

**Scottish Enterprise**  
*helping Scotland realise its energy potential*

**Coal Research Forum / IChemE / Energy Institute  
and University of Birmingham  
Low Carbon Economy  
Birmingham 14<sup>th</sup> November 2007**

*Brian Nixon, Director of Energy*

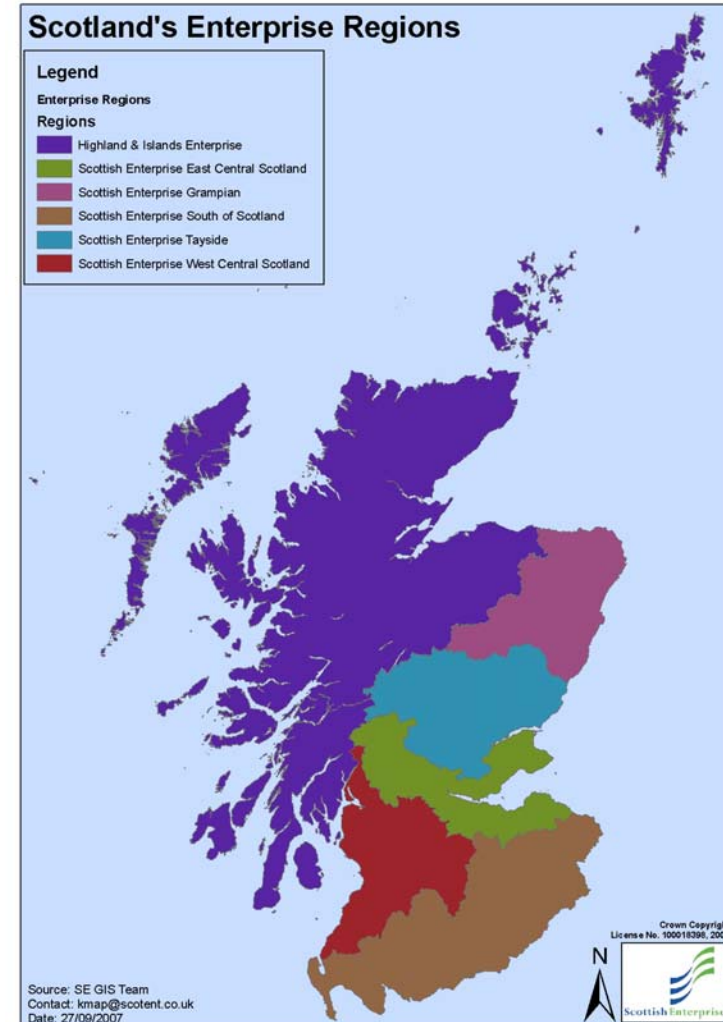


ScottishEnterprise

- **Scottish Enterprise**
- **Scotland's contribution to renewables and status**
- **role in the technology development process**
- **demonstration projects**
- **conclusions**



- Scotland's main economic development agency
- funded by Scottish Government
- strategy focused on 6 Priority Industries
  - life sciences
  - food & drink
  - tourism
  - electronic markets
  - financial services, and
  - *energy*
- support delivered via 5 regions, and
- Scottish Development International



# the role of the Energy Team



Scottish Enterprise head office in Glasgow

- **global business development**
- **commercialise new technologies**
- **diversification**
- **support for key energy sectors**
- **stimulate research collaboration**

- set the strategy for investment to promote economic growth in :-

- **oil & gas**
- **power generation – coal, gas, nuclear, hydro**
- **renewable energies**

# a small country - with a big contribution

**excellent natural  
resources**

**strong academic research  
capabilities**

**world class energy technologies  
and industry expertise**

**committed government support and fiscal mechanisms**



Scottish Enterprise



## the economic opportunity

**Scotland is targeting 18% of its electricity generation from renewable or sustainable sources by 2010 (UK target is 10%)**

**the market is forecast to grow to a value of approx £1 billion per year**

**the sector is already supporting ~ 2,300 jobs**

**but in Scotland, the aim is to grow generation of electricity from renewable sources to 40% by 2020 (UK target is 20%)**



