The Humber High Energy Intensive Industry Cluster Study

A Regional Analysis of the Humber Estuary Industries

Background to the need

- Humber reputation as leading industrial region and branding as the Energy Estuary
- Industries are a significant user of energy and the region is a major contributor to the UK's energy generation
  - EII consumes around 8GWh energy at a cost of £300m pa
  - All industry in the region uses 23GWh energy at a cost of nearly £1bn
  - Over 4.4GW of installed electrical capacity in the region
- Significant investment in the region over past decade:
  - Offshore wind – manufacture (Hull) and O&M (Grimsby)
  - Bioenergy
  - Energy from waste
  - Expansion and inward investment – Croda, Tricoya etc
- Regional strengths…..
  - Ports
  - Transport connections
  - Energy infrastructure
  - Land availability
  - Low costs

The requirement

- “The Humber LEP is looking for an organisation with proven experience and demonstrable track record to undertake an audit, review and assessment of the Humber’s High Energy Intensive Industries Cluster.
- This will provide a baseline for which opportunities can be identified for future benefit in decarbonisation, higher productivity and cost reduction that can be implemented at a regional level”

Humber Local Enterprise Partnership

greenporthull

Department for Business, Energy & Industrial Strategy

Evidence to feed into the local industrial strategy, local clean growth strategy etc.

CATCH

The Study

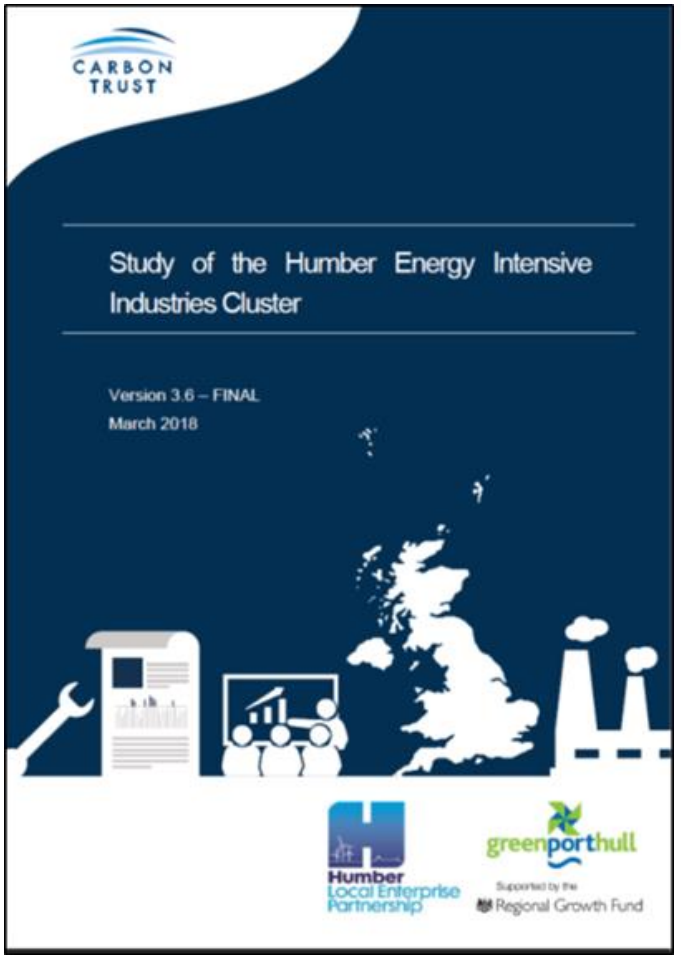
Carbon Trust selected to produce the report

Develop on NEPIC Cluster study

Aim to provide an audit of the current attributes – good and bad – and what potential exists

A study that

- Demonstrates the importance of the region
- Enables joined-up dialogue
- Inform future policy development – Industrial Strategy, Decarbonisation Roadmap 2050, Northern Powerhouse
- Inform local strategy - Energy Strategy, Energy Hub



The vision

- In 10+ years, the Humber Energy Estuary will be a leader in the renewables energy industry whilst maintaining the economic contribution from a sustained and evolved chemicals industry.
- Industry will have decarbonised through energy efficiency, process optimisation, renewable energy generation, and renewable energy purchasing. Progress will be made towards Carbon Capture, Usage and Storage (CCUS).
- Renewable energy generation will be supported by extensive energy storage, and be supplied to local businesses through various market arrangements (e.g. PPAs).
- Waste heat (and other resources) will be more effectively shared between neighbouring sites.
- The port facilities will be thriving, and have stimulated further inward industrial investment, cementing the Estuary's economic value to the UK.

