



Getting Skills Right

Australia



Getting Skills Right: Australia

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Foreword

Digitalisation, globalisation and demographic change are challenging the adequacy of labour market and training policies to ensure that workers have the skills needed in the labour market. In most countries, many employers complain that they cannot find workers with the skills that their businesses require. At the same time, a number of graduates face difficulties in finding job opportunities matching their qualifications. In light of these challenges, the OECD has launched a new programme of work on how to achieve a better alignment between the skills people acquire and those needed by employers, with a focus on: i) understanding how countries collect and use information on skill needs; ii) investigating cost-effective training and labour market policies to tackle skill mismatch and shortages; iii) studying the incentives of training providers and participants to respond to changing skill needs; and iv) setting up a database of skill needs indicators. This work builds on the extensive programme of work of the OECD in the area of skills, including the OECD Skill Strategy and its follow up national studies, the Survey of Adult Skills (PIAAC) and its rich analytical programme, and several studies in the areas of skills mismatch, vocational education and training, and work-based learning.

Within this area of work, the OECD Directorate for Employment, Labour and Social Affairs is carrying out a series of in-depth country reviews to offer a comprehensive analysis of the key areas where policy action is required to spur the development of an efficient system for skills assessment and anticipation to inform policy.

This report on Australia identifies strategies adopted for turning qualitative and quantitative information about skill needs into relevant policy actions. It provides a comparative assessment of: the collection and use of information on skill needs to foster a better alignment of skills acquisitions with labour market needs; and the use of governance arrangements to ensure co-ordination across the key stakeholders.

The work on this report was carried out by Katharine Mullock from the Skills and Employability Division of the Directorate for Employment, Labour and Social Affairs under the supervision of Glenda Quintini (Skills Team Manager) and Mark Keese (Head of the Skills and Employability Division). Several colleagues from the OECD provided valuable input and feedback in the development of this report. Special thanks are given to the many Australian stakeholders who participated in meetings in October 2017 and a seminar in April 2018, and provided documentation and comments critical to the production of this report.

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Acronyms and abbreviations

ABS	Australian Bureau of Statistics
AISC	Australian Industry and Skills Committee
ALMU	Australian Labour Market Update
ANZSCO	Australia and New Zealand Standard Classification of Occupations
ANZSIC	Australia and New Zealand Standard Industrial Classification
AQF	Australian Qualifications Framework
AWPA	Australian Workforce Productivity Agency
BLS	United States Bureau of Labor Statistics
CISC	COAG Industry and Skills Council
COAG	The Council of Australian Governments
COPS	Canadian Occupational Projection System
CoPS	Centre of Policy Studies
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSOL	Consolidated Sponsored Occupation List
DET	Department of Education and Training
DHS	Department of Human Services
DIBP	(former) Department of Immigration and Border Protection
EP	Employment Projections (United States)
ESCO	European Skills, Competences, Qualifications and Occupations
ESDC	Employment and Social Development Canada
GDP	gross domestic product
HILDA	Household Income and Labour Dynamics in Australia
ICT	internet and communications technology
IRC	industry reference committee
ISF	Industry Skills Forecasts
JSCI	Job Seeker Classification Instrument
LMIC	Labour Market Information Council (Canada)
LMIP	Labour Market Information Portal
MAC	Migration Advisory Committee (UK)
MACSM	Ministerial Advisory Council on Skilled Migration
MLTSSL	Medium and Long Term Strategic Skills List
NCVER	National Centre for Vocational Education and Research
NEET	not in employment, education or training
NILS	National Institute of Labour Studies
NSW	New South Wales
O*NET	Occupational Information Network (United States)
OECD	Organisation for Economic Cooperation and Development
PIAAC	Programme for International Assessment of Adult Competencies

QILT	Quality Indicators for Learning and Training
ROL	Regional Occupation List
S/T	state or territory
SAA	Skills assessment and anticipation
SERA	Survey of Employers who Recently Advertised
SME	small and medium-sized enterprises
SMP	State Migration Plan
SOL	Skilled Occupation List
SSC	Sector Skill Councils
SSO	skills service organisations
STEM	science, technology, engineering and mathematics
STSOL	Short Term Skilled Occupation List
TAFE	technical and further education
UK	United Kingdom
VET	vocational education and training
VSL	VET Student Loans
VUEF	Victoria University Employment Forecasting

Executive summary

Global trends like technological change and globalisation are transforming the nature of work, and in particular, the demand for and supply of skills. In Australia, the end of the mining boom has been coupled with an ongoing decline in the manufacturing industry, while the construction and services sectors are growing. For many individuals and employers, these economic changes imply the need to shift towards sectors and occupations in higher demand – a potentially difficult transition.

Sound policy can assist individuals and employers in making this transition – through a combination of employment, education and training, and migration policies, among others. But reliable information about how the labour market evolves is critical. Access to information about the skills in high demand, as well as those likely to be required in the short- and medium-term, is needed to feed policies aimed at reducing imbalances between the demand and supply of skills. This report offers an analysis of Australia's existing skill assessment and anticipation (SAA) system, including a review of how information is collected and used to foster alignment of the skill supply with labour market needs, and of the use of governance arrangements to ensure coordination among key stakeholders.

The report focuses on skill imbalances, including skill shortages and skill mismatches. Skill shortages are currently on par with the global average (about 40% of employers globally report difficulties filling vacancies) and low relative to their peak in 2007. While the OECD *Skills for Jobs* database identifies some types of skills as in shortage in Australia, the intensity of these shortages is low relative to other OECD countries. The most acute shortages are found in *knowledge of education and training*, *health services* as well as *mathematics and sciences*. But while skill shortages are low to average in Australia relative to other OECD countries, there is significant skill mismatch: in particular, many workers are over-qualified for their jobs (20% of workers, compared with the OECD average of 17%). Furthermore, a high share of workers is mismatched both by qualification level and by field-of-study, and as a result they face 20% lower wages than those who are well-matched to their jobs. Underuse of skills and human capital is a contributing factor to skill imbalances in Australia, as the long-term unemployed, job seekers in some regional areas, and under-represented groups represent a potential skill supply that could be better utilised.

To tackle these challenges, Australia uses a wide range of skill assessment and anticipation exercises, including employer surveys, surveys of graduates, quantitative forecasting models, sectoral studies, qualitative methods, and labour market information systems. By international standards, this variety of exercises is found in only a few countries. The two major national-level skill assessment exercises (skill shortage research and the review of the skilled occupation lists for migration) are conducted at least once a year and assess current skill needs. This frequency makes the exercises suitable for guiding shorter-term policies like the selection of temporary skilled workers (the objective of the skilled occupation lists for migration) and active labour market policies for job seekers. However, by focusing on skilled occupations only (i.e. those that require

at least an Australian Qualifications Framework (AQF) Certificate 4 or Certificate 3 with work experience), the skill shortage research may not be suitable for informing active labour market policies, as the long-term unemployed who stand to benefit the most from training may not have the necessary pre-requisites to enter programmes at the Certificate 3 or 4 levels.

Longer-term policies (e.g. education and training policies, or the selection of permanent skilled workers) require more forward-looking exercises that are updated on a regular basis. Several states commission forecasting exercises, and the Australian government commissions external consultants to conduct national forecasting on an ad hoc basis. Australia could benefit from implementing a more regular forecasting exercise (i.e. with results published every 2-3 years, as in Canada, the United States New Zealand and Sweden) at the national level to preview potential labour market imbalances in the longer-term (10-year time span), so that policy makers can develop policies to avoid these imbalances.

Australia could improve its SAA system even further by developing more sophisticated proxies for skills, i.e. the set of competencies that are mobilised to perform tasks related to a job, like numeracy, problem-solving, or communication skills. Existing SAA exercises in Australia are largely geared towards assessing which qualifications and occupations are in demand—as opposed to which skills, per se, are in demand. A skills-based approach to SAA would help Australia respond to rapidly changing demand for skills in an environment of technological progress; for example, by facilitating a modular approach to adult learning whereby workers can build on their existing skills by acquiring new ones that are in high demand, rather than retraining for a new occupation without capitalising on their past training and experience. To facilitate the development of data about the demand for skills, Australia could invest in a database of skill-based occupational definitions (similar to O*NET in the United States), designed to be consistent with the Australia and New Zealand Standard Classification of Occupations (ANZSCO) occupational framework and linked to the competency-based qualifications framework.

The use of SAA information to mitigate skill imbalances spans multiple policy domains (education, migration, employment) in Australia. In education policy, SAA information is used to inform potential learners about the labour market, to update and develop new qualifications, to decide which courses to fund, and to steer students towards skills and qualifications that have good labour market prospects in vocational education and training (VET) and adult training. In migration policy, Australia uses results from SAA exercises to select migrants with skills, qualifications and work experience that are in high demand. In employment policy, initiatives to help workers affected by the closure of automotive manufacturing plants have been well-informed by SAA information. Beyond these existing uses of SAA information in policy making, further applications could be explored: for example, in profiling job seekers, so that job seekers with skills in low demand or skills gaps receive more intensive employment services; and to shape the content of training offered to job seekers within employment services.

As skill challenges span multiple policy domains and levels of government, finding policy solutions that work requires concerted collaboration across stakeholders. The primary mechanism for collaboration between the national and state/territory governments, about the results of SAA exercises and the national policy response, is the Council of Australian Governments Industry and Skills Council (CISC). While CISC promotes coordination between the national and state and territory governments on issues

related to skills, it does not include ministries from other policy domains (e.g. employment, migration). Australia could benefit from setting an overview assessment or “vision” of skills policy, which includes clearly-defined policy objectives spanning policy domains and levels of government, and is underpinned by political leadership.

Furthermore, involving the social partners (employers, employer associations and trade unions) in discussing the results of SAA exercises can also improve the quality of these exercises by ensuring that the results reflect employers’ true needs, and that the longer-term training needs identified by trade unions are considered. In Australia, employer associations are involved in discussing the results of SAA exercises and also in influencing the policy response through industry reference committees (IRC). While trade unions are represented on IRCs, their overall level of engagement in the discussion of SAA results could be lifted to reflect a more tri-partite arrangement.

As noted above, one of the strengths of Australia’s SAA system is the variety of exercises that are carried out. Not only does Australia assess skill needs at the national level, but it also runs exercises at the state, territorial and sectoral levels. Such variety is clearly desirable in a country as vast and diverse as Australia, and in a federation where policy responsibilities are split between national and sub-national governments. But this variety comes at a cost, as multiple actors and a diversity of interests and institutional objectives can make agreement about skill needs and the policy response more challenging—even when good governance structures are in place. Raising awareness about the scope and comparability of the different SAA exercises could help to promote consensus about skill needs. This consensus could be achieved, for example, through the use of information workshops or conferences as is done in Canada and Norway. In other countries, an independent organisation carries out SAA exercises, which also helps to facilitate consensus. Centralizing some components of SAA at the national level by having an independent and respected body carry out forecasts at both the national and state/territory levels, for example, would assist comparability of SAA exercises across states, and reduce costs through economies of scale. Generally, stronger coordination between stakeholders that involves more information exchange around the methodologies of SAA exercises would facilitate smoother consensus-building.

Overall, Australia already produces reliable information about the labour market and uses this information to shape policies to reduce skill imbalances. The recommendations below suggest ways that Australia could make further improvements in assessing, anticipating and responding to changing skill needs in order to shape policies which bring about a better alignment between skills supply and skills demand. The end result would be higher earnings and job satisfaction for workers, higher productivity for firms, and higher productivity and lower unemployment for the economy as a whole.

Key recommendations

Building tools to assess and anticipate skill needs

- Regular national forecasts (i.e. every 2-3 years) are needed to identify potential longer-term labour market needs and imbalances (10-year time span), so that policy makers can develop policy to avoid these imbalances. Such forecasts could guide education and training policy, as well as permanent migration policy, particularly the construction of the Medium and Long Term Strategic Skills List (MLTSSL).

- Pursue initiatives to build a more skills-based occupational classification, which could help to inform VET training packages and leverage the existing competency-based VET framework to support a modular approach to adult learning. ANZSCO should be updated to reflect emerging occupations, many of which have specialised skill requirements.
- Apply skills clustering techniques to identify skills with a high degree of transferability between occupations and within sectors to facilitate career transitions in the context of structural adjustment.
- Encourage sharing of knowledge and SAA methodologies between states and territories, national government, and between industry reference committees. This could facilitate consensus about skill needs, and also promote labour mobility.

Use of SAA exercises

- Existing SAA information should be better used in profiling so that job seekers with skills in low demand receive more intensive employment services. Consider where this could best be operationalised—whether at the statistical profiling stage or by employment service providers
- For accredited training in high demand in the labour market, consider reducing the disincentives that employment service providers face in offering training to job seekers, e.g. remove upfront costs rather than require that they apply for reimbursement. Consider also removing the requirement to ask the Department of Jobs and Small Business’ approval of non-accredited training for a list of in-demand skills.
- To facilitate use of SAA information by potential students, trainees and job seekers, centralise existing SAA information and data into a single online platform. Offer regular training sessions for teachers, career counsellors, and employment service providers to receive updated information about the requirements of the labour market.
- To provide a sense of how well current SAA information reaches end users, pursue evaluation efforts to assess the quality and quantity of SAA information that is provided to students, workers, and job seekers. This would provide a basis for advice on possible shifts in approaches to career guidance and SAA information dissemination.
- Publish clear details about how the occupation lists for skilled migration will be reviewed and updated, including specific measures, thresholds and weights.

Governance and stakeholder involvement

- Explore options to improve the coordination of the development and use of SAA information across levels of government and policy domains. Consider the applicability of practices employed in other countries: stakeholder workshops to promote an understanding of the scope and comparability of different SAA exercises; assigning an independent organisation to conduct SAA exercises; or building a national skill policy which sets targets that span policy domains.
- Consider giving trade unions a more formalised role in discussions of SAA findings. This could help to balance shorter-term priorities of employers, for

instance in the development of VET training packages, with longer-term priorities around preparing the workforce for changing skill demands, e.g. teaching transversal skills.

Chapter 1. Skill imbalances in Australia

Global trends like rapid technological change, increased globalisation, and demographic developments, are transforming the nature of work and the demand and supply of skills in particular. These trends have already contributed to a change in the skill profile of employment across OECD countries, and these changes are expected to continue. In this context, there is a critical need to assess current skill needs and to anticipate future skill needs.

This chapter provides an overview of skill imbalances in Australia by focusing on skill mismatches and skill shortages. It discusses the cost of skill imbalances to individuals, firms and the economy as a whole; and sets the scene for a discussion about how skill assessment and anticipation (SAA) exercises can be powerful tools in responding to them.

The skills and jobs in demand in the workplace have altered considerably in recent decades as a result of major global trends: rapid technological innovation, increased globalisation, and ageing populations, among others. These trends have led to the emergence and expansion of some sectors and occupations at the same time as others have contracted. Even within existing occupations the tasks performed by workers and the skills needed to perform them have undergone significant change. These changes contribute to imbalances between the demand and supply of skills. While some degree of skill imbalances is expected in any dynamic economy, persistent imbalances in skills can be costly for individuals, firms and the aggregate economy.

To understand skill imbalances, and to devise appropriate policy responses, high-quality information about the needs of the labour market is needed. This chapter reviews the evidence on current skills imbalances in Australia, and sets the scene for a discussion about how skill assessment and anticipation (SAA) exercises can be powerful tools to respond to them.

Note that for most of this report, the term “skills” is used in a wide sense (i.e. to include qualifications, fields of study, and cognitive and non-cognitive abilities). However, in certain parts of the report, a distinction will be made between “skills” in this wider sense and “skills” in a narrower sense, i.e. to refer to the set of competences mobilised to perform the tasks related to a job. For example, this distinction will be made in Chapter 2 to frame the recommendation that Australia develop better proxies to measure skill needs, since most of the country’s available intelligence around skill needs focuses on qualifications and occupations, rather than skills, per se.

Box 1.1. Defining “skills”

Despite the key role that skills play in the labour market, there is little agreement as to how to define the concept. The term “skill” can refer to general cognitive and non-cognitive abilities (e.g. information-processing skills, teamwork, and problem-solving) as well as to knowledge and abilities that are specific to a particular job, occupation or sector (e.g. accounting or hair colouring) (Becker, 1962^[1]). In practice, the terms skills, knowledge, abilities, competences, and education are often used interchangeably.

Source: Adapted from OECD (2017) Getting Skills Right: Skills for Jobs Indicators.

