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ENERGY AND CLIMATE CHANGE ●  
ENVIRONMENT AND SUSTAINABILITY  
INFRASTRUCTURE AND UTILITIES  
LAND AND PROPERTY  
MINING, QUARRYING AND MINERAL ESTATES  
WASTE RESOURCE MANAGEMENT

Business Area  
**capability statement**



Energy and Climate Change  
AUGUST 2009

*your earth our world*





Wardell Armstrong LLP is a leading multidisciplinary consultancy, providing a comprehensive and diverse set of professional services to a broad client base .

With a unique mix of practical skills, knowledge and experience we work closely with our clients in the public and private sectors. We support and help them to realise the full potential and value of their resources and assets, gain increased business and financial returns from the environments they own and operate, and succeed in their ventures in a responsible and sustainable way.

Building on a strong heritage dating back more than 170 years, our portfolio has expanded and developed over the past two decades to reflect major global issues including international mining, climate change, renewable energy and environmental protection.

### **Our business areas:**

Energy and Climate Change  
Environment and Sustainability  
Infrastructure and Utilities  
Land and Property  
Mining, Quarrying and Mineral Estates  
Waste Resource Management

### **Our services:**

Civil & Structural Engineering  
Energy  
Environment and Environmental Impact Assessment  
Ground and Environmental Engineering  
Health and Safety  
Landscape and Urban Design  
Mineral Estates Management  
Mining and Mineral Resources  
Planning and Masterplanning  
Social Management CSR  
Waste Resource Management

### **Our key skills and capabilities:**

#### **An independent approach**

We're an independent Limited Liability Partnership, owned and led by our Directors, with no vested interest in any particular technology, supplier or contractor.

#### **Deep experience, wide expertise**

With a long and successful history of close involvement in projects over many decades, we've built an impressive track record and a reputation for high quality service, both in the UK and internationally.

#### **Flexible**

We tailor what we do to each client's individual needs and preferences. Whatever your involvement and speciality, we can help – either on a specific aspect of your project; or at every stage of the process from conception to completion.

#### **UK network**

Our 350 professional, technical and administrative staff, based at our Stoke-on-Trent head office and across our network of nine regional offices throughout the UK, combine an understanding of local and regional contexts with national and international expertise.

#### **International reach**

We have long experience of working in a wide variety of cultures and socio-economic environments. Our specialists work across the globe, on a variety of technically demanding projects, often in very challenging geographical locations.

We're ready to put our unique mix of professional skills and experience to work for you - and to become part of your team.

# Energy and Climate Change



## Overview

The issues of energy and climate change are key to the worlds' continued and sustainable economic growth. They affect everyone - from individual households and local authorities to multinational companies. Since carbon has now been identified as the primary currency to evaluate the sustainability of future development, this business area relates to anything that involves the production or reduction of greenhouse gases, termed CO2 equivalents.



## Markets and clients

We work with utility companies, energy project and land developers, landowners, and the venture capital sector where entrepreneurs have identified opportunities to invest in novel and emerging sustainable technologies.

We support local and regional government organisations who need assistance with their sustainable energy strategies and carbon management plans.

We also provide services to smaller developers, businesses and farm scale operations, in areas such as wind energy, energy from waste, biomass, biofuels, and building integrated renewables.

## Why it's important

Continued dependence on fossil fuels to meet future energy requirements is not an option. Although nuclear may provide a long term option for energy supply, renewable energy is needed as an immediate and continuing replacement. This driver will increase as a consequence of the international conference at Copenhagen, to continue and develop the treaties agreed at Kyoto.

The UK government encourages the use of renewable energy through policy mechanisms, subsidies and grants which provide major incentives to develop renewable energy projects. Such developments frequently require expert advice and consultancy services at all stages of their life cycle.

The legislative and policy framework, both nationally and regionally, requires that all aspects of sustainable development are considered at the planning stage.

## The value we add

Our experienced, expert staff are well known in the industry. They understand the technology and economics of renewable energy and carbon management, as well as the detail of options available. They have real experience in delivering successful projects, and are able to offer a complete package including impartial advice.

We have extensive experience of the planning and regulatory system throughout the UK. Successful development in the renewable sector requires close integration between technology and environmental specialists, and our teams supply the integrated expertise required for this approach.

## How are we different?

We're able to offer advice on all renewable energy technologies and related areas, including waste management, the built environment, brown field site redevelopment, energy infrastructure, planning, EIA and environmental permitting.

We pride ourselves on being innovative and flexible in our approach. This includes partnering with clients to ensure that we truly understand their aims and objectives, and developing project-specific teams to deliver timely and cost effective results.



## Areas of expertise

Within a broad range of expertise, particular areas of speciality are:

- Wind farms – site identification (GIS), feasibility studies, site design, planning, EIA and performance monitoring
- Anaerobic digestion – financial assessment, planning, environmental impact assessment and permitting
- Building integrated renewables – demand assessments, technology fit and costings
- Biomass CHP - feasibility studies, design, planning, EIA
- Renewable energy evidence bases for planning policy development.
- Carbon footprinting and management
- Business process re-engineering

## Our experience and track record

Whilst our roots lie in the provision of services to the coal industry - from exploration, extraction, and utilisation for power generation to ground remediation and reclamation - we also recognise that the coal industry has resulted in major pollution and environmental liabilities in the UK and internationally, with energy production from coal now one of the key drivers of climate change. Our environmental engineers and scientists have therefore responded by developing expertise to deal with this legacy.

