



Department
for Business
Innovation & Skills

**ADAPTATION AND RESILIENCE
(CLIMATE CHANGE)
(A&RCC)**

Report for 2011/12

JULY 2013

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1. Introduction

This is the third report on Adaptation & Resilience for Climate Change (A&RCC) and covers the period 2011/12. The first report was a joint BIS/ Defra and DECC research brief for 2009/ 10 and included a requirement to identify and measure A&RCC activities in the UK and the wider global economy. The definition of A&RCC was provided by Defra as part of the original brief for this research. An initial list of A&RCC activities to be investigated was also provided by Defra and these included:

- Construction & Retrofit
- Finance, Investment & Insurance
- Risk Management & Business Continuity
- Urban Environment Redesign & Re-Engineering
- Sustainable Drainage & Water Management
- Energy Storage Infrastructure Resilience
- Transport Infrastructure & Logistics Resilience, and
- Water Irrigation & Foot Printing.

A more detailed breakdown of each A&RCC activity is included at Appendix A.

In the 2009/10 report A&RCC economic activities were examined in two contexts. The first was an estimation of the value of the "new" A&RCC activities listed above. These activities were being researched and quantified for the first time. The second was an estimation of the A&RCC content of the activities included in the Low Carbon & Environmental Goods and Services (LCEGS) sector for BIS. LCEGS activities have been measured for a number of years, but this was the first attempt to calculate the proportion of LCEGS economic value that could be attributed to A&RCC. The results of this analysis can be found in the 2009/10 A&RCC report.

The 2009/10 report recorded a number of observations about the pilot analysis of A&RCC activities. The key observation was that measuring the intended use of established/ new products and services specifically for their A&RCC purpose requires much more detailed analysis than just reporting "headline" sales, where the sales figure contains many different purchasing "intents." It was agreed that, for this reason, the 2009/10 analysis overstated the economic value of A&RCC activity, but by how much was uncertain. It was also agreed that further and deeper analysis of A&RCC activities would be required in the future and that analysis is a key feature of the 2010/11 and 2011/12 reports, where the focus has been upon establishing a more robust methodology for measuring the economic value of the "new" A&RCC activities listed above.

2. Methodology

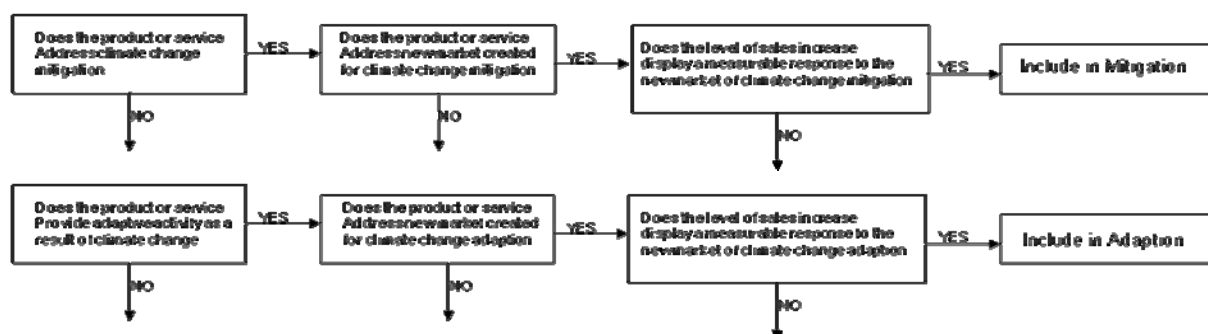
2.1 Methodology

The analysis of A&RCC economic activity is based upon an existing methodology employed for estimating the LCEGS (and other) UK sectors. This methodology is used to define and quantify unobserved or "difficult-to-measure" markets where standard statistical data sources are non-existent, restricted or rapidly out-dated. This is achieved by identifying, evaluating, interpreting and transforming multiple data sources to estimate new values and by using a rules-based approach to collecting, assessing, selecting and then managing these data sources. A detailed explanation of the standard methodology is outlined in the LCEGS 2011/12 report and, for brevity, is not repeated here.

While this methodology is not new, and has been applied to a wide variety of economic activities and markets, what is new is the decision making criteria used to decide if an economic activity should be considered as adaptive or resilient and, therefore, included in this research. This method for determining A&RCC was developed in 2009/10 and was revised in 2010/11.

The model at Figure 1 was applied to the A&RCC activities identified by Defra. It takes into account both Adaptation to and Mitigation of climate change. It is a triple-gate approach that addresses the claim for A&RCC (Step 1), the intent to create new A&RCC market rather than create a substitution effect for existing goods and services (Step 2) and finally, the A&RCC economic impact i.e. is it measurable and significant. The most critical stage in the model is Step 2, trying to isolate the "intent" of use for products and services that may have multiple functions and applications.

Figure 1: Decision Model



While the decision making model provides a valid route to defining A&RCC activity, it is this isolation of intent or purpose that was found deficient in the 2009/10 analysis because of the level of product and service detail at which it was being applied.

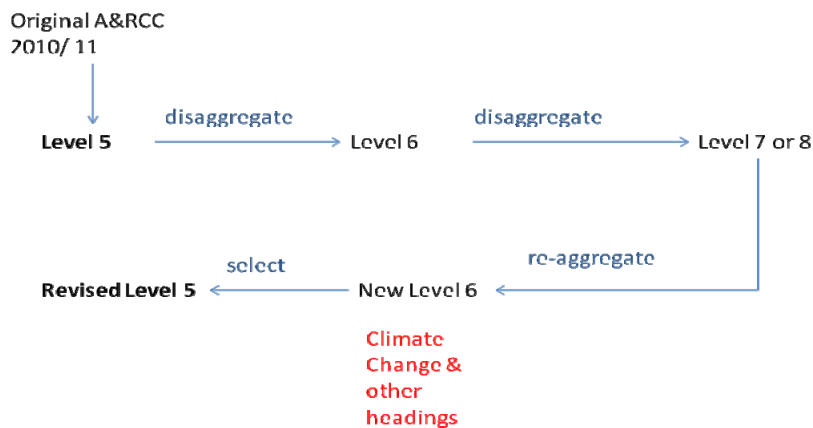
2.2 New Research Model for Isolating A&RCC Content

Product and service analysis can be conducted at many different levels, ranging from an aggregation of all sector related activities (high level) to disaggregated individual outputs. The standard approach for the current methodology works with hierarchical levels of data- ranging from 1 to 5 - where 5 (equating to a six level SIC code) represents the most disaggregated level for market activities. At this level sector activities can be described uniquely in terms of their function and this has proved sufficient for most economic development requirements. Level 5, however, does not provide the necessary level of detail to determine the end-user market or purpose/ intent for a particular product or service. This information generally resides at two or three levels below Level 5.

In a pilot analysis conducted in 2009/ 10 a very small sample of LCEGS Level 5 activities were disaggregated to Level 6. This exercise was designed to test whether a deeper analysis could provide a more accurate reflection of Adaptation and Resilience activities. The result was positive but the sample was too small to be able to extrapolate the results more widely across LCEGS or A&RCC activities. The outcome of the exercise did, however, influence the methodology for the 2010/11 and subsequent reports.

For the 2010/ 11 report it was decided that all 180 A&RCC activities from 2009/ 10 would be subjected to a deeper analysis with a view to isolating the true Climate Change content of these activities more accurately. The research model is shown at Figure 2.

Figure 2: Research Model



The model requires the calculation of values for A&RCC activities for 2010/11 onwards, using the 2009/ 10 methodology. This provides a baseline from which further changes in value can be measured.

It then requires a further disaggregation of the initial A&RCC activities to Levels 6, 7 or 8. It is at this level that the use/ purpose/ intent of a product or service in response to Climate Change becomes much clearer. Deciding what is/ is not Climate Change related is still a subjective exercise even at this level of detail, but the decision about what activities and values should be included is now based upon much more traceable evidence.

Research at this level of detail creates many more data lines than the original 180. Each new level of disaggregation adds 4-5 new data lines, so that for each of the original A&RCC activities at Level 5 there are up to 100 new subdivisions. This creates a new A&RCC research data set of approximately 18,000 data lines.

After disaggregating A&RCC activities to levels 7 or 8, the next step is to re-aggregate the data at Level 6 in such a way that Climate Change content is differentiated from non- Climate Change content. A number of new categories are used that reflect:

- Response to Climate Change
- Responses to General Environmental/ Ecological Disasters
- Responses to General Environmental Policies and Targets
- General Maintenance
- Traditional (non- Climate Change) Applications
- Other non- Climate Change Services

On average three other headings plus Climate Change are applied to each of the original 180 Level 5 activities. At level 6 the Climate Change category now reflects a much more accurate assessment and valuation than the previous Level 5 calculation for A&RCC. This Level 6 value can now be substituted for the previous A&RCC value and becomes the new baseline for A&RCC activity.

This process is applied to all of the A&RCC activities and to all of the economic values calculated for each activity- sales, employment, companies, growth, imports and exports.

3. Global A&RCC 2010/ 11

The global A&RCC sales in 2011/ 12 is £68,656m or **£68.7bn**, compared with 2010/11 where the value was £65,772m or **£65.8bn**. The distribution of sales value across the sub sectors of A&RCC is shown at Figure 3.