1.1. Main Findings

- Evidence from international analyses, as well as the Department of Jobs and Small Business’ research agree that skill shortages are currently low in Australia relative to the historic trend, and on par with the global average. Similarly, the OECD Skills for Jobs database finds that while several types of skills are in shortage in Australia, the intensity of the shortages of most skills is relatively low.
- According to the Skills for Jobs database, the most acute shortages are in knowledge of education and training, health services and mathematics and sciences. Apart from knowledge of manufacturing and production, and physical abilities like fine manipulative abilities, control movement, and physical strength, relatively few skills are in surplus. This profile of skills in shortage and surplus in

Australia largely reflects global trends, like the rapid development of new technologies.

- Over-qualification is higher in Australia compared to the OECD average (20% versus 17%), with vocational education and training (VET) graduates better matched to their jobs than graduates from higher education. To some extent, qualification mismatch in Australia is only apparent, as most workers who are over-qualified to their jobs are well-matched in terms of literacy skills. This discrepancy illustrates the low capacity of qualifications to accurately signal the quality of skills acquired.
- While field-of-study mismatch is on par with the OECD average (33% versus 32%), the overlap between field-of-study and qualification mismatch is relatively high (40% versus 33%). To the extent that these workers must downgrade to a job that requires a lower level of qualification, they could face wage penalties of up to 20% relative to those who are well-matched.
- Skill imbalances entail large costs for individuals, firms and the aggregate economy in terms of lower wages, lower job satisfaction, increased employee turnover, and lower productivity. Skill shortages are particularly costly for small and medium-sized enterprises, which make up 70% of employment in Australia. Gaps between the skills that job seekers have and those that employers are looking for also contribute to persistent and elevated unemployment.
- Existing skill imbalances in Australia have both demand-side and supply-side influences. On the demand side, the end of the mining boom has been coupled with an ongoing decline in the manufacturing industry, particularly in the automotive sector. Meanwhile, there has been growth in construction and the services sector, particularly in healthcare, social services and public administration, as well as professional, scientific and technical services.
- On the supply side, rising educational attainment has occurred in tandem with a shift away from vocational education and training (VET) and towards higher education. Australian adults also have strong literacy, numeracy, and digital problem solving-skills. However, there are pockets of labour and skills which are not being used. The long-term unemployment rate has not declined since economic activity picked up, suggesting a growing divide between the skills of the unemployed and those that employers need. Furthermore, disparities in regional unemployment rates have increased. Finally, several groups are not well-represented in the labour force: prime-aged women, mature-age workers, people with disabilities and mental health conditions, as well as indigenous persons and young people not in education, employment or training (NEET).
- Skill assessment and anticipation exercises can help policy makers to better understand skill imbalances and their causes, in order to mitigate them through policy design.

1.2. Evidence of skill imbalances in Australia

1.2.1. Skill shortages and surpluses

Skill shortages refer to a disequilibrium condition in which the demand for a specific type of skill exceeds its supply at the prevailing market wage rate (Janankar, 2009^[2]). In a

practical sense, though, there is no universally-applied definition of skill shortages (Shah and Burke, 2005^[3]). A commonly-used method to measure skill shortages is to survey employers about their hiring difficulties, but this is inherently subjective and results depend strongly on how the question is phrased (see Box 1.2). Other options include the analysis of job vacancy data, where long vacancy periods may signal the presence of skill shortages or employer hiring difficulties. An alternative approach is to build a composite indicator from a range of quantitative data sources (e.g. wage dynamics, unemployment growth, employment growth). A new OECD database, the Skills for Jobs database, follows this latter approach (see Box 1.2). **Skill surpluses** generally receive less attention than skill shortages, and arise when the supply of certain skills is higher than the demand for those skills.

Skill shortages and skill surpluses can be costly. Skill shortages hinder firm productivity by inhibiting adoption of new technology, and by causing firms to substitute unskilled workers for skilled workers (Haskel and Martin, 1993^[4]). Skill surpluses also represent a lost investment in human capital, both for individuals and for the aggregate economy, as governments usually subsidise post-school education in light of expected positive externalities, e.g. knowledge spill-overs.

Skill shortages may be particularly costly to small and medium-sized enterprises, which make up 70% of employment in Australia (Department of Industry, Innovation and Science, 2011^[5]). Recent findings from a study of the Riverina, an agricultural region in Australia, suggest that productivity costs from hard-to-fill vacancies are largest for younger and smaller firms in this region (Sharma, Oczkowski and Hicks, 2016^[6]). Productivity costs due to skill shortages can hamper the ability of SMEs to grow. Higher productivity costs may arise from the specific challenges that SMEs face in addressing skill shortages, including cost constraints in providing training, and difficulty competing with larger firms for highly-skilled workers. Indeed, evidence from an empirical analysis based on a sample of Australian firms finds that small firms (5-19 employees) are more likely to respond to skill shortages by extending hours for their existing workforce, while larger firms (20-199 employees) are more likely to provide on-the-job training (Healy, Mavromaras and Sloane, 2015^[7]).

Evidence from international analyses, as well as the Department of Jobs and Small Business' research agree that skill shortages are currently low in Australia relative to the historic trend, and on par with the global average. That said, several occupations in the skilled trades have been in continuous shortage over the last decade. According to the OECD Skills for Jobs database, while several types of skills, knowledge areas and abilities are in shortage, the intensity of these shortages is relatively low.

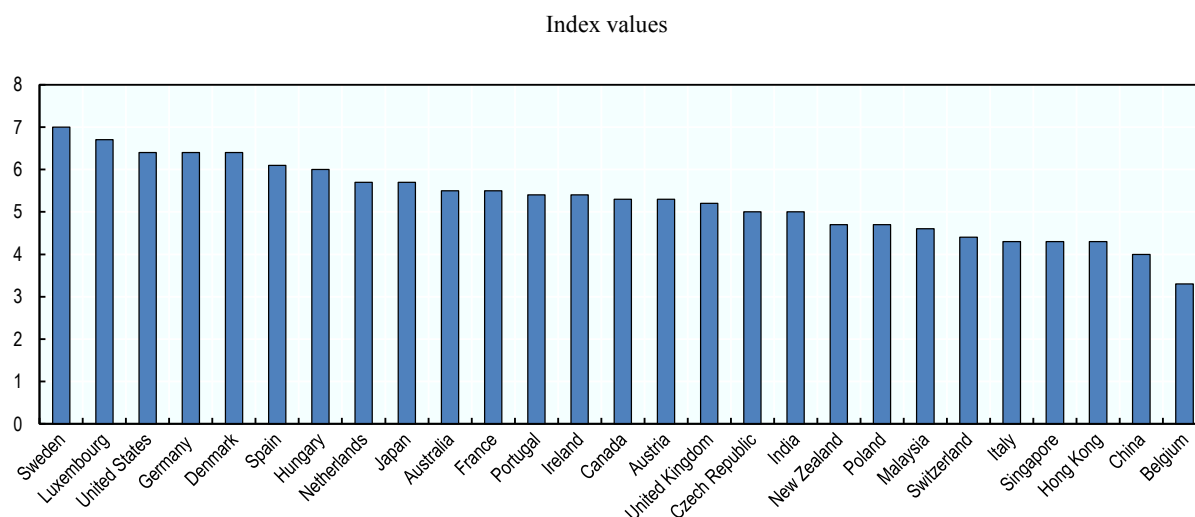
International evidence

The 2016/2017 Manpower Talent Shortage Survey found that 40% of employers globally report having difficulty filling positions, an increase from the low of 31% during the global financial crisis in 2008. At 38%, the share of Australian employers reporting difficulties filling jobs is close to the global average, but is at the lowest percentage since 2007 when 61% of employers reported difficulties. The end of the commodity boom and the associated decline in demand for skilled labour is no doubt behind the reduction in hiring difficulties. The hardest jobs to fill are in skilled trades, and these have topped the list for the last ten years. Engineers, management executives, sales representatives, and IT staff are also identified as hard-to-fill positions. According to Manpower, employers complain that positions are hard to fill because candidates have a lack of experience (23%

of employers report), there is a lack of available applicants (21%), or candidates lack technical skills (20%).

The Hays Global Skills Index provides another international comparison of skill shortages in national labour markets based on a range of quantitative data. The index combines data on wage pressures in the total economy and in high-skill industries and occupations, with indicators of labour market flexibility and the degree to which the qualifications of the unemployed align with employers' needs. As with the Manpower Survey, the Hays Global Skills Index shows an average level of skill shortage pressure for Australia compared with other countries. The accompanying analysis flagged that there is evidence of significant wage pressure in high-skill industries in Australia, and rising mismatch between the skills unemployed workers possess versus those that employers are looking for.

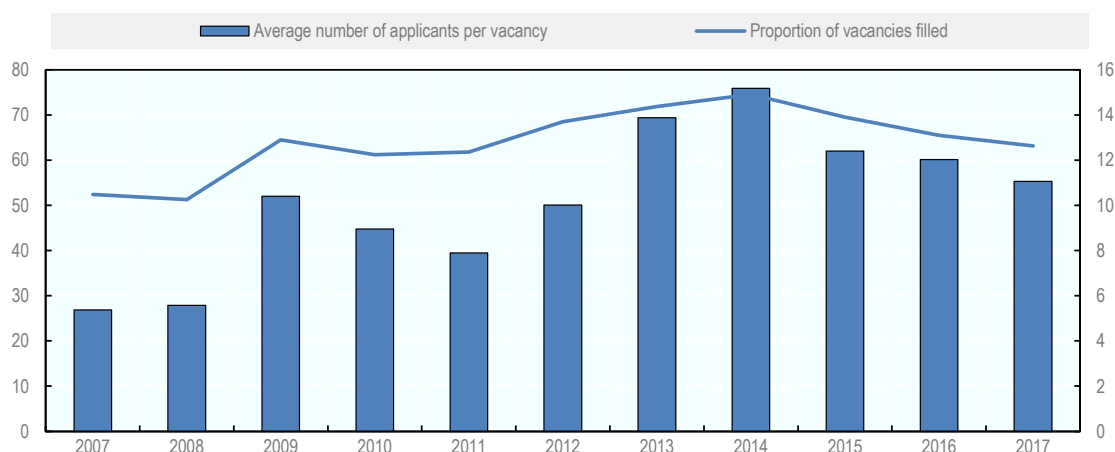
Figure 1.1. Hays Global Skills Index, selected countries, 2017



Source: The Hays Global Skills Index 2017 (www.hays-index.com).

Evidence from the Department of Jobs and Small Business' skill shortage research

According to Australia's official assessment (Department of Employment, 2017^[8]), skill shortages were limited in 2017, although many employers reported recruitment difficulties (i.e. cases where there is an overall adequate supply of skilled workers but employers are unable to recruit suitable workers due to lack of experience, specialist skills, or mobility barriers). There were 11.1 applicants per vacancy (Figure 1.2), but 37% of vacancies went unfilled due to difficulty recruiting suitable candidates. In terms of number of occupations in shortage, the Department of Jobs and Small Business (formerly the Department of Employment) found that 46% of consistently-assessed skilled occupations¹ were in national shortage in 2017, compared with 90% in 2007.²

Figure 1.2. The proportion of vacancies filled has been in decline

Source: Department of Jobs and Small Business (2018), “The Skilled Labour Market: A pictorial overview of trends and shortages.” Survey of Employers who have Recently Advertised.

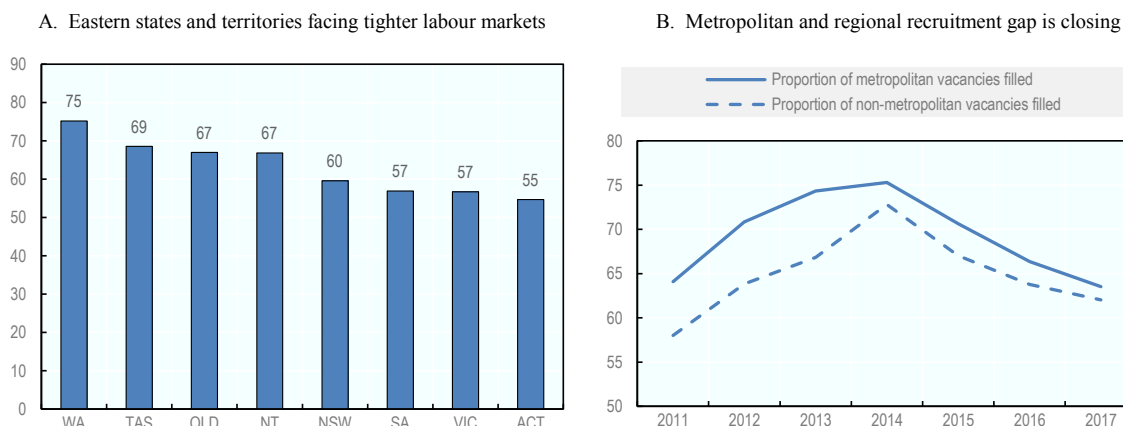
In 2017, shortages were concentrated in technician and trades worker occupations. A number of skilled trade occupations have been in continuous national shortage over the last decade, despite the end of the commodity boom and relatively weak employment growth in these occupations relative to total employment growth. Jobs and Small Business attributes continued national shortages in the skilled trades to several factors, including low participation in VET, and relatively poor pay and working conditions in some trades occupations (Department of Employment, 2018^[9]). Only a small share of applicants for skilled trade vacancies are considered suitable due to lack of experience, qualifications or skills.

Despite stronger growth in employment in professional occupations (34%) than in trades (10%) over the decade since 2007, just 13% of professional occupations were in shortage in 2017, compared with 80% in 2007. Widespread national shortages were apparent for only five professional occupations in 2017: audiologist, sonographer, veterinarian, surveyor and architect. Rising enrolment in higher education has in part contributed to softer graduate outcomes and some surplus labour activity within professional occupations.

In addition to assessing skill shortages at the national level, Jobs and Small Business also investigates differences in employer recruitment experiences for skilled occupations between states and territories, and between metropolitan and non-metropolitan regions. There are marked differences between states and territories in the share of vacancies which go unfilled (Figure 1.3, Panel A). Labour demand strengthened across the country in 2017, but the strongest demand for labour was seen in the eastern states, with elevated levels of construction activity contributing to this. Western Australia and Queensland have experienced looser conditions since the end of the mining boom. There is also variation in recruitment difficulties within states and territories. Employers in the rural and remote regions of the country tend to attract fewer applicants and fill a lower proportion of vacancies than employers in urban areas. This gap has narrowed in recent years (Figure 1.3, Panel B), likely owing at least partially to declines in labour demand in regional areas due to the end of the mining boom. In 2017, six occupations were deemed to be in shortage in rural and remote regions of the country: medical diagnostic

radiographer, optometrist, hospital and retail pharmacist, physiotherapist, midwife, and radio communication technician – almost all of which are in health professions.

Figure 1.3. Sub-national variation in proportion of unfilled vacancies



Source: Department of Jobs and Small Business (2018), “The Skilled Labour Market: A pictorial overview of trends and shortages.” Survey of Employers who have Recently Advertised.

Evidence from the OECD Skills for Jobs database

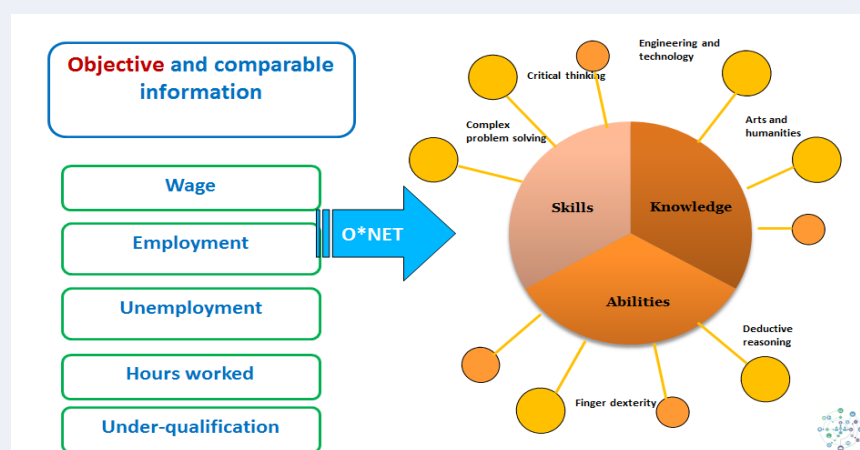
According to the OECD Skills for Jobs database (Box 1.2), many skills are in shortage in Australia, while only a few are in surplus – including knowledge of manufacturing and production, as well as physical abilities like fine manipulative abilities, control movement, and physical strength (Figure 1.5). But while several types of skills are in shortage, the intensity of the shortages of most skills is relatively low compared with other countries in the database. The most acute shortage pressure is evident in knowledge of education and training, health services and mathematics and sciences in addition to more transversal skills³ like verbal and reasoning abilities, basic process skills, systems skills and complex-problem solving skills.

