

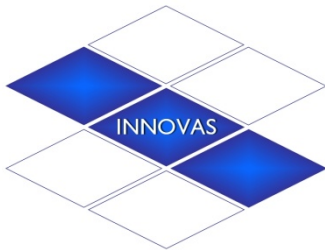
Skills Forecasting for the Low Carbon Sector

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Innovas Solutions Ltd

12th May 2009

Introduction

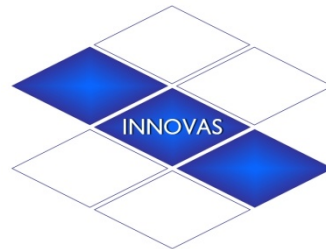


- **Who we are**
- **What we do**
- **How we do it**
- **Some Findings**



Innovas

- **Consultancy focused on the Environmental and Renewable Energy sectors**
- **Clients in both the public and private sectors**
- **Large group of associates and partners for specialised knowledge of sub sectors, regional, national and international markets**
- **Combination of hard market data, sector and international trade experience providing both quantitative and qualitative approaches**



KMatrix

- **kMatrix Ltd provides high quality business intelligence products and services to corporate, financial and professional markets in Europe and the US**
- **USP is delivering unique data and analytical processes for measuring and managing business risk**



The BERR Report

- Sector defined to 2,500 discrete product group lines
- Market value, company and employment numbers and growth levels
- Full Global Market Analysis with top 52 countries to 2,500 lines plus break down into regions
- Focus on UK and Regions
- Growth of individual sub sectors – employment levels
- What is not in the BERR report is company profiling information

Regional Studies

- Sector defined to between 720 and 2,500 discrete product group lines or specific sub sector or technology areas
- Market value, company and employment numbers and growth levels
- Training and educational facilities
- Regional and sub regional growth of individual sub sectors and technology areas
- Current and future skills gaps or retraining
- Assessment of other key sectors competing for skills

Sector Employment & Skills

Table E.2 Current Occupational Base (by Occupational Group and Sub Sector)