Figure 3: Global A&RCC Sales (£m) 2011/ 12

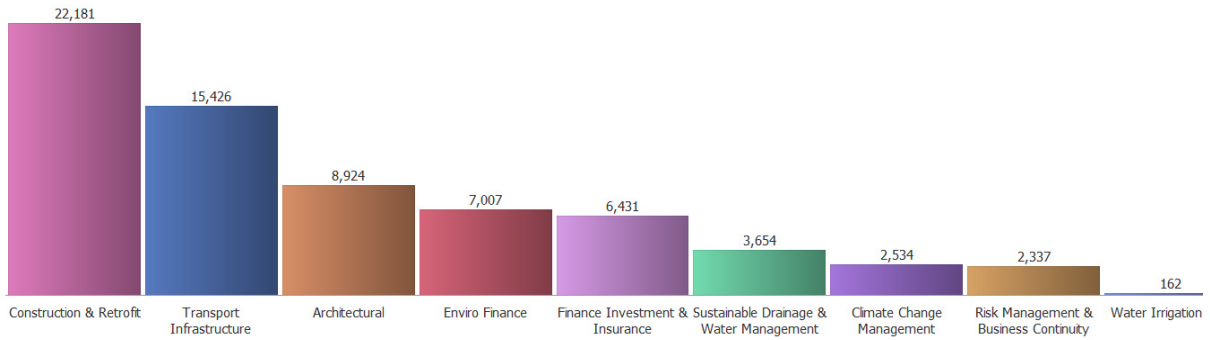


Figure 4: Global A&RCC Sales (%) 2011/ 12

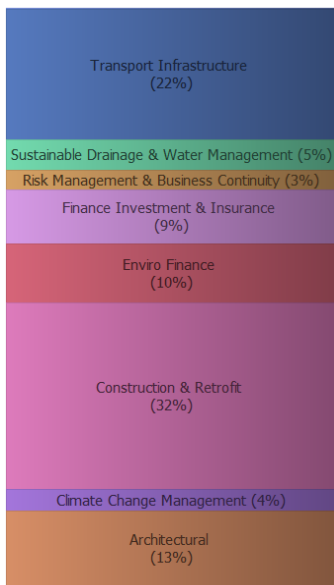


Figure 4 shows global sales values as a percentage, with Transport Infrastructure and Construction and Retrofit accounting for 54% of the total.

A&RCC activities in 2011/12 represent a 4.4% growth over 2010/ 11.

This growth varied across the different sub sectors of A&RCC, from 14.9% for Climate Change Management and 12.8% for Enviro Finance to 1.6% for Finance, Investment & Insurance and 0.5% for Construction & Retrofit (see Table 1).

Table 1: A&RCC 2011/12 by Sub Sector (£m)

Level 3	2011/ 12	2010/ 11	% Growth
Architectural	8,924	8,461	5.5
Climate Change Management	2,534	2,205	14.9
Construction & Retrofit	22,181	22,068	0.5
Enviro Finance	7,007	6,210	12.8
Finance Investment & Insurance	6,431	6,329	1.6
Risk Management & Business Continuity	2,337	2,296	1.8
Sustainable Drainage & Water Management	3,654	3,367	8.5
Transport Infrastructure	15,426	14,693	5.0
Water Irrigation	162	146	10.6
Total	68,656	65,772	4.4

The Top 53 global economies account for approximately 90% of global sales for most economic sectors. In the case of A&RCC, they account for 94% of global sales. Table 2 shows the Top 53 global economies ranked by value for 2011/12 and with their percentage of global market.

Table 2: A&RCC Sales 2010/11 and 2011/12 by Top 53 Countries

Country	Ranking	% of Global Total	2011/ 12	2010/ 11	% Growth
USA	1	21.6	14812.0	14316.7	3.5
China	2	13.2	9039.7	8552.3	5.7
Japan	3	6.4	4388.6	4267.4	2.8
India	4	6.0	4109.8	3876.0	6.0
Germany	5	4.3	2970.0	2663.8	11.5
France	6	3.4	2313.5	2273.6	1.8
UK	7	3.1	2125.3	2110.6	0.7
Italy	8	2.8	1936.8	1840.7	5.2
Brazil	9	2.6	1798.6	1653.2	8.8
Russian Federation	10	2.6	1772.8	1718.0	3.2
Mexico	11	1.8	1203.1	1249.0	-3.7
Canada	12	1.7	1170.4	1110.3	5.4
Indonesia	13	1.6	1115.3	992.6	12.4
Spain	14	1.6	1104.0	1095.0	0.8
South Korea	15	1.5	1041.0	1083.0	-3.9
Australia	16	1.1	732.6	725.6	1.0
Taiwan	17	1.0	685.7	603.0	13.7
Thailand	18	1.0	655.7	584.8	12.1
South Africa	19	0.9	622.2	578.3	7.6
Turkey	20	0.9	604.9	632.9	-4.4
Argentina	21	0.9	602.2	614.6	-2.0
Iran	22	0.9	591.1	562.5	5.1
Netherlands	23	0.8	565.2	566.4	-0.2
Poland	24	0.8	553.2	521.0	6.2
Philippines	25	0.8	542.6	475.1	14.2
Pakistan	26	0.6	437.1	458.0	-4.6
Saudi Arabia	27	0.6	407.3	379.3	7.4
Belgium	28	0.6	388.9	380.9	2.1
Ukraine	29	0.6	384.3	343.2	12.0
Egypt	30	0.6	382.9	365.0	4.9
Colombia	31	0.6	382.2	348.8	9.6
Bangladesh	32	0.5	327.7	333.0	-1.6
Sweden	33	0.5	316.5	312.6	1.3
Hong Kong	34	0.5	312.3	290.2	7.6
Switzerland	35	0.4	304.4	272.6	11.7
Austria	36	0.4	297.5	286.4	3.9
Malaysia	37	0.4	288.8	270.4	6.8
Greece	38	0.4	284.0	275.9	2.9
Vietnam	39	0.4	269.5	264.8	1.8
Algeria	40	0.4	266.4	251.0	6.2
Portugal	41	0.4	242.3	220.5	9.9
Denmark	42	0.3	221.3	200.8	10.2
Chile	43	0.3	219.2	198.1	10.6
Romania	44	0.3	209.5	206.4	1.5
Czechia	45	0.3	199.0	191.1	4.1
Peru	46	0.3	181.5	179.2	1.3
Finland	47	0.3	180.6	181.2	-0.4
Hungary	48	0.3	175.6	180.1	-2.5
Venezuela	49	0.2	170.1	170.4	-0.1
Morocco	50	0.2	158.0	152.7	3.4
Singapore	51	0.2	145.8	135.3	7.7
New Zealand	52	0.2	110.5	103.7	6.5
United Arab Emirates	53	0.1	79.6	80.3	-0.8

The UK is seventh overall, with 3.1% market share, behind the US, China, Japan, India, Germany and France. This compares with the UK's position of sixth for LCEGS in 2011/ 12. This ranking is unchanged from 2010/11.

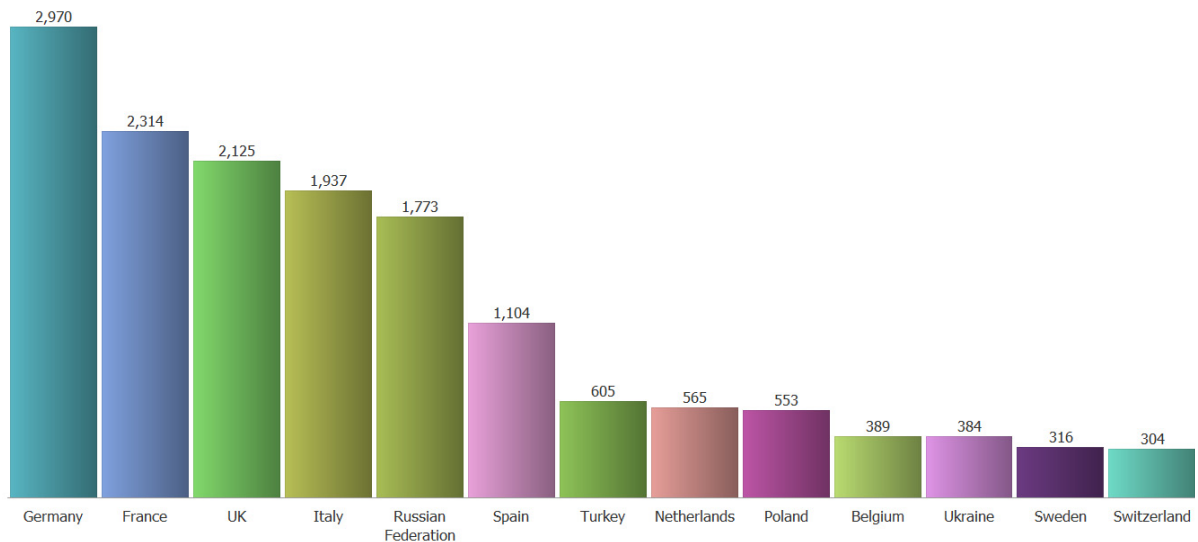
Annual growth in the UK is down to 0.9% (see Section 4.1) compared with the global average of 4.4%. There are high levels of variation in country A&RCC growth overall, reflecting a wide spectrum of national responses to Climate Change.

The UK is ranked fifth for Risk Management & Business Continuity, sixth for Architecture, Sustainable Drainage & Water Management, seventh for Construction

& Retrofit, Enviro Finance, Transport Infrastructure, Finance Investment & Insurance and eight for Water Irrigation and Climate Change Management.

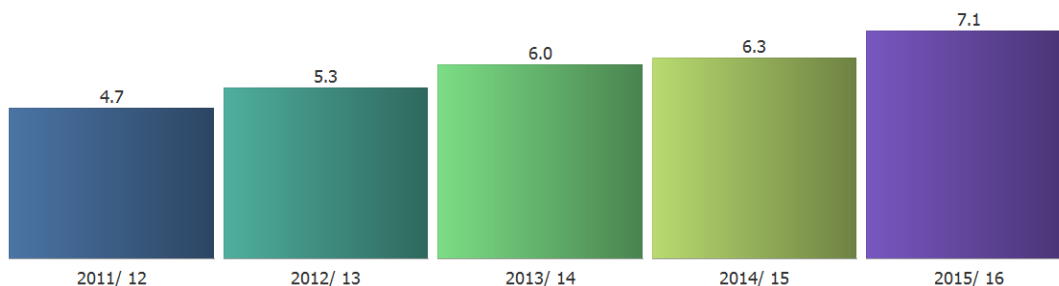
In Figure 5 the Top 13 European economies are ranked by sales value. The UK, with £2.1bn of sales is ranked third behind Germany and France.

Figure 5: A&RCC Sales (£m) 2011/12 by Top 13 European Economies



In Figure 6 we show the forecast growth rates for the A&RCC total to 2015/16¹. These forecast growth rates are in line with the forecasts published in 2010/ 11 and show a healthy growth forecast when compared with the rest of the global economy as a whole.²

Figure 6: Global Growth Rate Forecast (%) from 2011/12 to 2015/16 for A&RCC



¹ Growth forecasts are calculated by taking the mean value of a wide range of forecasting sources. The methodology is also used for the BIS LCEGS 2011/ 12 report and is explained in more detail there.

² Forecast growth rates apply to the base year i.e. the 2011/ 12 growth rate is the percentage change that is forecast to apply to 2011/ 12 values and be realised in 2012/ 13 figures.

