

# ESIMeC SKILLS FORECASTING MANUAL AND TOOL



## Skills forecasting at city level

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## Why skills forecasting matters

Skills forecasting has become more important in a global economy which recognises the importance of human capital as a key resource for growth, in an era of high unemployment yet persistent skill shortages in many advanced economies. Skills forecasting allows analysts and policy makers to not only examine the skills needs of today's labour market but to look forward to future skills shortages and plan and implement strategies and policies to help correct for these potential skill shortages.

Skills forecasting will allow cities to quantify future skills demand in terms of how many jobs will be created, what sectors and occupations will demand human capital and to what skill level will those filling future vacancies be required to have.

As one of the world's leading economic forecasting groups, Oxford Economics understands future skill forecasting is key for aligning supply with demand. Oxford Economics welcomes the proactive nature of ESIMeC to examine future skills needs. We hope that this brief manual along with the skills forecasting toolkit which has been developed in conjunction with the ESIMeC partner cities will form the basis of future decision making and discussion around the importance of skills within local economies.

On behalf of Oxford Economics I would like to thank all partner cities for their participation and responses to questionnaires and workshops conducted by Oxford Economics over the course of this project.

Graeme Harrison  
Head of Skills Forecasting  
Assistant Director Oxford Economics

## Why a skills forecasting manual and a tool for cities

The European Employment Strategy seeks to create more and better jobs. Upgrading skills is not enough and ensuring a better match between the supply of skills and labour market demands is just as necessary.

As engines of growth, cities need to consider how to act and react in the rapidly changing and competitive global economy. Skills forecasting at city level has an important role to play in this as it can enable cities to gain an in-depth picture of skills shortages and demand within their functional economic area. Having this information and intelligence on a local level can help cities develop and implement a skills and employment strategy that is based on real local need and that can address real local issues as well as responding to employers' demands.

We hope the ESIMeC skills forecasting manual and accompanying tool will help city practitioners on their journey to a job rich recovery and growth.

Daniel Garnier  
ESIMeC Lead Partner  
Basingstoke and Deane Borough Council

## Definition of skills

Skills are often defined as:

*“An ability and capacity acquired through deliberate, systematic, and sustained effort to smoothly and adaptively carryout complex activities or job functions involving ideas (cognitive skills), things (technical skills), and/or people (interpersonal skills)”*



When we consider skills and skills forecasting we usually focus on formal qualifications in a particular subject and obtained to a particular level. However, in the broad sense skills encapsulates many other aspects such as non-accredited workplace skills, years of experience in a profession or field and soft skills such as team work and management skills.

The paradox of today's global labour market is that in many advanced economies there are high levels of unemployment against a backdrop of talent/skills gaps leading to underemployment and unfilled vacancies. This skills mismatch problem is why skills forecasting has become so important in recent years.

The purpose of skills forecasting is to allow analysts and policy makers to quantify future skills demand in terms of how many jobs will be created, what sectors and occupations will demand human capital and to what skill level will those filling future vacancies be required to have. Globalisation has made economies much more interconnected and diverse, as a result economies are no longer typically dominated by just a few sectors as they previously were. With so many different sectors operating within an economy a wide range of skills which differ by sector will be required in order to thrive and compete locally and globally.

In summary skills demand forecasting helps to:

- Predict demand and/or limit the extent of skill shortages and mismatches
- Avoid missing out on investment or losing existing jobs to other locations due to labour and skill shortages
- Better align existing supply of skills of education & training systems and the unemployed and to inform funding, and
- Better advise young people on career choices.

## Who produces skills forecasts

Many countries around the world already use skills forecasting as a technique to help better understand their labour markets and future skills needs. The table below outlines a range of countries which take a quantitative approach to skills forecasting. National census data combined with sample surveys such as Labour Force Surveys tend to form the basis of the underlying data used to produce the skills forecasts.