# Scottish renewables employment



## per renewable sector

wind	1,080
hydro	620
wave & tidal	190
microgeneration	150
infrastructure	135
energy from waste, landfill / sewage gas	85
bioenergy – electricity and CHP	35
biofuels	5
<b>totals</b>	<b>(2,490 MW) 2,300</b>

## per discipline

construction & haulage	645
project development to final consent	630
engineering, manufacture, fabrication & assembly	405
operations & maintenance	320
consultancy, energy services and R&D	295
<b>total employed</b>	<b>2,300</b>

Source:-  
Scottish Renewables Forum

# technology development opportunities in renewable energies

conceptual & feasibility studies

“Proof of Concept”

“Enterprise Fellowships”

demonstration / validation projects

supply chain development

*commercialisation + industrial and investment uptake*

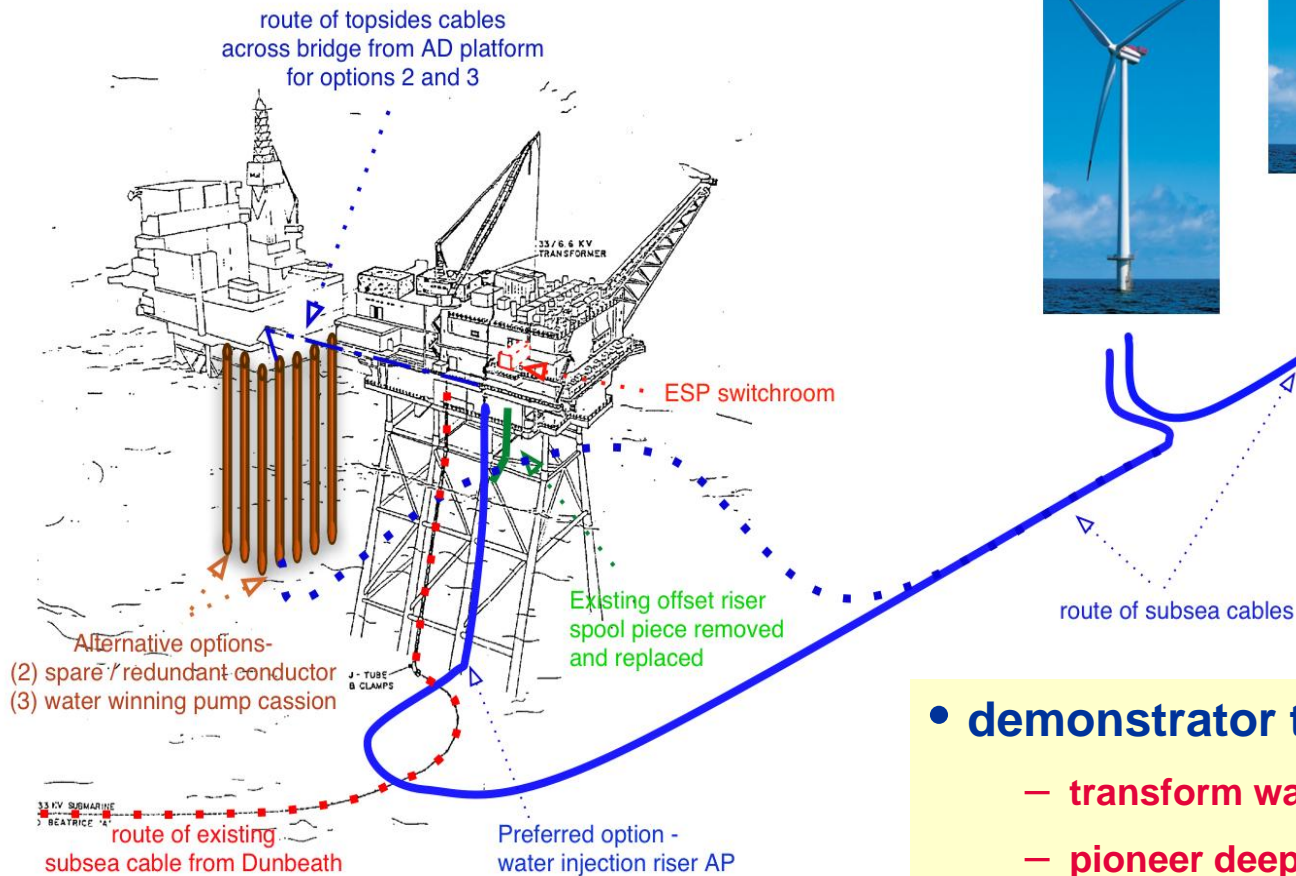
*energy delta -  
time / years*





# Talisman Energy with Scottish & Southern Energy - Beatrice

**water depth 44 m LAT at turbines**



## • demonstrator targeted to:

- transform water depth envelope
- pioneer deepwater windfarms
- establish safe operating practices
- improve operating performance