Box 1.2. OECD's Skills for Jobs database

Employer surveys often poll employers about their difficulty filling vacancies due to skill shortages (e.g. Manpower, Eurofound), which is a useful though imperfect measure of the degree to which skill shortages are widespread. While the employers' perspective on skills shortages is important, it has limitations. Employers do not all interpret skill shortages in the same way, leading to inconsistency in employers' self-reporting. Analysis shows that while many employers equate skills shortages with hard-to-fill vacancies, a substantial number do not (Green, Machin and Wilkinson, 1998^[10]; Shah and Burke, 2005^[3]). Some employers confuse skill gaps, i.e. the skill deficiencies of their internal workforce, with skill shortages. As a result, findings of employer surveys are often inconsistent with one another (OECD, 2017^[11]).

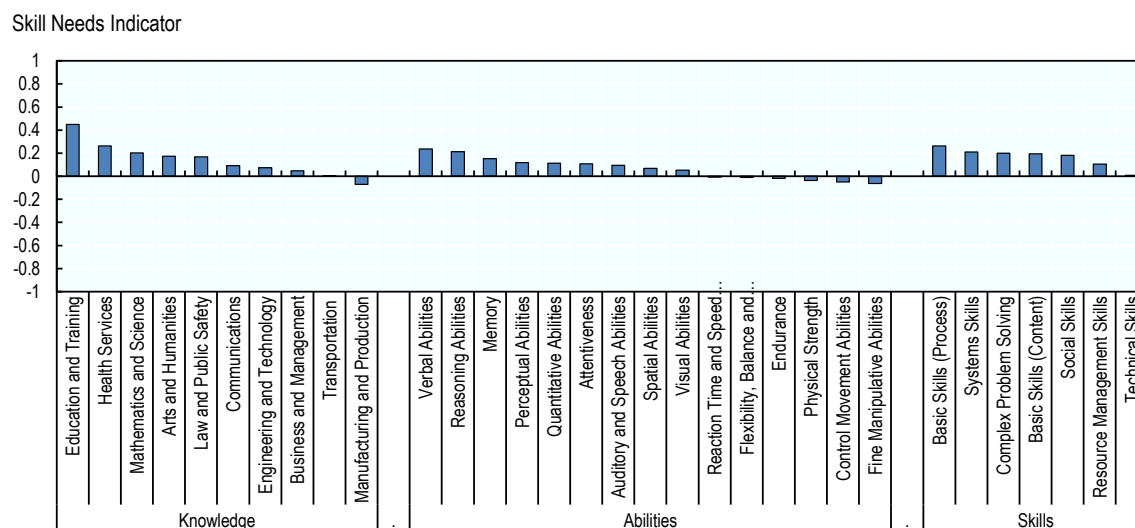
The **Skills for Jobs database**, released in 2017, is an internationally-comparable index of skills in shortage and in surplus across countries. Unlike employer surveys, which can be subjective, the Skills for Jobs database relies upon quantitative information. The indicators measuring shortage and surplus are constructed using a multidimensional set of quantitative signals of skills pressure, including changes in wages, employment, unemployment, hours worked, and under-qualification (Figure 1.4).

Figure 1.4. Diagram of Skills for Jobs database method



In addition to relying on objective evidence, the Skills for Jobs database offers a portrait of which specific **skills** (e.g. complex problem solving, critical thinking, finger dexterity) are in demand or in surplus across countries. After first assessing shortage pressure at the occupational level (ISCO, 2-digit), a mapping from occupation to skill (using the O*NET classification) generates an assessment of shortage and surplus pressure for specific knowledge, abilities and skills. This is a departure from other international comparisons of skill shortages, which generally compare shortages across occupations, qualifications, fields of study, or by sector, but not by specific skills.

Figure 1.5. Skills shortage and surplus, Australia, 2016



Note: Positive values indicate shortages while negative values indicate surpluses. A Skill Needs indicator value of +1 represents the maximum value across countries in the database, while a value of -1 represents the lowest value. Basic Skills (Process) refer to those skills that contribute to the more rapid acquisition of knowledge and skill across a variety of domains (e.g. critical thinking, active learning, etc.). Basic Skills (Content) refer to foundational structures needed to work with and acquire more specific skills in a variety of domains (e.g. reading comprehension, listening, writing, speaking, basic math and science).

Source: OECD Skills for Jobs database 2017.

This profile of skills in shortage and surplus in Australia largely reflects global trends, like the rapid development of new technologies⁴ which has raised demand for skills that complement the use of these new technologies. Looking at a higher level of disaggregation than depicted in Figure 1.5, several types of technology-related knowledge are in shortage in the Skills for Jobs database across OECD countries: knowledge of computers and electronics, mathematics, physics, and engineering and technology. While these knowledge areas are also in shortage in Australia, the intensity of these shortages are smaller than in other OECD countries (see Figure 1.6, Panel A).

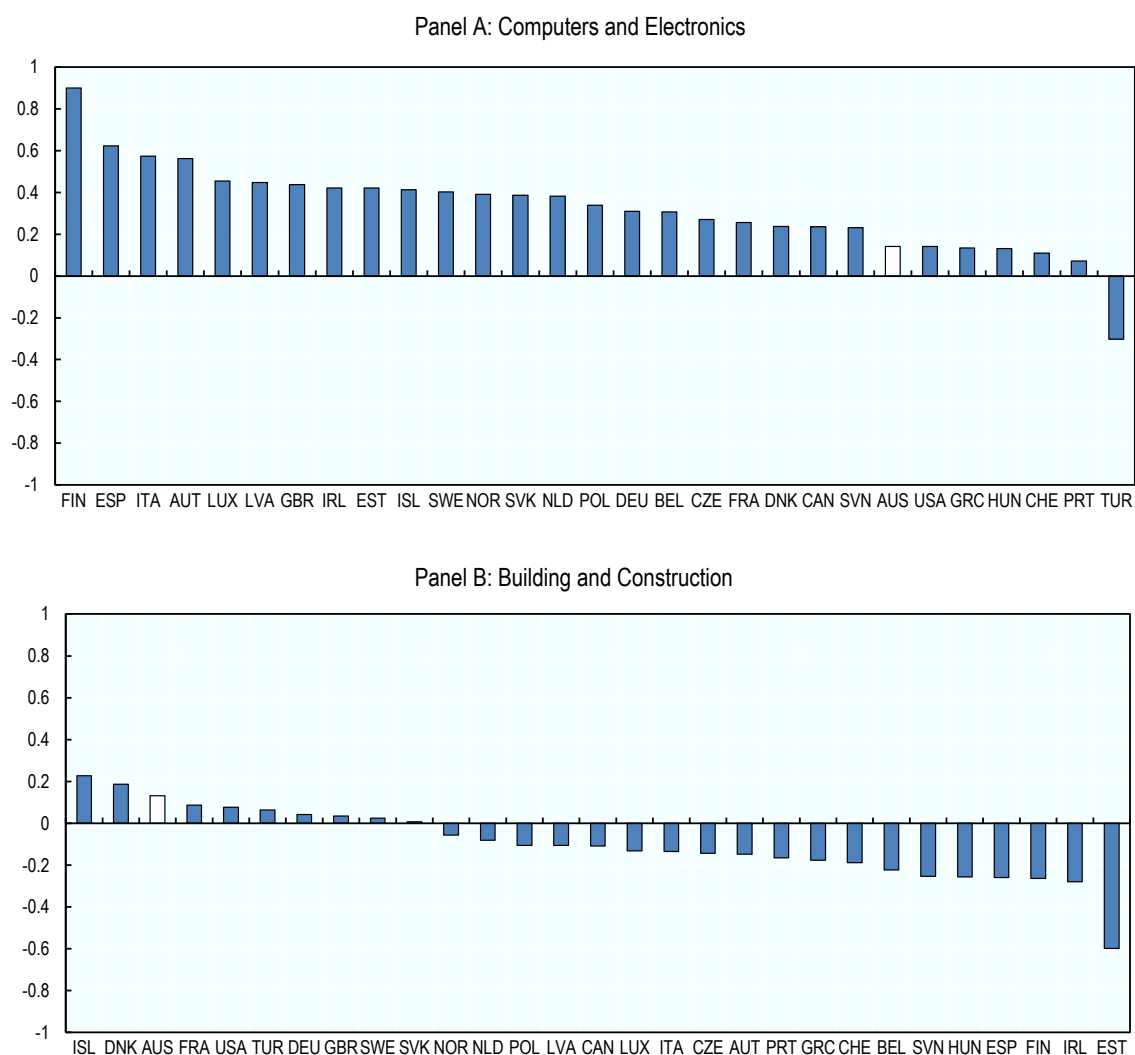
Shortages in technology-related knowledge are likely low in Australia due to a combination of demand- and supply-related factors. On the supply side, the OECD's 2017 Science, Technology and Industry Scoreboard suggests that Australia has one of the lowest shares of tertiary students entering science, engineering and internet and communications technology (ICT) in the OECD area⁵. However, according to the PIAAC Survey of Adult Skills, Australian adults have above-average proficiency in problem-solving in technology-rich environments, with nearly 40% of Australian adults scoring in one of the top two levels. Therefore, while supply of specialised technical skills may be low, Australian adults have strong transversal skills related to the use of technology. On the demand side, the OECD's 2017 Science, Technology and Industry scoreboard suggests that Australia performs well on some measures of technology adoption (e.g. Australia had the third highest rate of mobile penetration in the OECD in 2016), but lags behind on other indicators, including number of robots per worker, and ICT intensity of manufacturing and services jobs. Furthermore, the decline in mining activity has likely reduced the demand for engineers. Therefore, shortages in technology-related knowledge

may be low due to a combination of a good supply of technology-related transversal skills, changes in industry composition, and relatively slow adoption of new technologies.

At the same time that technological progress raises demand for technology-related skills and knowledge, machines and computers change the nature of production by lowering the cost of performing routine tasks. This reduces the demand for human labour to perform these tasks. Knowledge related to manufacturing and production, an industry historically characterised by routine tasks, is in surplus in the Skills for Jobs database for all countries including Australia, which has seen several large automotive manufacturing companies shut down in recent years. But while most OECD countries also have large surpluses in knowledge related to building and construction, this is not the case in Australia (Figure 1.6, Panel B), where the construction sector is currently growing, and Jobs and Small Business expects it to be one of the largest contributors to employment growth over the next five years. Recall that Jobs and Small Business in its skill shortage research finds persistent shortages in several trades occupations, including a number of those related to construction.

Research to understand the impact that technological change could have on jobs and the tasks that humans perform at work has come to the conclusion that manual, non-cognitive, physical tasks will decline in demand, as these tasks are more cheaply performed by machines, while more cognitive and social tasks (not yet mastered by machines) will rise in demand (Autor, Levy and Murnane, 2003^[12]). These trends are already playing out in Australia, where cognitive skills (e.g. reasoning abilities and complex problem-solving skills) and social skills are in shortage, and manual and physical skills, like fine manipulative abilities and physical strength, are in surplus (Figure 1.5). But relative to other OECD countries, shortages in cognitive skills are low in Australia (e.g. reasoning abilities, see Figure 1.7, Panel A), likely owing to an already highly-skilled and educated workforce. Surpluses in physical and manual skills are also low (e.g. finger dexterity; see Figure 1.7, Panel B), owing to ongoing demand for these skills in the skilled trades and construction sector.

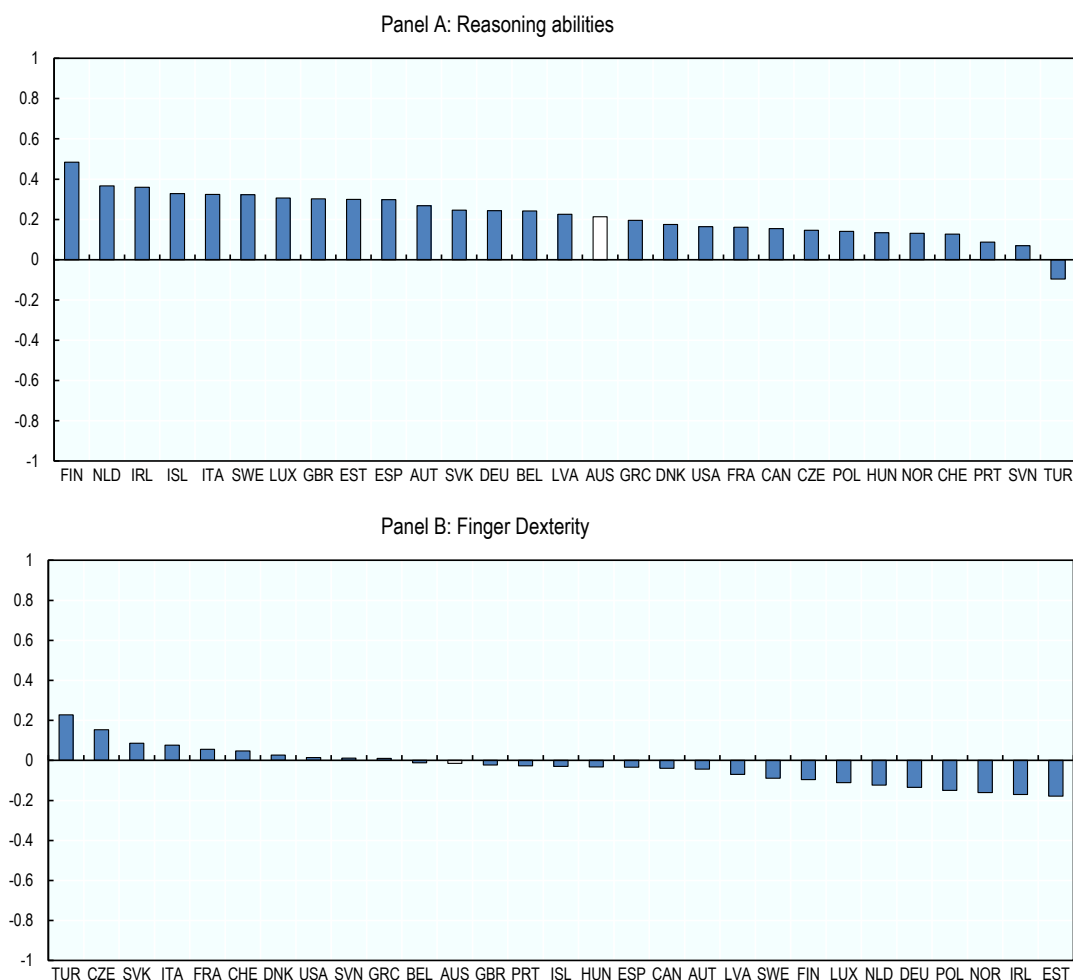
Figure 1.6. Knowledge of Computers and Electronics and Building and Construction are in shortage



Note: Positive values indicate shortages while negative values indicate surpluses. A Skill Needs indicator value of +1 represents the maximum value across countries in the database, while a value of -1 represents the lowest value. Latest year of data available for Australia is 2016. All OECD countries in the database were included.

Source: OECD Skills for Jobs database 2017 (<http://www.oecd.org/els/emp/skills-for-jobs-dataviz.htm>).

Figure 1.7. Skills related to non-routine, cognitive tasks in shortage (e.g. Reasoning abilities); skills related to routine, manual tasks in surplus (e.g. Finger Dexterity)



Note: Positive values indicate shortages while negative values indicate surpluses. A Skill Needs indicator value of +1 represents the maximum value across countries in the database, while a value of -1 represents the lowest value. All OECD countries in the database were included.

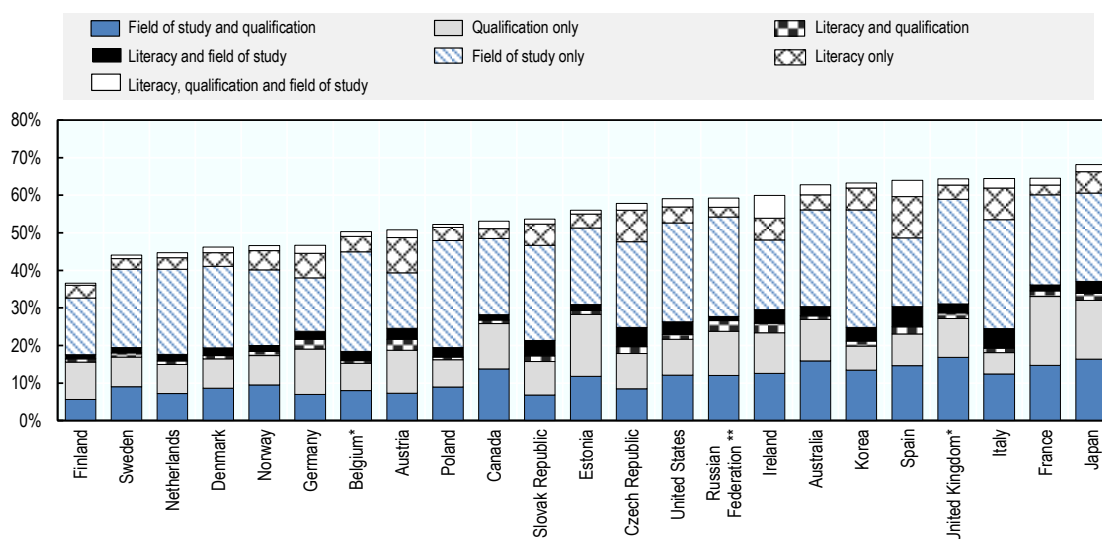
Source: OECD Skills for Jobs database 2017. Latest year of data available for Australia is 2016.

