

Academy for Sustainable
Communities

Mind The Skills Gap

Technical Report 2 -
Forecasting

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1 Introduction

Arup have been commissioned by the Academy for Sustainable Communities (ASC) to undertake an analysis of the gap in supply and demand of skills required to deliver the Sustainable Communities agenda.

The delivery of sustainable communities depends upon the skills, capabilities and working culture of a wide range of built environment professionals. The formation of ASC marks a major recognition of the role and increasing demands upon the professional component. Yet ASC can only fulfil and focus its role if it has a clear understanding of the skills gaps that need to be addressed.

Creating sustainable communities implies wide ranging objectives that must necessarily demand a wide range of skills and disciplines. The Egan Report published in 2004 correctly recognised the importance of core technical skills – many of which fall into traditional professional “silos” together with generic skills associated with multi-disciplinary delivery.

The main findings report has been published separately by the Academy for Sustainable Communities. It draws information from our own primary research, as well as drawing in conclusions from previous studies across the sectors forming part of sustainable communities.

This report provides details of the forecasting process undertaken for the purposes of this study, and sets out the results of the modelling process. It should be read in conjunction with the main report for a full analysis, discussion of surprising results and comparative analysis with other studies.

2 Methodology

2.1 Introduction

The focus of analysis of technical skills gaps has been evaluation of the labour shortages likely to occur in delivery of Sustainable Communities. In other words, the mismatch between likely job numbers and supply of professionals. This study also explores areas of knowledge or skill that would enhance the ability of professionals in post, and this is discussed elsewhere.

A spreadsheet model of supply and demand of professionals has been developed to forecast labour shortages. This includes a base case in absolute numbers between 2002 and 2005, and the forecast position to 2012 (which is given in terms of both supply and demand). The supply forecasts are trend based, and demand forecasts are policy based (where policy refers to the development and delivery of the Sustainable Communities agenda). Results can be presented in aggregate, by region and by occupation. All estimates are in terms of Full Time Equivalent (FTE) roles.

The online surveys carried out as part of this study have informed this development of the model – responses to questions have been used to underpin assumptions and proxies used for forecasting. For details of the surveys see the Main Report and the Survey Results Report.

Overall, the results of the model represent Arup's forecasts of future shortages, informed by a consideration of:

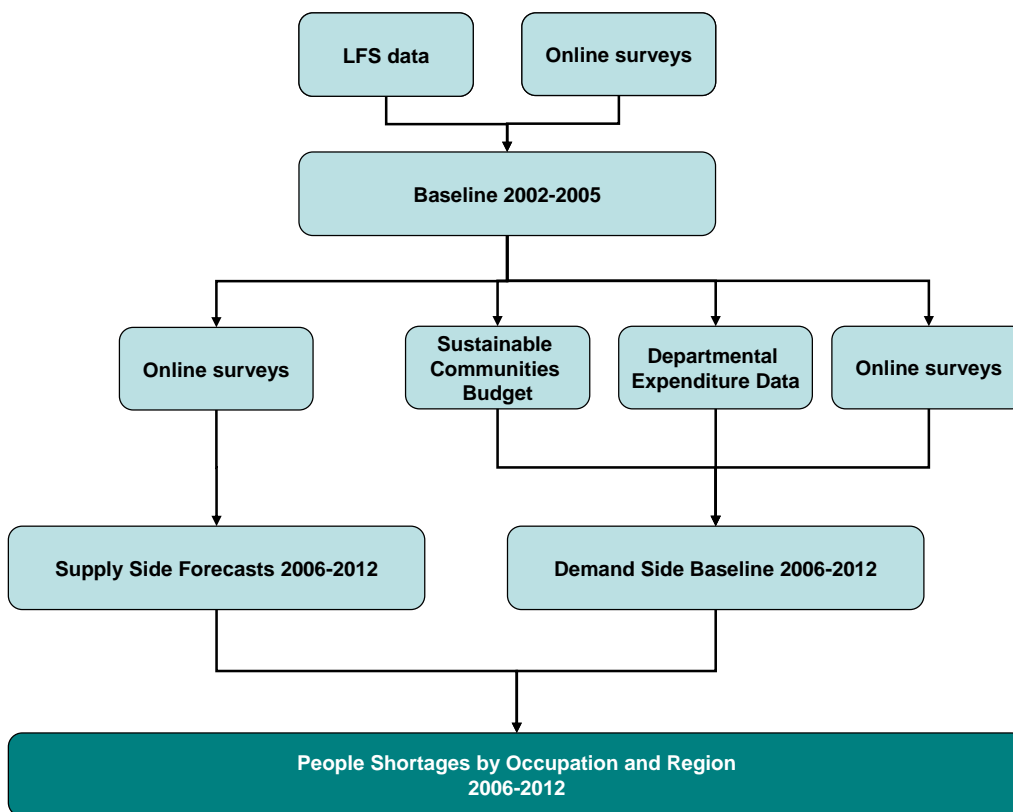
- survey results;
- expenditure trends; and
- assumptions about future policy.

