IPWG Update: 3. Manufacturing & Agriculture

All statistical data are courtesy of: Department of Industry and Science, Australian Government, and Business Council of Australia

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Overview

Manufacturing is the process of converting raw material into a part or product. It involves producing something in large quantities using machinery. The manufacturing industry involves manufacturing products, for a variety of purposes. Such purposes include the manufacturing of machinery, tools and equipment for industries like mining, farming, construction, agriculture, etc.

Sector information

The Australian manufacturing sector makes a vital and significant contribution to the economy. The sector has been growing at an average annual rate of 0.9% since 2000 (in dollar terms), accounting for 8.7% of GDP. The sector also continues to be an important contributor to exports, accounting for around 34% of total exports.

The manufacturing sector is a significant contributor towards overall employment, with almost 1 million people currently employed by the sector. However, employment is falling, largely due to labour productivity growth rates and significant falls in employment in the Textile, Clothing and Footwear industry since the late 1980s

Manufacturing is also the primary source of technological innovation. It has the highest expenditure on R&D (26% of the total in 2009, despite only representing around 9% of GDP).

The Australian agriculture sector is a world leader in providing high quality food and fibre for a global population using innovative technologies and sustainable natural resource management. It is productive, profitable, innovative and valued for its environmental, economic and social contribution to Australian life. This sector (with Forestry and Fishing together) employ 322500 workers and accounts for 2.8% of national employment. About 88% of jobs are outside state capitals and in many regional areas it is a major employer.

Manufacturing subsectors are:

1. Tool manufacturing
2. Fabrication metal product manufacturing*
3. Wood manufacturing
4. Machinery and equipment manufacturing*
5. Specialised parts manufacturing*
6. Electronic manufacturing*

Agriculture subsectors are:

1. Food product manufacturing
2. Beverage and tobacco product manufacturing*
3. Paper product manufacturing

High level skill mapping

Roles and Skills \ Manufacturing and Agriculture Subsectors	Tool Manufacturing	Fabricated Metal Product Manufacturing	Wood Manufacturing	Machinery & Equipment Manufacturing	Specialised parts Manufacturing	Electronic Manufacturing
Mechanical Engineer	X	X	X	X	X	
Electrical Engineer	X	X	X	X	X	X
Software Engineer					X	X
Control Systems Engineer	X	X	X	X	X	X
Data Analysis						
Problem Solving	X	X	X	X	X	X
Research & Development	X	X	X	X	X	X
Design and Development	X	X	X	X	X	X
CAD and 3D modeling	X	X	X	X	X	X
CAE (Simulation and Analysis)	X	X		X	X	X
Product Development	X	X	X	X	X	X
Product Engineering	X	X	X	X	X	X
Production Engineering	X	X	X	X	X	
Testing	X	X	X	X	X	X
Validation Engineering	X			X	X	X
Vendor Management						
Quality Engineering	X	X	X	X	X	X
Project Management				X	X	
Technical Sales Engineering					X	
Maintenance	X	X	X	X	X	X
Business Development						
Business Management						
Strategic Planning	X	X	X	X	X	X
Leading Teams	X	X	X	X	X	X

*Indicates that potential employment opportunities exist in the sub sector for automotive engineers transition

Potential opportunities and Synergy in Manufacturing Sector

Subsector	Potential Opportunity Areas	Job Synergy
Tool Manufacturing	Production Engineer, Production Manager, CAD Engineer, CNC Machine Programmer	Subsector finding it difficult to fill positions of Production Engineer, Production Manager, also demand for CAD Engineers.
Fabricated Metal Product Manufacturing	Production Engineer, Production Manager, CAD Engineer, Testing and Validation	Subsector finding it difficult to fill positions of Production Engineer, Production Manager, also demand for CAD Engineers.
Wood Manufacturing	Production Engineer, Production Manager, Testing, Quality Engineering	Subsector finding it difficult to fill positions of Production Engineer and Production Managers.
Machinery & Equipment Manufacturing	Production Engineer, Production Manager, CNC Programmer, Design and Development Engineer, Quality Control	Subsector finding it difficult to fill positions of Production Engineer and Production Managers. Also high demand for design and development engineers and CNC programmers.
Specialised parts Manufacturing	Production Engineer, Production Manager, CAD, CAE, R&D, Validation Engineering	Subsector finding it difficult to fill the positions of Production Engineer, Production Manager. Also high demand for CAD, design and development, CAE and Validation Engineers.
Electronic Manufacturing	Production Engineer, Production Manager, R&D, Validation Engineering	Subsector finding it difficult to fill the positions of Production Engineer and Production Manager. Also high demand for design and development, R&D, and validation engineers.

Potential Opportunities and Synergy in Agriculture Sector

Subsector	Potential Opportunity Areas	Job Synergy
Food Product Manufacturing	Food processing machinery and agricultural equipment designers, power system designers, research and development, production, sales and management.	Increasing demand for Research and Development.
Beverage and Tobacco Product Manufacturing	Beverage and tobacco machinery designers, power system designers, research and development, production, sales and management.	Also demand for CAD Engineers and research and developers.
Paper Products Manufacturing	Machinery designer, research and development, production, sales and management.	Subsector finding it difficult to fill positions of machinery designer but there is an increase demand for research and development, sales and management.