1.2.2. Skills mismatch

Typically, the term “skills mismatch” refers to three different types of mismatch: field-of-study mismatch, qualification mismatch, and the more narrowly-understood skills mismatch. **Qualification mismatch** is when a worker has a level of educational attainment that is higher or lower than what is required by their job. **Field-of-study mismatch**, on the other hand, arises when a worker is employed in a field other than the one in which they specialised in at school. Finally, **skills mismatch** refers to when a worker’s skills (e.g. literacy, numeracy or digital problem-solving skills) exceed or fall short of those needed to carry out the daily tasks of their job. On average, across the countries that took part in the 2012 Survey of Adult Skills, 60% of Australian workers are mismatched along at least one of these dimensions (Figure 1.8).

Figure 1.8. Total mismatch, by type of mismatch

As a percentage of all employment



Note: See OECD (2016), *Getting Skills Right: Assessing and Anticipating Changing Skill Needs*.

Source: OECD calculations based on the Survey of Adult Skills (PIAAC) 2012.

Skills mismatch entails costs for workers, firms and the aggregate economy. For individuals, over-qualification can lead to lower job satisfaction (Vieira and Cabral, 2005), costing firms heavily in terms of employee turnover. In addition to lower job satisfaction, mismatched workers also have lower wages. Over-qualified workers are shown to earn about 20% less than workers with similar qualifications who are well-matched to their jobs, while under-qualified workers earn 17% less than well-matched workers with similar qualifications (Quintini, 2011_[13]).

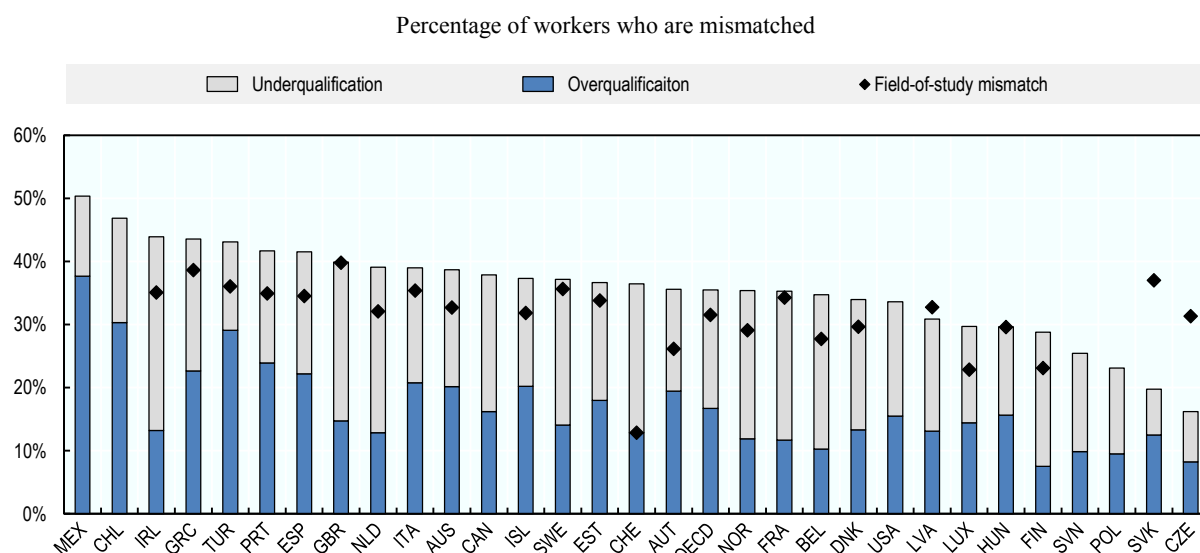
Field-of-study mismatch can also entail large costs for individuals as well as economies, due to the underuse of specific human capital. Generally, individuals only incur wage penalties when they work in a job unrelated to their studies if they must downgrade to a job which requires a lower level of qualification (Montt, 2015_[14]). In addition to costs for individuals, field-of-study mismatch can entail productivity costs for an economy, as mismatched workers may be less productive than well-matched workers because mismatched workers lack field-specific skills or may take longer to develop such skills through on-the-job training or work experience.

At the aggregate level, skills mismatch worsens labour productivity through an inefficient allocation of resources (Adalet McGowan and Andrews, 2015_[15]). Similarly, aggregate level costs associated with field-of-study mismatch are estimated at up to 1% of GDP, based on a cross-country analysis, due to losses in productivity and to the sunk cost of developing skills that are not fully used in the labour market (Montt, 2015_[14]). Looking at analysis specific to Australia, Mavromaras et al. (2009_[16]) estimate the cost of over-skilling in Australia in 2005 to be around 2.6% of GDP, using wages as an indicator of productivity.

Qualification mismatch

According to the 2017 Skills for Jobs database, about 35% of workers across OECD countries are mismatched by qualification. In Australia, 39% of workers are mismatched by qualification, putting the country just above the OECD average (Figure 1.9)⁶.

Figure 1.9. Incidence of qualification mismatch and field-of-study mismatch in Australia, and other OECD countries



Note: Most recent year available for each country. Data for Australia are for 2016. Field-of-study mismatch is calculated for all countries at the 2-digit ISCO level. See OECD (2017), *Getting Skills Right: Skills for Jobs Indicators* for details on methodology.

Source: OECD Skills for Jobs database 2017. Data for Australia come from the Australian Bureau of Statistics and are based on the two-digit ANZSCO classification.

About 20% of Australian workers are over-qualified for their occupations, while about 19% are under-qualified. The rate of under-qualification is on par with the OECD average, while the rate of over-qualification is slightly above the OECD average (20% vs. 17%). Over-qualification can arise if individuals are unable to find work in their field of study, and must downgrade to a job with a lower qualification requirement in order to find work.

Research using the Household Income and Labour Dynamics in Australia (HILDA) survey data studies how qualification mismatch varies by education pathway. Mavromaras (2009) differentiates between higher education graduates, VET graduates, Year 12 school graduates and those qualified below Year 12, and finds that VET graduates are the most likely to be well-matched by qualification in their jobs.

Apparent qualification mismatch

Over-qualification can be due to employers selecting candidates with higher qualifications than necessary to do a job, under the assumption that these candidates sport a set of unobservable qualities or skills that are likely to make them better workers (e.g. more disciplined, or productive). Empirical evidence suggests that firms do indeed employ such selection techniques (Bulmahn and Krakel, 2002_[17]).

While employers often use qualifications as a proxy for a set of skills, and individuals acquire qualifications as a signal to employers that they have certain skills, qualifications are an imperfect indication of skills. Indeed, there can be considerable heterogeneity in the quality of skills acquired by individuals with the same qualification. When individuals are over-qualified or under-qualified for their jobs, but well-matched in terms of the actual skills needed to do their jobs, this is known as “apparent qualification mismatch.”

Table 1.1. Apparent over-qualification by field of study in Australia

	Over-qualified but under-skilled (%)	Over-qualified but well-matched by skill (%)	Over-qualified and over-skilled (%)
All over-qualified persons	3.2	83.4	13.4
By field of study (major):			
Services	2.1	87.4	10.5
Health and welfare	9.4	87.1	3.5
Social sciences, business and law	3.3	86.4	10.3
Engineering, manufacturing and construction	4.1	85.8	10.1
Agriculture and veterinary	4.3	82.6	13.0
General programmes	2.3	81.5	16.2
Teacher training and education science	0.0	74.3	25.7
Humanities, languages and arts	1.4	74.0	24.7
Science, mathematics and computing	0.0	73.3	26.7

Note: The sample is full-time workers who are over-qualified. Skill level is a measure of performance on a literacy assessment.

Source: OECD calculations based on the 2012 OECD Survey of Adult Skills (PIAAC)

Evidence from the 2012 OECD Survey of Adult Skills indicates that among those Australians who were over-qualified for their jobs, 83.4% had the right level of literacy skills for the job, while only 13.4% had a higher level of literacy skills than was required (Table 1.1). The degree of apparent mismatch varies by field of study. Apparent qualification mismatch is highest in services, health and welfare, social sciences and engineering, manufacturing and construction, where qualifications seem to be inflated relative to the underlying literacy skills of the workers.

Apparent qualification mismatch of this type points to the low capacity of qualifications to accurately signal skill quality. Of course, qualifications may more successfully signal skills other than literacy skills. For instance, a degree in social work may do a good job of signalling human empathy skills, but a poor job of signalling literacy skills.

Field-of-study mismatch

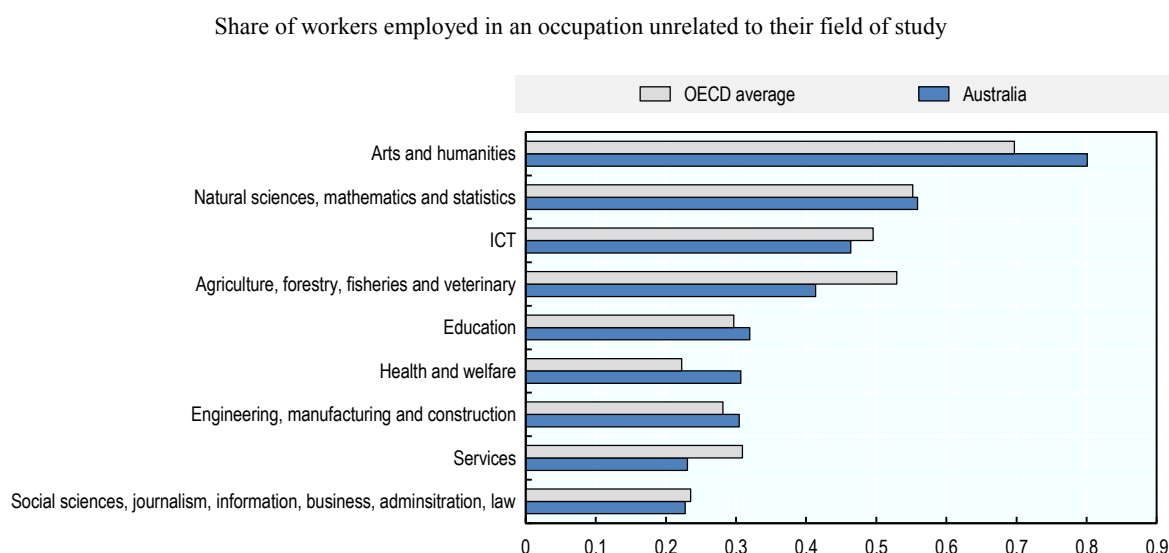
Evidence from the OECD Skills for Jobs database suggests that field-of-study mismatch is quite common across OECD countries, with 32% of workers, on average, employed in a field that is different from the one they have studied and specialised in (Figure 1.9).

While Australia’s level of field-of-study mismatch is on par with the average (33% relative to 32%), the overlap between field-of-study mismatch and over-qualification is somewhat high in Australia. About 40% of workers who are mismatched by field-of-study are also overqualified for their job, compared to an average of 33% among countries surveyed. The OECD estimates that such workers face 20% lower wages than

workers who are well matched. Analysis using the HILDA Australian panel survey finds that the wage penalties for workers who are mismatched both by field of study and by qualification level may be even higher for Australian workers: 30% for men and 25% for women (Mahuteau et al., 2015^[18]).

The incidence of field-of-study mismatch varies by field of study in Australia, with 80% of graduates from Arts and humanities working in a field unrelated to their studies, compared to only about a quarter of graduates from Social sciences and Services; and less than a third of graduates from programs in Engineering, manufacturing and construction; Health and welfare; and Education (Figure 1.10). Field-of-study mismatch in Arts and humanities is higher in Australia than the average (69%), which could indicate lower labour demand in these fields relatively to elsewhere, or perhaps students with these skill sets face better job prospects or higher pay in other fields.

Figure 1.10. Field-of-study mismatch by field of study, Australia and OECD countries, 2016



Source: OECD Skills for Jobs database. The OECD average includes 24 OECD countries in the database.

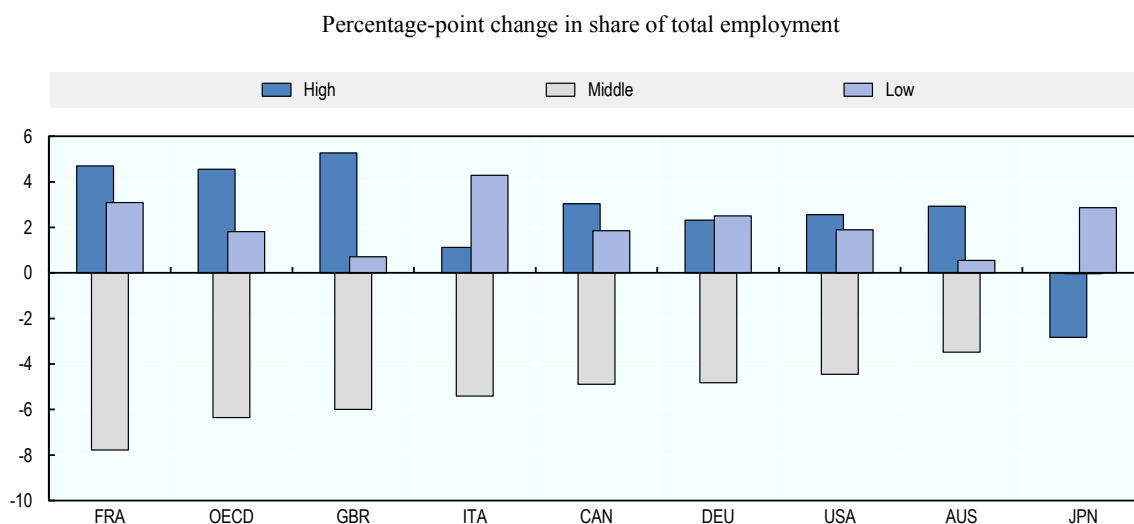
Both field-of-study mismatch and qualification mismatch also vary by immigration status in Australia. About 30% of foreign-born tertiary-educated adults are over-qualified, compared with just over 20% of the native-born who are tertiary-educated (PIAAC, 2012). Foreign-born adults are also more likely to be mismatched by field of study: 60% work in a field other than the one in which they studied, compared with only 35% for the total population (ABS, 2015^[19]). However, those adult migrants who obtained a non-school qualification after arrival in Australia had a similar level of field-of-study mismatch to the total population, suggesting that foreign credentials may not be well-recognised by employers.

1.3. Economic trends affecting the demand and supply of skills in Australia

Major global trends like rapid technological innovation, increased globalisation, and ageing populations have led to the emergence and expansion of some sectors and occupations at the same time as others have contracted. In Australia, as in other OECD countries, these trends have contributed to a change in the skill composition of

employment. The share of employment in jobs at the top and bottom of the skill distribution has grown over the last decade and a half, while the share of employment in middle-skill jobs has declined (Figure 1.11).

Figure 1.11. Labour market polarisation, selected OECD countries, 2001-2015

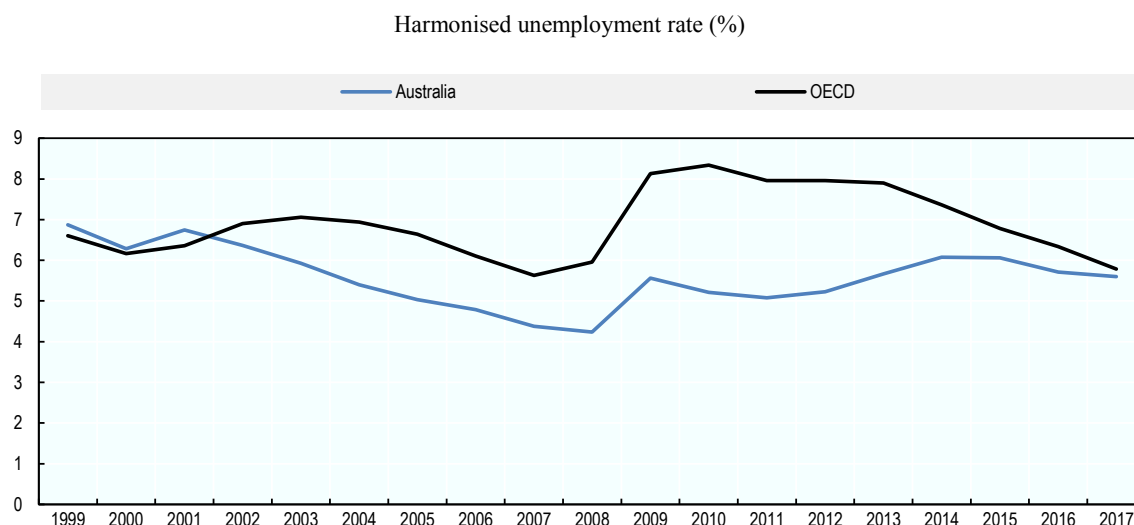


Note: High-skill occupations include jobs classified under the ISCO-88 major groups 1, 2 and 3; middle-skill occupations include those under major groups 4, 7 and 8; and low-skill occupations include those in major groups 5 and 9.