4. UK A&RCC 2011/ 12

4.1 UK A&RCC Sales, Employment Companies and Growth

UK A&RCC sales in 2011/12 is £2,125m or **£2.1bn**. The distribution of sales value across the sub sectors of A&RCC is shown at Figure 7.

Figure 7: UK A&RCC Sales (£m) 2011/ 12

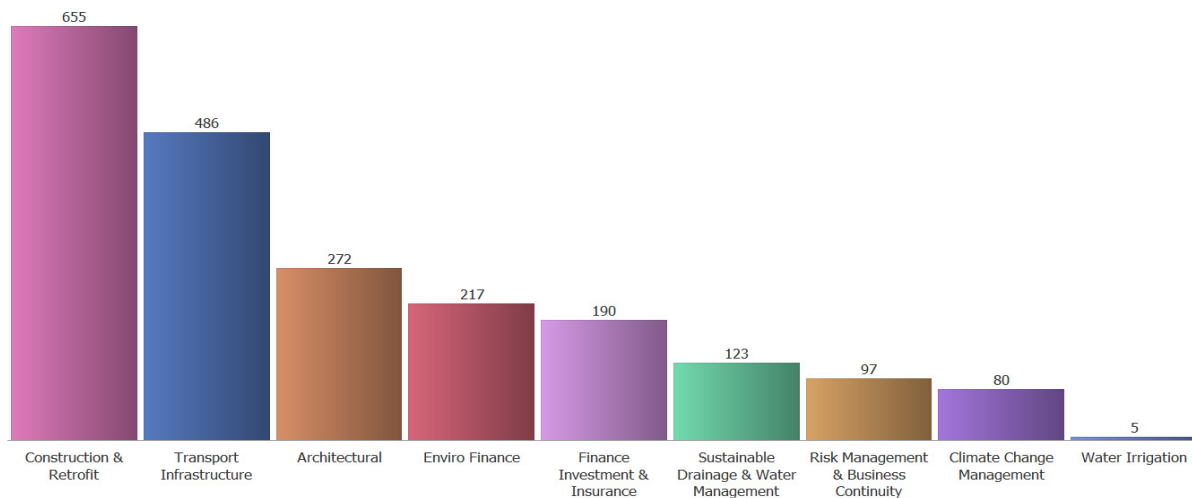


Figure 8: UK A&RCC Sales (%) 2011/ 12

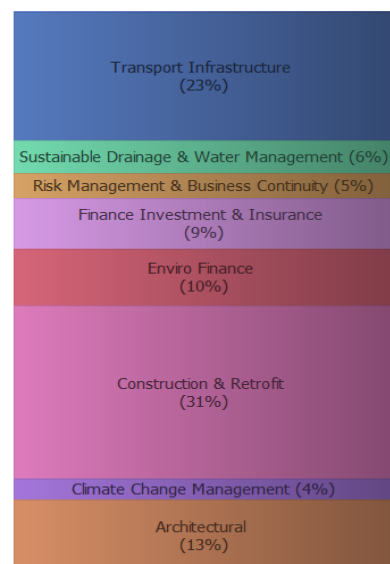


Figure 8 shows UK sales values as a percentage, with Transport Infrastructure and Construction and Retrofit accounting for 54% of the total. The distribution of UK activity shows some minor variations from the global distribution at Figure 4.

A&RCC activities in 2011/12 represents a 0.9% growth over the revised 2010/ 11 figure of £2,106m³. This is illustrated in Table 3, where 2010/ 11 and 2011/ 12 values are compared. Table 3 shows that growth is spread disproportionately across the different sub sectors, with only Architectural (7.4%) and Transport Infrastructure (3.6%) showing any real growth. Many sub sectors have actually shown a decline from the previous year's baseline.

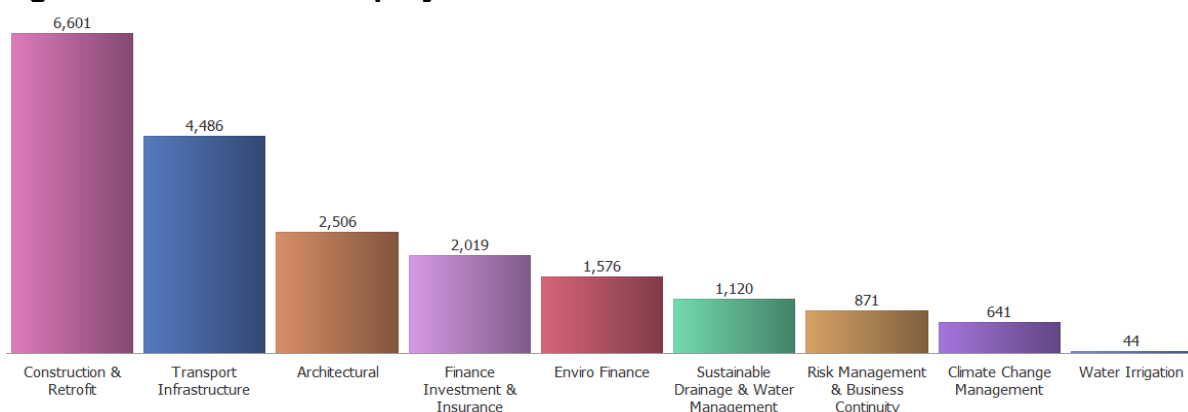
³ This figure is revised downwards from the £2,111m published in the 2010/ 11 A&RCC report. The revision to £2,106m is due to the greater accuracy of regional v. national analysis.

Table 3: UK A&RCC Sales (£m) 2010/ 11 and 2011/ 2 Compared

Level 3	2011/ 12	2010/ 11	% Change
Architectural	272	254	7.4
Climate Change Management	81	82	-1.4
Construction & Retrofit	655	669	-2.1
Enviro Finance	217	220	-1.4
Finance Investment & Insurance	190	188	1.2
Risk Management & Business Continuity	97	99	-1.5
Sustainable Drainage & Water Management	123	120	1.9
Transport Infrastructure	486	470	3.6
Water Irrigation	5	6	-18.7
Total	2,125	2,106	0.9

The UK employment level for A&RCC in 2011/12 is 19,864 (Figure 9). The distribution of employment shown at Figure 9 broadly reflects the distribution of A&RCC sales for 2011/12. 2011/12 employment shows a small increase on the previous year figure of 19,796⁴.

Figure 9: UK A&RCC Employment 2011/ 12

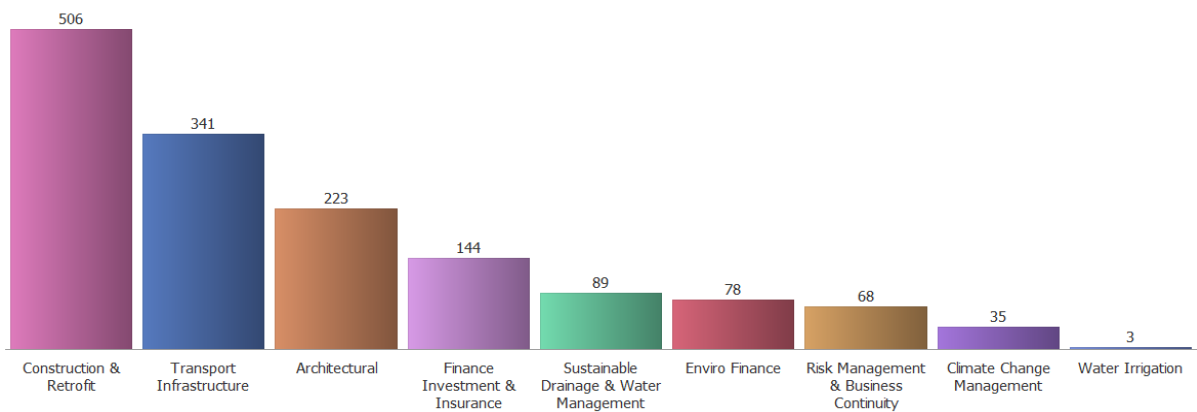


The UK companies involved in A&RCC in 2011/ 12 is 1,486 (Figure 10). The distribution of companies shown at Figure 10 is consistent with the UK the distribution of A&RCC sales and employment for 2011/ 12. The 2011/ 12 company count shows a small decline on the previous year figure of 1,491⁵.

⁴ This figure is revised downwards from the 21,012 published in the 2010/ 11 A&RCC report. The revision to 19,796 is due to the greater accuracy of regional v. national analysis.

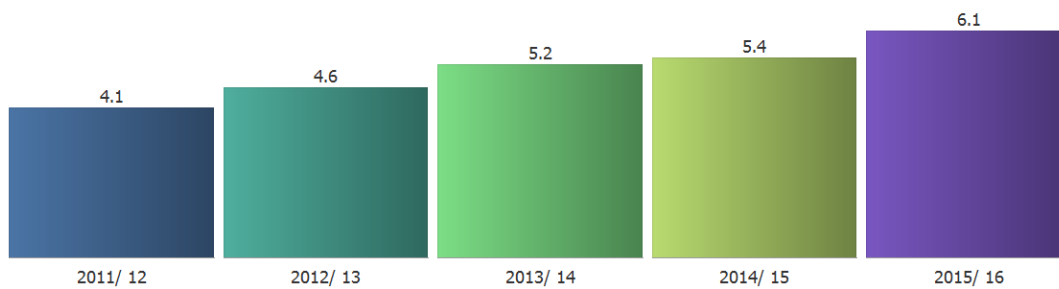
⁵ This figure is revised downwards from the 1,566 published in the 2010/ 11 A&RCC report. The revision to 1,491 is due to the greater accuracy of regional v. national analysis.

Figure 10: UK A&RCC Companies 2011/ 12



The UK growth forecast for A&RCC is lower than the global forecast (Figure 8). This reflects the lowest than forecast growth in 2011/ 12. Figure 11 shows the forecast growth rates for UK A&RCC to 2015/16.⁶

Figure 11: UK Growth Rate Forecast 2012/ 13 to 2017/ 18 for A&RCC



In Table 4 the key measures are shown at the next level of detail. At Level 4 Road Transport Infrastructure (£304m), Environmental Finance (£182m), Architectural Project Management Services (£159m) and Rail Infrastructure (£148m) are the four largest activities and account for £793m or 37% of the total.