# Scotland's lead in offshore wind

## Beatrice offshore wind demonstrator

### – 4 world firsts

- at 5MW it's the largest wind turbine to be deployed offshore anywhere in the world
- at 45 metres it's in the deepest water
- first use of oil & gas jacket design for offshore wind foundations
- complete turbine was constructed onshore and shipped to offshore location in the upright position

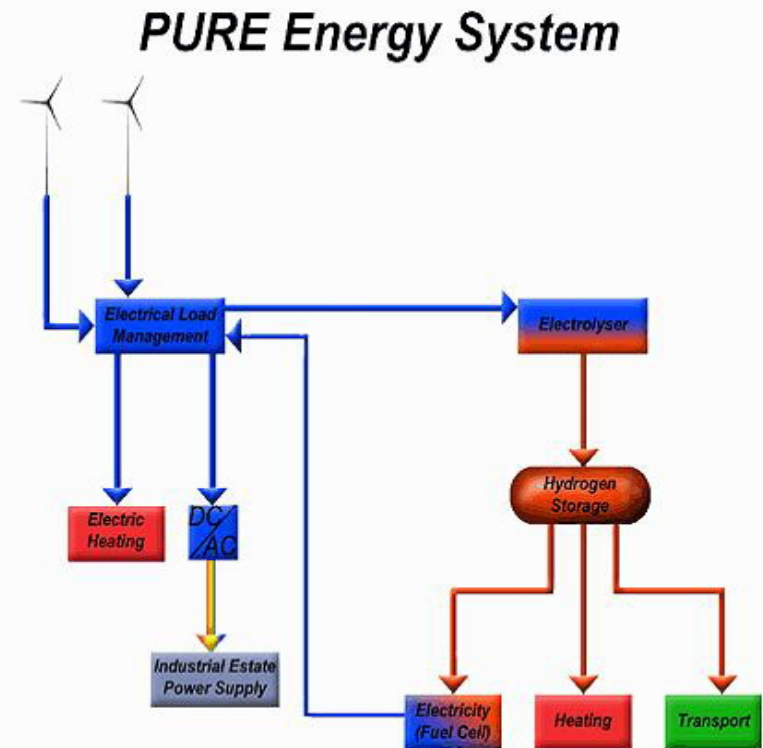


- **joint Talisman Energy and Scottish & Southern Energy *Beatrice Offshore Wind Project* has proved the concept of successfully deploying 5MW machines**
- **the global offshore wind industry showing real interest in the project, setting the pace for the size of offshore turbines**
- **Talisman Energy and SSE are looking at expanding the Beatrice project to a 200 turbine wind farm (1000MW)**
- **UK expects to deploy 6GW of offshore wind power by 2015 rising to 8.5GW by 2020**



# renewable hydrogen – deliverable now

- small scale demonstration project in Shetland Isles
- emission free energy generation
- ideal for remote and small communities (households?)
- can be used for transport, heating and electricity