Source: European Labour Force Survey for France, Great Britain, Italy and Germany; Labour force surveys for Canada (LFS), Japan (LFS), Australia (HILDA), and the United States (CPS MORG).

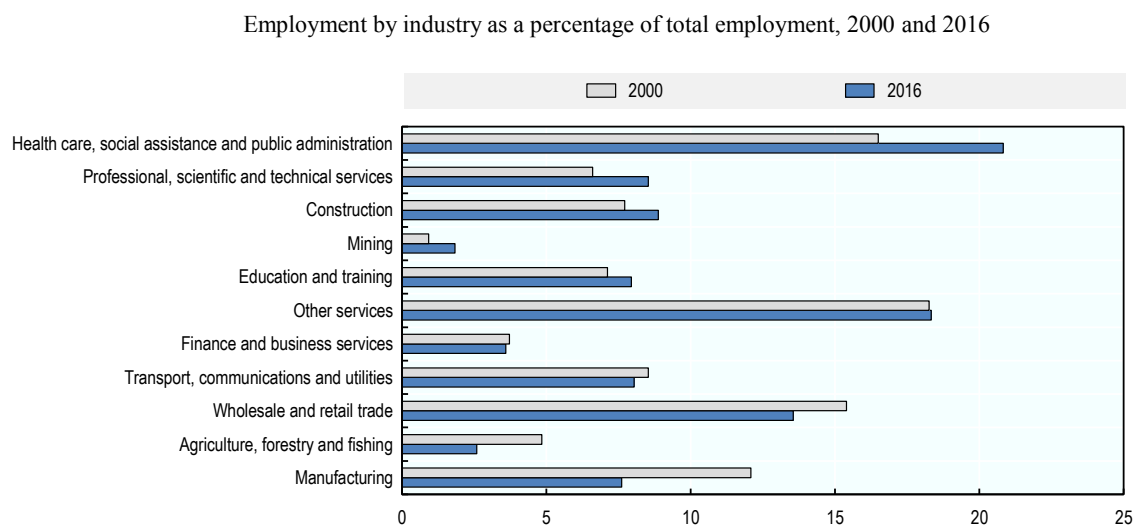
Economic trends suggest growing demand for labour in Australia. The country weathered the global financial crisis well thanks to a prompt monetary and fiscal stimulus response, high commodity prices along with continued robust demand for commodities from Asia, and a resilient financial system. However, the 2011 decline in commodity prices dampened labour demand and signalled the end of the mining boom, contributing to an increase in the unemployment rate from 5.1% in 2011 to 6.1% in 2015, though recent strong economic activity has started to bring the unemployment rate down and it is close to the OECD average (Figure 1.12). The end of the mining boom has been coupled with an ongoing decline in the manufacturing industry, particularly in the automotive sector. Flexible labour markets have facilitated this adjustment: employment has declined in manufacturing, while growing in the services sector, particularly in healthcare, social services and public administration, as well as professional, scientific and technical services (Figure 1.13).

Looking forward, the Department of Jobs and Small Business projects employment growth to be concentrated in four industries over the next five years to May 2022: health care and social assistance (contributing 26.4% of total projected employment growth), professional, scientific and technical services (13.3%), construction (12.7%) and education and training (12.3%). On the other hand, employment declines are anticipated for manufacturing; electricity, gas, water and waste services; and agriculture, forestry and fishing. Strong expected employment growth in the health care and social assistance sector can be attributed to the ongoing ageing of the Australian population, but also to the full implementation of the new National Disability Insurance Scheme, which is projected to require about 70,000 additional disability support care workers by 2019-20 to support increased participation (Productivity Commission, 2017_[20]).

Figure 1.12. Unemployment rate, Australia and OECD, 1999-2016

Note: Harmonised unemployment rates define the unemployed as people of working age who are without work, are available for work, and have taken specific steps to find work. The uniform application of this definition results in estimates of unemployment rates that are more internationally comparable than estimates based on national definitions of unemployment. This indicator measures the number of unemployed people as a percentage of the labour force and it is seasonally adjusted.

Source: OECD Short-Term Labour Market Statistics.

Figure 1.13. Employment has shifted from manufacturing to services

Note: Sectors are ranked in ascending order of employment change over the period 2000-2016.

Source: Australian Bureau of Statistics (2017), “Labour force, Australia, detailed, quarterly”, Table 04. Employed persons by industry – Trend, seasonally adjusted, original, Cat. No. 6291.0.55.003.

For its part, the labour supply in Australia is both highly educated and highly skilled. Australia ranks among the top ten countries in the world in the Global Talent Competitiveness Index 2017, which is testament both to its selective migration policies and responsive education system. In 2015, 43.7% of the adult population in Australia

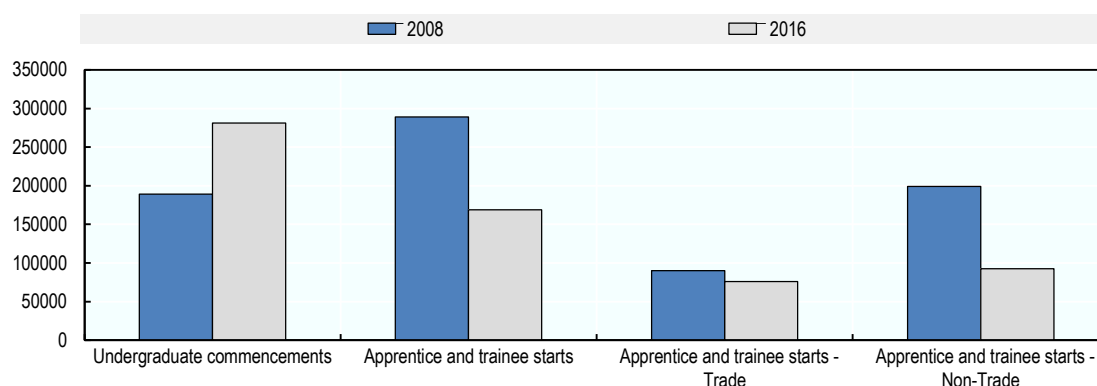
were educated at the tertiary level – one of the highest shares across OECD countries, and on par with the United States, United Kingdom and Ireland. Australian adults are also among the top-performers in literacy based on the OECD’s Survey of Adult Skills, with nearly 60% of adults performing at Level 3 or above compared to only 46% across the OECD. Numeracy performance is somewhat weaker, but still above the OECD average and on par with Canada, New Zealand and Germany (OECD, 2016^[21]). Recall from the above discussion on skill shortages that while the Skills for Jobs database finds that Australia has shortages in certain skills, e.g. cognitive skills, these shortages are low relative to other countries owing to Australia’s highly-skilled and highly-qualified workforce.

In tandem with the shift towards increasing educational attainment, there has been a move away from students choosing vocational education and training (VET) after completion of secondary education, in favour of higher education. Undergraduate starts have risen by 49% between 2008 and 2016, while apprenticeship and traineeship starts have declined by 42% (Figure 1.14). For the most part, declines in apprenticeship starts are concentrated in non-trade apprenticeships, as opposed to trade apprenticeships (which only declined by 15% over this period, compared with 53% for non-trade apprenticeships), and in part reflect a 2012 reform which removed employer incentives to non-trade apprenticeships. In addition to declining enrolment in apprenticeships, completion rates in Australia are low by international standards; however, they have been trending upwards since 2010 (NCVER, 2016^[22]).

Labour market outcomes of graduates provide an indicator of demand for higher-level qualifications. Adults with a tertiary education fare better on the labour market than less-educated adults, and the employment rate of adults with a tertiary education has stabilised at close to 84% since 2005. However, there are signs that the labour market outcomes of recent tertiary graduates (both VET and higher education) have weakened. Based on the Department of Education and Training’s (DET) Graduate Outcomes Survey and Graduate Careers Australia survey, the share of bachelor graduates in full-time work four months after graduation declined from 85% in 2008 to 71% in 2016⁷. Over the same period, government-funded VET graduates saw their employment rates (whether full-time or part-time) decline from 82.2% to 73.4% (from 2008 to 2016). Government-funded VET graduates who undertook their training as part of an apprenticeship or traineeship are more likely to be employed (83.0% in 2016) compared with other government-funded VET graduates, but their outcomes have also weakened (from 90.9% in 2008 to 83.0% in 2016)⁸. Softening labour market outcomes for recent tertiary graduates suggests that the rising supply of such workers may have surpassed current demand. Alternatively, it could be that tertiary students are graduating without the specific skills that employers need.

Figure 1.14. Shift away from VET in recent years

Commencements by educational pathway, 2008 and 2016



Note: Figures are for domestic students only.

Source: NCVET 2017, Historical time series of apprenticeships and traineeships in Australia, from 1963, NCVET, Adelaide; Department of Education, uCube, Enrolment Count by Commencing name, 2017.

Despite relatively low unemployment in Australia, a number of indicators suggest that challenges remain in matching the demand and supply of skills.

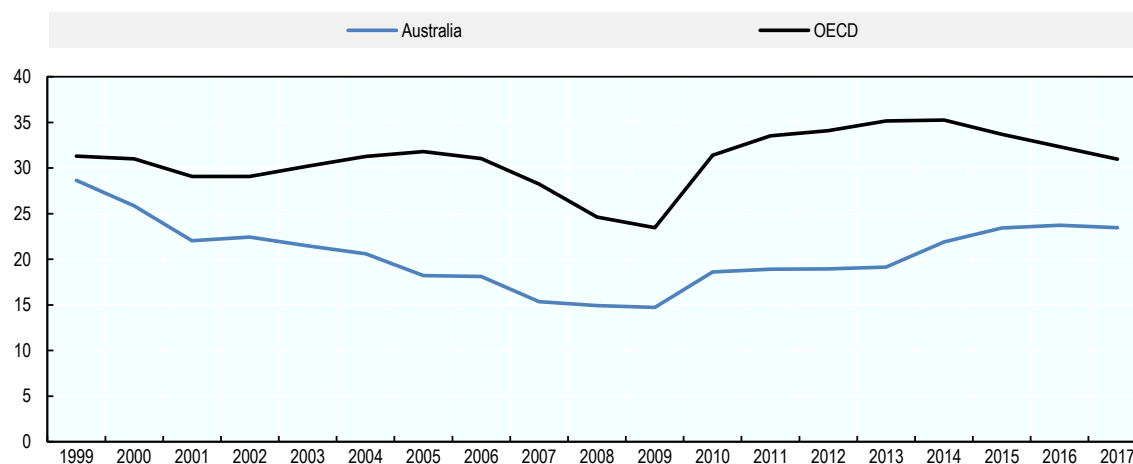
1.3.1. Long-term unemployment remains elevated

Australia's unemployment rate remains above pre-crisis levels (5.6% in 2017 compared with 4.2% in 2008, Figure 1.12), and the level of long-term unemployment is also still above pre-crisis levels (Figure 1.15). Among the unemployed, 23.5% have been looking for work for a year or longer – a long-term unemployment rate that is lower than the OECD average (31.0%), but still well-above pre-crisis levels (14.9% in 2008). The risk of long-term unemployment is highest for mature-age workers followed by prime-age workers: over a third of unemployed aged 50-64 years and a quarter of those aged 30-49 years have been unemployed for more than a year (OECD, 2017^[23]).

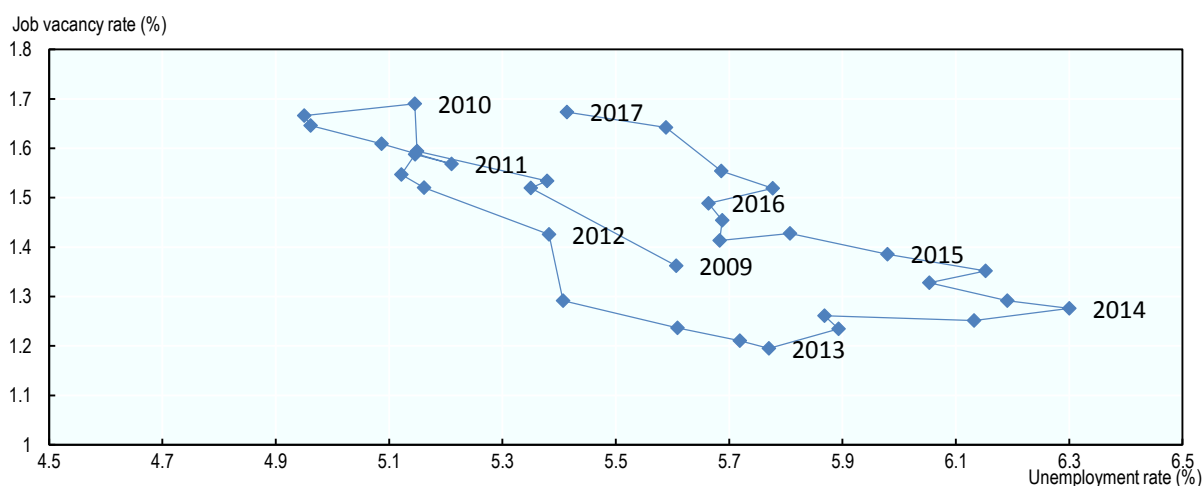
Elevated long-term unemployment can be a signal of declining efficiency in the way that labour markets match workers with jobs. Indeed, a decline in efficiency is observed by looking at the Beveridge curve (which depicts the relationship between the job vacancy rate and the unemployment rate over time; see Figure 1.16) for the period 2009-2017: for a given level of the job vacancy rate, the unemployment rate has increased over time, suggesting a deterioration in the matching of unemployed workers' skills relative to those required by employers. The longer a person remains in unemployment, the higher the risk that their skills will depreciate or become obsolescent.

Figure 1.15. Long-term unemployment still above pre-crisis levels

Share of unemployed who have been unemployed for at least one year, 1999-2017



Source: OECD Labour Force Statistics.

Figure 1.16. Some decline in labour market efficiency over time, 2009-17

Note: The Beveridge curve shows the unemployment rate along the x-axis, and the job vacancy rate along the y-axis. The job vacancy rate is the total job vacancies posted over a given period as a share of total labour demand, measured as the sum of total employed and total job vacancies. Each point represents a quarter, and labels refer to the quarter starting in November.

Source: Australian Bureau of Statistics; Job Vacancies, Australia (A590700F); Employed, Australia (A84423043C); Unemployment rate (A84423050A).

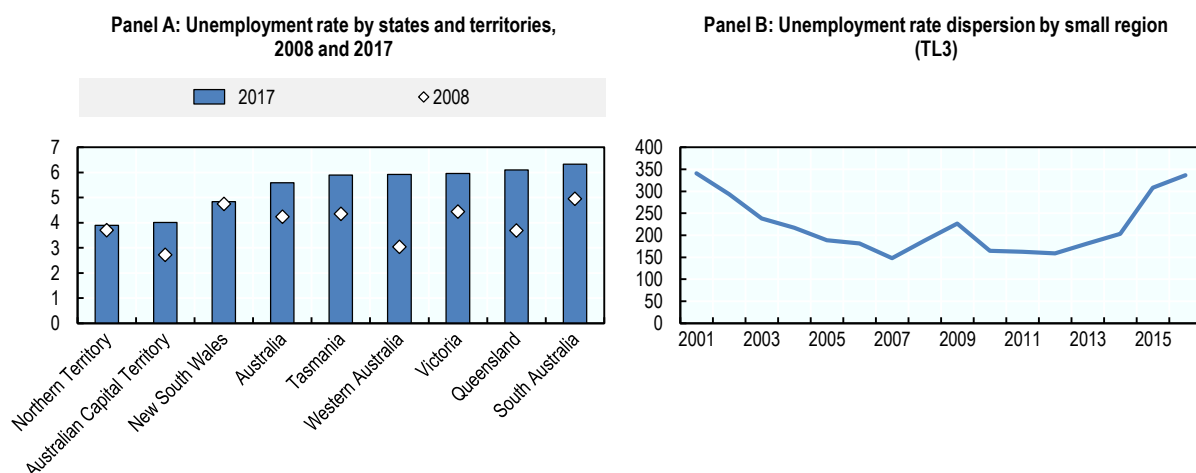
1.3.2. Evidence of widening regional disparities in unemployment

In addition to the risks posed by long-term unemployment, another challenge in matching the demand and supply of skills arises from widening regional labour market disparities. Since 2008, the unemployment rate has risen the most in Queensland and Western

Australia, in connection with declining activity in mining (Productivity Commission, 2017^[24]). But the unemployment rates between states and territories are still quite small, with only a 2.4 percentage point gap between the states with the highest and lowest unemployment rates (South Australia, 6.3%; Northern Territory, 3.9%; Figure 1.17, Panel A). However, looking at a finer level of disaggregation using unemployment rates across small regions (TL3) in Australia, there has been a rising dispersion in unemployment rates between (TL3) regions since 2012 (Figure 1.17, Panel B)⁹. In 2016, unemployment rates by small region ranged from 16.2% in Queensland – Outback to only 2.2% in Victoria – North West.