This response includes the development of skills specifically aimed at reducing the carbon footprint from coal powered generation - for example advising on coalbed methane utilisation. We're also actively involved in a number of R&D activities linked with academic institutions – such as clean coal technologies research linked with carbon sequestration with partners at Keele University. This builds on our knowledge of coal mining technology, recognising that coal (despite some inherent disadvantages) can continue to be an important resource for energy generation for the foreseeable future.

### Renewable energy

This is now an important sector where we offer a wide range of services to our clients. Our specialists were instrumental in the development of the first wind farms in the UK and have been involved in many since. We've also been integral in the development of the GIS resource/constraint database which provides the

framework for Regional Government and local targets for renewable energy generation in the South West.

We offer a proven, complete and integrated service for the wind farm sector, from site identification and feasibility studies to planning and EIA, construction audits, habitat management and ongoing environmental and performance monitoring.

We offer specialist advice in the use of biofuels and biomass, including the development and operation of biodiesel plants, with specific specialists in environmental permitting, health and safety and occupational hygiene. We've undertaken a range of feasibility studies for energy from biomass and waste (for instance a feasibility study for Scottish Executive Borders for biomass CHP), and the detailed studies required for planning permission and permitting.

In undertaking these projects, we've developed specialist expertise in the advanced thermal processes for energy generation by pyrolysis, gasification, advanced gas plasma and anaerobic digestion. This has involved an integrated approach to small scale power generation associated with reclamation of post industrial, mineral and waste sites. As part of comprehensive sustainability appraisals of developments, we've also prepared strategies for the integration of renewable energy into new developments to achieve the targets for embedded renewable energy generation.



Involvement with regional government agencies has allowed us to develop working relationships with SMEs focusing on the reduction of the use of natural resources and diversion of waste from landfill. We've also successfully facilitated the start-up of renewable supply chains, and undertaken energy and resource assessments to define carbon footprints. We're an active member of the Environmental Industry Commission (EIC) Carbon Trading Group that lobbies and advises central government on climate change and carbon trading issues.

### Climate change

The UK governments' commitment to achieving carbon reduction targets to limit the impact of climate change

### Results

We help our clients who are looking to address challenging CO2 reduction targets to tackle complex issues in the areas of government policy and technology.

We resolve these issues by applying in-depth understanding and expertise, and creating pragmatic solutions that deliver successful results.

requires the public and private sectors to work together to achieve this goal. Our range of innovative solutions is helping to address the impact and dynamic problems caused by climate change, and we're committed to providing solutions that reduce its threat. To this end we've established a multidisciplinary team of specialists to co-ordinate our skill sets across all aspects of our business.

For examples of projects we've undertaken in this, and our other business areas and service areas, please visit our website at [www.wardell-armstrong.com](http://www.wardell-armstrong.com)



STOKE-ON-TRENT  
Sir Henry Doulton House  
Forge Lane  
Etruria  
Stoke-on-Trent  
ST1 5BD  
Tel: +44 (0)845 111 7777

CARDIFF  
22 Windsor Place  
Cardiff  
CF10 3BY  
Tel: +44 (0)29 2072 9191

EDINBURGH  
Suite 2/3, Great Michael House  
14 Links Place  
Edinburgh  
EH6 7EZ  
Tel: +44 (0)131 555 3311

GREATER MANCHESTER  
2 The Avenue  
Leigh  
Greater Manchester  
WN7 1ES  
Tel: +44 (0)1942 260101

LIVERPOOL  
14 Hurricane Drive  
Estuary Business Park  
Speke  
Liverpool  
L24 8RL  
Tel: +44 (0)151 494 5431

LONDON  
Sutherland House  
5-6 Argyll Street  
London  
W1F 7TE  
Tel: +44 (0)20 7287 2872

NEWCASTLE UPON TYNE  
City Quadrant  
11 Waterloo Square  
Newcastle upon Tyne  
NE1 4DP  
Tel: +44 (0)191 232 0943

SHEFFIELD  
Unit 4  
Newton Business Centre  
Newton Chambers Road  
Thornccliffe Park  
Chapelton  
Sheffield  
S35 2PH  
Tel: +44 (0)114 245 6244

TRURO  
Wheal Jane  
Baldhu  
Truro  
Cornwall  
TR3 6EH  
Tel: +44 (0)1872 560738

WEST BROMWICH  
Thynne Court  
Thynne Street  
West Bromwich  
West Midlands  
B70 6PH  
Tel: +44 (0)121 580 0909

International offices:

ALMATY  
Office 515  
43 Dostyk Avenue  
Almaty  
Kazakhstan  
050010  
Tel: +77 273341310

BEIJING  
1321 Golden Land Building  
No. 32 Lian Ma Qiao Road  
Chaoyang District  
Beijing  
China  
Tel: +86 (0)10 64 64 6118