**Table 3.1: Which countries produce skills forecasts**

Country	Data used	Who compiles the forecasts?	Who uses the forecasts?
<b>Australia</b>	Census data and sample surveys	Centre of Policy Studies	Australian National Training Authority
<b>Austria</b>	Census data, national accounts, companies database, micro data of unemployment	Austrian Academy of Science, Austrian Institute for Economic Research, Institute for Advanced Studies	Low demand for results
<b>Canada</b>	National census, monthly labour force survey	Human Resource Development Canada	Federal Government
<b>Cyprus</b>	Census and labour force survey	Human Resource Development Authority	-
<b>France</b>	Census, labour force survey, national accounts	Ministry of Employment, Ministry of Education, Institute of Economic Forecasting	State and regional governments
<b>Germany</b>	Labour force survey, national census, micro census, expert interviews	Institute For Labour Market and Vocational Research	Federal and regional governments
<b>Great Britain</b>	Labour force survey, census, employer skills survey, establishment based surveys	The Institute for Employment and Research	Government bodies, local authorities, training and enterprise councils
<b>Japan</b>	Census basic survey of employment structure	Ministry of Labour	Government and social partners
<b>Netherlands</b>	Labour force survey, unemployment survey, school leavers follow up survey	Research Centre for Education and the Labour Market	Government ministries, individuals and firms for research
<b>Northern Ireland</b>	Labour force survey, IDBR, employer survey, training data	Priority Skills Unit	Department for Employment and Learning, Sector Skills Councils, NI expert Group on Skills, Career counsellors
<b>Republic of Ireland</b>	Labour force survey, Census	Economic and Social Research Institute	Government and state agencies for planning education and training
<b>Spain</b>	Labour force survey, National accounts, unemployment data	National Institute of Employment	Expert groups
<b>Sweden</b>	Data collected from questionnaires	Mainly Statistics Sweden and National Labour Market Administration	-
<b>USA</b>	Labour force survey, Census	Bureau of Labour Statistics	Government agencies concerned with training, education or migration. Career counsellors, individuals and firms

Source: CEDEFOP

## Approach to skills forecasting

There are several approaches to skills forecasting, each with different strengths and limitations. It is not possible to define a single approach as the best. The decision of which approach to use is relative to the specific situation, geography and sector. All approaches if undertaken correctly can add value. The best approach for a given situation undertaken incorrectly or insufficiently will produce poor information and results. In skills forecasting best practice could be said to be getting the balance right between the different approaches, depending on the situation, and integrating the approaches where appropriate.

**Figure 4.1: Methods of skills forecasting**

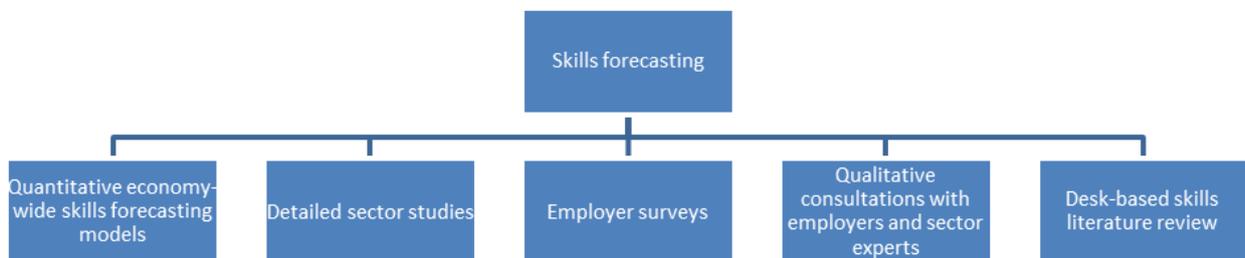


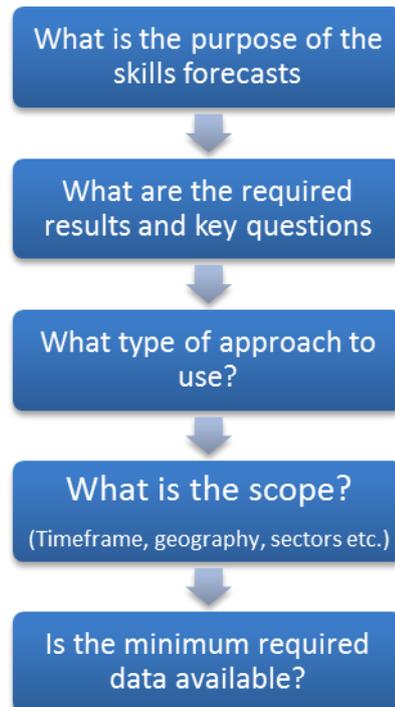
Table 4.1 outlines the limitations of each of the potential skills forecasting approaches. This helps to further clarify that each approach has its strengths and weaknesses. The usefulness of skill forecasts depends on the information they convey; do they answer questions being asked and how this influences decisions. By determining what questions you wish to answer with skills forecasting from the outset will help determine which approach or approaches are the most suitable to the individual situation.