Australians are highly mobile, with 3.3% of the total population moving across regions within Australia annually. This internal mobility rate is higher than the OECD average (2.1%).¹⁰ Such internal mobility plays a key role in facilitating adjustments from low-growth occupations, sectors and regions to higher-growth ones. But the resulting outflow of skills and labour from rural and remote regions, combined with the fact that rural and remote regions in Australia tend to be less educated (Department of Employment, 2017^[25]), has led to the emergence of regional skill shortages, particularly in health professions.¹¹

Figure 1.17. Widening regional labour market disparities



Note: Panel A: Annual averages of monthly unemployment rate data. Panel B: The absolute dispersion of unemployment rates is measured as the standard deviation of the regional unemployment rates from the national average weighted by the corresponding region's labour force share.

Source: Panel A: Australian Bureau of Statistics, Labour force status. Panel B: OECD Regional Labour Statistics.

1.3.3. Low labour force participation of certain groups

Finally, certain groups have scope to increase their labour market participation to make better use of the existing skill supply. OECD (2017^[23]) identified several groups with “untapped potential”: prime-aged women, mature-age workers, people with disabilities and mental health conditions, as well as indigenous persons and young people not in education, employment or training (NEET). For instance, since young women's level of educational attainment now outpaces that of young men in Australia, there would be potentially large gains to the economy if women participated more in the labour market. Youth labour market conditions have improved over recent years, but the share of young

adults (age 20-24) not in employment, education or training (i.e. the “NEET” rate) is still high. The NEET rate in Australia is above the OECD average (16.2% vs. 12.0% in 2016); only slightly higher than New Zealand (13.1%), Canada (14.9%), the United Kingdom (15.0%) and the United States (15.3%), but well-above Iceland (6%), the Netherlands (8.5%), and Switzerland (10.1%). Furthermore, indigenous persons in Australia face significantly lower employment rates than the non-indigenous population (48.4% versus 72.6% in 2014-15¹²). Not only does this have costs in terms of the well-being of indigenous persons, but it also represents an under-exploited source of labour and potential skills to address regional skill shortages, as indigenous persons are well-represented in rural and remote regions (Golebiowska, 2016^[26]).

1.4. Assessing and anticipating skill needs to reduce skill imbalances

While skill imbalances are in some sense inevitable in any dynamic economy, several avenues are available to reduce their size. OECD (2016^[27]) points out that the fact that there is variability across countries in the prevalence of shortages and mismatches indicates that they are sensitive to policy making and/or economic conditions.

But the success of policies to reduce skill imbalances hinges on the existence of information systems which i) assess current and future supply of and demand for skills; and ii) identify and/or anticipate skill shortages and mismatches. Skills assessment and anticipation exercises can play a fundamental role in providing adequate information to policy makers and other stakeholders in order to shape policies that lessen skill imbalances: to direct active labour market policies; to guide students’ and adults’ education and training decisions; and to facilitate the entry of migrants who have skills that are in demand. Chapter 2 provides an overview of the different types of skill assessment and anticipation exercises in place in Australia.

Notes

¹ The Department of Jobs and Small Business skill shortage research focuses on selected occupations defined in the Australia and New Zealand Standard Classification of Occupations (ANZSCO) that are skilled (i.e. require at least three years of post-school education and training). Most selected occupations are in one of three major occupation groups: managers, professionals, and technicians and trades.

² This may seem like an excessively high share of occupations in shortage; however, the Department of Jobs and Small Business only assesses about 70 occupations on a consistent basis, and these are all skilled occupations, mostly in professions and trades. Therefore they are not representative of the full labour market. The Department's methodology combines an employer survey with an assessment of other labour market information to arrive at whether an occupation is in shortage or not (see Chapter 2 for more details).

³ Skills are considered to be “transversal” when they are highly applicable to various occupations and sectors (European Union, 2011^[27]). Transversal skills can include soft skills – those that are non-job-specific and closely connected with attitudes (e.g. teamwork, leadership, entrepreneurship), but also generic hard skills, which are technical and job-specific abilities which can be applied effectively in most jobs (e.g. digital skills, communication in foreign languages).

⁴ The OECD (2017^[29]) publication, “The Next Production Revolution,” outlines some of the major technological developments likely to affect production now and into the future: from a variety of digital technologies (e.g. 3D printing, the Internet of Things, advanced robotics) and new materials (e.g. bio- or nano-based) to new processes (e.g. data-driven production, artificial intelligence, synthetic biology).

⁵ According to the OECD's 2017 Science, Technology and Industry Scoreboard, 17.6% of tertiary students in Australia (no distinction between domestic or foreign-born) entered one of the above fields, compared with 23.4% across OECD countries. In response, Australian education policy has recently introduced a number of skill-building initiatives which favour science, technology, engineering and mathematics (STEM) fields, including a \$1.1 billion National Innovation and Science Agenda which has allocated \$64 million to fund early learning and school STEM initiatives (<https://www.education.gov.au/support-science-technology-engineering-and-mathematics>).

⁶ In the 2012 Survey of Adult Skills, qualification mismatch in Australia was assessed to be much higher than the OECD average – 42% relative to 36%. While the Survey of Adult Skills relied on a self-reported measure of qualification mismatch (i.e. asking workers whether they thought they were over- or under-qualified for their job), the Skills for Jobs database is based on a definition of “well-matched” that is equivalent to the median qualification level in a given occupation (see OECD (2017), *Getting Skills Right: Skills for Jobs Indicators* for methodological details).

⁷ In 2017, 71.8% of undergraduates were in full-time employment four months after completing their degree. (2017 Graduate Outcomes Survey, National Report)

⁸ National Student Outcomes Survey, which is an annual survey that covers students who are awarded a qualification, or who successfully complete part of a course and then leave the VET system.

⁹ During the mining boom, unemployment rate dispersion narrowed between regions (Gruen, Li and Wong, 2012^[30]), suggesting that the mining boom drew labour from other parts of the country and helped to reduce unemployment across all regions.

¹⁰ Share of total population who moves across TL3 regions annually (average 2011-13). OECD Regions at a Glance 2016.

¹¹ Department of Jobs and Small Business, Skill Shortage Research, 2016-2017.

¹² Australian Bureau of Statistics; National Aboriginal and Torres Strait Islander Social Survey, Australia, 2014–15. Most recent data available.

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Chapter 2. Building tools to assess and anticipate skill needs in Australia

Skill assessment and anticipation exercises are carried out in every OECD country, but the approaches used vary and each has its advantages and disadvantages. This chapter first provides an overview of the main tools for assessing and anticipating skill needs in Australia, both at the national and sub-national levels. It then reviews the methodological challenges associated with each exercise and discusses steps that Australia has taken to address these challenges. The third section analyses the policy relevance of the information produced and the fourth section focuses on how SAA information is disseminated.

Policy can help to mitigate the costs of skills imbalances for individuals and economies, provided that actors have access to high-quality, reliable and timely information about the labour market. Skill assessment and anticipation exercises are tools to generate information about the current and future skills needs of the labour market, and the available skill supply (OECD, 2016^[1]). Such information can help to improve the allocation of resources in Australia's largely market-driven labour market, but should not be regarded as a blueprint for planning the labour market from the top down.

SAA exercises are carried out in every OECD country, although the approaches taken vary in terms of the methods used, the time span covered, frequency, how skill needs are defined or approximated, and the level of disaggregation chosen for the analysis (national/regional/sectoral, or a combination of these) (OECD, 2016^[1]). Each approach has its advantages and limitations. Many countries carry out multiple exercises, which can reduce potential bias associated with a particular approach (OECD, 2016^[1]). In Australia, the SAA system is well-developed, and a wide variety of exercises are carried out, which reduces the bias associated with any one type of exercise.

Several strengths of the Australian SAA system stand out. The cornerstone skill assessment exercise, the Survey of Employers who Recently Advertised (SERA), is conducted regularly, in a consistent manner across all states and territories, and includes built-in validation mechanisms. Australia's skill shortage research – into which SERA feeds – also takes a holistic approach to assessing current skill needs, by combining the use of qualitative and quantitative information.

On the other hand, some weaknesses and gaps in Australia's SAA system present opportunities for improvement. Forecasting of future skill needs should be undertaken on a more regular basis (every 2 or 3 years), as the national government currently commissions external consultants and academics to conduct forecasts, though on an ad hoc basis.

There is also room for improving sub-national exercises. In particular, while there are valid reasons for states to conduct their own analyses, more collaboration and sharing of methodologies across states could facilitate consensus on skill needs. Also, analysis of skill needs in remote and rural regions of Australia is weak. At the sectoral level, Industry Skill Forecasts provide regular analysis of skill needs by sector; however, these analyses vary in quality, and tend to be mainly qualitative.

Finally, as in other OECD countries, there is a need to develop more sophisticated proxies that better identify skills in SAA exercises. Currently, occupation and qualification level are used to approximate skills in Australian SAA exercises, though these are imperfect measures of the skills needed in the labour market. Sharpening the focus on skills, per se, is important in the context of preparing the workforce for the future of work, and the changes in skill demand associated with globalisation and technological change. For instance, it facilitates a modular approach to adult learning whereby workers can build on their existing skills by acquiring new ones that are in high demand, as opposed to retraining from scratch without capitalising on their past training and experience.

This chapter first provides an overview of the main tools for assessing and anticipating skill needs in Australia, both at the national and sub-national levels. The second section reviews the strengths and weaknesses associated with each of the major types of SAA exercises, discusses steps Australia has taken to mitigate these limitations, and highlights remaining challenges. The third section analyses the policy relevance of the information produced and the fourth section focuses on how SAA information is passed on to the end user (individuals, employers, policy makers).

2.1. Main findings

- Australia's SAA system is well-developed and consists of several exercises including employer surveys, surveys of graduates, quantitative forecasting models, sector studies, qualitative methods, and labour market information systems. By international standards, this variety is found in only a few countries.
- The two major national-level skill assessment exercises (skill shortage research and review of the skilled occupation lists for migration) are conducted regularly and have a relatively short time span. This makes them suitable for informing shorter-term policies like the selection of temporary skilled workers and active labour market policies. Indeed, the recently-introduced Short Term Skilled Occupation List (STSOL) is specifically intended to address the short-term skilled workforce needs of Australian business. On the other hand, the skill shortage research does not have a clear policy objective. Its usefulness for informing active labour market policies might be limited by its focus restricted to skilled occupations.
- The proposed new methodology for reviewing the skilled occupation lists for migration appears to be an improvement over the methodology used for the annual updates to the former Skilled Occupation List as it is based on a more comprehensive set of quantitative signals of labour market supply and demand for skilled occupations. However, few details about weighting and indicators are provided, though Jobs and Small Business intends to publish a more detailed methodology.
- No regular national-level forecasts are currently carried out in Australia, though they have been commissioned on an ad hoc basis. More regular forecasting (i.e. every 2-3 years) is needed to identify potential labour market imbalances in the longer-term (10-year time span), so that policy makers can set skill targets and develop policy to avoid these imbalances. Such forecasts could inform education and training policy, as well as migration policy, particularly construction of the Medium and Long Term Strategic Skills List (MLTSSL).
- SAA exercises at the state/territory and sectoral levels suffer from lack of consistency. The Survey of Employers who have Recently Advertised (SERA) is an exception, as researchers from the federal government do a good job of validating the results, and ensuring a consistent methodology across states and territories. But the state-level exercises to determine which vocational education and training (VET) qualifications merit subsidies, as well as the Industry Skill Forecasts, vary widely in their methodologies. This potentially compromises the capacity to achieve consensus on skill needs.
- There seems to be value in conducting SAA exercises for rural and remote regions based on pilot exercises, as these exercises generate recommendations tailored to the specific skill needs of the region.
- Australia, like other OECD countries, currently lacks good proxies for skills – most SAA exercises focus on qualifications or occupations. A more skill-based approach to SAA would help Australia to respond to changing demand for skills due to technological change and other global trends. There are several promising initiatives already underway to improve measures for skills. Australia should continue to pursue efforts to build a skill-based occupational classification, as this

would provide demand-side information about skills which could help to inform VET training packages, and leverage the existing competency-based VET framework to support a modular approach to adult learning.

- All SAA exercises are linked to the Australia and New Zealand Standard Classification of Occupations (ANZSCO), which was published in 2006, and updated in 2009 and 2013. ANZSCO should be updated again to reflect emerging occupations, many of which have specialised skill requirements and could contribute to skill imbalances.

2.2. Overview of main tools to assess and anticipate skill needs in Australia

Table 2.1 outlines some of the main tools and methods that countries employ to assess and anticipate skill needs. Australia is one of only six countries surveyed (out of 28 countries) which carries out at least one of each type of exercise (other countries in this group include Austria, Canada, France, Germany, and Norway). Having a variety of SAA exercises in place is recognised as good practice, since each type of exercise is associated with advantages and limitations, as summarised in Table 2.4. Carrying out multiple exercises simultaneously reduces potential biases arising from any one type of exercise (OECD, 2016^[1]). At the same time, if not well coordinated, a multiplicity of exercises can create a confusing system whereby different actors initiate ad hoc SAA exercises that are narrowly-designed for their own purposes. This can pose difficulties for achieving consensus on skill needs.

In Australia, the major skill needs assessments carried out nationally are labour market information systems, which draw from a variety of data sources, including employer surveys, graduate outcome surveys, and state/territory and sectoral analyses. The main exercises to anticipate future skill needs are undertaken by Commonwealth Scientific and Industrial Research Organisation (CSIRO) and external consultants. Department of Jobs and Small Business is the major player in the production of skill needs information in Australia, but other stakeholders also lead exercises, including the Australian Bureau of Statistics (ABS), the National Centre for Vocational Education Research (NCVER), the Department of Education and Training (DET), as well as state-level training authorities, state-level Jobs and Small Business offices, and industry reference committees.

Table 2.1. Tools and methods used in skills assessment and anticipation systems

	Employer surveys	Surveys of workers or graduates	Quantitative forecasting models	Sector studies	Qualitative methods	Labour market information system	Other
Australia	X	X	X	X	X	X	X
Austria	X	X	X	X	X	X	X
Belgium (Flanders)		X	X	X	X	X	
Belgium (Wallonia)				X	X	X	X
Canada	X	X	X	X	X	X	X
Chile	X			X	X	X	
Czech Republic			X	X			
Denmark	X	X	X	X	X		
Estonia			X				
Finland	X		X		X	X	
France	X	X	X	X	X	X	
Germany	X	X	X	X	X	X	X
Greece	X			X		X	
Hungary	X				X		
Ireland			X	X		X	
Italy	X	X	X	X			
Japan	X	X		X		X	X
Korea	X	X		X	X	X	
Netherlands	X		X	X	X	X	
Norway	X	X	X	X	X	X	X
Poland		X				X	
Portugal	X	X		X	X	X	
Slovak Republic						X	
Slovenia	X						X
Sweden	X	X	X		X	X	
Switzerland							
Turkey	X	X		X	X	X	
United States		X	X		X	X	X

Note: Only the 28 countries that replied to either the Ministry of Labour or the Ministry of Education questionnaires are included. If a tool or method is mentioned in either questionnaire it is marked as used.

Source: (OECD, 2015) Questionnaire on Anticipating and Responding to Changing Skill Needs: Ministry of Labour and Ministry of Education questionnaires.

2.2.1. Assessing current skill needs

When it comes to identifying current skill needs in the national labour market, a key skill assessment exercise is Jobs and Small Business' **skill shortage research**, which relies heavily on employer surveys, but also incorporates other labour market information and consultations with experts.