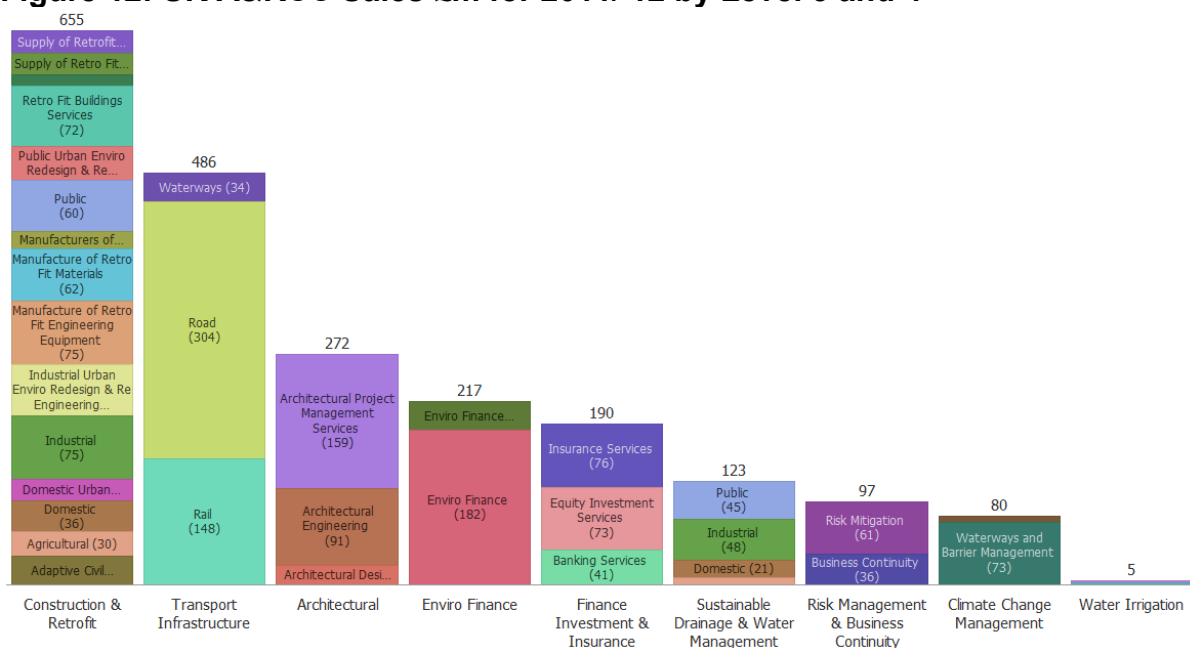
⁶ Forecast growth rates apply to the base year i.e. the 2011/ 12 growth rate is the percentage change that is forecast to apply to 2011/ 12 values and be realised in 2012/ 13 figures.

Table 4: UK A&RCC Sales, Employment and Companies for 2011/ 12 at Level 4

Level 3	Level 4	Sales £m	Companies	Employment
Architectural	Architectural Design Services	22.73	17	225
Architectural	Architectural Engineering	90.69	72	838
Architectural	Architectural Project Management Services	158.93	133	1,442
Climate Change Management	Waterways and Barrier Management	73.42	32	591
Climate Change Management	Weather Station Services	7.07	2	50
Construction & Retrofit	Adaptive Civil Engineering Services	33.46	24	351
Construction & Retrofit	Agricultural	30.02	28	326
Construction & Retrofit	Domestic	36.08	30	384
Construction & Retrofit	Domestic Urban Enviro Redesign & Re Engineering	25	21	272
Construction & Retrofit	Industrial	74.88	55	671
Construction & Retrofit	Industrial Urban Enviro Redesign & Re Engineering	60.96	57	772
Construction & Retrofit	Manufacture of Retro Fit Engineering Equipment	74.94	56	733
Construction & Retrofit	Manufacture of Retro Fit Materials	61.72	40	491
Construction & Retrofit	Manufacturers of Temporary Accommodation For Renovation Projects	20.63	17	214
Construction & Retrofit	Public	59.65	44	577
Construction & Retrofit	Public Urban Enviro Redesign & Re Engineering	40.1	30	454
Construction & Retrofit	Retro Fit Buildings Services	71.68	51	680
Construction & Retrofit	Suppliers of Temporary Accommodation For Renovation Projects	13.97	10	136
Construction & Retrofit	Supply of Retro Fit Engineering Equipment	24.42	19	250
Construction & Retrofit	Supply of Retrofit Materials	27.05	25	292
Enviro Finance	Enviro Finance	182.45	67	1,347
Enviro Finance	Enviro Finance Planning	34.22	11	230
Finance Investment & Insurance	Banking Services	41.31	36	464
Finance Investment & Insurance	Equity Investment Services	73.12	56	767
Finance Investment & Insurance	Insurance Services	75.59	52	788
Risk Management & Business Continuity	Business Continuity	36.37	27	340
Risk Management & Business Continuity	Risk Mitigation	61.09	41	531
Sustainable Drainage & Water Management	Agricultural	8.61	7	80
Sustainable Drainage & Water Management	Domestic	20.77	14	191
Sustainable Drainage & Water Management	Industrial	47.73	40	456
Sustainable Drainage & Water Management	Public	45.48	27	393
Transport Infrastructure	Rail	148.27	123	1,676
Transport Infrastructure	Road	304.35	191	2,465
Transport Infrastructure	Waterways	33.8	26	345
Water Irrigation	Agriculture	2.76	2	29
Water Irrigation	Leisure Areas	1.91	1	15

The same data is shown in Figure 12 as a stacked bar chart.

Figure 12: UK A&RCC Sales £m for 2011/ 12 by Level 3 and 4



Despite the low (and below forecast) growth in 2011/12 the growth forecasts for 2012/ 13 and beyond are still healthy, albeit lower than previous forecasts. Table 5 shows forecast growth rates to 2017/ 18 for Level 4 activities. The highest growth

activities (using 2012/ 13 as the indicator) in the UK are: Water Irrigation for Agriculture (6.9%), Manufacture of Retro Fit Engineering Equipment (6.7%), Sustainable Drainage & Water Management for Industry (6.4%) and Enviro Finance (6.0%).

Table 5: UK A&RCC Growth Forecast to 2017/ 18 at Level 4

Level 3	Level 4	Growth % 2012/ 13	Growth % 2013/ 14	Growth % 2014/ 15	Growth % 2015/ 16	Growth % 2016/ 17	Growth % 2017/ 18
Architectural	Architectural Design Services	3.4	3.9	4.1	4.6	5.2	5.4
Architectural	Architectural Engineering	2.4	2.7	2.8	3.2	3.6	3.7
Architectural	Architectural Project Management Services	5.8	6.5	6.8	7.7	8.7	9.0
Climate Change Management	Waterways and Barrier Management	5.2	5.9	6.1	6.9	7.8	8.1
Climate Change Management	Weather Station Services	3.5	4.0	4.1	4.7	5.3	5.5
Construction & Retrofit	Adaptive Civil Engineering Services	5.4	6.1	6.3	7.2	8.2	8.5
Construction & Retrofit	Agricultural	4.2	4.8	4.9	5.6	6.3	6.6
Construction & Retrofit	Domestic	5.0	5.7	5.9	6.7	7.6	7.8
Construction & Retrofit	Domestic Urban Enviro Redesign & Re Engineering	3.0	3.4	3.5	4.0	4.5	4.7
Construction & Retrofit	Industrial	5.9	6.7	6.9	7.9	8.9	9.2
Construction & Retrofit	Industrial Urban Enviro Redesign & Re Engineering	2.5	2.8	2.9	3.3	3.8	3.9
Construction & Retrofit	Manufacture of Retro Fit Engineering Equipment	6.7	7.6	7.9	8.9	10.1	10.5
Construction & Retrofit	Manufacture of Retro Fit Materials	5.8	6.5	6.8	7.7	8.7	9.0
Construction & Retrofit	Manufacturers of Temporary Accommodation For Renovation Projects	4.1	4.7	4.9	5.5	6.2	6.5
Construction & Retrofit	Public	5.0	5.7	5.9	6.7	7.6	7.9
Construction & Retrofit	Public Urban Enviro Redesign & Re Engineering	3.6	4.1	4.3	4.9	5.5	5.7
Construction & Retrofit	Retro Fit Buildings Services	4.0	4.5	4.7	5.3	6.0	6.2
Construction & Retrofit	Suppliers of Temporary Accommodation For Renovation Projects	5.1	5.8	6.0	6.8	7.7	7.9
Construction & Retrofit	Supply of Retro Fit Engineering Equipment	5.3	6.1	6.3	7.1	8.1	8.4
Construction & Retrofit	Supply of Retrofit Materials	3.4	3.8	3.9	4.5	5.1	5.2
Enviro Finance	Enviro Finance	6.0	6.9	7.1	8.0	9.1	9.4
Enviro Finance	Enviro Finance Planning	4.2	4.8	5.0	5.6	6.4	6.6
Finance Investment & Insurance	Banking Services	2.2	2.5	2.5	2.9	3.3	3.4
Finance Investment & Insurance	Equity Investment Services	4.7	5.3	5.5	6.3	7.1	7.4
Finance Investment & Insurance	Insurance Services	1.7	1.9	2.0	2.2	2.5	2.6
Risk Management & Business Continuity	Business Continuity	1.9	2.2	2.3	2.6	2.9	3.0
Risk Management & Business Continuity	Risk Mitigation	3.3	3.7	3.8	4.3	4.9	5.1
Sustainable Drainage & Water Management	Agricultural	5.8	6.6	6.9	7.8	8.8	9.1
Sustainable Drainage & Water Management	Domestic	3.9	4.4	4.6	5.2	5.9	6.1
Sustainable Drainage & Water Management	Industrial	6.4	7.3	7.6	8.6	9.7	10.1
Sustainable Drainage & Water Management	Public	5.4	6.1	6.4	7.2	8.2	8.5
Transport Infrastructure	Rail	5.2	5.9	6.0	6.9	7.8	8.1
Transport Infrastructure	Road	5.2	5.9	6.1	6.9	7.8	8.1
Transport Infrastructure	Waterways	5.2	5.9	6.1	7.0	7.9	8.2
Water Irrigation	Agriculture	6.9	7.8	8.1	9.2	10.4	10.8
Water Irrigation	Leisure Areas	3.3	3.8	3.9	4.4	5.0	5.2

4.2 Regional Analysis

Regional analysis of A&RCC is introduced for the first time in 2011/ 12. The move to regional reporting has meant the readjustment of the UK 2010/ 11 baseline figures to reflect the greater accuracy of regional analysis. Regional analysis includes all of the "old" UK regions, Scotland, Northern Ireland and Wales.