The methodology

The methodology

Scope of Sector Coverage

- Energy producing and (intensive) energy using industry in the Energy Estuary:
  - Chemicals and related industries
  - Renewables sector
  - Plus the ports, other major manufacturing industry – traditional heavy industry including cement, lime, glass and steel

- Take note of, but not areas of focus:
  - Agriculture
  - Food production and processing
  - Digital and creative industries.

Air products	Associated British Ports
Associated Petroleum Terminals	BASF
BOC Immingham	BP Chemicals
British Steel	Cemex
Centrica Storage	Cristal
Croda	Drax Group
Greenergy	Team Humber Marine Alliance
Ineos	Nippon Gohsei
Northern Powergrid	Novartis
Ørsted	Perenco
Phillips66	PX Group (Saltend)
Reckitt Benckiser	Siemens Gamesa
Singleton Birch	SSE Gas Storage
SSE Keadby	Total Lindsey
University of Hull	Vivergo Fuels
VPI Immingham	

The methodology

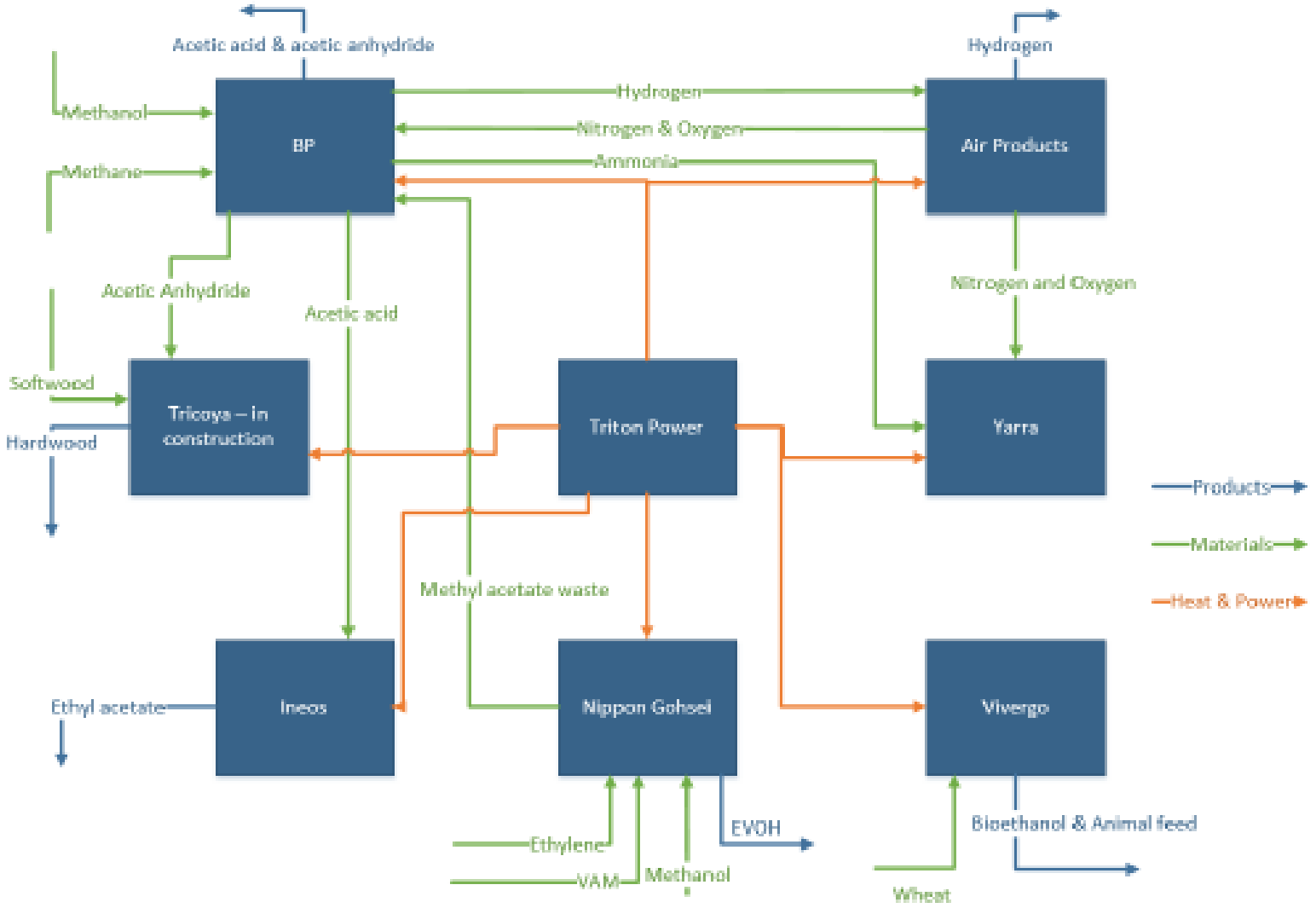
A detailed analysis of strengths, weaknesses, opportunities and threats (SWOT) has been undertaken for the Energy Intensive Industries Cluster. To understand the different areas of potential six pertinent questions were selected and an individual SWOT analysis was undertaken for each one:

How can the Humber EII cluster become a global exemplar of a decarbonised, high growth, resource optimised manufacturing region?

How can decarbonisation in energy supply be taken forward?	**How can decarbonisation in energy-using industry be accelerated?**	**How can Humber be a/the renewables centre of excellence for the UK?**
Consider offshore wind, onshore generation and storage, as well as heat and bioenergy	Scope for energy efficiency? And for wider decarbonisation (purchasing certificates, PPAs / private wires, on site renewables, CCUS)?	Research, innovation, manufacture, installation, and servicing renewable energy.
How can the EIIs grow, adding additional capacity in a lower carbon way.	**Is there an opportunity for more decentralised low carbon heat provision?**	**What is scope for industrial symbiosis, integration or other synergies?**
Maintain and grow process industries and other sectors. Reduced cost base, increased productivity, inward investment	Consider CHP, renewable energy centres (from waste & bioenergy) & heat recovery, along with heat sinks	From sharing power and re-using waste to co-location of chemical process chain players

6 separate SWOT / TOWS analyses were undertaken

Saltend – an example of industrial symbiosis



Recommendations

Recommendation 1

A strategic platform for industrial leadership

Key to the platform is a **vision and mission statement** for the EII cluster, agreed across a wide range of stakeholders. This should be backed by an appropriate **governance structure**, and supported by approved **regional strategy documents**, including a Humber energy strategy, local industrial strategy and updated strategic economic plan.

Recommendation 2

Strengthening strategic sectors

This theme concerns growth in the key sectors in which the Humber can succeed, building on long fostered strengths and more recent successful progress. Many stakeholders have reiterated the need to **maintain and grow once more the traditional industries** of petrochemicals and speciality chemicals

Recommendations

Recommendation 3

Strengthening regional support

For industry to succeed in the Humber, improvements in infrastructure, availability of skills, training and incentives must at least match those offered by other regions. Further improvements are required to road and rail infrastructure to bring in materials and move out goods more efficiently

Recommendation 4

Unlocking new opportunities

Building on the existing strengths and successes, there are **opportunities to develop into new priority sectors and technologies** which will be needed as the UK moves to a decarbonised future, with carbon capture, smart grids, energy storage and clean cooling.

A series of deep dive technology and local market scoping studies is proposed to determine the benefits that could accrue to the Humber by taking a leading stance – or whether a collaborative approach with other regions would be more effective.

Recommendations

Recommendation 5

Improving efficiency of operations

The starting point in any programme of decarbonisation should be to **determine whether the processes being undertaken are necessary** at all – and then if so, **are they being undertaken efficiently**. It is always important to reiterate that there is no point in generating or buying renewable energy for example, to power a process which could be run with 30% less energy, given some investment – especially as such investments will often bring other product or process benefits

Recommendation 6

Collaboration and coordination

To enable all this to happen will require stronger coordination, collaboration and facilitation. It is proposed that this is managed by the umbrella organisation proposed above. There is already some good networking within mini-clusters (e.g. Saltend, and around the South Humber Bank refineries) but businesses across the Humber – and to the east and west are less joined up