**Table 4.1: Limitations of skills forecasting methods**

<b>Quantitative economy-wide skills forecasting models</b>	Data 'hungry', data not always available or reliable, data not always a true reflection of skill demand, high level and sometimes lacking in specific sector detail
<b>Detailed sector studies</b>	Often lack quantification, undertaken in isolation from rest of economy
<b>Employer surveys</b>	Biased responses, difficult to distinguish between what employers want and need, not all employers have specific skill requirements
<b>Qualitative consultations with employers and sector experts</b>	Often lack quantification, how to ensure a representative sample, also need to consult with tomorrow's employers not just today's employers (but where to find them)
<b>Desk-based skills literature review</b>	Often does not exist or is out of date

Figure 4.2 below poses a series of key questions that should be asked prior to beginning the process of skills forecasting. These questions will help steer the process so the final outputs meet the requirements of the user / stakeholders as well as identifying any issues such as scope or data limitations at the outset.

**Figure 4.2: Key initial decisions to make prior to skills forecasting**



To conduct skills forecasting using the quantitative economy-wide skills forecasting models requires a wide range of data inputs. Often regarded as data 'hungry' this approach offers a detailed quantitative approach to skills forecasting without issues of bias often exhibited with other approaches such as employer surveys.

Both historic and forecast data is required to be gathered before constructing quantitative skills forecasting models.

*Core historic data requirements:*

- Employment by sector
- Occupation structure of sectors
- Skill structure of sectors
- Working age population
- Unemployment