Figure 13 shows A&RCC Sales by region, with London accounting for 20% of the total, followed by- South East and East of England 11% and Scotland, North West and West Midlands 9%.

Figure 13: UK A&RCC Regional Sales 2011/ 12

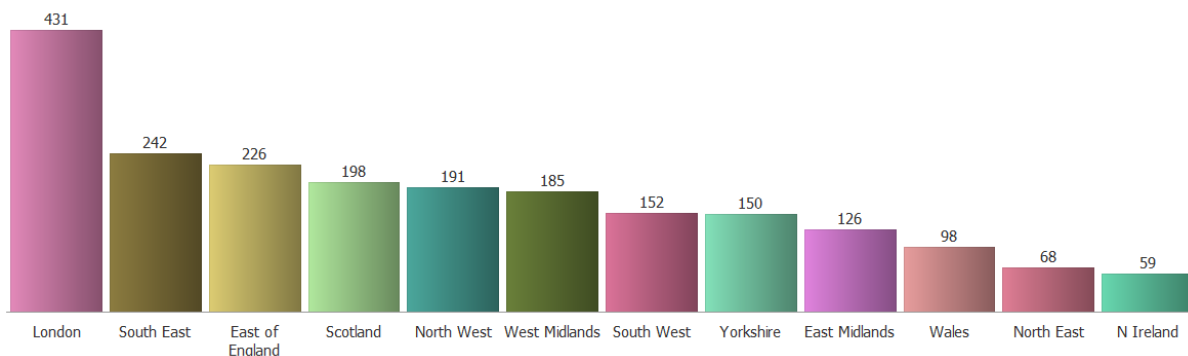


Table 6 shows A&RCC Sales by region and by sub sector.

Table 6: UK A&RCC Regional Sales 2011/ 12 by Sub Sector⁷

Level 3	East Midlands	East of England	London	N Ireland	North East	North West	Scotland	South East	South West	Wales	West Midlands	Yorkshire	Total
Architectural	13	26	63	9	8	25	25	33	18	14	20	19	272
Climate Change Management	6	8	15	1	4	11	7	12	4	2	5	6	80
Construction & Retrofit	37	63	140	19	22	55	67	65	47	29	65	45	655
Enviro Finance	12	21	40	4	8	26	24	27	16	8	16	15	217
Finance Investment & Insurance	11	23	30	5	6	15	19	19	17	9	22	15	190
Risk Management & Business Continuity	7	14	23	3	4	4	4	16	7	4	5	7	97
Sustainable Drainage & Water Management	8	12	29	5	3	8	12	12	9	8	9	8	123
Transport Infrastructure	31	59	89	14	13	47	41	56	33	24	43	36	486
Water Irrigation	0	0	1	0	0	0	0	0	0	0	0	0	5
Total	126	226	431	59	68	191	198	242	151	98	185	150	2,125

Figure 14 shows A&RCC Employment by region, with London accounting for 20% of the total, followed by- South East 11%, East of England and Scotland 10% and North West 9%.

Figure 14: UK A&RCC Regional Employment 2011/ 12

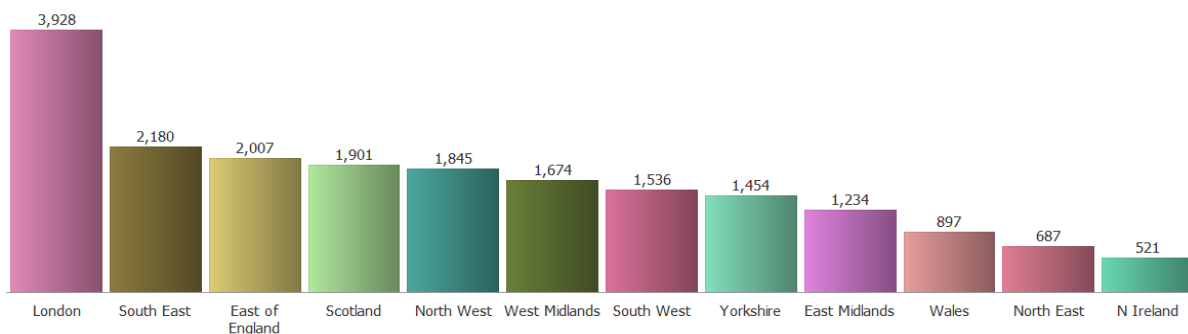


Table 7 shows A&RCC Employment by region and by sub sector.

⁷ There are very small differences in the regional totals shown by the bar charts and the tables, this is due to rounding differences at the national and regional level.

Table 7: UK A&RCC Regional Employment 2011/ 12 by Sub Sector

Level 3	East Midlands	East of England	London	N Ireland	North East	North West	Scotland	South East	South West	Wales	West Midlands	Yorkshire	Total
Architectural	110	246	527	59	101	167	232	295	167	121	269	211	2,506
Climate Change Management	43	53	88	18	32	66	32	110	95	12	59	33	641
Construction & Retrofit	384	606	1,453	155	216	568	738	668	498	288	559	468	6,601
Enviro Finance	90	98	227	46	74	280	136	195	139	50	123	117	1,576
Finance Investment & Insurance	133	275	327	52	67	187	193	231	140	116	163	135	2,019
Risk Management & Business Continuity	69	128	122	26	33	42	68	140	76	34	37	95	871
Sustainable Drainage & Water Management	82	80	264	31	27	74	95	138	72	71	90	97	1,120
Transport Infrastructure	321	515	911	133	134	457	404	399	347	203	369	293	4,486
Water Irrigation	2	5	10	1	2	5	3	4	3	2	5	4	44
Total	1,234	2,006	3,929	521	686	1,846	1,901	2,180	1,537	897	1,674	1,453	19,864

Figure 15 shows A&RCC Companies by region, with London accounting for 18% of the total, followed by- South East 11%, East of England 10% and North West, Scotland and West Midlands 9%.

Figure 15: UK A&RCC Regional Companies 2011/ 12



Table 8 shows A&RCC Companies by region and by sub sector.

Table 8: UK A&RCC Regional Companies 2011/ 12 by Sub Sector

Level 3	East Midlands	East of England	London	N Ireland	North East	North West	Scotland	South East	South West	Wales	West Midlands	Yorkshire	Total
Architectural	10	23	40	5	7	15	12	36	14	11	26	23	223
Climate Change Management	2	3	8	1	1	4	2	4	3	1	3	3	35
Construction & Retrofit	36	51	95	13	15	44	59	57	41	22	46	28	506
Enviro Finance	5	8	10	2	3	11	7	10	7	3	6	7	78
Finance Investment & Insurance	11	18	26	4	5	14	10	11	9	7	13	16	144
Risk Management & Business Continuity	6	8	13	3	4	4	4	10	4	2	2	9	68
Sustainable Drainage & Water Management	7	8	22	2	3	5	9	7	5	4	7	9	88
Transport Infrastructure	32	33	55	11	11	31	25	31	37	20	36	19	341
Water Irrigation	0	1	1	0	0	0	0	1	0	0	0	0	3
Total	109	153	270	41	49	128	128	167	120	70	139	114	1,486

4.3 UK Imports

The UK Imports value for A&RCC activities in 2011/ 12 is £249.7m. Figure 16 shows the distribution of Imports across the sub categories of A&RCC, with Construction & Retrofit accounting for 34% of the total. 2011/12 shows 4.4% growth in Imports on the previous year figure of £239.2m⁸.

⁸ This figure is revised downwards from the £250m published in the 2010/ 11 A&RCC report. The revision to £239,2m is due to the greater accuracy of regional v. national analysis.

Figure 16: A&RCC Imports 2011/ 12 (£m)

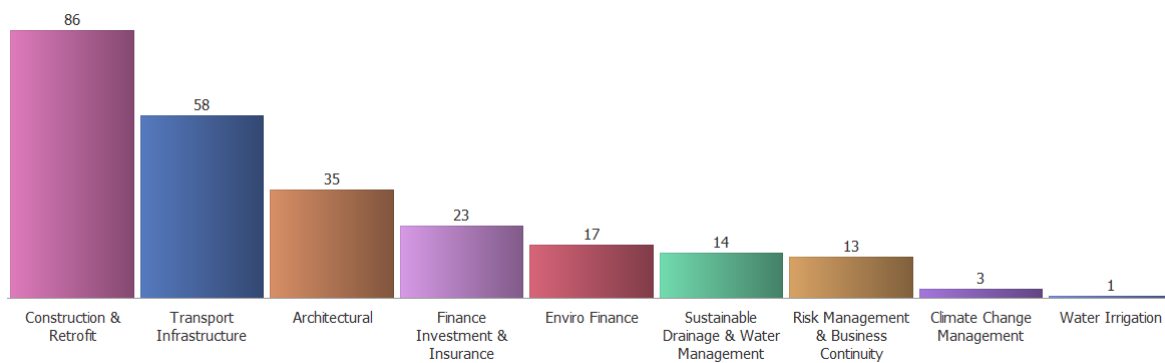


Figure 17 shows the top 13 countries providing A&RCC Imports into the UK in 2010/ 11. China accounts for 8%, followed by Hong Kong (5%). South Korea (5%) and the US (5%). The ranking of countries differs from that of LCEGS, as we would expect for different products and services, with the US ranked much higher for A&RCC activities than for LCEGS.