A second major skill assessment exercise is the **review of skilled occupation lists for migration purposes**. Before July 2017, DET was responsible for providing advice to the Assistant Minister for Vocational Education and Skills who made recommendations to the Minister of Home Affairs on the composition of the Skilled Occupation List (SOL), while Department of Immigration and Border Protection (now under Department of Home Affairs) managed the Consolidated Sponsored Occupation List (CSOL). Under

reforms announced in April 2017, the CSOL and SOL have been replaced by the Short Term Skilled Occupation List (STSOL) and the Medium and Long Term Strategic Skills List (MLTSSL), respectively. Jobs and Small Business is now responsible for providing advice to the Australian government on updates to both lists, as well as the new Regional Occupations List which was introduced in March 2018. Jobs and Small Business' proposed methodology draws from survey results, data on temporary visa usage, employment projections, and submissions from stakeholders.

Both of these exercises are examples of labour market information systems, in that they monitor the labour market by tracking a set of indicators on a regular basis, with the specific aim of assessing the relative supply and demand for skills (OECD, 2016^[1]). This section provides an overview of these two exercises by making comparisons about their objectives, coverage, frequency, and methodology.

Overview of exercises

Skill shortage research

Jobs and Small Business' skill shortage research, which began more than three decades ago, is undertaken on an ongoing basis with the aim of identifying shortages in skilled occupations where long lead times for training mean that shortages cannot be quickly addressed. The results are taken into consideration when formulating a range of education, training, and employment programmes and are publicly available on the Jobs and Small Business website (<https://www.jobs.gov.au/skillshortages>).

The backbone of the skill shortage research is an employer survey, the Survey of Employers who have Recently Advertised (SERA), although researchers also take into account a range of other data in conjunction with the results of the SERA. The SERA is a telephone-based survey of employers who have recently advertised in selected skilled occupations. It is conducted in a consistent manner by each of the state and territory offices of Jobs and Small Business, as well as the national office. Researchers collect a pool of vacancy details from newspapers and internet sites, and randomly select vacancies for an interview. During the interview, information is collected about the skill and qualification requirements of the position; the number of jobs available; whether vacancies were filled; the number of applicants, qualified applicants and suitable applicants; and the reasons for applicants being considered unsuitable.

A low proportion of vacancies filled is taken as a signal of skill shortages – though Jobs and Small Business emphasises that the reasons for vacancies remaining unfilled are complex and may not necessarily relate to a lack of qualified applicants. For instance, workers may choose not to accept jobs where the pay is below market rate, there are barriers to transport, or working arrangements do not meet their expectations. Similarly, employers may have highly specialised skill requirements.

To complement the results from the SERA, researchers consider other secondary data relating to the demand for skills (e.g. industry activity statistics and projections, changes in employment levels, vacancy trends, graduate employment outcomes and anecdotal information from employers and industry contacts) as well as data on the supply of skills (e.g. training completions and commencements, people leaving the occupation, net migration and informal supply) where data are available.

Taking account of available information, researchers decide on one of three ratings for each occupation: shortage, recruitment difficulty or no shortage. Occupations are deemed to be in “shortage” when:

“...employers are unable to fill or have considerable difficulty filling vacancies for an occupation, or significant specialized skill needs within that occupation, at current levels of remuneration and conditions of employment, and in reasonably accessible locations.” (Department of Jobs and Small Business, 2017^[2])

But if some employers have difficulty filling vacancies (e.g. for a limited set of specialised skills) while there is an overall adequate supply of skilled workers for the occupation, a rating of “recruitment difficulty” is assigned. Finally, a rating of “no shortage” is assigned if there are no signs of significant difficulty filling vacancies in an occupation.

Review of skilled occupation lists for migration purposes

Prior to reforms announced in April 2017, there were two skilled occupation lists for skilled migration purposes: the Skilled Occupation List (SOL) and the Consolidated Sponsored Occupation List (CSOL). The SOL was relevant for independent points-based skilled migrants, while the CSOL was relevant for most other types of skilled migration (see Table 3.6). DET had responsibility for reviewing the SOL, while (former) Department of Immigration and Border Protection (DIBP) was responsible for the management of the CSOL and the (former) Department of Employment was involved in an advisory role in this process, with other departments providing input on specific occupations (for example, the Department of Health was responsible for health workforce modelling as an input into the SOL).

DET’s review of the SOL followed two steps. The first step involved the use of four criteria: long lead time (several years of study or training), high use (a high share of persons employed in the occupation had studied in the same/related field of education), high risk (short supply of such skills can disrupt the economy) and high information (quality of information that is adequate to inform the first three criteria). An occupation was shortlisted for further consideration if it met two of the first three criteria, plus the fourth criterion.

The second step involved assessing the medium to long-term skill needs of the economy for each occupation identified in step one, to determine if the occupation would benefit from independent skilled migration. An occupation successfully passed step two if a surplus of skilled workers was unlikely in the medium to long-term. The assessment in the second step was based on a wide range of indicators in addition to consultations with stakeholders. Over time, occupations could be removed from the list if they were expected to be in surplus in the medium to long term. The second list, CSOL, was not developed as a result of an analytical and consultative exercise as the one that the SOL underwent.

Under the reforms, the SOL and CSOL have been replaced by the Medium and Long Term Strategic Skills List (MLTSSL) and the Short Term Skilled Occupation List (STSOL), respectively. Jobs and Small Business is responsible for providing labour market and stakeholder advice to the Australian government on updates to both lists on a regular basis. Jobs and Small Business has also introduced a third list, the Regional Occupation List (ROL), which will be used to supplement the MLTSSL for certain skilled visa subclasses.

According to its draft methodology (Department of Employment, 2017^[3]), Jobs and Small Business considers 11 national-level sources of data in its labour market analysis for the migration occupation lists. Jobs and Small Business classifies each data source into two categories: primary factors (robust and statistically reliable and available for most occupations); and secondary factors (data is not available for all occupations or where the factor may be less relevant). The primary factors include: skilled migrant employment outcomes, reliance on temporary visa holders, educational attainment of workers compared to ANZSCO skill level, low visa grants, and projected employment growth.

A points system is used to determine if an occupation is of concern from a labour market perspective, or if it requires further analysis. Jobs and Small Business intends to refine this system over time, and updates to the methodology will be published and will provide further information on the labour market demand and supply factors, and how they are weighted. Occupations where there may be labour market concerns are flagged via a “traffic light bulletin,” which is published on the Department of Jobs and Small Business website for further examination and stakeholder consultation. The traffic light bulletin will also identify occupations that support Australia’s international trade commitments, those for which Australian citizenship is a pre-requisite for employment, and those identified as supporting Australia’s science and innovation agenda. Stakeholders are invited to provide evidence on occupations identified for possible removal (highlighted in red), addition (blue), or movement between lists (orange and yellow).

Comparison of exercises

Objective

The review of the skilled occupation lists for migration has a clear policy purpose. The STSOL identifies occupations required to meet short-term, critical skill needs in the labour market and is used to select migrants for the short-term Temporary Skill Shortage visa (which is good for two years or up to four years if an international trade obligation applies). The MLTSSL identifies occupations needed to meet medium-term projected skills shortages in the labour market and occupations required in the longer-term to build productive capacity in the economy. It is used to select migrants for the medium-term Temporary Skill Shortage visa (up to four years) as well as all permanent skilled visas. Finally, the Regional Occupation List (ROL) identifies occupations that are in specific need in regional Australia and is used to supplement the MLTSSL in certain skilled visa subclasses.

But while the review of the skilled occupation lists for migration has a clear policy purpose, the policy objective of the Department of Jobs and Small Business’ skill shortage research is less narrowly-defined. The research serves a general need for information about skill needs on a national and state/territory basis, and results are considered in a range of policies and programmes.

Coverage

Both exercises undertake analysis for selected occupations defined in the Australian and New Zealand Standard Classification of Occupations (ANZSCO) at the six-digit level. Both exercises also limit their analysis only to skilled occupations (defined as ANZSCO Skill Level 1-3, which corresponds to occupations requiring at least Certificate 4 or Certificate 3 including at least two years of on-the-job training). The skill shortage research focuses on a core group of about 70 consistently-assessed occupations which are

concentrated among Professionals, and Technicians and Trade Workers, though a small number of assessed occupations are Managers and Community and Personal Service Workers as well. For its review of the skilled occupation lists for migration, the Department of Jobs and Small Business will undertake labour market analysis for all ANZSCO Skill Level 1–3 occupations. (Department of Employment, 2017^[3])

Attempts are made in Jobs and Small Business' skill shortage research to achieve coverage of both metropolitan and non-metropolitan areas. When carrying out their telephone-based research, SERA researchers at the state level attempt to survey employers from both metropolitan and more remote areas. By comparison, the review of the skilled occupation lists for migration is currently limited to national-level sources of data, since data at the state, territory or regional level is either not available or not statistically robust. The Department used available regional labour market data to construct the Regional Occupation List (ROL), with a more robust methodology under development for future updates to the ROL (from 2019).

For occupations where the vacancy numbers are low, the SERA is supplemented by cold canvassing a wider sample of employers to assess whether they have advertised vacancies in the target occupation in the last six months. The sample and the occupations researched are targeted¹ in order to be cost-effective, and thus they are not statistically representative which limits the comprehensiveness of the outputs (Coelli and Wilkins, 2008^[4]); however, in a review of the methodology the Australian Bureau of Statistics found it to be appropriate for its purpose (Department of Jobs and Small Business, 2017^[2]).

Both approaches limit analysis to occupations included in ANZSCO. This unfortunately excludes occupations which have emerged with technological progress – like, cyber-security or artificial intelligence experts – since these are not included in ANZSCO, which was last updated in 2013. Emerging occupations may require specialised skills which contribute to skill shortages. Excluding such occupations from the analysis is a gap in Australia's skill assessment exercises which could have negative impacts on skill shortages and productivity if not addressed, either by updating the ANZSCO or by better formalizing consultation processes with employer and industry groups.

Frequency/time span

Jobs and Small Business updates its skill shortage research on a regular basis, and conducts the SERA every six months, with each occupation generally assessed annually on a rotating basis. Under recent reforms, Jobs and Small Business is now also responsible for reviewing occupations on the STSOL and MLTSSL regularly.

Both the skill shortage research and the review of the STSOL have a short-term time span, in that they identify pressures in the labour market arising either immediately or in the very short-term. This makes them suitable for informing short-term skill policies, like the selection and integration of temporary migrants, or active labour market policies. The MLTSSL is intended to identify occupations appropriate to the medium and long-term needs of business and industry. Each of these exercises considers the Department of Jobs and Small Business' 5-year employment projections in their analysis. However, forward-looking exercises with a longer time horizon (e.g. 10 years) may be needed to identify the medium and long-term needs of business and industry for the MLTSSL.

While the skill shortage research covers the right time-span to inform active labour market policies (i.e. short-term), it may not be suitable in practice. The skill shortage research captures demand for skilled occupations which require at least an Australian

Qualifications Framework (AQF) Certificate 4 or an AQF Certificate 3 with at least two years of relevant work experience. According to Jobs and Small Business' records, only 4% of job seekers who received accredited training through *jobactive* (Australia's quasi-market employment services system) undertook training at Certificate 4 or higher. Most received training at Certificate 3 (46.9%), or else they undertook accredited skills or units at an unspecified level (46.5%). The long-term unemployed, who stand to benefit the most from training (Card, Kluve and Weber, 2015^[5]), are less educated and may not have the necessary pre-requisites to enter into a Certificate 3 or 4 programme. By focusing on skilled occupations, the skill shortage research may not be suitable for informing active labour market policies, despite covering the appropriate time span.

Methods and data sources

As highlighted in (OECD, 2016^[1]) and (Cedefop, 2008^[6]), it is considered good practice in SAA exercises to combine the use of qualitative and quantitative data sources to improve the robustness of results. Furthermore, the accuracy and reliability of SAA exercises can be improved by a combination of “top-down” and “bottom-up” approaches, where top-down evidence comes from national-level sources and bottom-up evidence comes from information from employers, industry groups, researchers, and educators (Thomas, 2015^[7]; Migration Advisory Committee, 2010^[8]).

This type of holistic approach is employed for both the skill shortage research and the review of the skilled occupation lists for migration purposes. During the telephone interview of the SERA, for instance, SERA researchers collect two types of information about employers' experience recruiting skilled workers: qualitative information from discussions with employers and recruitment professionals, and quantitative data, including the proportion of vacancies filled and the number of applicants, qualified applicants and suitable applicants. Jobs and Small Business will rely mostly on quantitative and national-level evidence in its review of the skilled occupation lists for migration; however, it will invite stakeholders to submit additional evidence in support of adding or removing particular occupations from the lists. For example, during the January 2018 review, the Department of Jobs and Small Business received more than 600 submissions from a range of stakeholders, which contributed new quantitative and qualitative data. Jobs and Small Business also undertakes bilateral meetings and roundtables with relevant industry stakeholders as part of its consultation process.

Other skill assessment exercises

In addition to Jobs and Small Business' skill shortage research and review of skilled occupation lists for migration, the Department for Education and Training (DET) also produces surveys of recent graduates in higher education and the National Centre for Vocational Education and Research (NCVER) manages a similar exercise for recent graduates in vocational education and training. The results from these surveys are compiled on websites (*Quality Indicators for Learning and Teaching*, *MySkills*) to assist prospective students in making informed decisions about investing in education and training (see Section 3.4 for more on the use of *QILT* and *MySkills* in career guidance). The results of these exercises also serve as important inputs into the skill shortage research and the review of skilled occupation lists for migration.

2.2.2. *Anticipating future skill needs*

Beyond understanding current skill needs, there is also value in anticipating future ones. Forecast and foresight exercises can help to plan or steer education and training provision and acquisition based on projected labour market demand. Such forward-looking exercises are critical to ensuring the availability of a pipeline of relevant skills which may take several years to acquire through education and training. In Australia, a regular national forecast exercise does not yet exist, but national foresight exercises have been carried out by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) on an ad hoc basis.

Unlike many countries, including Canada, the United States and New Zealand (see Box 2.7), Australia does not yet have a regular national **forecast exercise**. Instead, it commissions forecasting on an ad hoc basis. Most recently, DET commissioned an external consulting company, Deloitte Access Economics, to develop a macroeconomic modelling framework to forecast Australia's medium and long-term qualification needs. Looking 10 years ahead to 2027, the model will forecast qualification demand and supply by industry, occupation and nationally, by state and territory, and at a regional level.

While Australia does not yet have a regular national forecast exercise, Jobs and Small Business carries out 5-year employment projections every year for 474 occupations (4-digit ANZSCO code) across all five skill levels. Compared to quantitative forecasting, Australia's employment projections are less data-demanding and do not capture the complexities of an inter-connected economy². The Department of Jobs and Small Business' employment projections are instead based on a time-series model about employment growth at the occupational level. The model makes assumptions about "wastage" (i.e. the degree to which graduates from one field find employment in other fields) and turnover, as well as the expected employment impact of new infrastructure projects. Total employment growth is constrained to match the projections for total employment growth as published in the budget. These projections are used in the Department of Jobs and Small Business' career guidance web portal (*Job Outlook*) to inform individuals about the employment prospects of their intended occupation, and projections on the *Labour Market Information Portal* feed into updates of the skilled occupation lists for migration, which was discussed in the previous section.

Though less common than forecast exercises (see Figure 2.1), many countries also run **foresight exercises** to understand the future demand and supply of skills (Box 2.1). Foresight exercises are generally more qualitative in nature than forecasts, and rely upon consultations with stakeholders and experts to build scenarios about how the demand and supply of skills might change in the future. In Australia, national foresight exercises are carried out by CSIRO, an independent agency of the Australian government.

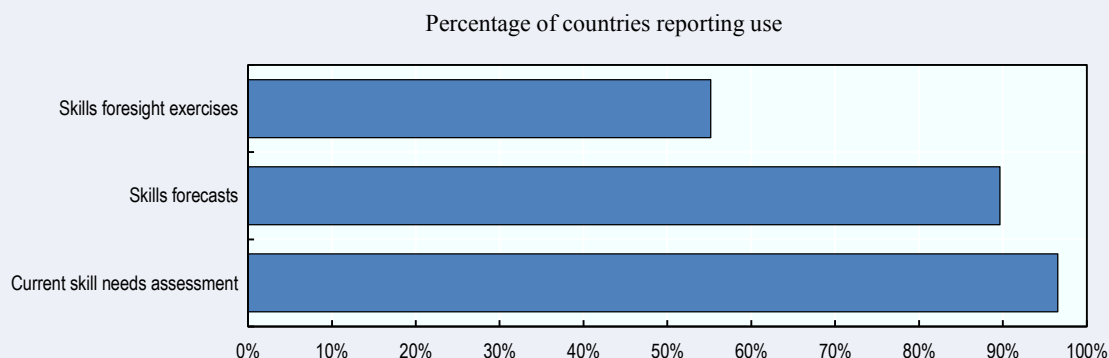
CSIRO's foresight process involves first conducting a background study of current conditions, then doing an "environmental scan" to identify and synthesise key trends, followed by a validation of such trends through interviews with experts. The most recent exercise, *Tomorrow's Digitally Enabled Workforce*, considered four future scenarios around the risks of automation. The report made the following projections about the future demand for skills: "aside from core STEM [science, technology, engineering, and mathematics] knowledge and skills, our aging population means that the healthcare and aged care sectors will be the largest employers and thus workers will need some hybrid of technical, business, creative and interpersonal skills" (Hajkowicz et al., 2016^[9]). One of the conclusions of this study was that better labour market modelling is needed to (i) predict tasks and jobs likely to be automated, (ii) to identify new jobs likely to be created, and (iii) to identify pathways between jobs and sectors in order to facilitate transitions in the face of changing demand.