*Core forecast data requirements:*

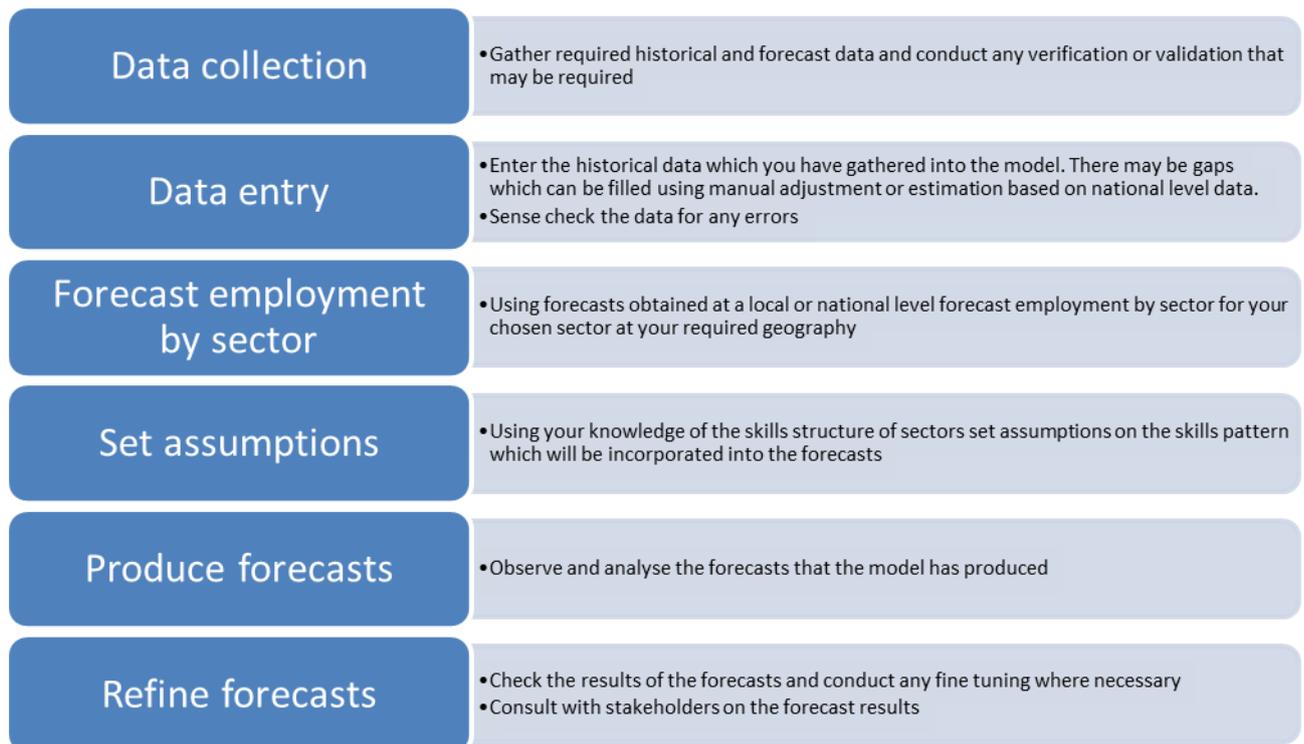
- Employment by sector

There are other forecast variables that are required such as replacement demand within the economy but these can be based on national assumptions where reliable data is not available.

In relation to historical data, ordinarily the majority of this data can be sourced from national statistics offices, National Census (although these can often be quite outdated due to frequency of which they are carried out) and Eurostat. Obtaining this data at a geographical level below national level may be difficult depending on individual regional/national statistics collection.

The forecast data required can be obtained from commercial consultancies or academic groups. There may also be official projections and existing regional forecast models compiled at a local and national level which would provide the necessary data. Engagement with relevant statistics organisations at the outset of a skills forecasting exercise is vital, to scope what data is available and at what level of detail.

**Figure 5: Stages of quantitative skills demand forecasting**



### **Making use of skills forecasts**

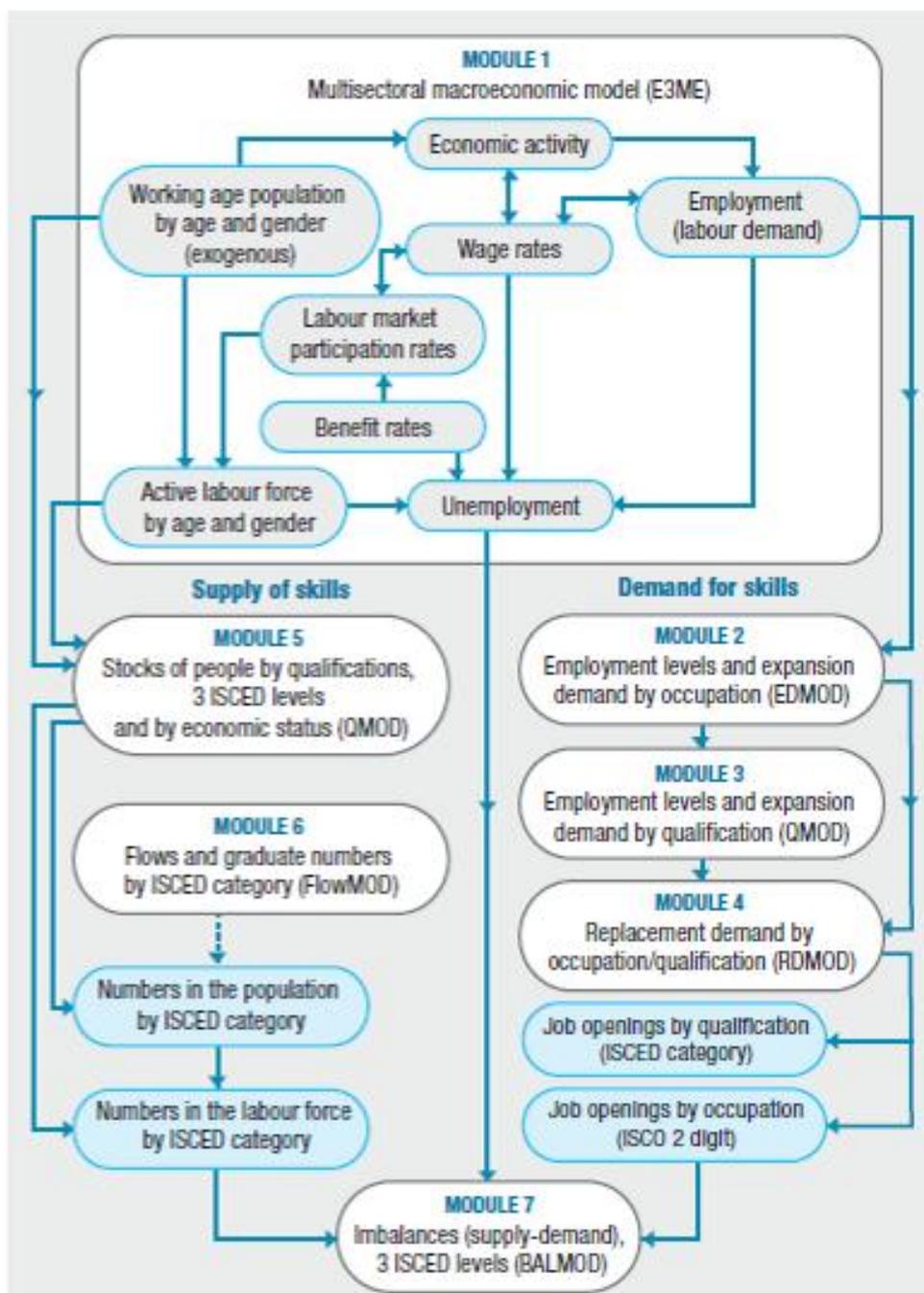
- It is vital that where skill forecasts are produced they convey useful information to key stakeholders. The needs of the stakeholders should be considered from the outset and help shape decisions regarding what approaches to use.
- Think broadly about stakeholder groups and bring together employers, education & training institutions, employment agencies, students, unemployed where possible or where this will add value to the forecasting process. Effective collaboration is key.
- Share results and engage in discussions – incorporate feedback, can improve forecasts and enhance credibility.
- Present key messages – will there be skill shortages or surpluses in future? In which sectors? What will the impact be? What should be done differently? But warn stakeholders of caveats of skills forecasting – not 100% accurate.
- Regularly update skill forecasts – the economy can change quickly, especially at city level – skill forecasts can date quickly; regularly update skills policy messages.
- Track outcomes versus forecasts and learn lessons.

