

Future Skills Requirements of the Manufacturing Sector to 2020

April 2013



“To undertake a detailed assessment of manufacturing skills needs and use of the new structures for training and skills development to address both the immediate needs of the manufacturing sector and to anticipate longer term needs”

Government’s Action Plan for Jobs 2012

What the Study Addresses



- Global drivers of change impacting on manufacturing & skills
- Economic, labour market & skills profile in manufacturing
- Supply of skills & in-company training activity & supports
- International evidence for developing manufacturing skills & careers
- Qualitative assessment of future skills needs
- Recommendations to ensure that the skills requirements of the manufacturing sector can be addressed



- Steering Group – Intel, Dromone, Diageo, PWA Int., BC Gases, IBEC, ICTU, First Polymer Training, Skillnet, UL, Sligo IT,, FAS, IDA, EI, Forfás
- 35 companies interviewed across manufacturing sectors
- 3 workshops with 35 participants on the specific themes
 - Operatives, Technicians, crafts & supervisors
 - Skills for enterprise & innovation
 - Skills for Manufacturing Excellence
- 18 trade & industry groups interviewed
- Occupational employment in manufacturing, QNHS, CSO stats
- Education and Training provision, FETAC & HETAC
- Final report approved by 27 person EGFSN



- Update previous EGFSN work in:
 - Medical Devices
 - Food and Beverage Manufacturing
 - Bio-Pharma/Pharma-chemicals and
 - The Green Economy

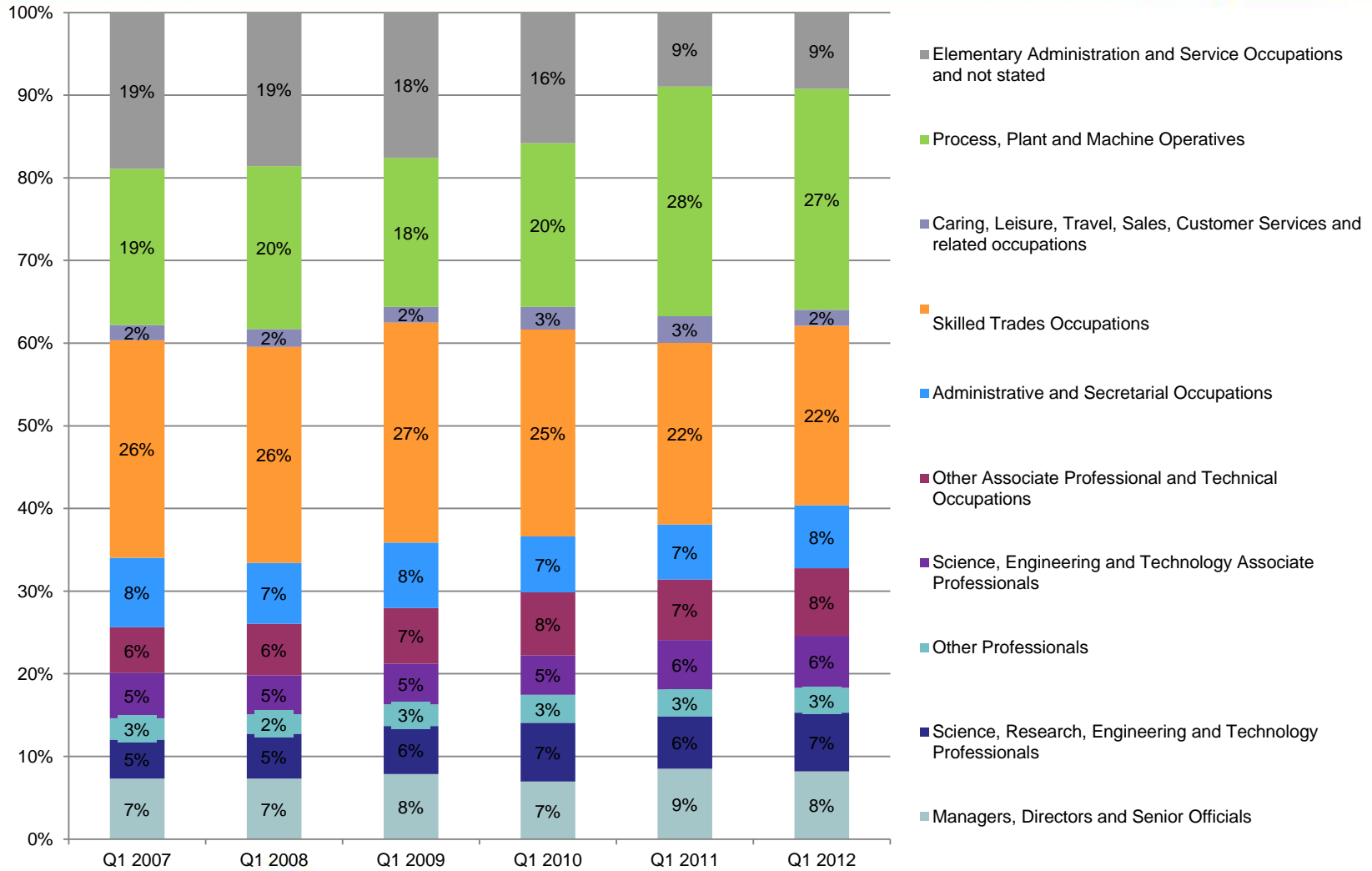
- Focus on manufacturing sectors not addressed in recent EGFSN sectoral studies:
 - ICT hardware
 - Engineering
 - Consumer Products