Figure 17: A&RCC Imports 2011/ 12 (£m) by Country of Origin

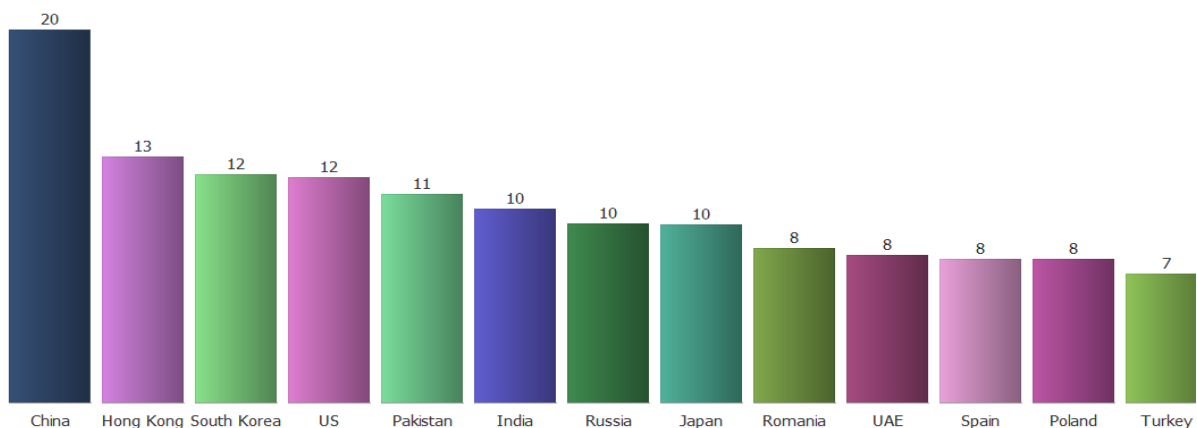


Table 9 shows UK imports at Level 5 in a heat map format where Red starts at 0, Green finishes at £1.1m and Orange represents the midpoint (with gradations of colour in between). The heat map has been rationalised down to the 26 largest importing A&RCC activities and for the top 16 importing countries. Table 5 shows a distinctive Import pattern for:

- A range of Environmental Finance Services from the US and China
- Road and Rail Anti Subsistence Works activities from most of the 17 countries
- Architectural Project Management Services for Industrial projects from most of the 17 countries.

Table 9: A&RCC Imports 2011/ 12 (£m) at Level 5

Level 4	Level 5	China	France	Germany	Hong Kong	India	Italy	Japan	Pakistan	Poland	Romania	Russia	South Korea	Spain	Turkey	UAE	US
Architectural Project Management Services	Architectural Project Management Services Highw ays	0.231	0.072	0.062	0.175	0.123	0.079	0.113	0.151	0.099	0.111	0.129	0.166	0.100	0.092	0.104	0.101
Architectural Project Management Services	Architectural Project Management Services Housing Development	0.239	0.074	0.063	0.187	0.127	0.077	0.113	0.161	0.105	0.118	0.127	0.172	0.103	0.090	0.112	0.105
Architectural Project Management Services	Architectural Project Management Services Industrial Projects	0.629	0.198	0.176	0.502	0.357	0.218	0.312	0.411	0.289	0.307	0.343	0.457	0.274	0.259	0.311	0.281
Waterw ays and Barrier Management	Sea Defence Management Services	0.235	0.059	0.077	0.008	0.112	0.045	0.108	0.013	0.015	0.006	0.044	0.024	0.028	0.018	0.002	0.424
Industrial	Manufacture of Path & Standing Area Porous Resurfacing Services	0.240	0.068	0.058	0.170	0.122	0.071	0.114	0.150	0.098	0.108	0.122	0.159	0.096	0.090	0.108	0.097
Industrial Urban Enviro Redesign & Re Engineering	Urban Re Engineering Civil Engineering Services Industrial Estates	0.460	0.144	0.122	0.339	0.234	0.149	0.215	0.296	0.199	0.211	0.246	0.304	0.200	0.178	0.206	0.198
Manufacture of Retro Fit Engineering Equipment	Manufacture of Anti Erosion Constructs	0.249	0.079	0.066	0.185	0.135	0.085	0.121	0.164	0.110	0.124	0.136	0.176	0.106	0.103	0.117	0.108
Public	Manufacture of Path & Standing Area Porous Resurfacing Services	0.265	0.081	0.067	0.190	0.133	0.085	0.123	0.170	0.117	0.128	0.139	0.178	0.112	0.100	0.116	0.108
Public	Supply of Porous Surfacing Materials	0.205	0.068	0.054	0.166	0.112	0.070	0.103	0.134	0.095	0.101	0.108	0.143	0.091	0.082	0.098	0.088
Public Urban Enviro Redesign & Re Engineering	Urban Re Engineering Civil Engineering Services Public Areas	0.331	0.099	0.083	0.258	0.174	0.106	0.152	0.204	0.138	0.156	0.170	0.226	0.143	0.129	0.147	0.134
Retro Fit Buildings Services	Retro Fit Electrical Services	0.391	0.121	0.101	0.292	0.202	0.124	0.186	0.251	0.165	0.189	0.201	0.262	0.160	0.148	0.175	0.162
Enviro Finance	Enviro Banking Services	0.386	0.081	0.112	0.012	0.154	0.072	0.173	0.019	0.023	0.008	0.067	0.042	0.040	0.023	0.003	0.561
Enviro Finance	Enviro Specific Capital Venture Services	0.457	0.097	0.140	0.016	0.233	0.100	0.218	0.024	0.031	0.011	0.093	0.052	0.061	0.031	0.005	0.865
Enviro Finance	Enviro Specific Equity Investment Services	0.410	0.088	0.119	0.015	0.182	0.083	0.195	0.018	0.024	0.009	0.084	0.053	0.055	0.028	0.004	0.656
Enviro Finance Planning	Business & Investment planning Services	0.294	0.061	0.129	0.012	0.136	0.066	0.162	0.016	0.020	0.007	0.062	0.034	0.046	0.022	0.003	0.480
Equity Investment Services	Equity Investment Services for Corporate Projects	0.222	0.076	0.063	0.180	0.125	0.077	0.116	0.155	0.102	0.113	0.121	0.168	0.098	0.092	0.108	0.096
Insurance Services	Flood Insurance Services	0.231	0.073	0.061	0.181	0.117	0.077	0.105	0.147	0.103	0.108	0.121	0.166	0.098	0.086	0.107	0.099
Insurance Services	Weather Insurance Services	0.291	0.090	0.078	0.225	0.155	0.092	0.141	0.178	0.124	0.138	0.155	0.205	0.126	0.113	0.129	0.124
Business Continuity	Business Continuity Recovery Implementation Services	0.216	0.066	0.055	0.163	0.114	0.072	0.102	0.142	0.095	0.101	0.118	0.143	0.096	0.081	0.103	0.091
Risk Mitigation	Risk Assessment Services	0.446	0.136	0.114	0.329	0.230	0.150	0.204	0.294	0.190	0.211	0.212	0.300	0.187	0.167	0.195	0.183
Rail	Anti Subsidence Works	0.574	0.176	0.149	0.426	0.291	0.185	0.273	0.364	0.252	0.274	0.295	0.376	0.237	0.226	0.262	0.237
Rail	Flood Abatement Works	0.335	0.101	0.089	0.260	0.183	0.112	0.158	0.219	0.148	0.166	0.178	0.238	0.143	0.134	0.157	0.144
Rail	Surface Water Drainage Works	0.254	0.078	0.065	0.195	0.137	0.081	0.119	0.164	0.107	0.121	0.129	0.178	0.104	0.100	0.115	0.109
Road	Anti Subsidence Works	1.086	0.343	0.291	0.843	0.565	0.369	0.514	0.708	0.493	0.529	0.570	0.770	0.464	0.428	0.491	0.490
Road	Flood Abatement Works	0.755	0.220	0.204	0.572	0.388	0.244	0.350	0.466	0.322	0.345	0.390	0.524	0.322	0.298	0.348	0.325
Road	Re Location and & Re laying	0.501	0.153	0.139	0.387	0.257	0.162	0.238	0.316	0.219	0.239	0.272	0.350	0.214	0.206	0.227	0.218

4.4 UK Exports

The UK Exports value for A&RCC activities in 2011/ 12 is £266m, Figure 18 shows the distribution of Exports across the sub categories of A&RCC, with Construction & Retrofit accounting for 32%, Transport Infrastructure 23% and Architecture 14% of the total. 2011/12 shows 4.7% growth in Imports on the previous year figure of £254m⁹. This level of growth in Exports suggests that the reduced levels of sales for A&RCC in 2011/12 is due to a downturn in domestic market demand.

Figure 18: A&RCC Exports 2011/ 12 (£m)

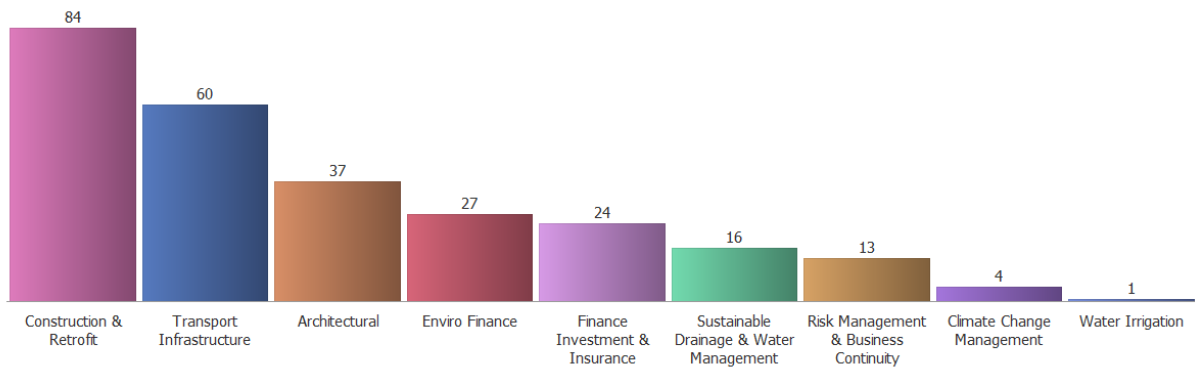


Figure 19 shows UK exports for the top 13 export destinations in 2011/ 12. The top countries are South Africa and Canada (6%), followed by Germany, Italy, Hong Kong and Singapore (4%). This is a very different ranking order to LCEGS as a whole but is consistent with the 2010/ 11 report.

