Outline

• Introduction
• Workforce and Skills: the main concepts
• Overview from the European/ the UK perspective
• Vocational Education and Training (VET) in Engineering
• Lift Engineering Education / Training Pathway
Workforce and Skills: workforce shortage

**Workforce shortage**: the quantity of workers needed, exceeds the available supply.

**Two types:**

- **Quantitative shortages** - caused by an aggregate excess demand with insufficient workers to fill the overall demand.

- **Qualitative shortages** - shortages in particular skills, occupations or sectors, while available workers do not have the skills, preferences or information needed to fill these shortages.

  - labour demand and labour supply are in equilibrium, but there is simultaneously a large share of unfilled vacancies and a high unemployment rate, caused by qualitative discrepancies between supply and demand.

  - the qualitative characteristics are mainly related to **skills** (as well as to work experience, age, gender and work preferences).

Source: *Labour Market Shortages in the European Union*

The Committee on Employment and Social Affairs of the European Parliament (EMPL)

March 2015
# Workforce shortages: types and specific causes

<table>
<thead>
<tr>
<th>Type</th>
<th>Specific causes</th>
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<tbody>
<tr>
<td></td>
<td>Supply side</td>
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<td>Demand side</td>
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<tr>
<td>Quantitative</td>
<td>Decline in the population of working-age:</td>
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<tr>
<td>Aggregate excess</td>
<td>• demographic trends</td>
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<td>demand</td>
<td>• emigration</td>
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<td>Decrease in the participation rate:</td>
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<td></td>
<td>• inactivity of marginal groups</td>
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<td></td>
<td>• early retirement</td>
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<td></td>
<td>• low participation of women, disabled</td>
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<tr>
<td>Qualitative</td>
<td></td>
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<tr>
<td>Specific excess</td>
<td></td>
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<tr>
<td>demand</td>
<td></td>
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<tr>
<td>Skill mismatch</td>
<td>Educational choices and options of students</td>
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<td>Skill mismatch</td>
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<td>Preferences of labour supply</td>
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<tr>
<td>Preference mismatch</td>
<td>Suboptimal search channels</td>
</tr>
<tr>
<td>Information mismatch</td>
<td>Suboptimal search channels</td>
</tr>
</tbody>
</table>

Source: Labour Market Shortages in the European Union
The Committee on Employment and Social Affairs of the European Parliament (EMPL)
March 2015
Workforce shortages: qualitative shortages

- The main causes of qualitative workforce shortages:
  - **Skill mismatch** - imbalance between demand and supply of particular skills, both in terms of the level of the skills and the type of skills; may be caused by
    - changes in demand, for example due to **technological change**,
    - changes in supply, for example due to a ‘wrong’ **choice of an education**.
  - **Preference mismatch** - available vacancies, for example with respect to working conditions, do not match with the preferences of potential workers.
  - **Informational mismatch** – due to a lack of information among job seekers and employers about the available vacancies and candidates
Workforce Shortages in the EU

• No evidence of quantitative labour shortages at EU level.
• The tightness of the workforce market has decreased substantially compared to the situation prior to the last economic crisis.
• Shortages in the broad sectors industry, services and construction is well below its pre-crisis levels.
• But two in five companies claim to have difficulties recruiting people with the required skills.
• On the other hand many employees have difficulties to find a job which matches their qualification level.

Labour Market Shortages in the European Union
The Committee on Employment and Social Affairs of the European Parliament (EMPL) March 2015
Education and Training

• Vision for the Future: Europe where citizens have more and better skills.
  ➢ education and training systems propose innovative and equitable approaches such as flexible learning pathways, and focus on developing essential skills as well as intellectual and job-specific skills.
  ➢ education and training’ and ‘work’ should not be two separate worlds, but should be more integrated into a single lifelong learning process, open to innovation and open to all.

Source: New Skills for New Jobs: Action Now
Engineering Workforce and Skills – the UK perspective

Engineers are the people who can create practical solutions to our 21st Century challenges of sustainability, housing and an ageing population. And we need more of them. Sir James Dyson

• Engineering drives technological progress and engineering skills are needed throughout the economy.

• *Ensuring the supply of engineering skills is a long-term problem that needs to be solved collectively through longer term solutions working across Government and in partnership with employers and the engineering community*

Review of Engineering Skills
Department for Business Innovation & Skills
November 2013
Vocational Education and Training (VET) in the UK

- Two main pathways into Engineering: the academic route through higher education, and the vocational route through VET: apprenticeships, further education and other work-place based training.
- The issue of skills associated with VET – has long history in the UK
- VET should be responsive and able to deal with new skills as they are needed.
- National Vocational Qualifications
- University Technical Colleges
- Diplomas
- Apprenticeships
Vocational Education and Training: NVQs

• NVQs - National Vocational Qualifications, competence/ work-based qualifications in England, Wales and Northern Ireland that are achieved through assessment and training.

• For the award learners have to prove their competence (ability) to carry out their work to the required standard.