Employment in Manufacturing by Occupation



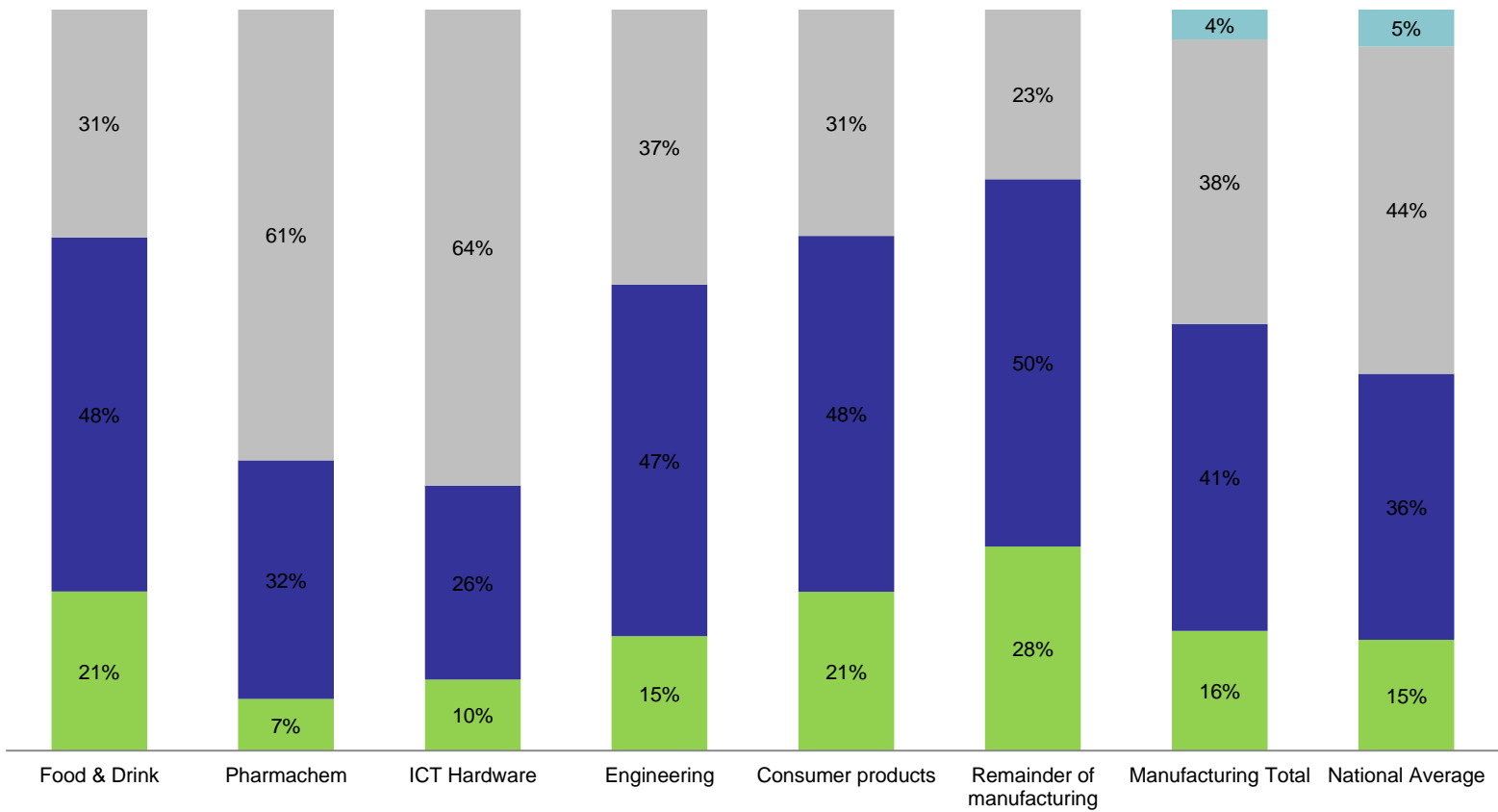
Occupations	Number Employed 2012	% of total
Managers, Directors and Senior Officials	16,900	8.2%
Professional Occupations	20,800	10.1%
Associate Professional and Technical Occupations	29,900	14.5%
Administrative and Secretarial Occupations	15,700	7.6%
Skilled Trades Occupations	44,800	21.8%
Caring, Leisure, Travel, Sales, Customer Services and related occupations	4,000	1.9%
Process, Plant and Machine Operatives	55,100	26.8%
Elementary Administration & Service Occupations	18,600	9.0%
Total	205,800	100.0%

