The Potential for Marine Energy Extraction from the Channel

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Today's presentation

- EU binding target for energy mix
- The Channel's marine energy resource and technologies for extraction
- UK Licensing regime
- Harmony with other marine stakeholders
- The EU Maritime Green Paper

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EU Target for Renewable Energy

- Every kWh of electricity generated by renewable sources saves 0.44 kg of carbon emissions
- On 8th March 2007, Europe's leaders set a binding target for the EU's energy supply of 20% renewables by 2020

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Tidal Energy

- The “pull” of the moon (and sun) on oceanic waters causes:
  - Tidal height changes
  - Tidal flows of water

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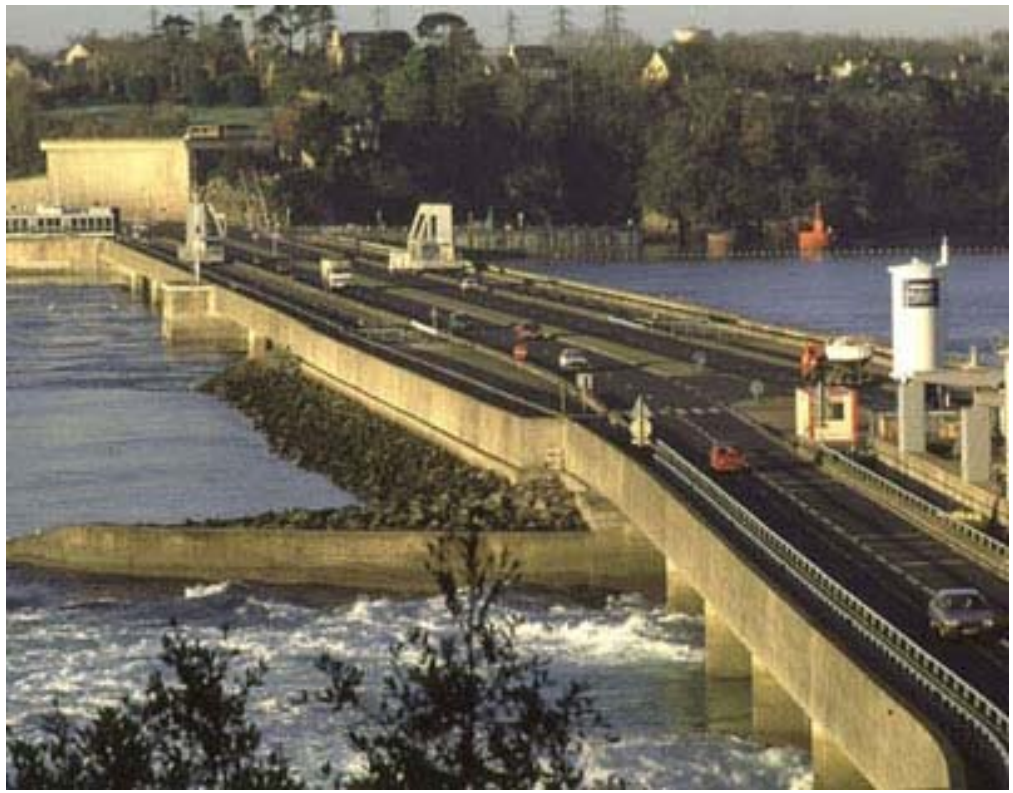
La Rance Tidal Barrage



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Tidal Barrages

- Potentially capture 100% available energy, but with “peaky” output.
- Significant disadvantages:
  - Unsustainable: upstream sedimentation
  - High, irreversible environmental impact
  - Interference with shipping
  - Questionable energy return: enormous energy cost of construction

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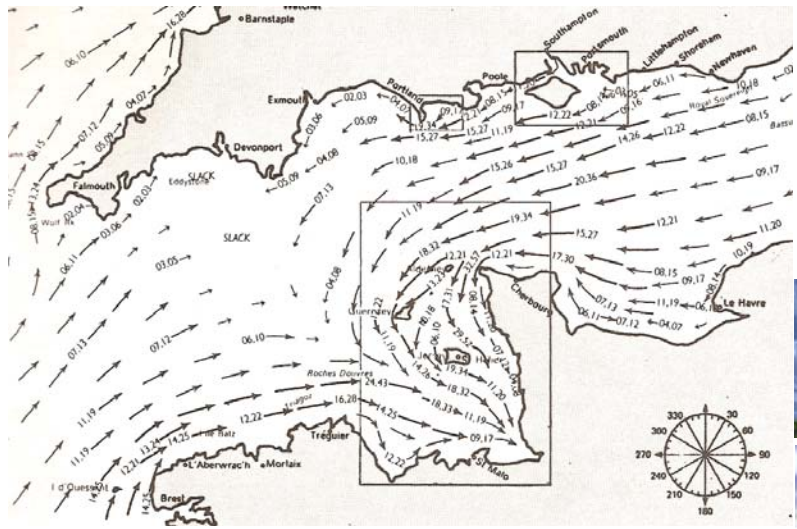
Tidal Stream Resource in the Western Channel

- Maximum tidal rate 7-8 knots (3.5 – 4 m/s)
- Further strong resource in the Dover Straits
- Close to centres of population



