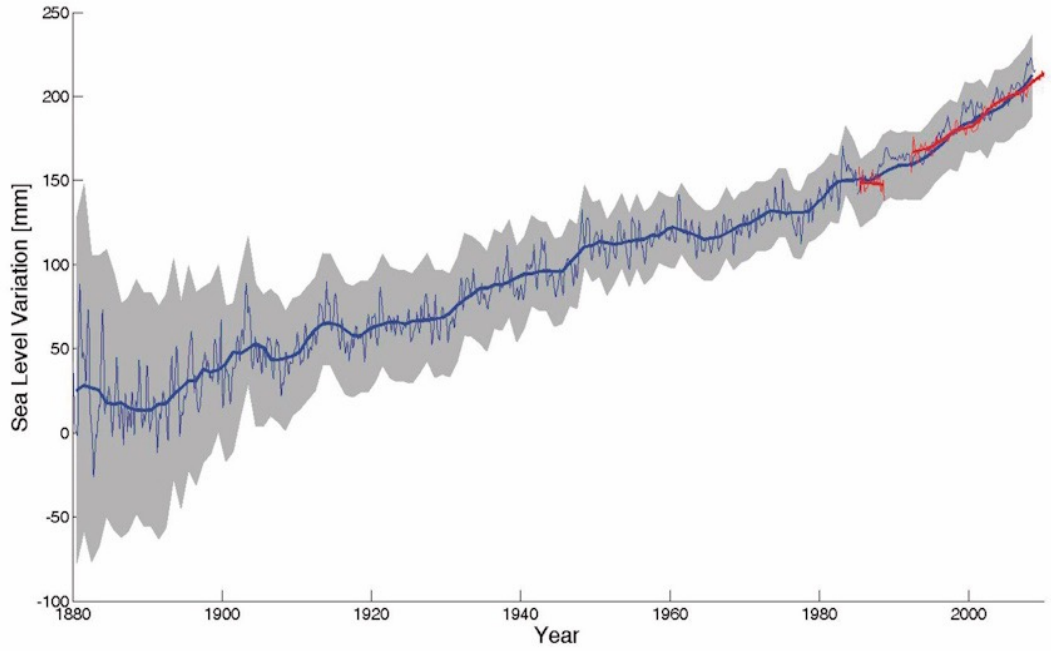
- Sea level rise
  - Impact on generation
  - Consequences for habitats
- Environmental risks
  - Disturbance (esp. in deployment)
  - Changes in flow (sedimentation)
- Sustainability
  - Carbon budget
  - Support

Sea level rise

Sea level rise

- Global sea level rose 3.6mm per year 2010-2019
- Water expands as it warms
- IMechE advice:

“expect 1 metre sea level rise by the end of the century, but plan for 3 metres”



Royal Society (2020) Climate change: evidence and causes

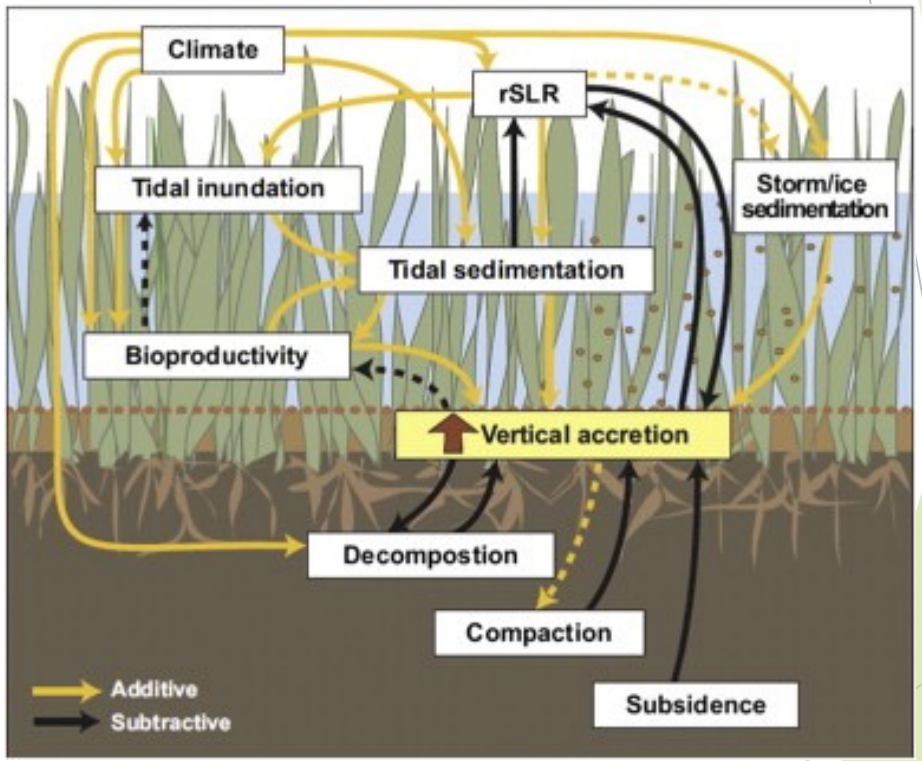
Impact on generation

- Height between hi and low water assumed to be unchanged.
- Schemes need to be future-proofed or mobile