They are necessarily limited in terms of the extent to which any of the above may change. For example, recent announcements on housing provision post date the exercise. Generally, they should therefore be considered indicative rather than absolute.

2.2 Model Structure

The model is structured around a supply forecast and a demand forecast from 2006 onwards. Data are presented as observed trends in the baseline (2002-2005) and then forecasts forward from 2006 to 2012 in terms of supply and demand. These forecasts are based on assumptions drawn from LFS trends, Arup's online surveys, and details of public expenditure plans.

Figure 2.1: Labour Shortages forecasting model structure CHANGE BOTTOM TIER FROM ‘PEOPLE SHORTAGES’ to ‘LABOUR SHORTAGES’



2.3 Labour Force Survey data

The first stage in the baselining and supply side modelling process is the extraction of the relevant data from the Labour Force Survey (LFS). This presents numbers employed by Standard Industrial Classification (SOC) code and by region in a variety of sectors, for years from 2001 to 2005¹.

Some of the occupation categories used for the purposes of this study were easy to extract and could be used directly in the model, whilst others were either not available as identifiable SOC categories, or the SOC categories were too broad and adjustments were made.

LFS categories used in the supply side model are set out in the table below:

Table 2.1: LFS categories used

LAR	Landscape Architects, Urban Designers and Architects	2431 Architects
		3121 Archt technols & town plan technics
DEV	Developer	1231 Property housing & land managers
ENG	Engineer (inc. civil, structural, transport etc)	2121 Civil engineers
		2122 Mechanical engineers
		2123 Electrical engineers
		2128 Planning & qlty control engineers

¹LFS data is available from earlier years, but the SOC classifications changed in 2001 making it difficult to directly compare data.

ENV	Environmental specialist	3551 Conservat & environ protection offs
HOU/WEL	Housing and welfare officer	3232 Housing & welfare officers
NEI	Neighbourhood/community development specialist	1184 Social services managers
		3231 Youth & community workers
PLN	Planner	2432 Town planners
REG	Regeneration/economic development professional	NOT IDENTIFIABLE IN LFS
SUS	Sustainable development specialist	NOT IDENTIFIABLE IN LFS
SRV	Surveyor	2433 Quantity surveyors
		2434 Chartrd surveyors (not qntity surv)
TRA	Transport planner	NOT IDENTIFIABLE IN LFS

Where there is no realistic option for using LFS data for an occupation, ARUP have used alternative figures based on data collected from online surveys. In particular:

- Regeneration and Economic Development professionals are not directly identifiable from LFS data, and there is no obvious category where they may lay. Arup's work to date identifies that many, but not all, professionals now working in regeneration came from the traditional built environment professions.
- Sustainable development specialists are relatively new as a category of professional and are not identifiable in LFS.
- Transport planners, surprisingly, have no dedicated category in LFS.

In order to estimate the current number of individuals working in these three professions Arup have turned to data collected in the online surveys. The survey of organisations shows the proportion of all respondents' employees by occupation. Arup have taken the proportion of planners shown in the survey as well as the proportion of regeneration, sustainable development and transport planning professionals, and set that against the LFS data on planners to derive an estimate of the number of those three categories of professional.

In order to avoid double counting Arup have stripped out a certain percentage based on those respondents to the survey who work in the 'unidentifiable' categories but also have professional qualifications in a discipline which is identifiable in LFS.

Regional splits for data not directly derived from LFS are assumed to be the same as observed across the total English workforce.

2.4 Base Data

This equates to the number of professionals working in each occupation. This information is largely provided by Standard Occupational Classification (SOC) data from the Labour Force Survey (LFS). However, not all of the professions identified by this study can be easily picked out of the SOC classification system, so data collected through the online surveys has been used to supplement LFS data to complete the picture.