The next steps

Highest Priority Recommendations

Recommendation	Priority	Timescale	Difficulty	Investment needed	Impact/Comment
Develop strategic platform for industrial leadership – define Vision, Governance, Strategies and single region messaging	Highest	Immediate	Low	<£100k	Enables cluster / region to present a more coherent message
Create local industrial strategy and local energy strategy.	Highest	Immediate	Low	<£100k	Align closely with BEIS objectives to achieve maximum support
Set up EII cluster workshops to learn about, influence and prepare to take part in Government clean growth programmes	Highest	Immediate	Low	<£100k	Proactive approach could give Humber EIIs an advantage and maximise participation
Engage more widely with Government on biomass policy and programmes	Highest	Immediate	Med - High	<£100k	Seek influence which benefits the growing industry in the Humber
Expand remit of CATCH as umbrella organisation for EII cluster	Highest	Short	Med	<£1m	Organisation to represent and campaign for the interests of the cluster
Implement ESOS follow up and support programme to realise the potential energy efficiency savings. Invite in equipment suppliers and funding suppliers to support.	Highest	Short	Low	<£1m	Often savings of 10-20% identified. > 5% saving realistically achievable
Carry out series of deep dive technology reviews: Energy storage (and smart energy systems) Carbon Capture and use/storage Clean cooling Renewables potential (excl. offshore wind)	Highest	Short	Low	<£1m	Provide foundation for significant structural development and prepare for the future. Alignment with Industrial Strategy maximise chances of future action/investment.
Produce updated marketing brochures and websites for inward investment in the Humber.	Highest	Short	Low	<£100k	Important to showcase the best the region has to offer. Benefits the whole region.

The next steps

High Priority Recommendations

Recommendation	Priority	Timescale	Difficulty	Investment needed	Impact/Comment
Create and maintain a pipeline of industry decarbonisation and growth projects. Create mechanism to coordinate support: coordinate local champions, focussed assistance (planning, enterprise funding), obtaining local and national support and future commitment.	High	Short	Low	<£100k	Will help to prioritise and coordinate local support on highest impact projects – and bring in national Govt. backing, raising profile of region.
Expand existing fora to bring in working level, cross-cluster communication, collaboration and action planning mechanisms.	High	Short	Med	<£100k	Activity needs to be underpinned at working level to ensure action
Implement charm offensive to increase exposure of opportunities within EII cluster – lobby for devolution style regional deal	High	Med	High	<£1m	Lots of effort required, but potentially £multi-million rewards
Undertake heat network masterplanning study focussed on use of industrial waste heat. Consider implementing incentives for the first industrial companies to connect.	High	Med	Low	<£1m	Impact of tapping into significant waste heat resource could be great, and also set a precedent for other UK schemes.
Further examination of shared, private wire, power generation opportunities – cost benefit analysis of installing further heat and power stations along the banks of the Humber. Seek HNIP funding	High	Med	High	£multi-million	Providing secure, good value energy production increases willingness to invest and allows maximum carbon saving by increasing control of technology selection.
Part fund local feasibility studies and assist with project business case development, and technical advice to de-risk projects	High	Med	Low	<£1m	Business is resource constrained but external help can unlock action

The next steps

Medium Priority Recommendations

Recommendation	Priority	Timescale	Difficulty	Investment needed	Impact/Comment
Undertake discussions with other regions to form cluster of clusters. Collaborate with Northern energy hubs.	Med	Short	Low - Med	<£100k	In some areas, greater impact by working together
Survey of local businesses and future trends in core EII and renewable industries – identify and proactively develop new training offers. Bolster regional engineering level training and development.	Med	Short	Low	<£100k	Already underway but stay ahead of the game – part of placing Humber in leadership position.
Seek funding for a Process Industries Testing hub	Med	Short	High	£multi-million	Could make Humber a real front runner in industrial decarbonisation agenda.
Seek industry support to work with BEIS as a leader in the implementing 2050 decarbonisation action plans across sectors. Provide appropriate incentive e.g. co-funding for technical assistance and R&D.	Med	Med	High	<£1m - £multi-million	Will be difficult to achieve but could driver forward industry is local players persuaded to engage.
Implement Symbiosis Incubator	Med	Med	Med	<£1m	Very high potential but time needed to realise benefits.
Implement Novel Business Models Accelerator	Med	Med	High	<£1m	Could prove to be a role model for other regions.
Review of enterprise zone effectiveness – can further encouragement be given to underperforming zones? Identify new areas that can be proposed for EZ status e.g. Saltend?	Med	Med	Med	<£100k	Setting up new zones is a long-term activity – but could bring significant expansion of process industries
Implement programme of measures through the ports to further increase sustainability. Complete the EcoPorts Self-Diagnosis to determine environmental benchmarks and consider applying for Eco Port certification Post to consider signing up to Green Award scheme for shipping	Med	Med	Low	<£100k	Could raise ports profile and attractiveness for inwards investment.

The next steps

Regional and National

Regional Working Group includes:

- Humber LEP
- Local Authorities
- CATCH
- Greenport Hull

Humber LEP Industrial Strategy and workshop

Input to CGP strategic activity

Support to Chems NW planned study and other regions, possibly leading to a National Cluster Study drawing from all regions?

Conclusion – the Study has presented a huge potential for regional and national deliverables to support EII but how is the work to be funded and resourced?