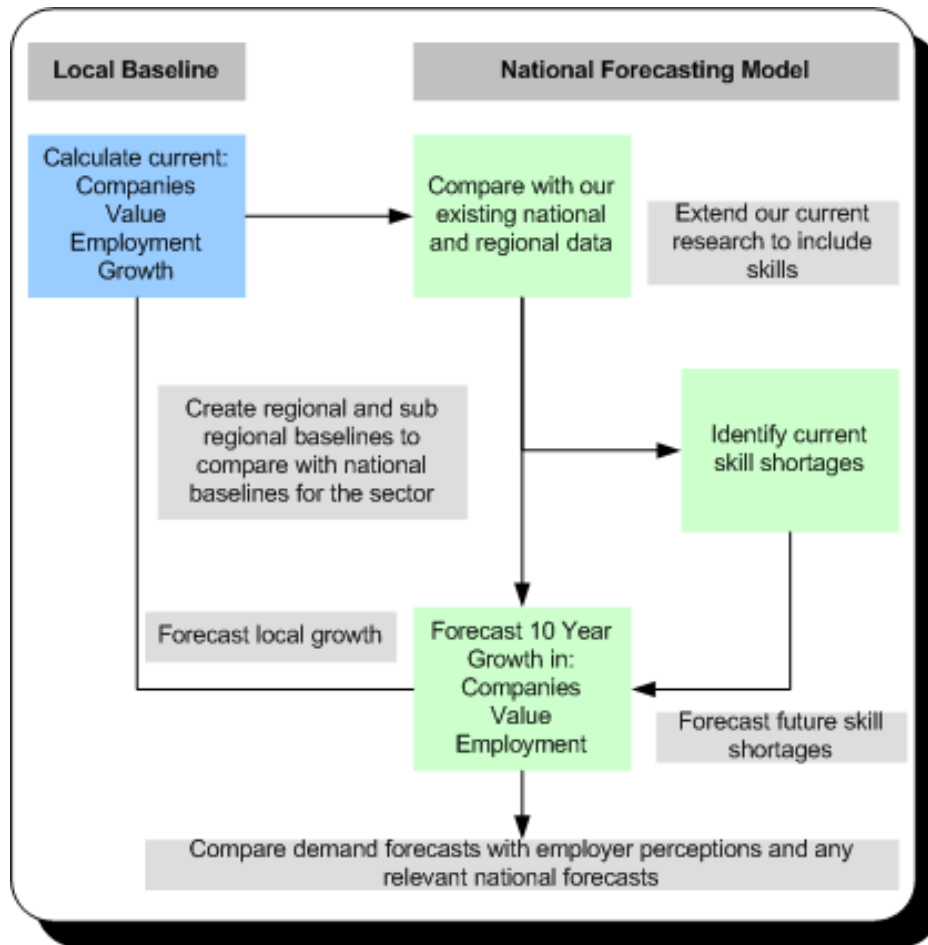
| Current Occupational groups | Sub Sectors | | | | | | | | | | | | | Total | % Total |
|---|-------------|------------|------------|------------|------------|-------------|-------------|------------|-------------|-------------|-------------|------------|-------------|--------------|--------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | | |
| Technicians | 35 | 125 | 85 | 38 | 46 | 58 | 68 | 65 | 62 | 138 | 274 | 25 | 126 | 1145 | 7.9 |
| Snr Management Large Firms | 12 | 28 | 31 | 11 | 16 | 38 | 16 | 8 | 25 | 61 | 135 | 11 | 34 | 426 | 2.9 |
| Snr Management SME | 16 | 72 | 84 | 54 | 49 | 135 | 254 | 42 | 86 | 216 | 212 | 38 | 342 | 1600 | 11.0 |
| Supervisory | 18 | 48 | 51 | 48 | 60 | 216 | 305 | 63 | 145 | 322 | 326 | 26 | 325 | 1953 | 13.4 |
| Middle / Junior Management Designer / Developer | 25 | 59 | 64 | 66 | 56 | 284 | 251 | 125 | 164 | 284 | 264 | 44 | 403 | 2089 | 14.4 |
| Clerical | 35 | 126 | 135 | 158 | 172 | 358 | 407 | 116 | 429 | 265 | 524 | 125 | 526 | 3376 | 23.2 |
| Self Employed | 12 | 16 | 16 | 32 | 35 | 114 | 377 | 218 | 140 | 230 | 205 | 110 | 400 | 1905 | 13.1 |
| Advisor or Agent | 15 | | | | | | | | | | | | | 15 | 0.1 |
| Educator | 10 | | | | | | | | | | | | | 10 | 0.1 |
| Specialist or Consultant | 24 | 35 | 32 | 53 | 26 | 25 | 52 | 224 | 54 | 63 | 122 | 35 | 62 | 807 | 5.6 |
| Editor | 5 | | | | | | | | | | | | 28 | 33 | 0.2 |
| Researchers | 11 | 16 | 11 | 24 | 14 | 14 | 14 | 25 | 35 | 31 | 60 | 11 | 12 | 278 | 1.9 |
| Environmental Scientist | 14 | 12 | 14 | 26 | 15 | 12 | | 11 | | | | | 4 | 108 | 0.7 |
| Microbiologist | 11 | 15 | 15 | | | | | | | | | | | 41 | 0.3 |
| Toxicologist | 12 | 7 | 8 | | 7 | 4 | | | | | | | | 38 | 0.3 |
| Environmental Officer | | 5 | | | | | | | | | | | | 5 | 0.0 |
| Environmental Specialist | | 11 | | 39 | 36 | 25 | | 26 | 16 | 14 | 18 | 14 | 51 | 250 | 1.7 |
| Scientist | | 7 | 8 | 9 | 6 | 7 | | 11 | 25 | 22 | 25 | 6 | 18 | 144 | 1.0 |
| Environmental Education Officer | | | | | | | | | | | | | | | 0.0 |
| Environmental Health Officer | | | | | | | | | | | | | | | 0.0 |
| Total | 255 | 582 | 558 | 569 | 538 | 1304 | 1802 | 962 | 1219 | 1688 | 2199 | 465 | 2399 | 14540 | 100.0 |
| % of total | 1.8 | 4.0 | 3.8 | 3.9 | 3.7 | 9.0 | 12.4 | 6.6 | 8.4 | 11.6 | 15.1 | 3.2 | 16.5 | 100 | |