Figure 19: A&RCC Exports 2010/ 11 (£m) by Country of Origin

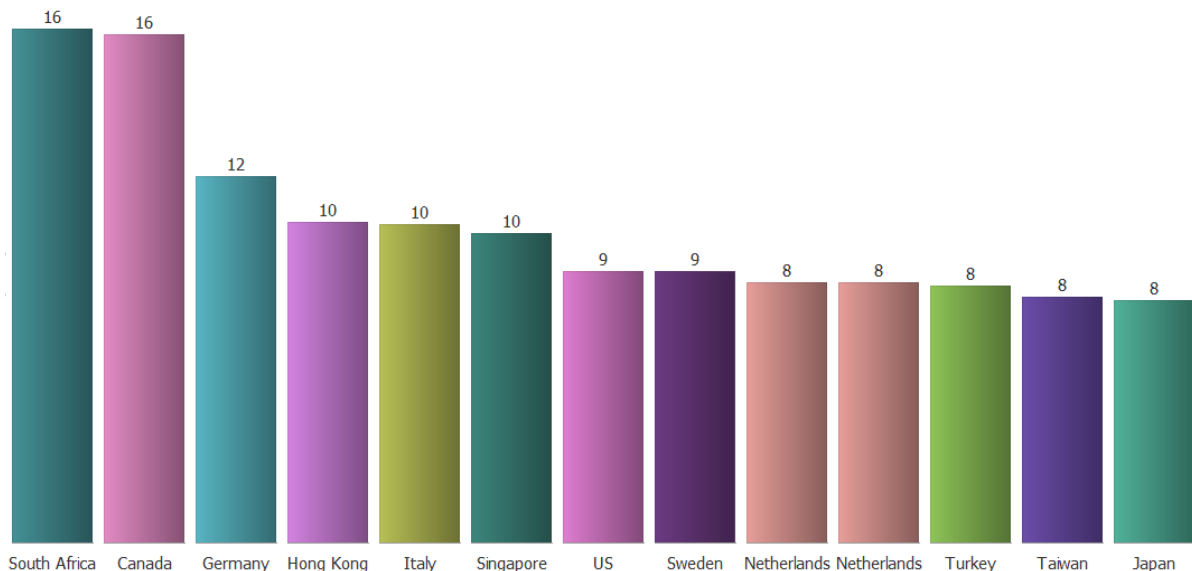


Table 10 shows UK exports at Level 5 in a heat map format where Red starts at 0, Green finishes at £1.3m and Orange represents the midpoint (with gradations of

⁹ This figure is revised downwards from the £265m published in the 2010/ 11 A&RCC report. The revision to £254m is due to the greater accuracy of regional v. national analysis.

colour in between). The heat map has been rationalised down to the 36 largest exporting A&RCC activities and for the top 20 exporting destinations. Table 6 shows a polarised export pattern with:

- Environmental Finance activities being most important to the US, China, India, Japan and Germany
- Road and Rail Transport Infrastructure activities being most important to Canada, Germany, South Africa, Singapore, Italy and Hong Kong.

Table 10: A&RCC Exports 2011/ 12 (£m) at Level 5

Level 4	Level 5	Canada	China	Germany	Hong Kong	Indonesia	Iran	Italy	Japan	Netherlands	Peru	Poland	Russia	Saudi Arabia	Singapore	South Africa	Sweden	Taiwan	Turkey	Ukraine	US
Architectural Engineering	Architectural Engineering Airports, Ports & Railways	0.169	0.030	0.106	0.105	0.068	0.066	0.095	0.055	0.082	0.062	0.076	0.069	0.047	0.103	0.167	0.088	0.080	0.083	0.068	0.014
Architectural Engineering	Architectural Engineering Highways	0.180	0.034	0.121	0.122	0.077	0.081	0.108	0.067	0.097	0.072	0.082	0.080	0.054	0.116	0.193	0.102	0.089	0.093	0.082	0.016
Architectural Engineering	Architectural Engineering Housing Development	0.135	0.025	0.089	0.086	0.057	0.056	0.082	0.048	0.070	0.050	0.064	0.059	0.037	0.088	0.136	0.071	0.064	0.067	0.057	0.012
Architectural Engineering	Architectural Engineering Large Civil Structures Projects	0.122	0.022	0.081	0.078	0.049	0.051	0.071	0.043	0.063	0.045	0.057	0.051	0.034	0.076	0.120	0.068	0.059	0.060	0.052	0.011
Architectural Engineering	Architectural Engineering Public Buildings & Complexes	0.120	0.023	0.079	0.078	0.050	0.050	0.072	0.043	0.062	0.047	0.056	0.052	0.034	0.077	0.123	0.067	0.057	0.062	0.052	0.011
Architectural Project Management Services	Architectural Project Management Large Civil Structures Projects	0.125	0.022	0.082	0.079	0.050	0.049	0.074	0.044	0.061	0.046	0.056	0.051	0.033	0.077	0.130	0.069	0.060	0.063	0.050	0.011
Architectural Project Management Services	Architectural Project Management Services Airports, Ports & Railways	0.151	0.028	0.098	0.100	0.061	0.062	0.093	0.052	0.079	0.055	0.071	0.062	0.042	0.101	0.158	0.084	0.073	0.076	0.065	0.014
Architectural Project Management Services	Architectural Project Management Services Highways	0.231	0.042	0.154	0.150	0.097	0.097	0.145	0.085	0.118	0.087	0.107	0.099	0.064	0.154	0.233	0.123	0.110	0.121	0.099	0.020
Architectural Project Management Services	Architectural Project Management Services Housing Development	0.190	0.034	0.126	0.117	0.077	0.078	0.108	0.065	0.096	0.068	0.083	0.078	0.050	0.111	0.203	0.100	0.088	0.090	0.078	0.017
Architectural Project Management Services	Architectural Project Management Services Industrial Projects	0.687	0.121	0.455	0.434	0.262	0.280	0.393	0.237	0.344	0.242	0.302	0.282	0.192	0.428	0.715	0.365	0.322	0.349	0.286	0.058
Industrial	Manufacture of Path & Standing Area Porous Resurfacing Services	0.180	0.034	0.121	0.119	0.076	0.077	0.110	0.066	0.099	0.070	0.082	0.076	0.050	0.120	0.182	0.100	0.086	0.090	0.080	0.017
Industrial	Manufacture of Rain Water Capture Systems	0.158	0.029	0.103	0.101	0.065	0.065	0.094	0.053	0.079	0.059	0.073	0.067	0.042	0.098	0.159	0.086	0.075	0.080	0.063	0.014
Industrial	Supply of Porous Surfacing Materials	0.208	0.038	0.143	0.141	0.088	0.089	0.126	0.076	0.112	0.081	0.101	0.089	0.060	0.136	0.222	0.114	0.102	0.111	0.093	0.019
Industrial Urban Enviro Redesign & Re Engineering	Urban Re Engineering Civil Engineering Services Industrial Estates	0.377	0.068	0.249	0.247	0.156	0.153	0.222	0.133	0.191	0.145	0.174	0.165	0.107	0.233	0.402	0.209	0.183	0.192	0.165	0.034
Manufacture of Retro Fit Engineering Equipment	Manufacture of Anti Erosion Constructs	0.230	0.040	0.149	0.144	0.093	0.091	0.136	0.081	0.115	0.085	0.103	0.096	0.065	0.139	0.231	0.121	0.103	0.110	0.095	0.019
Manufacture of Retro Fit Engineering Equipment	Manufacture of Structural Braces for Buildings	0.171	0.031	0.112	0.110	0.070	0.071	0.102	0.061	0.091	0.063	0.077	0.072	0.051	0.108	0.180	0.097	0.080	0.088	0.073	0.014
Public Urban Enviro Redesign & Re Engineering	Urban Re Engineering Civil Engineering Services Public Areas	0.267	0.051	0.177	0.173	0.107	0.114	0.164	0.095	0.138	0.103	0.124	0.115	0.075	0.170	0.289	0.153	0.127	0.142	0.117	0.025
Retro Fit Buildings Services	Retro Fit Electrical Services	0.318	0.058	0.208	0.208	0.127	0.127	0.176	0.113	0.156	0.118	0.143	0.134	0.089	0.196	0.317	0.179	0.154	0.155	0.132	0.028
Enviro Finance	Enviro Banking Services	0.080	0.586	0.176	0.019	0.063	0.037	0.116	0.277	0.033	0.015	0.038	0.107	0.026	0.010	0.042	0.020	0.045	0.038	0.027	0.920
Enviro Finance	Enviro Specific Capital Venture Services	0.112	0.711	0.224	0.024	0.073	0.051	0.151	0.349	0.047	0.017	0.047	0.146	0.035	0.010	0.047	0.024	0.061	0.047	0.028	1.254
Enviro Finance	Enviro Specific Equity Investment Services	0.084	0.699	0.197	0.023	0.080	0.038	0.122	0.300	0.040	0.015	0.039	0.135	0.028	0.012	0.053	0.022	0.052	0.045	0.026	1.088
Enviro Finance	Enviro Specific Fund Management Services	0.055	0.319	0.118	0.011	0.040	0.022	0.069	0.152	0.023	0.007	0.024	0.069	0.014	0.006	0.020	0.012	0.028	0.028	0.014	0.488
Enviro Finance Planning	Business & Investment planning Services	0.073	0.468	0.174	0.017	0.055	0.036	0.106	0.250	0.031	0.011	0.031	0.101	0.020	0.009	0.029	0.018	0.040	0.037	0.022	0.745
Insurance Services	Flood Insurance Services	0.208	0.039	0.135	0.135	0.086	0.089	0.128	0.076	0.109	0.080	0.096	0.092	0.060	0.133	0.217	0.114	0.100	0.107	0.087	0.019
Insurance Services	Weather Insurance Services	0.196	0.036	0.127	0.127	0.079	0.082	0.121	0.068	0.102	0.075	0.088	0.085	0.055	0.122	0.204	0.109	0.090	0.101	0.082	0.018
Business Continuity	Business Continuity Recovery Implementation Services	0.218	0.040	0.136	0.142	0.095	0.090	0.124	0.076	0.116	0.085	0.095	0.092	0.064	0.134	0.232	0.117	0.105	0.111	0.095	0.020
Risk Mitigation	Risk Assessment Services	0.343	0.061	0.219	0.214	0.140	0.135	0.204	0.118	0.174	0.123	0.147	0.143	0.096	0.206	0.348	0.188	0.166	0.177	0.137	0.031
Industrial	Anti Subsidence Works	0.182	0.033	0.117	0.115	0.074	0.071	0.106	0.064	0.090	0.067	0.079	0.075	0.051	0.114	0.175	0.097	0.082	0.089	0.076	0.015
Industrial	Flood Abatement Works	0.104	0.020	0.068	0.067	0.044	0.044	0.063	0.038	0.054	0.039	0.050	0.045	0.030	0.068	0.107	0.059	0.051	0.055	0.046	0.009
Public	Bank Maintenance Services	0.220	0.041	0.146	0.140	0.091	0.090	0.128	0.075	0.109	0.081	0.100	0.095	0.060	0.137	0.236	0.117	0.105	0.111	0.093	0.019
Rail	Anti Subsidence Works	0.509	0.098	0.340	0.337	0.207	0.220	0.308	0.178	0.273	0.200	0.242	0.224	0.156	0.332	0.517	0.282	0.256	0.266	0.215	0.047
Rail	Flood Abatement Works	0.285	0.050	0.183	0.177	0.114	0.115	0.158	0.100	0.139	0.105	0.123	0.117	0.080	0.177	0.284	0.148	0.135	0.144	0.114	0.025
Road	Anti Subsidence Works	1.128	0.209	0.750	0.727	0.452	0.480	0.650	0.402	0.582	0.423	0.500	0.488	0.318	0.720	1.169	0.611	0.530	0.551	0.498	0.096
Road	Flood Abatement Works	0.662	0.128	0.439	0.441	0.272	0.273	0.400	0.233	0.348	0.246	0.303	0.293	0.204	0.419	0.671	0.359	0.322	0.328	0.278	0.056
Road	Re Location and Re laying	0.366	0.067	0.241	0.238	0.155	0.155	0.223	0.131	0.193	0.139	0.174	0.157	0.107	0.229	0.388	0.203	0.182	0.185	0.158	0.033
Road	Surface Water Drainage Works	0.195	0.035	0.124	0.115	0.077	0.078	0.112	0.065	0.097	0.068	0.084	0.078	0.054	0.119	0.199	0.102	0.091	0.095	0.081	0.017