https://www.gov.uk/government/news/thames-barrier-closed-for-200th-time

Impact on habitats

- Intertidal habitats most sensitive
- Saltmarsh dependent on inundation/exposure
- Rocky habitats at risk
- Coastal squeeze



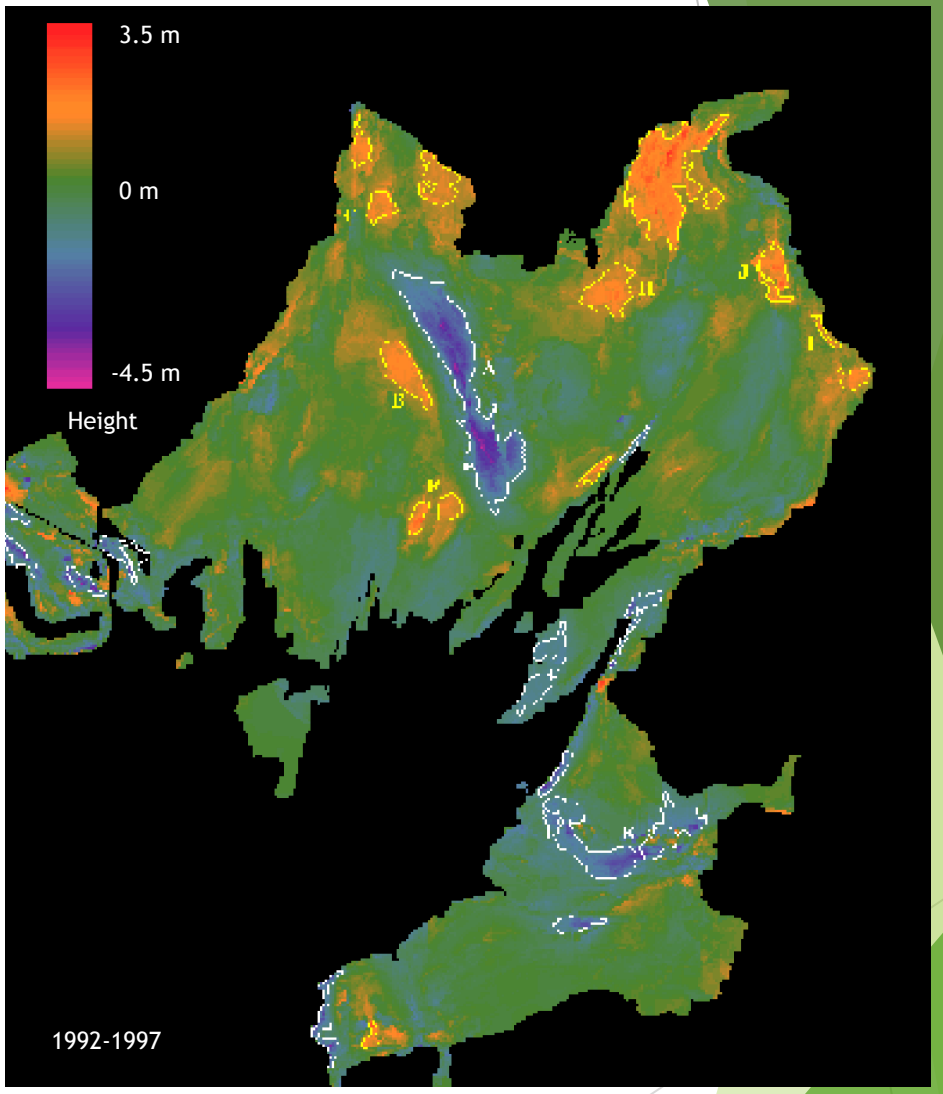
Short, F.T., Kosten, S., Morgan, P.A., Malone, S. and Moore, G.E. (2016) Impacts of climate change on submerged and emergent wetland plants *Aquatic Botany* **135** 3-17

Disturbance

- Installation/deployment usually most damaging
- Impact on organisms
  - Fish
  - Birds
- Impact on habitats
- Relaxation (Diamond)

Sedimentation

- Dynamic
- Impacted by infrastructure
- Sewage?