Sub Sector Skill Set Change

| E1 Hardware | | | | | |
|----------------------------|--|---------|--|--|---------|
| Occupation | Current Skills | Numbers | Driver for Change | Additional Skills Required 2-3 years | Numbers |
| Technicians | Systems integration, Digital communication & Systems protocols | 60 | Higher levels of supply chain integration, Digital technologies | Digital communications, Inner media data transfer, Remote system integration | 25 |
| Snr Management Large Firms | Spread sheets, Internet, basic Computing | 20 | Flatter organisational structures | Human management skills, Virtual & 3D data modelling | 25 |
| Snr Management SME | Spread sheets, Business systems, Office systems, Internet | 10 | Faster product development, High market demand | Change management, data modelling, Virtual working, Internet | 15 |
| Supervisory | Data entry, Basic work station skills, Team building | 15 | Convergence of media, Shorter lead times | Data management skills, Advanced O.T.P Training (distance) | 22 |
| Middle / Junior Management | Internet, Spread sheets, Data modelling, Supply chain management | 10 | Integration of supply chains, High speed production | Supply modelling, Virtual working, Media integration | 0 |
| Designer / Developer | CAD 2D and 3D, Inner design techniques | 25 | Integration of supply chains | Virtual working, High level design and modelling, Inner design | 30 |
| Clerical | Basic data base management, O.T.P | 10 | Data driven, Sales and marketing | Advanced data base management, Basic data management systems, Accessibility, e.g. Access | 15 |
| Self Employed | Business systems, Spread sheets, Accounts packages, Business networking, Multi Platform Applications | 20 | Supply chain integration | Business integration in digital technologies, Graphic design | 25 |
| Tech Support | Multi Platform Applications | 40 | Wider spread markets and customers | Remote help & Media, Interactive services | 60 |
| Technical Advisor | Systems Applications | 20 | Higher rates of new product introduction | Systems integration, Multi technology Applications | 45 |
| IT Solution Delivery | Business operations | 20 | Further integration of business operations through the chain of supply | Supply Chain based business operations | 30 |
| Technician | Multi Platform Applications | 15 | Wider spread markets and customers | Remote help & Media, Interactive services | 25 |
| Corporate Account Mgr | Virtual Office Working | 10 | Reduction in Central Facilities & Overheads | Virtual Office Working, Multi media links | 15 |

We use skills templates, industry benchmarks and regional financial/ employment data to identify and quantify the impact of market change on the current and future sector workforce

Skills Forecasting Model



Draws on current sector baselines and unique regional business mix

Identifies occupational groups in detail by market activity (Level 3)

Calculates current employment levels/ shortages by occupational group and market activity

Models growth scenarios and impact on employment by occupational group/ market, identifying gaps

Identifies new key skill requirements due to market shift

Occupational Group Mapping

| Current | Sub Sectors | | | | | | | | | | | | | | |
|---------------------------------|-------------|------------|------------|------------|------------|-------------|-------------|------------|-------------|-------------|-------------|------------|-------------|--------------|--------------|
| Occupational groups | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total | % Total |
| Technicians | 35 | 125 | 85 | 38 | 46 | 58 | 68 | 65 | 62 | 138 | 274 | 25 | 126 | 1145 | 7.9 |
| Snr Management Large Firms | 12 | 28 | 31 | 11 | 16 | 38 | 16 | 8 | 25 | 61 | 135 | 11 | 34 | 426 | 2.9 |
| Snr Management SME | 16 | 72 | 84 | 54 | 49 | 135 | 254 | 42 | 86 | 216 | 212 | 38 | 342 | 1600 | 11.0 |
| Supervisory | 18 | 48 | 51 | 48 | 60 | 216 | 305 | 63 | 145 | 322 | 326 | 26 | 325 | 1953 | 13.4 |
| Middle / Junior Management | 25 | 59 | 64 | 66 | 56 | 284 | 251 | 125 | 164 | 284 | 264 | 44 | 403 | 2089 | 14.4 |
| Designer / Developer | | | 4 | 11 | | 14 | 58 | 28 | 38 | 42 | 34 | 16 | 72 | 317 | 2.2 |
| Clerical | 35 | 126 | 135 | 158 | 172 | 358 | 407 | 116 | 429 | 265 | 524 | 125 | 526 | 3376 | 23.2 |
| Self Employed | 12 | 16 | 16 | 32 | 35 | 114 | 377 | 218 | 140 | 230 | 205 | 110 | 400 | 1905 | 13.1 |
| Advisor or Agent | 15 | | | | | | | | | | | | | 15 | 0.1 |
| Educator | 10 | | | | | | | | | | | | | 10 | 0.1 |
| Specialist or Consultant | 24 | 35 | 32 | 53 | 26 | 25 | 52 | 224 | 54 | 63 | 122 | 35 | 62 | 807 | 5.6 |
| Editor | 5 | | | | | | | | | | | | 28 | 33 | 0.2 |
| Researchers | 11 | 16 | 11 | 24 | 14 | 14 | 14 | 25 | 35 | 31 | 60 | 11 | 12 | 278 | 1.9 |
| Environmental Scientist | 14 | 12 | 14 | 26 | 15 | 12 | | 11 | | | | 4 | | 108 | 0.7 |
| Microbiologist | 11 | 15 | 15 | | | | | | | | | | | 41 | 0.3 |
| Toxicologist | 12 | 7 | 8 | | 7 | 4 | | | | | | | | 38 | 0.3 |
| Environmental Officer | | 5 | | | | | | | | | | | | 5 | 0.0 |
| Environmental Specialist | | 11 | | 39 | 36 | 25 | | 26 | 16 | 14 | 18 | 14 | 51 | 250 | 1.7 |
| Scientist | | 7 | 8 | 9 | 6 | 7 | | 11 | 25 | 22 | 25 | 6 | 18 | 144 | 1.0 |
| Environmental Education Officer | | | | | | | | | | | | | | | 0.0 |
| Environmental Health Officer | | | | | | | | | | | | | | | 0.0 |
| Total | 255 | 582 | 558 | 569 | 538 | 1304 | 1802 | 962 | 1219 | 1688 | 2199 | 465 | 2399 | 14540 | 100.0 |
| % of total | 1.8 | 4.0 | 3.8 | 3.9 | 3.7 | 9.0 | 12.4 | 6.6 | 8.4 | 11.6 | 15.1 | 3.2 | 16.5 | 100 | |

