



Rialtas na hÉireann  
Government of Ireland

# Focus on Engineered Products & Sub-Supply

December 2018

# Engineered Products & Sub-Supply

Success of the sector in Ireland is driven by strong research and innovation capability and regulatory competence and increased productivity arising from industrial automation



## IRISH EXPORTS

**€7bn**  
in 2016

Source: Department of Business, Enterprise and Innovation, Annual Business Survey of Economic Impact, 2016



Direct economy expenditure (DEE)

**€3.9bn**  
in 2016

Source: Department of Business, Enterprise and Innovation, Annual Business Survey of Economic Impact, 2016; DEE relates to total payroll costs, and materials and services sources from Irish suppliers



Technologies and the drive toward sustainable development are fundamentally changing the world of manufacturing and engineered products

## EMPLOYMENT

**42,459**  
in 2017 in agency supported firms

Source: Department of Business, Enterprise and Innovation, Annual Employment Survey, 2017



**40%**

of companies are changing their business strategies to adapt to Brexit

Source: Engineers Ireland membership survey

60% 40%



Prepared by the Department of Business, Enterprise and Innovation



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## The sector in numbers

	Exports (2016) <sup>i</sup>	% of National Exports <sup>ii</sup>	5-year CAGR (2011-2016)	Employment <sup>iii</sup> (2017)	% of National Employment (2017) <sup>iv</sup>	5-year CAGR (2012-2017)	DEE <sup>v</sup> (2016)
<b>Agency</b>	€7.0bn	3.6%	5.3%	42,459	1.90%	3.52%	€3.9bn
<b>Irish</b>	€2.2bn	1.1%	6.6%	27,191	1.22%	4.06%	€2.4bn
<b>Foreign</b>	€4.8bn	2.4%	4.8%	14,736	0.66%	2.40%	€1.5bn

i) ABSEI 2016, DBEI (Engineered Products and Sub-supply data set contains the following sectors: 'Paper and printing'; 'Rubber and plastics'; 'Basic and fabricated metal products'; 'machinery and equipment'; 'transport equipment'; other 'miscellaneous manufacturing')

ii) Percentage of national exports is derived using total exports from ABSEI 2016

iii) AES 2017, DBEI (Engineered Products and Sub-supply data set contains the following sectors 'Paper and printing'; 'Rubber and plastics'; 'Basic and fabricated metal products'; 'machinery and equipment'; 'transport equipment')

iv) Percentage of national employment is derived using CSO total employment, LFS Q42016 Seasonally adjusted data

v) Direct Economy Expenditure relates to total payroll costs, and materials and services sourced from Irish suppliers

## Description of the sector globally

This brief contains commentary relating to engineered products (often termed 'manufacturing') and sub-supply.

- 'Other manufacturing' or 'traditional' manufacturing includes engineered products. However, engineering (as a discipline) is crucial to all manufacturing sectors.
- Engineering enterprises serve a broad range of markets, including: Automotive, Aerospace, ICT, Bio Medical, Energy & Environmental, Construction and Agriculture (e.g. machinery and equipment) markets.
- International growth in these markets drives growth in the engineering firms serving those markets and offers significant potential for innovative products and services.
- Sub-supply also includes paper and printing as well as basic and fabricated metals.

## Global developments and implications

- In terms of technologies:
  - Industry 4.0 (enabled by advanced ICT technologies including sensor technology, data analytics, machine learning, artificial intelligence, and 5G mobile networks) is driving competitiveness and opportunities to enhance goods and services, increase productivity, improve energy efficiency, and to deliver customised solutions. Many OECD countries are implementing national strategies for industry 4.0.<sup>1</sup>

<sup>1</sup> Industry 4.0, the overarching name given to the next disruptive industrial revolution

- Digital transformation opens up potential for entirely new markets, new business models and better integrated supply chains.
- Technology developments in automation, robotics and co-botics (robotics that interfaces with people) will boost company productivity and competitiveness.
- Most of the manufacturing industry is expected to derive considerable benefits from the advancement of additive manufacturing and 3D printing as the technology becomes cheaper and more widely available.
- In terms of sustainable development:
  - There is a shift from 'end of pipe' pollution control to a focus on product life cycles and integrated environmental strategies, taking account of materials, decarbonisation, circular economy and energy consumption.
  - Carbon-neutral manufacturing aims to leverage the latest technologies to reduce CO<sub>2</sub> emissions. This involves the implementation of CO<sub>2</sub> Capture and Storage (CCS) and a shift towards renewable energy sources.
- R&D in materials - developing the capabilities of existing materials and/or developing novel "next generation" materials - is transforming processes and new product development.