## Skills forecasting in practice

With the openness of the European labour market, the need to identify occupations, skills, competences and qualifications, which will be demanded in the future has become crucial. With such diverse national labour markets across Europe finding ways to obtain consistent and comprehensive information on future skill demand as well as supply in Europe became a policy priority. The first national level pan European forecast of skill demand providing consistent and comprehensive medium-term projections of employment and skill needs across Europe until 2015 and 2020 was published by CEDEFOP in 2008.

Further work has been done to produce regular forecasts integrating skills supply and demand. These skills forecasts have become one of many pieces of information that contribute to a more detailed, consistent and plausible picture of the European economy.

**Figure 5.1: CEDEFOP conceptual framework of modelling the demand for and supply of skills**



CEDEFOP use a modular approach which combines a multi-sectoral macroeconomic model with occupational and qualification expansion demand and replacement demand within the economy. CEDEFOP base their forecasts on data from Eurostat sources, adopting common methods and models. This required developing a basic database and tools for a comprehensive and consistent set of skill projections for EU-25+. A key issue with CEDEFOP's forecasts and indeed any skills forecasts is the use of the best possible data to measure employment structures using a common framework.

Although the ESIMeC skills forecasting toolkit is only based on skill demand, the approach adopted is the same as that used by CEDEFOP. National level assumptions that have been incorporated into the model are based on the same assumptions that are used by CEDEFOP.

## Skills forecasting at city level

Traditionally, skills forecasting is carried out at a national level to influence government policy, and national skills provision and employment strategies. However, it is difficult to use this data to inform strategies and skill provision at a local level and does not take account of the needs of local employers. Each city has different economic requirements and faces different issues when it comes to developing their labour market. Skills forecasting at a city level would reflect the local needs and context to ensure that the workforce is suitably skilled to meet economic demand.