Skills/Employment Analysis

Shift in
Occupational
Skills over time

Competing
demands across
different sectors

Future
Skills

Potential skills/
occupational
gaps

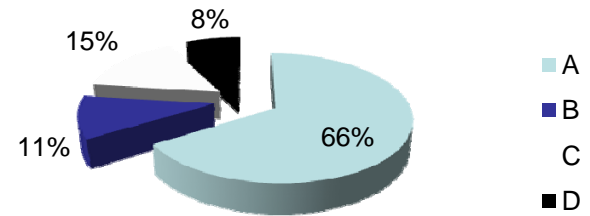
Changing
employment
levels

Sub Regional Sector Analysis

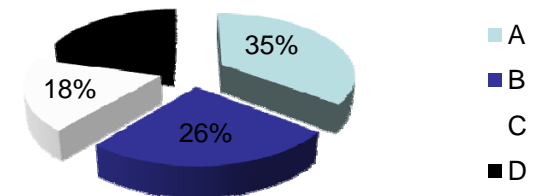
| | A | C |
|---------------------------|----------------|----------------|
| Air Pollution | 78.39 | 19.99 |
| Environmental Consultancy | 23.63 | 31.92 |
| Environmental Monitoring | 8.16 | 8.95 |
| Marine Pollution Control | 10.94 | 5.53 |
| Noise & Vibration control | 7.77 | 7.89 |
| Contaminated Land | 66.91 | 0.72 |
| Waste Management | 356.58 | 128.48 |
| Water and Waste Water | 385.27 | 258.24 |
| Recovery and Recycling | 398.69 | 157.88 |
| Energy Management | 165.65 | 61.21 |
| Hydro | 34.80 | 5.10 |
| Wave & Tidal | 3.17 | 0.97 |
| Biomass | 401.56 | 39.53 |
| Wind | 1342.37 | 24.02 |
| Geothermal | 721.56 | 80.16 |
| Photovoltaic | 317.60 | 32.00 |
| Alternative Fuel Vehicle | 730.11 | 0.00 |
| Alternative Fuels | 1133.34 | 442.73 |
| Building Technologies | 1074.30 | 391.30 |
| Additional Energy sources | 122.50 | 0.00 |
| Total | 7383.30 | 1696.61 |



Market Value by Sub Region and by Sector



Companies by Sub Region and by Sector



Regional analysis can be used to identify the unique business mix for each sub region, quantify their relative strengths and weaknesses and suggest local business support needs.