The model works by forecasting future labour shortages from a baseline assumption that supply is equal to demand. They should thus be interpreted as medium term forecasts which do not reflect existing labour shortages. Some evidence on existing labour shortages is available from our survey in terms of current shortages, and this is discussed in the main report as well as the Survey Results technical report. These tended to focus on planners, urban designers and architects. Arup have not incorporated these into the model because:

- the data is not thought to be entirely robust; and
- the model focuses on the medium term and aims to identify trends and directions, rather than exact numbers.

Base data 2002-2005

	2001	2002	2003	2004	2005
LAR	50,255	47,973	50,411	53,496	53,223
DEV	77,867	80,404	82,250	83,062	86,441
ENG	166,728	161,044	175,128	173,339	192,128
ENV	12,877	12,439	17,561	15,596	17,732
HOU/WEL	90,450	93,560	111,232	114,885	130,734
NEI	82,562	96,886	97,913	110,224	117,924
PLN	12,309	13,247	14,361	15,178	12,120
<i>REG</i>	<i>16,833</i>	<i>17,157</i>	<i>18,360</i>	<i>19,168</i>	<i>20,587</i>
<i>SUS</i>	<i>4,491</i>	<i>4,578</i>	<i>4,899</i>	<i>5,114</i>	<i>5,493</i>
SRV	79,008	77,507	75,090	85,638	89,320
<i>TRA</i>	<i>4,236</i>	<i>4,317</i>	<i>4,620</i>	<i>4,823</i>	<i>5,180</i>

Source: LFS/Arup

Note: Data on professions not derived directly from LFS data are given in italics

2.5 Supply Forecast 2006 to 2012

LFS data has been forecast forward based on growth rates observed across the four years of LFS data available by occupation, by region; it is assumed that these trends will be unchanged.

Non-LFS data has been forecast across the years by assuming that the proportion of all Sustainable Communities employment represented by those professions is held constant across all years.

This yields a series of individual average annual growth factors for each occupation in each region, which are applied forward to 2012.

2.6 Demand Forecast 2006 to 2012

The demand side of the model is driven by patterns in public spending, and in particular the spending commitments related to sustainable communities. Public expenditure on sustainable communities, and the year on year change in that expenditure, is assumed to be a proxy for the level of activity which will occur in the sector and be the major contributing factor to changes in staffing requirements².

Much of sustainable communities employment and expenditure is directly within the public sector, in local authorities, government agencies etc. Similarly, much private sector work on sustainable communities is indirectly driven by levels of public expenditure as that will determine budgets for consultancy. Even where there is no obvious direct link to public expenditure, such as for housing developers, changes in the scale and direction of government priority, activity and spending will still act as a proxy for the scale of change in the sector.

Most professions have been projected forward using an average annual growth factor derived from the Departmental Expenditure Limits (DEL) for CLG's communities function given by National Statistics for the financial years 2001/2 to 2007/8. This is taken to represent the generalised increase in spending priority across the sector. However it is recognised that there has been an increased priority on some of the functions and therefore some professions have been projected forwards using an accelerated growth rate derived from the Sustainable Communities Plan³ growth in expenditure over the last four financial years. These professions have been selected on the basis of responses to our online surveys and case studies.

² The model holds all other contributing factors, most notably productivity, constant.

³ Annex A, 'Sustainable Communities: Building for the Future', ODP, 2003

2.7 Labour Shortages 2006 to 2012

The supply and demand projections are set against one another to produce a measure of labour shortage by profession and region for the years 2006 to 2012. Labour shortages are expressed as a percentage of labour supply; that is to say, a “20% shortage of planners in 2012” expresses the prediction that by 2012 demand for planners will have grown to be 20% higher than the supply indicated by LFS trends.

The model provides estimates of labour shortages, in terms of people shortages, by occupation and by region. A sensitivity test has been undertaken around the basic model forecasts to examine how the changing patterns of student entrants to the workforce may influence the supply side forecasts after 2006. This helps to provide a more rounded picture of the range of labour shortages which may be experienced over the coming five years.

3 Model Results

3.1 Labour shortages by occupation

The model shows estimates that the labour shortages are predicted to become most acute for architects and urban designers, sustainable development specialists and regeneration and economic development specialists by 2012.

Figure 3.1: Forecast Labour Shortage by Occupation 2012

ARC SHOULD BE LAR AND HOU SHOULD BE HOU/WEL.