Skills forecasting can be an effective way to gain an in-depth picture of the current and future skills needs of employers to assess skills shortages at city level. By providing intelligence and data, it can also be an effective tool to influence policy making and training provision, as well as influencing inward investment and economic growth within cities.

Skills forecasting not only involves collecting and analysing data but also requires a dialogue with employers to collect qualitative information that a tool in itself cannot produce. As such, skills forecasting can help establish and develop positive relationships between the municipality and local employers. It shows the municipality is committed to supporting the private sector to fill the skills gap locally which benefits both the local economy and population.

A dialogue with employers is not the only qualitative aspect of skills forecasting. It also requires engaging with education providers to understand the current local training and education provision as well as future plans in terms of new courses or training. Skills forecasting will also highlight any mismatch between employer need and the take up of courses by students, which can be a useful tool to help young people identify the careers that are likely to lead to employment opportunities locally.

Finally, skills forecasting at city level will help foster dialogue and build bridges between local businesses and educational institutions. The analysis of the results of skills forecasts will provide both quantitative and qualitative evidence that will help influence local skills and training provision, enabling education providers to respond more adequately and *effectively to business needs*.



## What is needed for effective skills forecasting at city level

- Data – to use the skills forecasting tool effectively a whole set of data will need to be collected. This includes:
  - Up-to-date information and data on the demand side of the labour market:
    - Historic data
      - Employment by sector
      - Occupation structure of sectors
      - Skill and subject structure of sectors and occupations
      - Replacement demand of sectors and occupations, i.e. ‘churn’ in jobs
    - Forecast data
      - Employment by sector, occupation and skill level – including for existing firms and firms of tomorrow
      - Replacement demand
  - Up-to-date information and data on the supply side of the labour market:
    - Historic data
      - Working age population and skills structure
      - Education enrolments and qualifiers by different level and subject areas and destinations of students
      - Migration and commuting
- Understanding of where to find this data – census, labour market surveys, national and regional statistical offices, Eurostat, existing regional and national forecasting models
- Capacity to ask for the data effectively and to “speak the right language” with statistics experts
- A detailed and realistic implementation framework for how objectives will be achieved including joint activities, budgets, responsibilities, timescales, etc.
- Consideration of benchmarking your city against others to help anticipate the future shape of your labour market
- Understanding of the limitations of different approaches – e.g. models are data hungry, data may be unreliable / out of date; qualitative approaches can be biased / lack quantification
- Development of different assumptions and scenarios to be used in your skills forecasting exercise
- Development of results which are linked to / can be easily compared to e.g. regional and national skills forecasts
- Robust analysis of demand and supply
- Clear methods for sharing and using the results of your skills forecasts to influence education and training provision in your city
- Acknowledgement that replacement demand (i.e. the demand for skills due to people leaving the labour market e.g. through retirement or sickness) creates flows which are much more influential than sectoral shifts
- Where appropriate, an ability to operate at functional labour market level which may not account for administrative geographical boundaries

## How to achieve effective skills forecasting at city level

**SHARED UNDERSTANDING OF WHAT SKILLS ARE** is a vital tool if you are going to get the consistency of this recipe right. Cities need to consider this with other key stakeholders and particularly employers and education and training providers. For many, skills comprise not only formal qualifications but soft skills, years of experience, non-accredited workplace skills and “attributes that make employees effective and productive in their roles”. The EU Framework for Key Competences includes competences in ‘traditional’ subjects, such as mother tongue literacy, numeracy, knowledge of foreign languages, science and IT skills alongside other skills, such as learning to learn, social and civic competence, initiative-taking, entrepreneurship, cultural awareness and self-expression.

Perhaps not surprisingly one of the most important utensils is **RECOGNITION OF WHY SKILLS MATTER**. Across the EU, economies are becoming more diverse and city economies nowadays are rarely dominated by a small number of industries for which skill needs are well established and understood. Skills needs differ significantly by sector. By anticipating future skills needs, cities can consider how to meet these needs and/or limit the extent of skill shortages and mismatches. This helps them to avoid missing out on investment or losing existing jobs to other locations due to labour and skill shortages. Skills and education / training systems can be better aligned to the needs of employers and unemployed (young) people can make more effective career choices.