Example – Renewable Energy

| | Hydro | Wave & Tidal | Biomass | Wind | Geothermal | Photovoltaic | Bio fuel | Total | % of Total |
|-----------------------------|-----------|--------------|------------|------------|------------|--------------|------------|-------------|------------|
| Technicians | 18 | 0 | 69 | 169 | 98 | 48 | 96 | 498 | 24.2 |
| Snr Management Large Firms | 0 | 0 | 0 | 5 | 0 | 2 | 0 | 7 | 0.3 |
| Snr Management SME | 7 | 0 | 18 | 19 | 17 | 15 | 31 | 107 | 5.2 |
| Supervisory | 0 | 0 | 14 | 30 | 35 | 9 | 5 | 93 | 4.5 |
| Middle / Junior Management | 0 | 0 | 4 | 19 | 28 | 7 | 1 | 59 | 2.9 |
| Designer / Developer | 0 | 0 | 16 | 48 | 33 | 13 | 16 | 126 | 6.1 |
| Clerical | 3 | 0 | 18 | 25 | 30 | 15 | 26 | 115 | 5.6 |
| Self Employed | 6 | 18 | 4 | 16 | 19 | 4 | 0 | 67 | 3.3 |
| Advisor or Agent | 0 | 0 | 2 | 4 | 3 | 3 | 0 | 12 | 0.6 |
| Educator | 0 | 0 | 2 | 3 | 3 | 1 | 0 | 9 | 0.4 |
| Specialist or Consultant | 0 | 0 | 7 | 22 | 87 | 8 | 24 | 148 | 7.2 |
| Editor | 0 | 0 | 1 | 2 | 2 | 1 | 0 | 6 | 0.3 |
| Industrial Researchers | 0 | 0 | 6 | 11 | 22 | 24 | 31 | 94 | 4.6 |
| Scientist | 1 | 0 | 5 | 9 | 11 | 12 | 10 | 48 | 2.3 |
| Maintenance Engineer | 5 | 0 | 40 | 94 | 27 | 8 | 2 | 176 | 8.6 |
| Civil Engineer | 0 | 0 | 0 | 9 | 5 | 0 | 0 | 14 | 0.7 |
| Production Engineer | 1 | 0 | 15 | 16 | 6 | 5 | 0 | 43 | 2.1 |
| Power Distribution Engineer | 0 | 0 | 0 | 35 | 1 | 7 | 0 | 43 | 2.1 |
| Construction Engineer | 0 | 0 | 0 | 26 | 2 | 0 | 0 | 28 | 1.4 |
| Sales Exec | 0 | 0 | 24 | 20 | 39 | 4 | 0 | 87 | 4.2 |
| Marketing Personnel | 0 | 0 | 4 | 1 | 10 | 0 | 0 | 15 | 0.7 |
| Semi Skilled | 1 | 1 | 24 | 141 | 56 | 38 | 0 | 261 | 12.7 |
| TOTAL | 42 | 19 | 271 | 724 | 534 | 224 | 242 | 2056 | 100.0 |

Skills Needs

| Occupational Group | Current Posts | New Posts | Increase in Posts | % Post increase | Increased Skills Current Posts | %Current Posts needing new skills |
|-----------------------------|---------------|-----------|-------------------|-----------------|--------------------------------|-----------------------------------|
| Technicians | 498 | 1045 | 547 | 110 | 155 | 31 |
| Snr Management Large Firms | 7 | 13 | 6 | 86 | 3 | 43 |
| Snr Management SME | 107 | 187 | 80 | 75 | 23 | 21 |
| Supervisory | 93 | 176 | 83 | 89 | 25 | 27 |
| Middle / Junior Management | 59 | 97 | 38 | 64 | 11 | 19 |
| Designer / Developer | 126 | 254 | 128 | 102 | 52 | 41 |
| Clerical | 115 | 118 | 3 | 3 | 3 | 3 |
| Self Employed | 67 | 113 | 46 | 69 | 17 | 25 |
| Advisor or Agent | 12 | 17 | 5 | 42 | 2 | 17 |
| Educator | 9 | 13 | 4 | 44 | 2 | 22 |
| Specialist or Consultant | 148 | 271 | 123 | 83 | 52 | 35 |
| Editor | 6 | 9 | 3 | 50 | 1 | 17 |
| Industrial Researchers | 94 | 185 | 91 | 97 | 32 | 34 |
| Scientist | 48 | 86 | 38 | 79 | 13 | 27 |
| Maintenance Engineer | 176 | 307 | 131 | 74 | 44 | 25 |
| Civil Engineer | 14 | 27 | 13 | 93 | 5 | 36 |
| Production Engineer | 43 | 66 | 23 | 53 | 10 | 23 |
| Power Distribution Engineer | 43 | 72 | 29 | 67 | 10 | 23 |
| Construction Engineer | 28 | 38 | 10 | 36 | 2 | 7 |
| Sales Exec | 87 | 154 | 67 | 77 | 9 | 10 |
| Marketing Personnel | 15 | 25 | 10 | 67 | 2 | 13 |
| Semi Skilled | 261 | 288 | 27 | 10 | 16 | 6 |
| TOTAL | 2056 | 3561 | 1505 | 73 | 489 | 24 |