• Five levels of NVQ; from Level 1 (basic work activities) to Level 5 (for senior management).
Vocational Education and Training: UTCs

- University Technical Colleges (UTCs).
- Provide high-quality education for 14-19 year olds with a clear focus on employment.
- Students develop the key practical and technical skills that employers need through employers’ engagement.
- A young person can start at a UTC, graduates with a good set of GCSEs (General Certificate of Secondary Education exams), move on to A or Tech levels, and then move on to a higher apprenticeship and/or a university degree.
Vocational Education and Training: Apprenticeships

- Apprenticeships include elements of on the job and off the job training, leading to industry recognised standards or qualifications.

<table>
<thead>
<tr>
<th>Name</th>
<th>Level</th>
<th>Equivalent educational level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediate</td>
<td>2</td>
<td>5 GCSE passes at grade A*– C or 9 – 4</td>
</tr>
<tr>
<td>Advanced</td>
<td>3</td>
<td>2 A level passes/Level 3 Diploma/International Baccalaureate</td>
</tr>
<tr>
<td>Higher</td>
<td>4, 5, 6 and 7</td>
<td>Foundation degree and above</td>
</tr>
<tr>
<td>Degree</td>
<td>6 and 7</td>
<td>Bachelor’s or master’s degree</td>
</tr>
</tbody>
</table>
### Vocational Education and Training: apprenticeships statistics

#### Apprenticeship starts in England by sector subject area since 2009/10, thousands

<table>
<thead>
<tr>
<th>Sector</th>
<th>09/10</th>
<th>10/11</th>
<th>11/12</th>
<th>12/13</th>
<th>13/14</th>
<th>14/15</th>
<th>15/16</th>
<th>16/17</th>
<th>17/18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business, Administration and Law</td>
<td>77</td>
<td>134</td>
<td>165</td>
<td>160</td>
<td>126</td>
<td>143</td>
<td>143</td>
<td>138</td>
<td>111</td>
</tr>
<tr>
<td>Health, Public Services and Care</td>
<td>44</td>
<td>90</td>
<td>109</td>
<td>123</td>
<td>109</td>
<td>130</td>
<td>132</td>
<td>139</td>
<td>88</td>
</tr>
<tr>
<td>Engineering and Manufacturing Technologies</td>
<td>43</td>
<td>55</td>
<td>70</td>
<td>66</td>
<td>65</td>
<td>74</td>
<td>78</td>
<td>75</td>
<td>59</td>
</tr>
<tr>
<td>Retail and Commercial Enterprise</td>
<td>62</td>
<td>103</td>
<td>108</td>
<td>101</td>
<td>87</td>
<td>90</td>
<td>85</td>
<td>75</td>
<td>54</td>
</tr>
<tr>
<td>Construction, Planning and the Built Env.</td>
<td>21</td>
<td>22</td>
<td>14</td>
<td>14</td>
<td>16</td>
<td>18</td>
<td>21</td>
<td>21</td>
<td>23</td>
</tr>
</tbody>
</table>

#### Apprenticeship starts in England by sector subject in 2017/18, thousands

- Business, Administration and Law: 111
- Health, Public Services and Care: 88
- Engineering and Manufacturing Technologies: 59
- Retail and Commercial Enterprise: 54
- Construction, Planning and the Built Env.: 23

A Powell, *Apprenticeship Statistics: England*
Briefing Paper No. 06113, 11 Feb 2019
House of Commons Library
The Engineering and Manufacturing apprenticeship starts in England over the last years have fallen, after the initial growth period.
Lift Engineering Education and Training Pathway in the UK

- **MSc Lift Engineering (Univ. of Northampton)**
  - Field Engineer/Design Engineer
  - 2 Years’ experience in Engineering

- **FDSc Lift Engineering (Univ. of Northampton)**
  - Field Engineer/Design Engineer
  - Higher/degree Apprenticeships
  - Apprentice/Time served Apprentice

- **HNC Lift Technology (Univ. of Northampton)**
  - Service Mechanic

- **LEIA Distance Learning Course**
  - National Vocational Qualifications (NVQs) LEIA/EAL
  - Callout/Maintenance Mechanic

- **Consulting Engineer**
  - Research degree in Lift Engineering (Univ. of Northampton)

- **Engineering Manager/Senior Engineer**
  - Consulting Engineer
  - Research degree in Lift Engineering (Univ. of Northampton)

**Advanced Apprenticeships**

**Consulting Engineer**
- Research degree in Lift Engineering (Univ. of Northampton)
Academic Awards in Lift Engineering

Qualifications:

- Foundation Degree (FdSc)
- Higher National Certificate (HNC)
- Master of Science (MSc)
- Research Degrees (PhD/ MPhil)
Life Long Learning (LLL) Provision for Lift Engineering

PhD / MPhil
MSc Lift Eng
Foundation Degree Lift Eng
HNC Lift Eng
LEIA DL Course

LLL educational/training provision

Engineering Degree top-up (BSc Hons)
Apprenticeships
Life Long Learning (LLL) Provision for Lift Engineering (2)
THANK YOU – QUESTIONS?