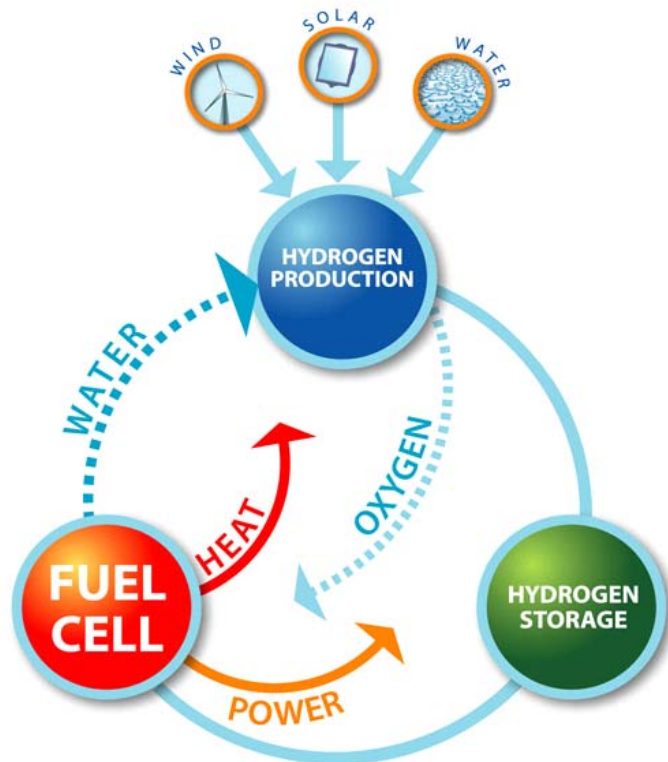


- **full scale testing of wave and tidal stream marine energy devices**
- **grid connected**
- **certified to UK Accreditation Service (UKAS) standards**
- **codes of practice for design, installation, maintenance and inspection**
- **development of marine energy industry standards**