**ENGAGING KEY STAKEHOLDERS THROUGHOUT THE PROCESS** is also essential. Cities need to ask stakeholders what information would be useful before designing a tool. They should think broadly about stakeholders and bring them together in a long term collaborative framework. Employers, education and training institutions, employment agencies, students and unemployed alike should engage in discussions. Incorporating feedback from these stakeholders can improve forecasts and enhance credibility. A tool produces evidence which feeds into discussions and brings focus and purpose.

Developing **LOCAL ABILITY TO ACT AND REACT TO THE RESULTS** is also important. The information from skills forecast needs to be shared effectively with stakeholders. Key messages should be presented in a user-friendly way and consider, for example, if there will be skill shortages or surpluses in the future. In which sectors? What will the impact be? What should be done differently? It is also important to warn stakeholders of caveats of skills forecasting. They are not 100% accurate and come with all sorts of health warnings. They also need to be regularly updated – the economy can change quickly, especially at city level.

# ESIMeC Skills Forecasting Tool

The **ESIMeC Skills Forecasting Tool** is to be used alongside this manual. It has been developed by Oxford Economics Ltd in consultation with the ESIMeC partner cities. It is aimed to be a practical and user-friendly tool to help city practitioners involved in economic and employment development understand and address their city's future skills shortages.

**ESIMeC Future Skills Demand Forecast Template**

**MENU** **OUTPUTS** **GUIDE** ← Navigation buttons

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- [Step 2: Local Economy Forecasts](#)
- [Step 3: Existing Sectoral Data](#) ← Links to individual steps
- [Step 4: Existing Occupational Data](#)
- [Step 5: Sector vs Occupation Matrix](#)
- [Step 6: Occupation vs Skills Matrix](#)
- [Step 7: Replacement Demand](#)

[Forecast Outputs](#)

[User Guide](#)

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To complete this tool cities will need to collect data on the supply and demand side of the labour market. This data can be found in the national census, labour market surveys, local, national and regional statistical offices, Eurostat or existing regional and national forecasting models.

The **ESIMeC Skills Forecasting Tool** is an Excel document which consists of a series of data tables and spreadsheets. A step by step guide is included in the tool and provides guidance and information on how to complete the tables.