Trends in Employment in Manufacturing by occupation 2007-12



Educational Attainment in Manufacturing

Sub-sectors, Total Manufacturing & National Average



■ Lower secondary or less
 ■ Higher secondary/FET
 ■ Third Level
 ■ Other/Not state



Higher Education

- 28% increase enrolments (2006 – 2011) programmes relevant to manufacturing
- Enrolments are over 45,000 - increased STEM graduates in the coming years
- Ratio of STEM to Engineering enrolments is 2:1
- Graduates sought after in other sectors - health, education, software & research

Further Education

- 18,000 FETAC awards across STEM fields in 2012
- Some are quite general & others are highly specific to manufacturing eg pharmaceutical processing, materials manufacturing, injection moulding
- Good potential for upskilling low skilled given breadth & specificity of FE awards
- Significant declines across Apprenticeships since 2007 due to decline in mfg. employment – fitters, electricians, metal fabricators, toolmakers, sheet metal workers

Other Provision – Skillnets, Enterprise Ireland, Engineers Ireland, IDEAS, IMDA

Key Skills Competencies Identified



Operatives, Technicians, crafts & supervisors

- Tool making, machinists, polymer technicians, skilled trade/technicians in mechanical, electrical & IT fields

Skills for Manufacturing Excellence

- Lean, automation & data analytics to support mfg. processes & R&D
- Engineering skills – validation, quality, automation & supply chain engineering specialisms; knowledge of polymers

Skills for enterprise & innovation

- Researcher innovation skills for product development
- Key person with industry-leading skills to drive business performance improvements

Recommendation 1 - Establishing Career Paths



Issue

- Lack of clarity re: career paths linked to education & training v other countries
 - Germany (dual system, Meister pathway, strong apprenticeship-HE links);
 - US Manufacturing Institute (stackable credentials)
 - UK SEMTA Sectoral Skills Council (career maps)
- Career Path Key Features
 - Main occupations mapped to the NFQ
 - Learning pathways meet occupation standards & provide progression routes
 - Pathways that match in-company & formal education learning pathways & provide opportunities for cross linkages or joint provision
 - Industry-based track to HE qualifications e.g. Meister or Time-served Engineer
- Multiple partners required but also industry leadership

Recommendation:

MDF lead a review of manufacturing career paths & engage with employee reps, education & training providers, QQI, industry Fas Skillnets & HE