Gaps & Shortfalls

| Occupational Group | Posts | Vacs | Gaps | % shortfall |
|-----------------------------|-------------|------------|-----------|-------------|
| Technicians | 498 | 34 | 11 | 9 |
| Snr Management Large Firms | 7 | 1 | 0 | 14 |
| Snr Management SME | 107 | 16 | 4 | 19 |
| Supervisory | 93 | 6 | 2 | 9 |
| Middle / Junior Management | 59 | 5 | 2 | 12 |
| Designer / Developer | 126 | 10 | 3 | 10 |
| Clerical | 115 | 15 | 5 | 17 |
| Self Employed | 67 | 8 | 3 | 16 |
| Advisor or Agent | 12 | 2 | 0 | 17 |
| Educator | 9 | 2 | 0 | 22 |
| Specialist or Consultant | 148 | 20 | 7 | 18 |
| Editor | 6 | 1 | 0 | 17 |
| Industrial Researchers | 94 | 7 | 2 | 10 |
| Scientist | 48 | 11 | 5 | 33 |
| Maintenance Engineer | 176 | 12 | 4 | 9 |
| Civil Engineer | 14 | 3 | 2 | 36 |
| Production Engineer | 43 | 5 | 2 | 16 |
| Power Distribution Engineer | 43 | 12 | 4 | 37 |
| Construction Engineer | 28 | 7 | 2 | 32 |
| Sales Exec | 87 | 7 | 1 | 9 |
| Marketing Personnel | 15 | 2 | 0 | 13 |
| Semi Skilled | 261 | 16 | 4 | 8 |
| TOTAL | 2056 | 202 | 63 | 13 |

UK Employment Numbers

| Level 1 | Total Emp | Specialist Emp | Specialist Emp as % | Man Emp | Man Emp as % |
|------------------------------|----------------|----------------|---------------------|----------------|--------------|
| Environmental Sub Sectors | 192,000 | 93,000 | 48.4 | 38,900 | 20.3 |
| Renewable Energy Sub Sectors | 257,000 | 147,100 | 57.2 | 102,000 | 39.7 |
| Low Carbon Sub Sectors | 432,300 | 205,300 | 47.5 | 131,500 | 30.4 |
| Total All Sub Sectors | 881,300 | 445,400 | 50.5 | 272,400 | 30.9 |

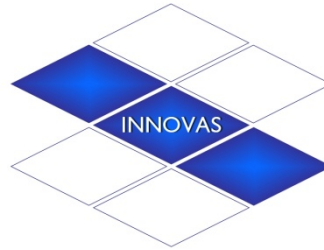
UK Growth Levels

Forecast Growth Rates - December 2008

| | 2007/8 | 2008/9 | 2009/10 | 2010/11 | 2011/ 2012 | 2012/2013 | 2013/2014 | 2014/2015 |
|------------------------------|-------------|-------------|-------------|-------------|---------------|-------------|-------------|-------------|
| Environmental Sub Sectors | 2.87 | 2.47 | 2.49 | 2.82 | 3.00 | 3.03 | 3.07 | 3.11 |
| Renewable Energy Sub Sectors | 6.68 | 6.13 | 6.23 | 7.09 | 7.61 | 7.76 | 7.92 | 8.09 |
| Low Carbon Sub Sectors | 5.41 | 4.69 | 4.74 | 5.34 | 5.68 | 5.74 | 5.79 | 5.86 |
| Total All Sub Sectors | 5.25 | 4.66 | 4.74 | 5.38 | 5.76 | 5.87 | 5.98 | 6.10 |

UK Summary

- Growth of 45% to 2015
- Increase in employment of about 400,000 including supply chain
- Largest increases in Renewable Energy and Low Carbon Technologies
- Trends are still showing positive growth rates though growth rate is declining for next few years



Thank you

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