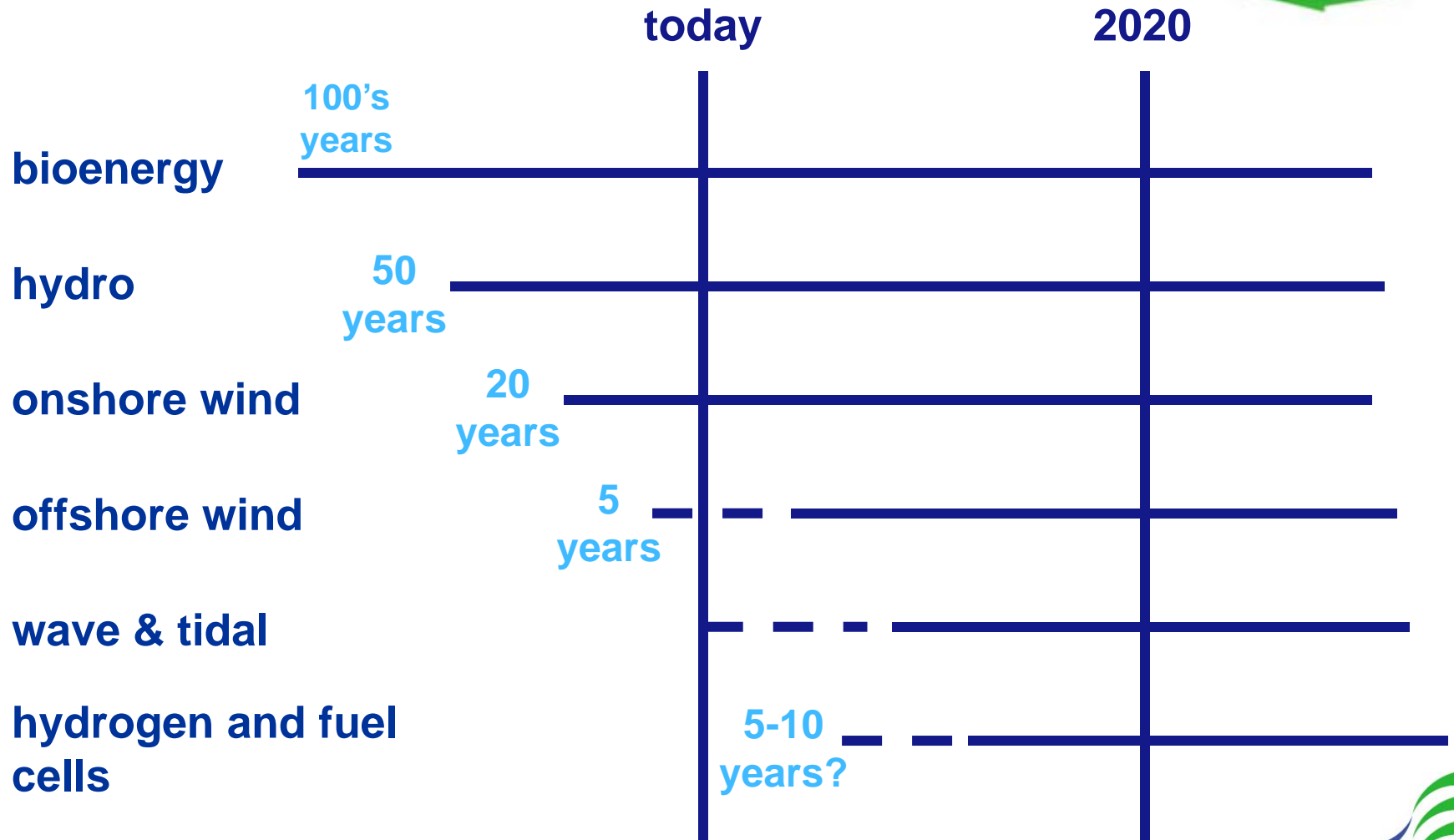


# The Hydrogen Office

THE HYDROGEN OFFICE

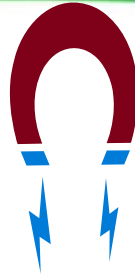


# energy delta – a simplistic renewables timeline

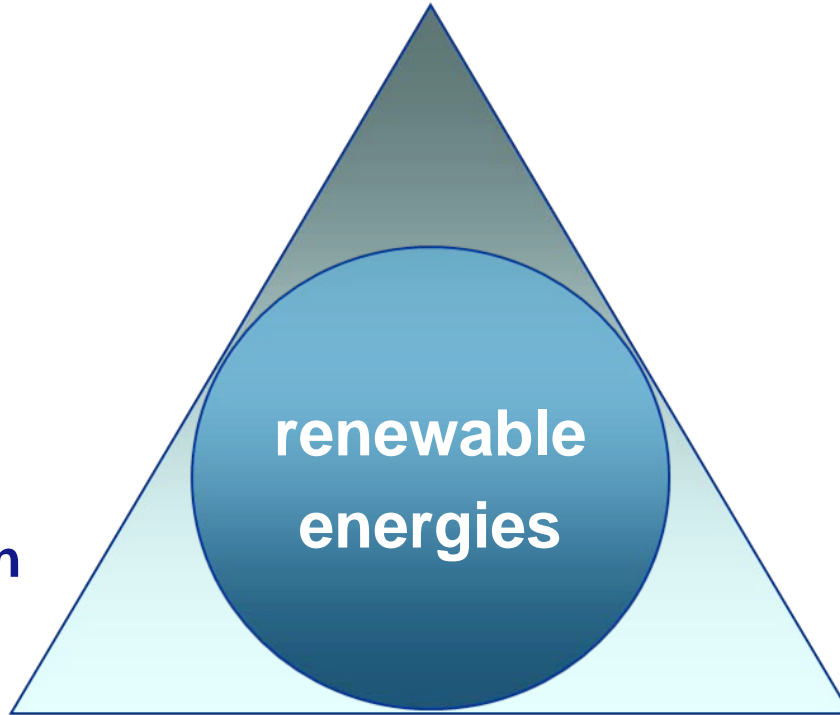


# the sustainability challenge

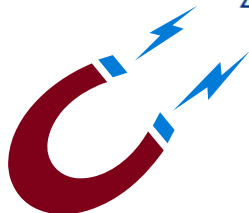
environment and  
climate change



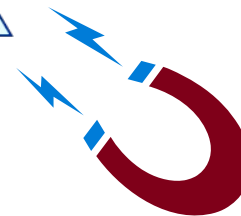
renewable  
energies



economic growth  
and prosperity



social aspects



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*for further information please visit*  
*[www.scottish-enterprise.com/energy](http://www.scottish-enterprise.com/energy)*

*thank you*