ALL COLUMN SHOULD BE REMOVED

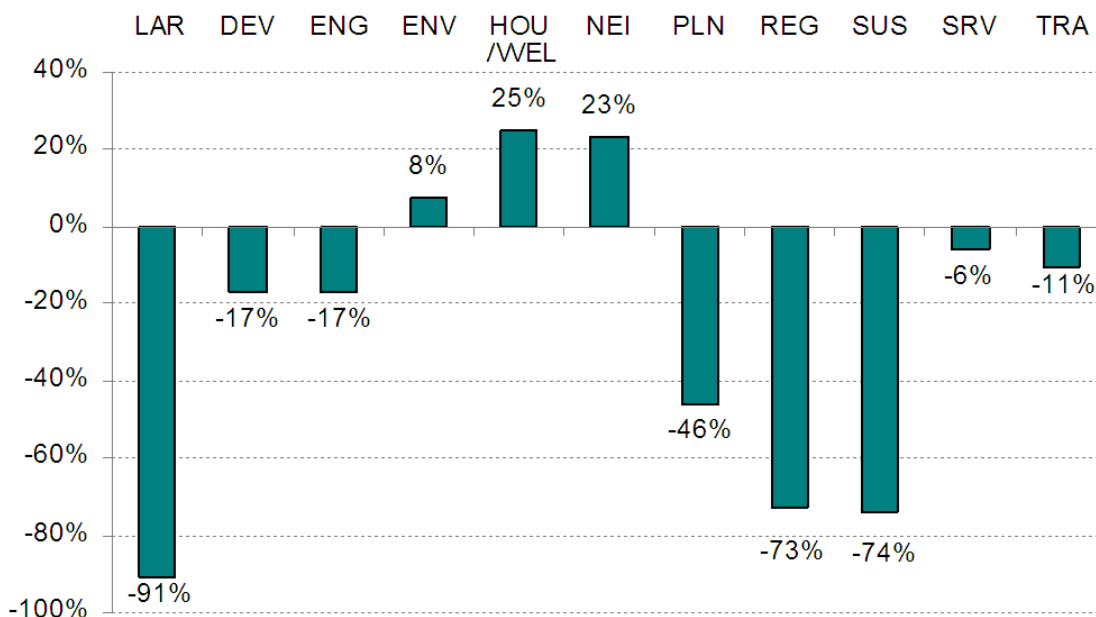


Figure 3.2: Forecast Labour Shortage by Occupation 2006-2012

	2006	2007	2008	2009	2010	2011	2012
LAR	-11%	-22%	-34%	-47%	-61%	-75%	-91%
DEV	-3%	-6%	-9%	-12%	-14%	-16%	-17%
ENG	-3%	-5%	-8%	-10%	-12%	-15%	-17%
ENV	-1%	-2%	-1%	0%	2%	5%	8%
HOU/WEL	3%	7%	10%	14%	18%	21%	25%
NEI	3%	6%	9%	13%	16%	20%	23%
PLN	-9%	-18%	-25%	-32%	-38%	-42%	-46%
REG	-8%	-17%	-26%	-37%	-48%	-60%	-73%
SUS	-8%	-17%	-27%	-37%	-48%	-60%	-74%
SRV	-2%	-4%	-5%	-6%	-7%	-7%	-6%
TRA	-1%	-3%	-4%	-6%	-7%	-9%	-11%

These results have a good degree of consistency with responses to Q21 of the online survey of organisations (Arup asked respondents to indicate in which professions they anticipate there being staff shortages in future).

3.2 Labour Shortages by region

The estimated labour shortage by region show the ‘greater south east’ regions likely to experience the greatest labour shortages, whilst the northern regions are likely to have a surplus of staff.