## The sector in Ireland

- There is a broad range of engineering companies based throughout the regions in Ireland<sup>2</sup>:
  - Irish owned companies that develop, manufacture and export their own (branded) products to end customers, as well as companies engaged in sub-supply. The sector includes companies in agricultural machinery, materials handling, precision engineering, process engineering, plastics and toolmaking, automotive and aerospace and metal fabrication and processing.
  - Foreign owned companies including environmental, plant and machinery, aerospace and energy companies, many of which have been in Ireland for over 20 years. Examples include Liebherr, Element Six, ThermoKing, Henkel, Kostal.
- Implementation of Industry 4.0 and new production technologies offers significant potential impact on the manufacturing industry in Ireland to drive productivity gains, enable new opportunities for goods and services innovation and enhance supply chain integration.
- Investment in machinery and automation technology although expensive in the short term will be necessary to increase productivity and remain competitive on a global scale.

<sup>2</sup> Refer also to individual Focus on Medical Devices, Agri-food & Beverages and Technology

- The sector provides employment across a broad range of occupations. Engineering skills are in increasing demand across traditional engineering and automation and also digital skills to support technological advances requiring both upskilling existing workers and development of new graduates.
- Potential impacts on the Engineered Products sector, as a result of Brexit, include:
  - Impacts on competitiveness arising from currency exchange fluctuation particularly in low margin sub sectors
  - imposition of tariffs on exports to the UK
  - transport and logistics impacts, including increasing shipping times and costs and potential supply chain disruption
  - Regulatory divergence, and loss of mutual recognition of specifications and product standards.
- Engineers Ireland membership survey, 2017, indicated that 40% of companies are changing their business strategies to adapt to the new economic reality of Brexit.

## Ecosystem

- The recently established Disruptive Technologies Innovation Fund (one of four funds in the National Development Plan 2018-2027), will fund collaborative enterprise-driven partnerships that will develop, deploy and commercialise disruptive technologies to transform business. Advanced and Smart Manufacturing, Manufacturing and Novel Materials is one of the areas being given priority in the first funding call.
- Increased investment in building RD&I capabilities of relevance to manufacturing/engineering including:
  - I-Form - focusing on Additive Manufacturing and 3D Printing;
  - CONFIRM - Smart Manufacturing Centre focused on the convergence of IT systems and industrial automation systems;
  - Irish Manufacturing Research (IMR) specialises in Advanced Manufacturing Technologies in Industry 4.0, Collaborative Robotics, Industrial IoT, Data Analytics, Energy Efficiency, Additive Manufacturing/3D printing, Design Thinking and Knowledge Management. IMR's Centre in Mullingar is focused on Cobotics, Artificial Reality and Additive Manufacturing.
  - AMBER Advanced Materials and Bio-engineering Research
  - Tyndall (Photonics, Microsystems, Micro/Nanoelectronics and Theory, Modelling and Design),
  - IPIC Irish Photonic Integration Centre (to develop new light-enabled technologies)
- IT Sligo is the National Centre for Training in toolmaking; and courses in Polymer and Precision Engineering & design are available at third level.

- Apprenticeships in the manufacturing and engineering sector have been set up, including Polymer Processing Technologist, involving a consortium of 14 companies in conjunction with Athlone Institute of Technology and IT Sligo. There are traineeships in Engineering OEM and Engineering.
- A number of Skillnets have been established by companies in the Engineering Sector in areas including robotics and automation, polymers, productivity (LEAN, six sigma and process improvement), Business Excellence and Engineering.
- Ibec provides services and networking opportunities through its engineering network.
- Engineers Ireland offers a wide variety of Continuous Professional Development training on topics related to manufacturing for engineers and other professionals, including digitalisation, Industry 4.0, biopharma, quality assurance and process measurement.

