



Australian Government



Australian Workforce  
and Productivity Agency

# Resources sector skills needs

## Skills for a transitioning resources sector

December 2013



### Resources companies need to build the specialist skills of their workers as the sector shifts from construction into operations and major oil and gas projects come online.

For the best part of a decade, the Resources Sector has been one of Australia's most important and influential industries—and an engine of national economic growth. In 2011–12, exports of mineral and energy commodities were valued at \$187.1 billion (using chain volume measures), accounting for 60 per cent of the total value of Australian exports.

Growth has been driven by strong demand from China, India and other developing countries resulting in investment in major resources projects, particularly in Western Australia and Queensland.

Iron ore is now Australia's largest export commodity in terms of revenue; we are the world's fourth largest producer of coal; we have significant gas fields; our production of natural gas is increasing substantially; and we are set to become the world's second largest exporter of liquefied natural gas.

In the last few years, uncertain global economic conditions, weakening commodity prices, declining investment and increasing global competition have prompted speculation the resources boom may be coming to an end.

However, industry experts believe the Resources Sector is in transition, not decline, with some of our biggest resources projects moving from a construction phase to an operations phase, and major mining, oil and gas projects coming on stream.

The *Resources sector skills needs 2013* report, produced by the Australian Workforce and Productivity Agency (AWPA), examines the sector's changing skills and employment outlook to 2018. It finds as the industry moves from construction into an operations phase, particularly in the growing Oil and Gas sector, resources companies will need to develop more

people with specialised technical skills and industry experience, to maintain momentum and growth in the sector.

While many companies and education providers are delivering effective skills development programs, AWPA believes individual efforts will not be sufficient to prepare the sector for the challenging skills demands which lie ahead.

With a long lead time required to develop critical skills for the sector's future, especially in oil and gas, it is clear industry, government, and education and training providers need to collaborate and plan now to develop the workforce the industry will need in the years to 2018.

### Jobs outlook

In developing its *Resources sector skills needs 2013* report AWPA commissioned comprehensive five-year employment demand and supply outlook modelling using three economic growth scenarios—base case, high growth and low growth.

The modelling, which is based on April 2013 Bureau of Resources and Energy Economics data, details projections of employment and skills needs for 2014–18 across three subsectors:

- Resources Project Construction
- Mining Operations
- Oil and Gas Operations.

The modelling suggests:

**Resources Project Construction** employment under the most likely low growth scenario will peak at 83,324 workers in 2014 and then decline to 7,708 in 2018, as the construction phase gives way to operations. Over time, many trades workers will need to transition to the broader construction workforce or acquire new skills to perform longer-term Resources Sector operational jobs.

Employment in **Mining Operations** is likely to steadily increase from 2014–18, under the most likely base

case growth scenario, from 236,690 workers in 2013 to 254,260 in 2018—a 7.4 per cent increase.

Burgeoning **Oil and Gas Operations** are likely to produce the most significant employment gains, with an expected 57 per cent increase from 38,943 workers in 2013 to 61,212 in 2018 under the base case scenario. This is due to many of the major liquefied natural gas projects currently under construction moving into their production phase.

While the average worker in the sector is a middle-aged male who works full-time, is well remunerated and highly skilled, the industry has made considerable inroads in engaging under-represented groups in the workforce, including women, Indigenous Australians and mature-aged workers. This engagement has been driven—and will continue to be driven—by the sector's increasing need for skilled workers.

## Impact on skills demand

The acute skills shortages experienced by the Resources Sector in recent years have now eased considerably and the proportion of occupations in shortage is at its lowest level since 2007.

But as the sector shifts from construction to operations and major oil and gas projects come online, it will need to work hard to develop workers with the right skills and experience to manage the transition.

The transition to operations will increase the demand for specialised skills. The AWPA growth scenarios project skills shortages in Mining Operations, particularly for Production Managers and a number of trade occupations such as Metal Fitters and Machinists, Structural Steel and Welding Trades Workers and Other Building and Engineering Technicians. While required skills may be 'bought in' from other industries, a new response is needed from employers to meet the ongoing challenge of recruiting and retaining these specialist workers.

The strongest jobs growth is projected in Oil and Gas Operations with the subsector likely to experience an acute undersupply of appropriately skilled workers across all occupational groups, with Professionals and Technical and Trades the worst affected.

This skills undersupply is of particular concern, as it comes at a time when Australia is embarking on major liquefied natural gas and coal seam gas projects, and as competition from other industries and overseas will limit the sector's ability to source appropriately skilled workers.

## Automation and the skills mix

Resources companies are increasingly turning to technological solutions to increase productivity, improve safety, discover new ore bodies, improve recovery rates, remove waste and decrease energy use. The sector's shift to an operations phase is expected to result in

increasing use of remotely controlled and automated systems. While the impact of automation is not expected to significantly reduce employee numbers, it will present skills challenges with a shift in demand to high level specialists and away from areas such as drill rigs, loaders, haul trucks and trains. Retraining and upskilling of employees will need to be a focus for resources companies.

## Meeting the challenges: strategies to deliver the right skills

The *Resources sector skills needs 2013* report identifies six recommendations to ensure the Resources Sector workforce is ready and able to meet future demand.

### Developing an industry-driven workforce development strategy for the Oil and Gas sector

Individual resources companies are already playing an active role in skills development for the existing workforce and the *Resources sector skills needs 2013* report cites many examples of industry best practice.

However, a new approach is needed to ensure appropriately skilled workers are available, particularly in the burgeoning Oil and Gas Operations subsector.

The current environment provides a perfect opportunity for industry and education and training providers to develop strategic, collaborative responses to meet these skills challenges.