Figure 3.3: Forecast Labour Shortage by Region: 2012

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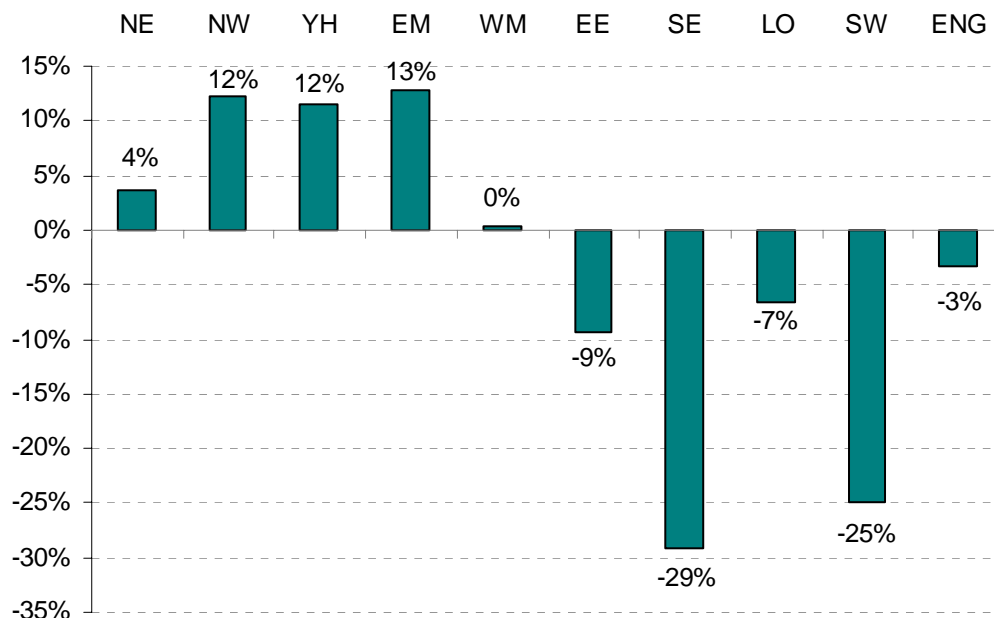


Figure 3.4: Forecast Skills Gaps by Region 2006 – 2012

	2006	2007	2008	2009	2010	2011	2012
NE	-1%	-1%	-1%	0%	1%	2%	4%
NW	1%	2%	4%	6%	8%	10%	12%
YH	1%	1%	3%	4%	6%	9%	12%
EM	1%	2%	3%	5%	7%	10%	13%
WM	-1%	-1%	-1%	-1%	-1%	0%	0%
EE	-1%	-3%	-4%	-6%	-7%	-8%	-9%
SE	-4%	-9%	-13%	-17%	-21%	-25%	-29%
LO	-2%	-3%	-4%	-5%	-6%	-6%	-7%
SW	-5%	-9%	-14%	-17%	-20%	-23%	-25%

3.3 Sensitivity test results

Some of the labour shortages observed are likely to be affected by trends in the number of students undertaking related courses at university. Not all professions considered have a degree directly associated with them but, where it is reasonably clear that trends in numbers graduating from particular degree is likely to translate into changes in labour supply patterns in that profession, it has been included.

Arup have used data from the Higher Education Standards Agency (HESA) to apply a secondary annual growth factor (based on observed HESA trend data in student numbers graduating from relevant courses and responses to the survey of individuals concerning age).

The results of the sensitivity test are fairly consistent with the central estimates.

Figure 3.5: Forecast Labour Shortages by Profession (sensitivity test)

	2006	2007	2008	2009	2010	2011	2012
LAR	-11%	-22%	-34%	-47%	-61%	-75%	-90%
DEV	-3%	-6%	-9%	-12%	-14%	-16%	-17%
ENG	-3%	-5%	-7%	-10%	-12%	-14%	-16%
ENV	-1%	-2%	-1%	0%	2%	5%	8%
HOU/WEL	3%	7%	10%	14%	18%	21%	25%
NEI	3%	6%	10%	13%	16%	20%	24%
PLN	-9%	-18%	-25%	-32%	-37%	-42%	-46%
REG	-8%	-17%	-26%	-37%	-48%	-59%	-72%
SUS	-8%	-17%	-27%	-37%	-48%	-60%	-74%
SRV	-2%	-4%	-6%	-7%	-7%	-7%	-6%
TRA	-1%	-3%	-4%	-6%	-7%	-9%	-11%

Figure 3.6: Forecast Labour Shortage by Region (sensitivity test)

	2006	2007	2008	2009	2010	2011	2012
NE	0%	-1%	0%	0%	1%	2%	4%
NW	1%	2%	4%	6%	8%	10%	12%
YH	1%	1%	3%	4%	7%	9%	12%
EM	1%	2%	3%	5%	7%	10%	13%
WM	0%	-1%	-1%	-1%	0%	0%	1%
EE	-1%	-3%	-4%	-6%	-7%	-8%	-9%
SE	-4%	-8%	-13%	-17%	-21%	-25%	-29%
LO	-2%	-3%	-4%	-5%	-6%	-6%	-6%
SW	-5%	-9%	-13%	-17%	-20%	-22%	-25%