## Relevant Reports

*Click on the hyperlinks below*

- [Addressing the Skills Needs Arising from the Potential Trade Implications of Brexit, Expert Group on Future Skills Needs, June 2018](#)
- [An Assessment of the Firm-Level Impact of Brexit on Most Exposed Sectors, Department of Business, Enterprise and Innovation, June 2018](#)
- [Ireland and the Impacts of Brexit Strategic Implications for Ireland arising from changing EU-UK Trading Relations, Copenhagen Economics report to DBEI, February 2018](#)
- [Internet of Things and the Future of Manufacturing, McKinsey](#)

## Key actors

**Government:** Department of Business, Enterprise and Innovation, Department of Finance

**Agency and Regulatory:** Enterprise Ireland, IDA, National Standards Authority of Ireland

**Industry:** IBEC, Engineers Ireland

## Recent Developments

### Company Developments

- Leetha Industries, manufacturers of packaging material for the medical, foodservice and disposable packaging sectors today announced it is to establish a manufacturing and supply operation called Red Seal Cups Limited in Longford. The new facility will create 100 + jobs over three years (May 2018)

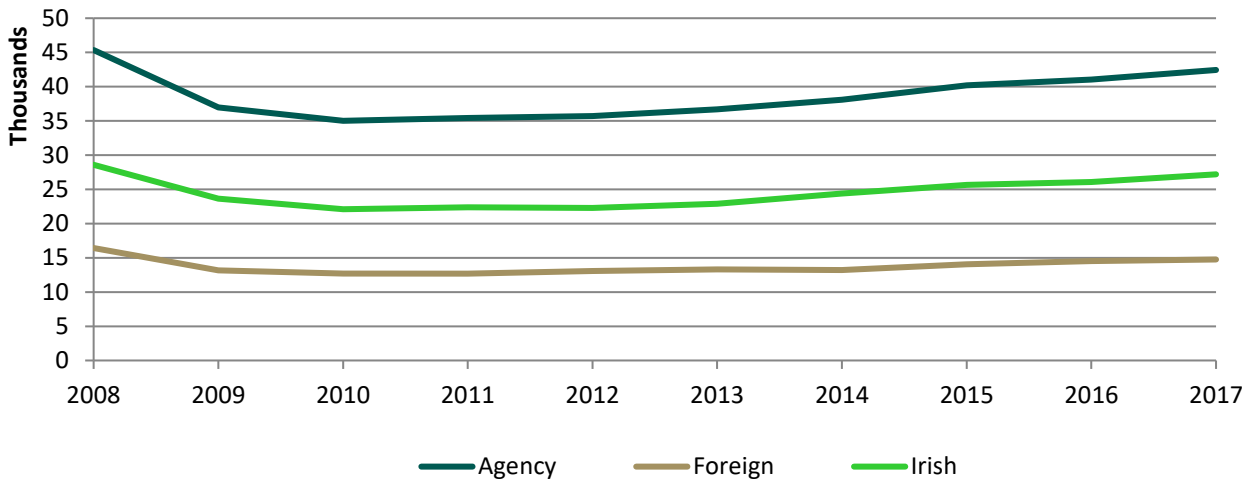
- Avery Dennison Corporation, (NYSE:AVY), a global materials science and manufacturing company, announced plans to expand its medical product manufacturing operations in Longford, Ireland, increasing the Finesse Medical Ltd., facility's end-to-end medical device manufacturing capacity and capabilities for its customers (May 2018)
- 200 new jobs in Monaghan as Combilift opens new global headquarters and manufacturing facility (April 2018)
- CupPrint announces new Eco-Friendly products expansion of their manufacturing facility and creation of 15 jobs (November 2017)
- Henkel Ireland, will establish a major Additive Manufacturing project in Tallaght, Dublin. 40 highly skilled scientists and engineers will be employed to develop new advanced materials for use in precision manufacturing industries, such as medical devices, automotive and aerospace (October 2017)
- Global leader in innovative fastening technologies and solutions, PennEngineering®, has increased its presence in Ireland with the development of a new, 80,000<sup>2</sup> ft. facility located in Galway. The new facility will become the primary manufacturing site for all PEM clinch products sold in Europe (September 2017)
- BorgWarner, a leading supplier of advanced hybrid and electric vehicle (EV) technologies, extends its production capabilities in Tralee, Ireland, with a €11.5 mn investment. Up to 50 new jobs could be created (April 2017)
- Element Six, a world leader in synthetic diamond super-materials, announced the creation of a further 100 jobs at its Shannon facility as part of a €7mn investment at the plant this year (January 2017)
- Galway based steel shed manufacturing company, Steeltech Sheds Ltd., announced a major investment of €5mn over the next three years and 43 new jobs in the next 12 months (January 2017)