Recommendation 2 - Promoting Manufacturing Careers



Issue

- Attracting employees affected by lack of knowledge of career opportunities & negative perceptions of manufacturing
- Promotional programme targeted at all skills levels
- Existing role of DSE (SET careers) & Engineers Ireland (STEPs)

Recommendation

Manufacturing cos. & industry associations participate in future DSE campaigns to deliver initiatives promoting manufacturing careers using the career paths in recommendation 1 across the range of operative, technician, supervisor & professional roles

(Companies, Industry Associations, SFI & Engineers Ireland)

Recommendation 3 - Operatives, Skilled Trades and Technician Levels



Toolmakers (FAS)

- Immediate shortage of toolmakers – increase apprenticeship intake by industry
- Use accelerated apprenticeship scheme to increase apprentice toolmakers
- Ensure 55-60 pa qualify over the period to 2016
- Update tool making syllabus for advances in mfg materials & processes

Polymer technicians (Skillnets/IOTs/Plastics Irl & IMDA)

- Assess additional demand required from Sligo IT level 7 distance learning
- Springboard programme address future demand & jobseekers
- Share costs of new equipment – leasing/sponsorship by co cluster/eq. mfgs

Machinists

- Engineering training network for upskilling employees (Skillnets/MDC)
- CNC machining & programming Traineeship/Apprenticeship (FAS)
- Include in Springboard & Momentum for unemployed (DES, HES, FAS)
- Apprenticeship Review include mfg needs & cyclical nature of apprenticeships

Recommendation 5 - Undergraduate Skills



- **Mechanical/Manufacturing Engineering Level 8**
 - 250 places in manufacturing skills (automation, dev. design) Springboard
 - Collaboration between providers & cos. incl. course content & work placements
 - Target jobseekers with Level 8 & below with previous work experience
(*DES, HEA, Industry Associations, Cos.*)
- Future output from engineering to increase in next 3-4 years. Content:
 - HE providers focus on core. engineering (variety of titles can cause confusion about competencies developed)
 - Production engineering & process improvement should be standard in mechanical engineering
 - Polymer modules/options should be available within mechanical engineering
 - Substantial structured work placement should be offered 9-12 months
 - Automation and data analysis modules

Recommendation 5 & 6 – Postgraduate Skills & CPD and on-going HEI/Industry Linkages



- Level 9 – 200 places in validation, quality, polymer, automation, supply chain engineering

(HEA- Springboard, Skillnets, HEIs)

- Focus on Manufacturing SMEs in future Irish Research Council/Enterprise Partnership Scheme calls

(IRC/HEA, HEIs, EI)

National Strategy for HE objectives & guidelines for enhancing industry/academic engagement in the provision of skills:

- Clear points of contact for industry engagement
- Communication of HEIs relevant expertise, capacity & capabilities
- Demonstrate benefits of engagement through case studies
- Professionalise the interface & service level expectations
- Set targets & metrics for engagement within the broader HEI mission

Recommendation 7 - Upskilling those In-Employment



Operatives

- Identify progression opportunities for low skilled & operatives
- Develop operative accredited upskilling programme building on Food/Drinks sector & activity in Workplace Basic Education Fund
- Recruitment campaign - upskilling low-skilled operatives detailing free career progression for employees in the VEC Skills for Work Initiative
(NALA, VECs, DES, AONTAS, MDF, Industry Associations, Skillnets)

Supervisors

- Potential for a national manufacturing supervisory development programme
(Skillnets, Industry Associations)

Technical

- Support specific technical manufacturing upskilling for mfg. excellence (lean)
- Bring together sectoral training networks in manufacturing -identify opportunities for cross-network initiatives that might benefit from scope or scale of serving multiple manufacturing sectors
- Target development of an Engineering Skillnet in consultation with the engineering sector.
(Skillnets, MDF)



➤ **Springboard 2013 call**

- Mechanical/Manufacturing engineers Automation, Development & Design 250 places, Level 8
- Validation, Quality, Polymer, Supply Chain & Automation engineers 200 places, level 9
- Polymers/plastics technicians (place numbers to be decided with industry)

➤ **FAS**

- Apprenticeship
- Momentum

➤ **Skillnets**

➤ **HEIs and VECs**