Appendix A

A&RCC Definition

The A&RCC definition used for analysis in this report is identical to the 2009/ 10 study. The main categories of activity are shown below.

Level 2	Level 3	Level 4
Adaption & Resilience	Architectural	Architectural Design Services
Adaption & Resilience	Architectural	Architectural Engineering
Adaption & Resilience	Architectural	Architectural Project Management Services
Adaption & Resilience	Climate Change Management	Waterways and Barrier Management
Adaption & Resilience	Climate Change Management	Weather Station Services
Adaption & Resilience	Construction & Retrofit	Adaptive Civil Engineering Services
Adaption & Resilience	Construction & Retrofit	Agricultural
Adaption & Resilience	Construction & Retrofit	Domestic
Adaption & Resilience	Construction & Retrofit	Domestic Urban Enviro Redesign & Re Engineering
Adaption & Resilience	Construction & Retrofit	Industrial
Adaption & Resilience	Construction & Retrofit	Industrial Urban Enviro Redesign & Re Engineering
Adaption & Resilience	Construction & Retrofit	Manufacture of Retro Fit Engineering Equipment
Adaption & Resilience	Construction & Retrofit	Manufacture of Retro Fit Materials
Adaption & Resilience	Construction & Retrofit	Manufacturers of Temporary Accommodation For Renovation Projects
Adaption & Resilience	Construction & Retrofit	Public
Adaption & Resilience	Construction & Retrofit	Public Urban Enviro Redesign & Re Engineering
Adaption & Resilience	Construction & Retrofit	Retro Fit Buildings Services
Adaption & Resilience	Construction & Retrofit	Suppliers of Temporary Accommodation For Renovation Projects
Adaption & Resilience	Construction & Retrofit	Supply of Retro Fit Engineering Equipment
Adaption & Resilience	Construction & Retrofit	Supply of Retrofit Materials
Adaption & Resilience	Enviro Finance	Enviro Finance
Adaption & Resilience	Enviro Finance	Enviro Finance Planning
Adaption & Resilience	Finance Investment & Insurance	Banking Services
Adaption & Resilience	Finance Investment & Insurance	Equity Investment Services
Adaption & Resilience	Finance Investment & Insurance	Insurance Services
Adaption & Resilience	Risk Management & Business Continuity	Business Continuity
Adaption & Resilience	Risk Management & Business Continuity	Risk Mitigation
Adaption & Resilience	Sustainable Drainage & Water Management	Agricultural
Adaption & Resilience	Sustainable Drainage & Water Management	Domestic
Adaption & Resilience	Sustainable Drainage & Water Management	Industrial
Adaption & Resilience	Sustainable Drainage & Water Management	Public
Adaption & Resilience	Transport Infrastructure	Rail
Adaption & Resilience	Transport Infrastructure	Road
Adaption & Resilience	Transport Infrastructure	Waterways
Adaption & Resilience	Water Irrigation	Agriculture
Adaption & Resilience	Water Irrigation	Leisure Areas

Appendix B

Apportionments

When allocating sale values to adaptation and resilience, the data sources varied widely in terms of not only what they included in their definition for adaptation and resilience but also their granularity of detail. In some cases reported data was clear and the sales were accounted separately, however in others the sales figures reported included several other aspects not classified as adaptation and resilience. In cases such as this there is a need to triangulate with data sources outside of the industry. In the worked example included these additional data sources are shown where further evidence is needed to apportion an activity value. Our experience of needing these additional sources has varied across the major sub categories of A&RCC and a brief summary of this is provided below.

In the case of enviro finance and enviro finance planning we have taken into account only those activities which have been identified by the industry as relevant to climate change as this sector is relatively well informed via the actuarial and financial analytical sectors. Any variation in value identified via our data triangulation process, as a back check, was minimal.

In the case of waterways and barrier management we have looked at additional demand placed due to natural water course change and water burden management due to changing weather conditions. Although project definition was highly variable works procurement data gave higher definition and granularity in this area.

In the case of weather station services we have taken the new demand on the sector for longer term weather change forecasting for sectors other than those who would normally require weather services for normal operational need, for example agriculture, shipping, aviation etc

In the case of architectural project management services, architectural design services and architectural engineering data returns were relatively clear in the sector, as was the industry bodies definition for adaptation and resilience.

In the case of insurance services we have used business return outputs from the actuarial sector where they clearly define new quotations business as a result of changing risk due to climate adjustment over previous years

In the case of banking services and equity investment services whilst the financial sector is relatively well informed and has rich data sets in support, the sub sectors of banking services and equity investment are extremely difficult to segment and, therefore, allocate sales proportion to adaptation and resilience. In this case it has been necessary to triangulate the data in order to get a view of the proportionality of activity relevant to adaptation and resilience.

In the case of risk mitigation the industry is well segmented with growing specialism in the area of climate change and its affect and also how adaptation and resilience contributes to risk mitigation. As a result, data returns in this area are specific to adaptation and resilience and in this case, it has not been necessary to take market ripple effect into account as these services tend to rely only on technically proven demand.

In the case of business continuity, this sub sector is broad in that it covers both normally occurring events and natural and man-made disaster. We were somewhat surprised to discover that this sector does not delineate well those services that are specific to climate change and adaptation and resilience. Therefore in this case it has been necessary to break out the allocated figures via triangulation with the construction, water, strata management, flood abatement and risk mitigation sectors in order to allocate values to adaptation and resilience.

In the case of domestic, industrial and public urban enviro redesign & re engineering the industrial and public urban data sources were relatively specific in their delineation of adaptation and resilience. However, the domestic data had no delineation at all. Therefore as a result we have had to rely upon parallel data from the construction and civil engineering industry in order to see some proportionality in this area. Furthermore the domestic housing buildings insurance data networks have been helpful here.

In the case of agricultural we have used data provided via the procurement industry and its industrial bodies in order to see spend in the sector. The agricultural sector overall is not well documented for our purposes when looking at the allocation of spend on a farm by farm basis. The most reliable data used here was from the water industry and its network of supply. It was also necessary to triangulate this data with waterways and barrier management sector data which also looks at irrigation and spur supplies.

In the case of the manufacture of retro fit materials, supply of retrofit materials and retro fit buildings services. The construction industry trade bodies along with civil engineering and engineering institutions have been actively reporting the change in market demand as a result of climate change. Whilst data sources tend to conflict as a result of variances in definition and in this particular case significant differences as a result of the market ripple effect there are a large number of sources with which to triangulate. The key problem faced in this particular area was to reach agreement on the definition of a retro fit material that is relevant to climate change.

In the case of adaptive civil engineering services, the sector is well reported with detailed information on the proportionality of adaptive and resilience projects and associated spend overall. Minimal data triangulation was required in this area.

In the case of the manufacture of retro fit engineering equipment and the supply of retro fit engineering equipment the equipment is also used for other applications which are not associated with climate change, therefore it is necessary to relate sales to individual projects and specialisms which are specifically to do with climate change and adaptation and resilience. In order to achieve this we have triangulated data with additional data sources, which include the civil engineering, risk mitigation, architectural and actuarial sectors and their industry bodies.

In the case of the manufacturers and suppliers of temporary accommodation for renovation projects we have taken the sales values which are over and above the normal

market trend for these temporary accommodation units as the same units are used in various other applications. As this sector is relatively small in terms of the construction sector, the end use of unit sales for temporary buildings was relatively well reported.

In the case of construction & retrofit domestic, industrial, public and agricultural the industrial and public urban data sources were relatively specific in their delineation of adaptation and resilience. However, the domestic data had no delineation at all. Therefore as a result we have had to rely upon parallel data from the construction and civil engineering industry in order to see some proportionality in this area. Furthermore the domestic housing buildings insurance data networks have been helpful here. In the case of agricultural, however, the most reliable data used here was from the water industry and its network of supply. It was also necessary to triangulate this data with waterways and barrier management sector data which also looks at irrigation and spur supplies.

In the case of sustainable drainage & water management domestic, industrial, public and agricultural we have relied almost solely on data from the water industry and its network of supply. Adaptation and resilience is a key focus in this sector at this time.

In the case of transport infrastructure rail and road sector data is relatively good, with some triangulation from the procurement chain.

In the case of transport infrastructure waterways we have relied almost solely on data from the water industry and its network of supply. Adaptation and resilience is a key focus in this sector at this time.

In the case of water irrigation agriculture we have relied heavily on the procurement sector data as individual reporting is limited on a farm by farm basis.

In the case of water irrigation leisure areas the sector has almost no detailed reporting on expenditure in this area. Therefore we have been reliant primarily on data streams from the civil engineering and construction industries for meaningful data.

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Any enquiries regarding this publication should be sent to:

Department for Business, Innovation and Skills
1 Victoria Street
London SW1H 0ET
Tel: 020 7215 5000

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