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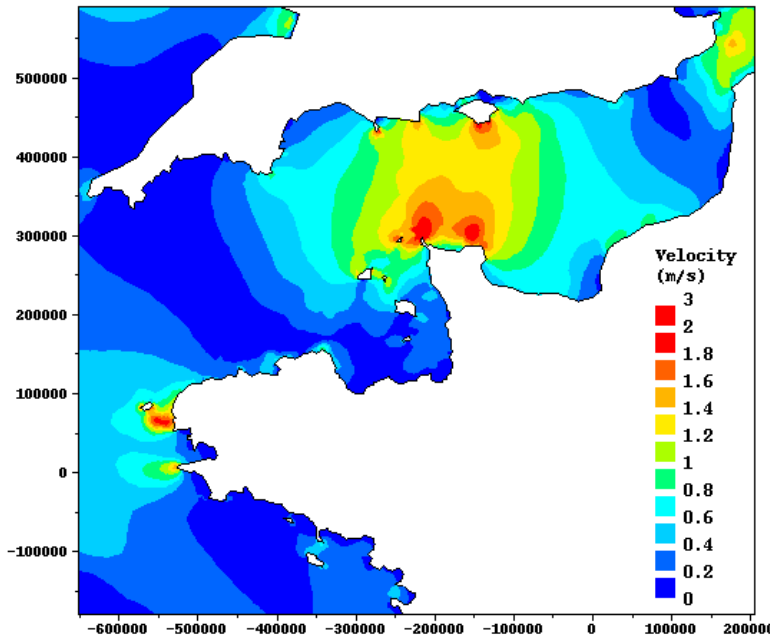
Channel Tidal Stream Resource: EDF study

- Advantages of tidal stream energy:
  - High energy density
  - Predictable energy schedule
  - Low visual impact
- Europe has 20-30% of global resource



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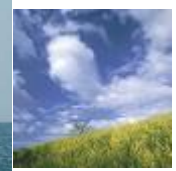
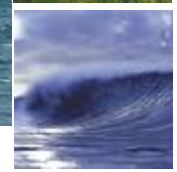
Seaflow Project

- 300 kW tidal energy generator
- Installed in 2003 off Lynmouth, Devon
- Next phase: Seagen 1 MW tidal generator in Ireland Strangford Loch)





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Wave Power

- Concentrated form of solar energy
- Solar power 100 W per square metre
- Atlantic wave power 70 kW per metre of crest length

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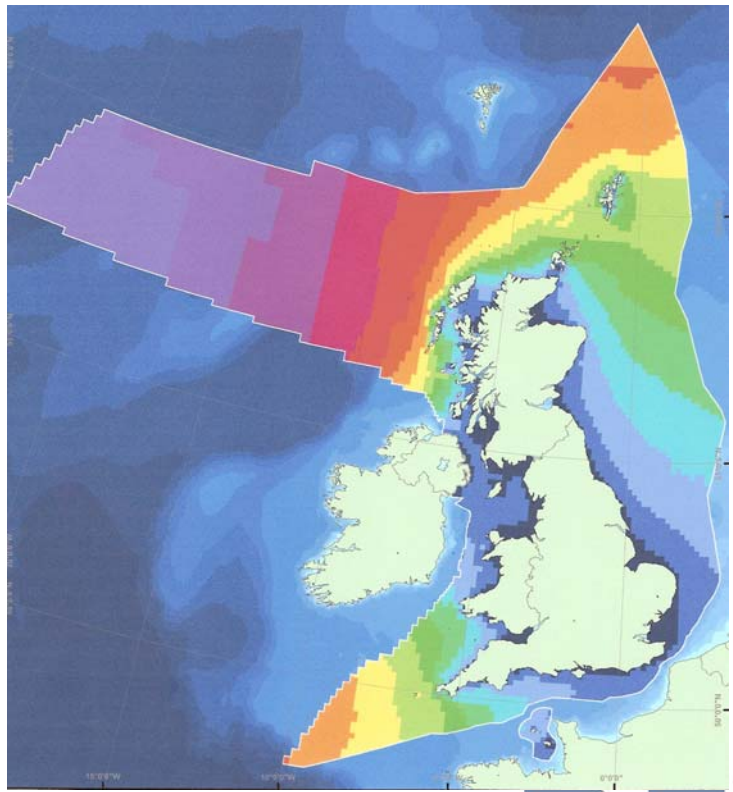
UK Wave Energy Resource

- Advantages of wave energy:
  - Less location-dependant than tidal energy resource
  - More predictable energy resource than wind
  - Low visual impact



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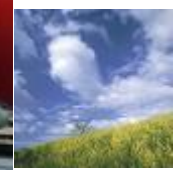
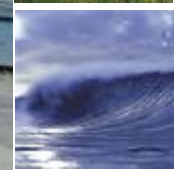
Pelamis - 2.25 MW wave farm off coast of Portugal will supply 1,500 households





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Licensing in the UK

- At least 5 licenses are required:
  - Site license
  - Electricity Act (Section 36) if over 1 MW
  - Food and Environmental Protection Act
  - Coastal Protection Act
  - Approval for cable laying
- Considerations include:
  - Environmental Impact Assessment regulations
  - Monitoring and research
  - Navigation
  - Decommissioning

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Harmony with other Marine Stakeholders

- Marine energy development must not harm the environment
- Conservation and development are not mutually exclusive
- Avoid confrontation - seek symbiosis between stakeholders

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Promotion of offshore renewable energy technologies through EU maritime policy

- Provide strong leadership and promote sense of ownership of climate change mitigation objectives in member states
- Ensure economic and climate change issues are given equal weight to social and environmental issues in marine spatial planning
- Conduct baseline strategic environmental assessments and study generic challenges to deployment – e.g. foundations and marine access
- Simplify legislation

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Thank you for listening

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