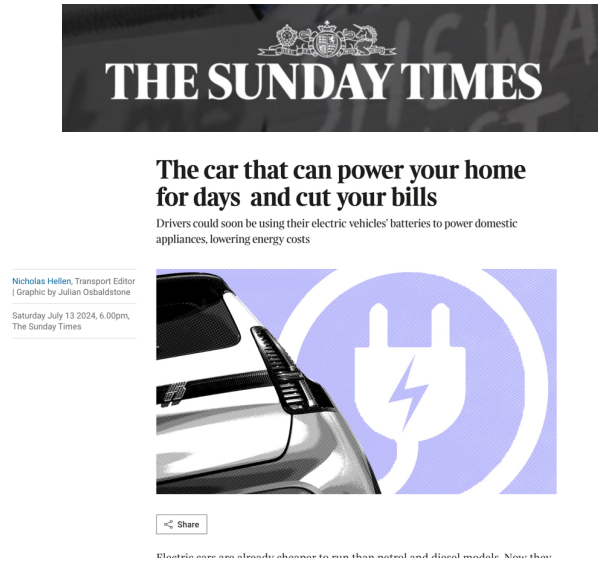


Mason et al estimated 16 million m^3 loss between 1992 and 1997

Mason, D.C., Amin, M., Davenport, I.J., Flather, R.A., Robinson, G.J. and Smith, J.A. (1999) Measurement of Recent Intertidal Sediment Transport in Morecambe Bay using the Waterline Method *Estuarine, Coastal and Shelf Science* **49**, 427–456

Carbon budget

- Life Cycle Analysis (cradle to grave)
- Electricity
  - Use it or lose it
  - Intermittency
  - Storage



THE SUNDAY TIMES

The car that can power your home for days and cut your bills

Drivers could soon be using their electric vehicles' batteries to power domestic appliances, lowering energy costs

Nicholas Hellen, Transport Editor | Graphic by Julian Osbaldstone

Saturday July 13 2024, 6.00pm, The Sunday Times

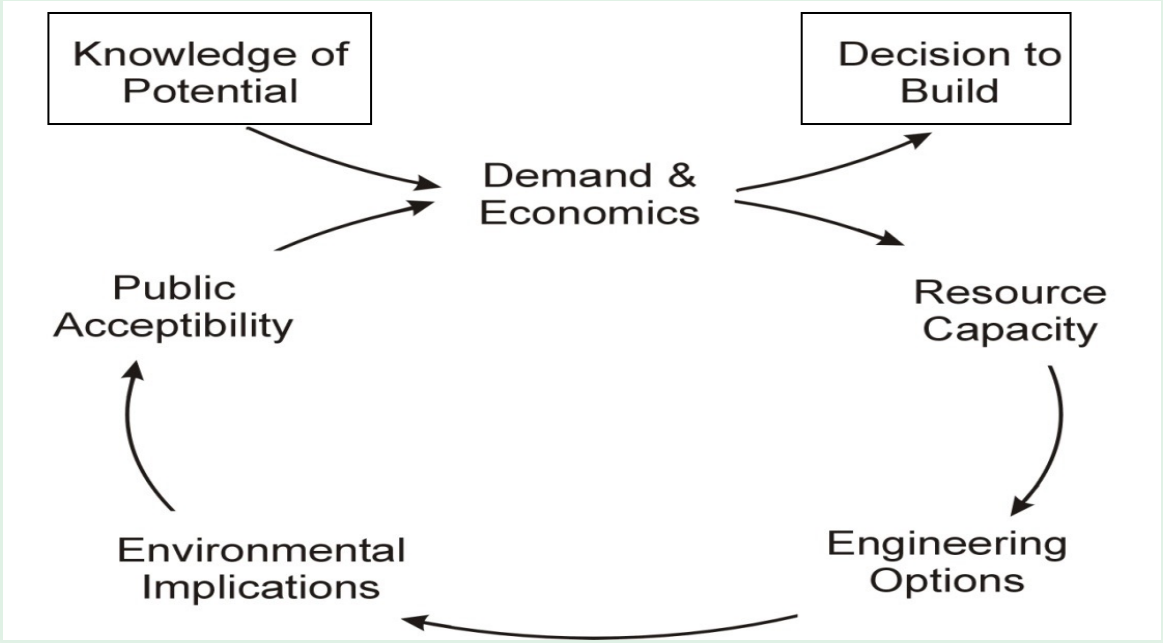
Share

Life Cycle Analysis

A technique intended to quantify the total impact of a product or activity during its creation, deployment, use and maintenance or disposal.

Support

- Political
- Public
- Legal
- Financial



Arnside Bore