#### Sector Developments

- Science Foundation Ireland (SFI) Manufacturing Research Centres, CONFIRM (launched in May 2018) and I- FORM Advanced Manufacturing Research Centre (launched in September 2018) aim to shape the future of Irish advanced manufacturing, positioning Ireland as a world-leader in digital technologies for Industry 4.0 and additive manufacturing.
- The Irish Manufacturing Research and Technology Organisation (IMR) was opened in May 2017 with the creation of 40 jobs. IMR specialises in Advanced Manufacturing Technologies including Industry 4.0, Collaborative Robotics, Industrial IoT, Data Analytics, Energy Efficiency, Additive Manufacturing/3D printing, Design Thinking and Knowledge Management (May 2017)

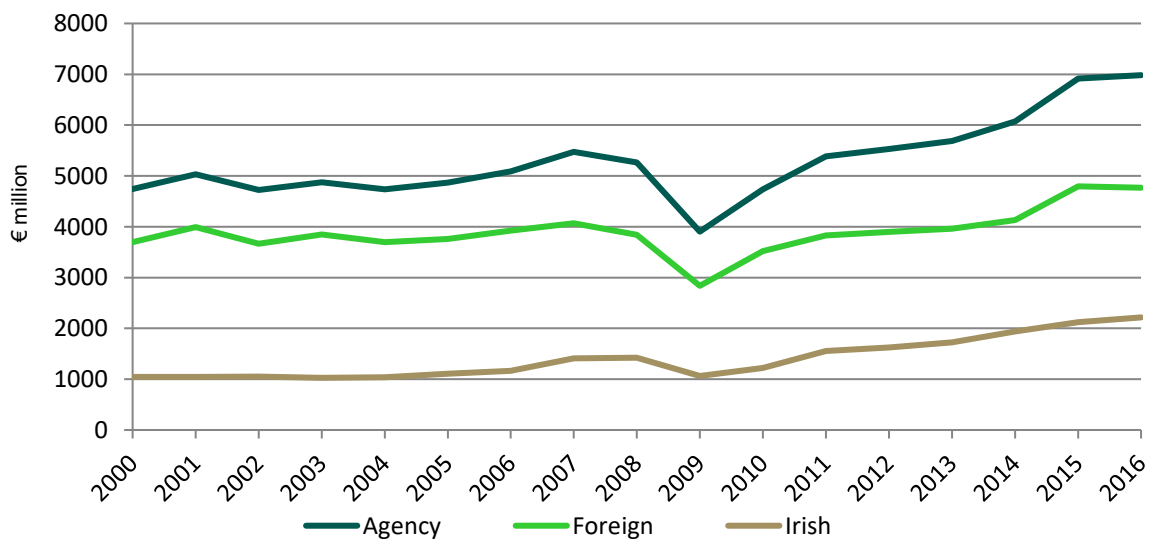
Data Trends

Employment in Agency-Assisted Companies in Engineered Products and Sub-Supply Sector (2008-2017)



Employment in agency firms experienced a sharp fall in 2008 coinciding with the global economic downturn. Since 2010, as the economy entered recovery, employment growth in the sector has increased slowly but steadily with positive increases in the last two years.

Exports in Agency-Assisted Companies in Engineered Products and Sub-Supply Sector (€ million) (2000-2016)



Exports in agency firms decreased sharply following the 2008 downturn. However exports recovered to exceed 2007 levels and continue to grow.

Source: AES, 2017; ABSEI, 2016