This will ensure Australia's domestic workforce remains a strong source of skills, supplemented by experienced personnel from overseas as required. Workforce planning needs to proceed quickly to ensure domestic workers are available to fill time-critical shortages in the Oil and Gas sector in the second half of this decade.

The *Resources sector skills needs 2013* report calls for industry stakeholders and the tertiary education sector to collaborate on a workforce development strategy to build a domestic workforce to meet future skills demand for resources operations.

### Encouraging the development of science, technology, engineering and maths skills

Ensuring the Resources Sector has an adequate supply of skills for current and upcoming projects requires industry involvement with every level of education and training.

Participation in science, technology, engineering and maths subjects has declined considerably in schools in recent years.



Industry involvement in strategies and initiatives to increase student participation in these subjects will strengthen pathways to resources careers and ensure an ongoing and increased supply of the required skills.

The report recommends resources companies and peak organisations engage with the industry working group, established by the Office of the Chief Scientist, to develop a national strategy for schools–industry science, technology, engineering and mathematics skills initiatives.

## Promoting careers in the sector

The number of students graduating from Resources Sector related courses is not sufficient to meet future skills needs.

While good programs are underway to promote resources careers and prepare tertiary students for careers in the industry, more needs to be done. The provision of accurate career information underpinned by up-to-date labour market intelligence and a ‘real life’ perspective will interest and engage students and encourage them to consider a career in the industry.

Industry has a key role to play in ensuring career development practitioners have the skills and knowledge to provide current and relevant advice to students on the resources labour market and raise awareness of the value of professional and trade qualifications.

The report recommends industry work with tertiary education providers to fund, develop and implement a strategy to deliver training and support to career development practitioners.

## Developing skills in automation to keep pace with industry demand

To build the skills required for the sector’s continued adoption of automation technologies, Australia needs to develop the capacity of its education and training sector to provide the skills required.

Greater collaboration between industry and the higher education sector will be vital to meeting emerging skills needs as the sector continues to transform.

The report recommends the Minerals Tertiary Education Council member universities and specialist oil and gas university faculties work with industry to scope the development of a postgraduate qualification in automation for mechanical, electrical, mining and oil and gas engineering graduates.

## Sector snapshot

- The Resources Sector accounts for around 9.6 per cent of Australia’s GDP.
- Mining accounts for over 35 per cent of Western Australia’s Gross State Product, 19 per cent of the Northern Territory’s, and just under 10 per cent of Queensland’s.
- While the Resources Sector employs just 261,800 people, 2.2 per cent of Australia’s workforce, it contributes substantially to employment in aligned industries.
- Western Australia, Queensland and New South Wales account for 85.2 per cent of national employment in mining.
- Projected employment is expected to be strongest in the Pilbara in Western Australia, and the Darling Downs and Mackay regions of Queensland.
- Mining has experienced the fastest rate of jobs growth of all industries in the past decade, increasing by 174,400—an annual growth rate of 11.6 per cent.

## Skills in the sector

- A high proportion of mining workers are skilled, with 63.3 per cent having a Certificate III level qualification or higher, compared with 58.0 per cent across all industries.
- The sector employs approximately 110,000 tradespeople, that is 6.5 per cent of all tradespeople, and almost twice the number it did in 2005.
- The sector employed 13,700 trade apprentices in 2012, representing 6.8 per cent of all trade apprentices, up from 2.4 per cent in 2005.

## Who’s working in the sector?

- Reflecting the industry’s preference for experienced workers, mining employs a significantly higher proportion of workers aged 25 to 44 years (58.1 per cent) than the all industries average (45.1 per cent). The proportion of 15 to 19 year olds in mining (1 per cent) is well below the all industries average (5.8 per cent).
- Males account for the vast majority of employees in the industry (85.4 per cent), compared with 54.3 per cent for all industries.
- The share of females in the mining workforce has increased over the past 10 years, up from 11.1 per cent in May 2003, to 14.6 per cent in May 2013.
- Mining employs the highest proportion of Indigenous workers in relation to its total workforce at 3.1 per cent, compared with 1.4 per cent for all industries.

## Jobs in the sector

- Almost all jobs in mining (97 per cent) are full-time, the largest proportion of all industries.
- Median weekly full-time earnings in mining stood at \$2,000 in 2012, 73.5 per cent higher than the all industries median.



## Improving the supply of operational skills to the Oil and Gas sector

Many resources companies effectively promote career opportunities to students in the higher education sector by offering graduate programs and cadetships. There are also encouraging trends in the proportion of apprentices and trainees being engaged by resources companies.

However it is unlikely the demand for high-end, specialist skills in our expanding Oil and Gas sector will be met, unless further action is taken to increase the supply of domestic skills.

The report recommends the Australian Government, industry and the tertiary education sector pilot a program based on the United Kingdom's successful Transition Training Programme with the aim of improving the supply of long-term technical operational skills to the Oil and Gas sector.

It also recommends the Australian Government, in collaboration with industry stakeholders, develop and pilot a national program for apprentices and trainees, modelled on the UK Oil and Gas Upstream Technician Training Scheme and the Western Australian Energy Apprenticeship Group joint venture, to provide clear pathways to the liquefied natural gas sector and ensure supply of long-term technical skills.

## Australian Workforce and Productivity Agency

The Australian Workforce and Productivity Agency (AWPA) is an independent statutory authority which advises the Australian Government on the nation's skills and workforce development needs.

*Resources sector skills needs 2013* is the agency's third annual report on employment and skills needs in Australia's Resources Sector. It considers the implications of changing circumstances on the demand for, and the supply of, the skills and workforce capacity which will be required to deliver major mining and oil and gas projects in the years to 2018.

AWPA developed the *Resources sector skills needs 2013* report in consultation with industry, unions and education stakeholders.

## Contact us

You can view or order a copy of the *Resources sector skills needs 2013* report.

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