**ESIMeC Future Skills Demand Forecast Template**

**Step 1: Definitions**

**City:** Basingstoke and Deane ← Select Partner City

**Sectors:**

1	Agriculture
2	Mining and
3	Manufacturing
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

Fill in your sectors

**Occupations:**

1	Managers, Directors and Senior Officials
2	Professional Occupations
3	
4	
5	
6	
7	
8	
9	

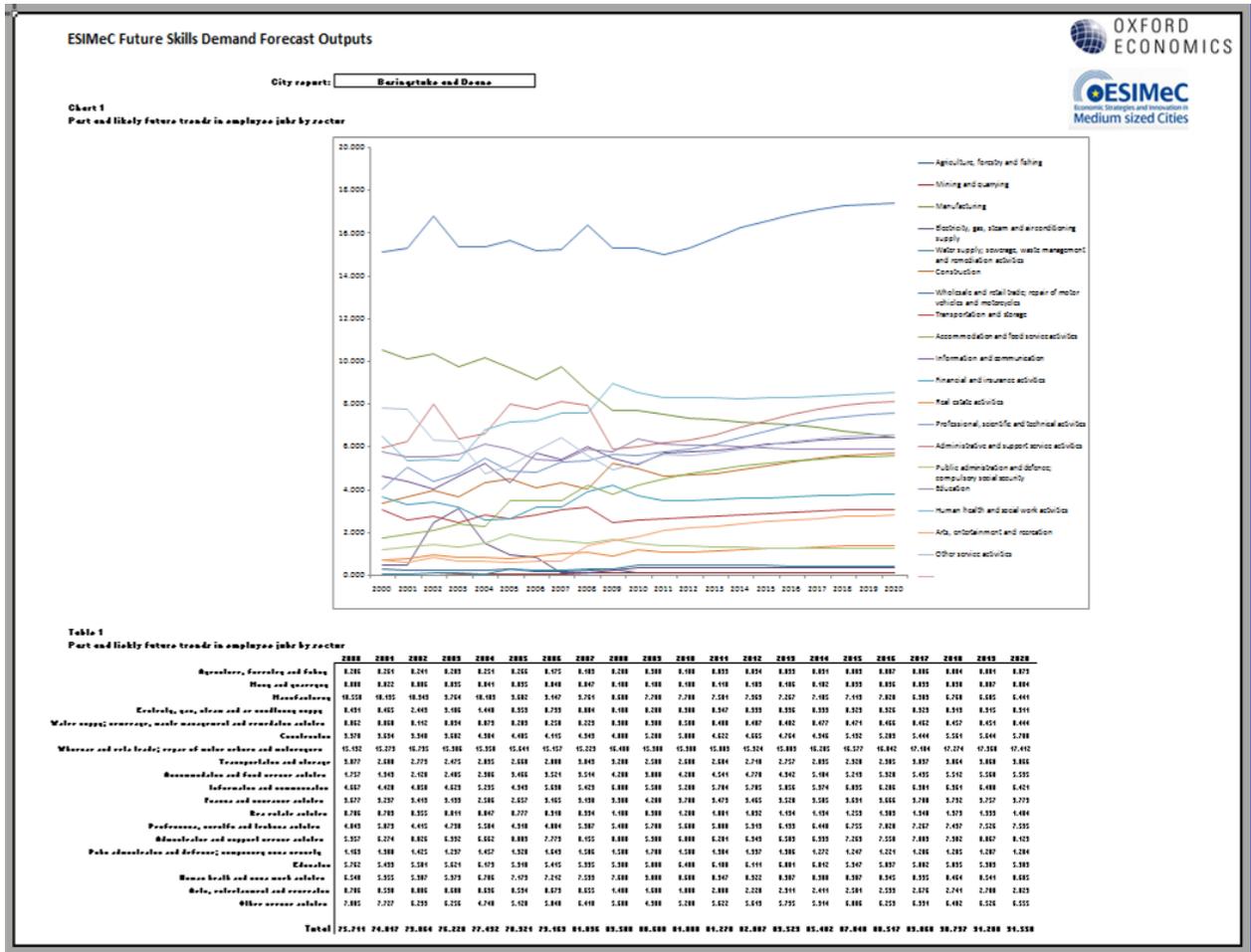
Fill in your occupations

**Skill levels:**

1	Low Skill
2	
3	

Fill in your skill level definition

Once all the sections of the **ESIMeC Skills Forecasting Tool** have been completed, the tool will produce a series of charts and tables based on the data entered. These tables and charts give a visual overview of labour market current and future trends as well as skills levels and sectoral changes.



The **ESIMeC Skills Forecasting Tool** has been loaded on the attached USB memory stick or can be downloaded at [www.urbact.eu/esimec](http://www.urbact.eu/esimec)

## Contact details

For more information on the ESIMeC Skills Forecasting Tool, please contact:

- Daniel Garnier, Partnerships and Skills Officer and ESIMeC Lead Partner, Basingstoke and Deane Borough Council, at [esimec@basingstoke.gov.uk](mailto:esimec@basingstoke.gov.uk)

For more information on Oxford Economics, go to [www.oef.com](http://www.oef.com)

## ESIMeC

**ESIMeC** (Economic Strategies and Innovation in Medium-sized Cities) is an URBACT II project which brings together **eight medium-sized cities** from across Europe to find **innovative approaches** to economic recovery, growth and resilience. The partners have placed their main asset, their **people**, at the heart of the project and define how **workforce development** and **demand-led skills provision** can be the main **drivers** for a thriving **local economy**.

For more information on ESIMeC go to <http://www.urbact.eu/esimec>



URBACT II

**URBACT** is a European exchange and learning programme promoting sustainable urban development.

It enables cities to work together to develop solutions to major urban challenges, reaffirming the key role they play in facing increasingly complex societal challenges. It helps them to develop pragmatic solutions that are new and sustainable, and that integrate economic, social and environmental dimensions. It enables cities to share good practices and lessons learned with all professionals involved in urban policy throughout Europe. URBACT is 300 cities, 29 countries, and 5,000 active participants

[www.urbact.eu/esimec](http://www.urbact.eu/esimec)



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DEVELOPMENT