Box 2.1. Foresight vs. forecast exercises in OECD countries

Forecasting involves starting with data points from the past and extrapolating into the future using a set of tools and assumptions. However, as pointed out by Policy Horizons Canada, “at a time when the underlying systems are changing in fundamental ways, users of forecasting should take care to confirm that the supporting assumptions are still correct” (Policy Horizons Canada, 2016_[10]).

Many countries run foresight exercises to better understand the future demand and supply of skills, although such exercises are less common than forecasts (OECD, 2016). The European Training Foundation draws this distinction between forecasting and foresight exercises: “foresight has a participatory and networking dimension involving a wide range of stakeholders. In addition, it explores long-term futures through holistic analysis that goes beyond typical forecasting. Foresight combines qualitative approaches and provides the link between reflection and action.” (European Training Foundation, 2014)

Figure 2.1. Use of SAA exercises



Note: Percentages based on responses from 28 countries (Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Korea, the Netherlands, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey and the United States). If more than one questionnaire was received per country, a use is considered if reported in any questionnaire received.

Source: OECD (2016) Getting Skills Right: Assessing and Anticipating Changing Skill Needs.

2.2.3. Sectoral, state/territory and regional analyses

As national-level skill needs exercises can sometimes overlook skill imbalances in a particular state, region or sector, sub-national skill needs exercises can be useful complements. Sectoral, state and regional analyses can improve the accuracy and reliability of national-level assessments through “bottom up” evidence, as noted previously. In a country as diverse as Australia, state/territory and regional analyses help to tailor skill policies to the diverse needs of different parts of the country.

Sectoral analyses

In Australia, skills service organisations (SSO) receive government funding to conduct sectoral skills analyses on behalf of a number of industry reference committees (IRC).

This intelligence supports the IRCs in their role in advising the Australian Industry and Skills Committee (AISC) regarding the updating and development of vocational education and training packages (VET) (see Box 2.2). Some peak bodies also conduct sectoral skills analyses, as is the case in the construction sector (Box 2.3). In addition, the Department of Health undertakes regular projections of the skill needs of the health sector (see Box 2.4).

Prior to its closure in 2014, the Australian Workforce and Productivity Agency used to carry out in-depth workforce studies on a number of key sectors and occupations, including the resource sector, retail, engineering, construction, mining, ICT, food and beverage, accounting, and manufacturing.

Box 2.2. Australia's VET training packages

A “**training package**” specifies the skills and knowledge required to perform effectively in the workplace and is detailed in units of competency. They also describe how these units can be encompassed into nationally-recognised qualifications that are aligned to the Australian Qualifications Framework (AQF) and industry-recognised skill sets (or part qualifications). Training packages form the basis for most of the programmes delivered in the vocational education and training system, including Australian Apprenticeships, training courses offered by registered training organisations (RTO), VET in Schools programmes, recognition of existing skills and occupational licensing.

The Council of Australian Governments (COAG) Industry and Skills Council introduced new arrangements for strengthened industry leadership in the VET sector in January 2016. Industry now has a formal, expanded role in decision-making for the VET sector through the establishment of the Australian Industry and Skills Committee (AISC) and its network of almost 70 Industry Reference Committees (IRCs). IRCs are voluntary committees made up of people with experience, skills and knowledge of their particular industry sector and drive the process of VET training package development.

IRCs are supported by contestable, professional and independent Skills Service Organisations (SSOs) that have replaced the former Industry Skills Councils that were previously responsible for training package development.

Currently, there are 68 training packages, about 1 470 qualifications, and over 17 000 units of competency published on the National Register of VET training website.

Source: DET website; Australian Industry Skills Committee (2016), “Industry Reference Committees: Operating Framework for the Development of Training Packages.”; National Register of VET training website (training.gov.au).

Industry Skills Forecasts

Each year IRCs develop an “industry skills forecast” (ISF) and a proposed schedule of work which are submitted to the AISC for approval. The ISFs help to identify skills gaps, emerging skill needs and associated training needs for their industry sector and whether there is a need to update training packages. Despite their name, they are not forecasts but rather qualitative snapshots of current and future skill needs in the industry.

IRCs consult widely with key industry stakeholders to develop the ISFs. They also draw on research tools, including:

- **Future Skills and Training**, which is a type of foresight exercise that was commissioned by the AISC in order to spark conversations within IRCs about how emerging trends may affect their industry, and the implications for skills and training. The exercise gathers and analyses data on Australian and international skills trends and megatrends to build an understanding of the potential impacts on Australia's workforce in the future. Drawing upon the analysis, focused workshops are held to develop and refine potential future scenarios and implications for the industry sector.
- **The National Industry Insights Report** is a web-based resource developed to provide an accessible platform for industry stakeholders and IRCs to access data and industry intelligence on their sector. The website provides easy-to-access data and information by industry sector on economic and employment trends, and education and training patterns.

ISFs are intended to support the development of VET packages, and each IRC sets the methodological approach taken, with the support of a SSO. As a result, there can be considerable variation in the methods used across industries. ISFs replace the former "Environmental Scans," and stakeholders from the Department of Education noted that the new ISFs improve upon Environmental Scans in two ways: by introducing a template to facilitate the consistency of responses across industries, and by engaging a more representative group of stakeholders in consultations. The template for the ISF requires, for example, that IRCs prioritise the most important skills out of a generic list of 13 broad skill categories.

Box 2.3. Social partners' skill assessment exercises

Twice a year, the Australian Industry Group and the Australian Constructors Association deliver an update on conditions in the country's **construction sector**, called the "Construction Outlook," which includes an assessment of labour and capital supply constraints. The assessment is based on a survey of 100 major construction companies employing 51 000 persons. The most recent Construction Outlook noted that 64% of respondents reported major or moderate difficulty in recruiting skilled labour in the previous six months, an increase from the trough of 30% two years prior.

Between 2014 and early 2017, activity in the construction sector contracted as a result of the decline in mining-related engineering construction. But engineering construction is expected to rise in 2017/18, reflecting new road and rail projects, telecommunications infrastructure and new pipeline infrastructure for gas supply. As a result, respondents reported rising labour costs pressures in the construction of infrastructure and building projects, as contractors compete for the same pool of skilled labour in the ramp up of major infrastructure projects.

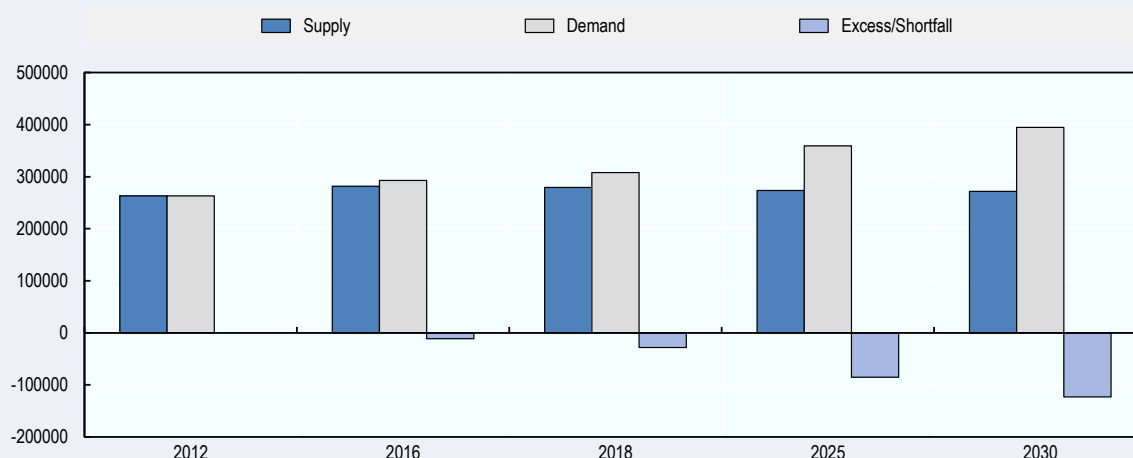
Source: AI Group and Australian Constructors Association (November 2017), "Construction Outlook."

Box 2.4. Forecasting Skill Needs in the Health Sector

The Department of Health carries out national-level projections for the demand and supply of health professionals (see Figure 2.2 for registered nurses example). There is a recognised role for workforce planning in the health profession, given the importance of health professionals to public welfare, particularly in the context of an ageing population, and in view of the long lead times and public expense required to train for a medical occupation. Such planning is also viewed as essential to bring about a better geographic distribution of the medical workforce, as disparities continue to exist between metropolitan areas and the rest of the country. It is also needed to ensure that there are adequate training places available.

There are 16 regulated professions that are included in the biannual exercise, and include doctors, nurses, oral health workers and allied health professionals.

Figure 2.2. Projected shortfalls of registered nurses and enrolled nurses



Source: Health Workforce Australia (2014) "Australia's Future Health Workforce – Nurses Overview Report"

To assemble the required demand and supply data for their projections the Department of Health exploits administrative data, as the Labour Force Survey does not allow for sufficient disaggregation to obtain detailed information about health professions. The Census, which offers this level of disaggregation, is only updated every five years. On the supply side, the department gathers information from the annual registration process for health professionals, together with findings from a voluntary survey. To this is added administrative data about commencements and completions of medical students, as well as numbers of foreign health professionals in the country. Researchers make assumptions about the rate of ageing, migration, and graduation to project supply from 2012 to 2030. Demand projections are built by computing utilisation rates (calculated as billing information against number of doctors).

State/territory and regional analyses

In a country as vast as Australia, mismatches or shortages for a particular skill may exist in particular states, territories or regions but not in others. Shah and Burke (2005) note that inclusion of a regional dimension to the analysis is important as internal migration is sometimes part of the solution to skills imbalances. In Australia, the state and territory governments carry out two types of skill assessment exercises:

- State and territory offices of Jobs and Small Business conduct telephone surveys of employers in their state or territory, as part of the **SERA**. Findings are then aggregated to produce the national-level skill shortage results, but are also available on a disaggregated basis by state and territory.
- State training authorities are responsible for managing the distribution of subsidies for VET. Most states and territories conduct **occupational labour market analysis** to assess which VET qualifications ought to be funded, and by how much. This analysis is also often used in compiling State Migration Plans (SMPs), which are used to inform state/territory-nominated migration.

While Jobs and Small Business sets a consistent methodology to be applied across state and territory offices for the first exercise, each state and territory government sets their own methodology for the second one, resulting in considerable variation in methodologies and quality (Table 2.2). For example, in Tasmania no formal or quantitative analysis is carried out. Instead, Tasmania relies on industry consultation to decide which VET qualifications should be subsidised. In Victoria, industry consultations are combined with quantitative exercises. Victoria commissions an occupational forecasting exercise and conducts its own survey of students and employers, which provides a rich and state-specific source of information about student outcomes to inform which VET qualifications should receive a subsidy.

Table 2.2. Comparison of state-level occupational labour market analysis

	Predominantly quantitative or qualitative?	Broad methodology type	Does the model incorporate forecasts?
Tasmania	Qualitative	N/A	No
Northern Territory	Qualitative	Indicator approach (4 indicators)	Yes. Victoria University Employment Forecasts (VUEF).
South Australia	Quantitative	Forecast	Yes. State government economic projections used to calculate economic forecasts and employment forecasts.
Queensland	Quantitative	Indicator approach (4 indicators)	No
New South Wales	Quantitative	Indicator approach (18 indicators)	Yes. Job growth and replacement demand projections based on Centre for International Economics modelling.
Western Australia	Quantitative	Indicator approach (6 indicators)	Yes. Combination of VUEF and Shah Consulting.
Victoria	Quantitative/Qualitative	Indicator approach (3 main metrics made up of 13 sub-metrics)	Yes. Employment and demand forecasts provided by Deloitte Access Economics.
Australian Capital Territory	Quantitative	Indicator approach (11 indicators)	Yes. Forecasts provided by Jobs and Small Business.

Source: Bent, Patrick (unpublished), “Scoping of labour force modelling and its application to VET subsidisation.”

DET has commissioned a comprehensive review of the different approaches states and territories take to assess which VET qualifications ought to be funded (Bent, 2018^[11]). This review (to be completed in 2018) could inform a more consistent approach across states and territories in the future, potentially encouraging more knowledge sharing around methods and data.

While most states take an indicator-based approach, drawing inspiration from the method developed by the National Institute of Labour Studies (NILS), the number and type of indicators vary considerably. The indicator-based approach that NILS developed is strongly informed by international experience, including the United Kingdom's Migration Advisory Committee (MAC) skill shortage indicator framework (Mavromaras et al., 2013^[12]). NILS proposes an array of skills imbalance indicators under four categories: state of the labour market, recruitment experience, student responses, and labour market entry (see Table 2.3). Unlike MAC's approach, however, which sets thresholds to decide whether an indicator value signals shortage or not, NILS eschews thresholds in favour of qualitative judgements. Each state and territory has adapted the NILS method to their own context, selecting those indicators which they see as relevant or for which they have data.

Table 2.3. NILS Indicator-based Approach for Assessing Skills Imbalances

	Indicator
State of the aggregate labour market	Male full-time employment/population ratio (per cent)
	Male total employment/population ratio (per cent)
	Female total employment/population ratio (per cent)
	National unemployment rate (per cent)
	Total hours worked (percentage change from previous year)
Recruitment experience	Proportion of vacancies unfilled after 6 weeks
	Average number of applicants per vacancy
	Average number of suitable applicants per vacancy
	Vacancy rate (percentage of employment)
	Occupational unemployment rate (percentage of employment)
Student responses	Average Australian Tertiary Admission Rank (ATAR)*
	Commencements ('000s)
	Completions ('000s)
Labour market entrants	<u>University graduates: 4 months after graduation</u>
	Percentage employed full-time
	Percentage not employed
	Mean full-time hours worked per week
	Mean full-time annual salary (\$'000)
	Percentage with education-job match
	<u>University graduates: 3 years after completion</u>
	Percentage employed full-time
	Mean full-time hours worked per week
	Median annual earnings of full-time workers (\$'000)
	<u>VET graduates: 6 months after completion</u>
	Percentage employed full-time
	Percentage not employed
	Mean full-time weekly pay
	Percentage with education-job match
	<u>Skilled immigration intake</u>
	Subclass 457 visas granted (as percentage of all new entrants)

Note: ATAR is a rank between 0.00 and 99.95 that indicates a high school student's position relative to all students who started high school in the same year. According to NILS, the more an occupation is in shortage, the higher will be the ATAR for the qualification that feeds into it (provided the number of places is kept constant).

Source: Mavromaras, Healy, Richardson, Sloane, Wei and Zhu (2013). "A System for Monitoring Shortages and Surpluses in the Market for Skills." National Institute of Labour Studies, Flinders University, Australia.

Several states incorporate forecast estimates from the Victoria University Employment Forecasting (VUEF) model in their methodology (Box 2.5). The VUEF is produced by the Centre of Policy Studies (CoPS), an independent research centre based at Victoria University. State governments wishing to use VUEF output to inform VET qualification subsidies must develop a methodology for mapping occupations to more finely-detailed qualifications, since there is no standard and broadly-accepted mapping procedure between occupations and qualifications.

Box 2.5. Macroeconomic forecast from the Centre of Policy Studies

The Victoria University Employment Forecasting (VUEF) exercise is a macroeconomic computer general equilibrium (CGE) model that can capture structural and demographic change. The model draws upon a range of inputs, including macroeconomic and demographic data, labour market statistics, education statistics, national and state economic and demographic forecasts, and expert industry forecasts. The main outputs of the model are eight-year employment forecasts. Occupation output is presented at the four-digit ANZSCO level (358 occupations), regions at the SA4 level (57 regions), level of qualification at broad ASCED levels (five levels), and field of study at broad ASCED levels (11 fields).

Since the VUEF is a “market clearing” model, it assumes that demand and supply are equal. The model cannot therefore be used to directly estimate an expected oversupply or undersupply of graduates, but movements in wages indicate where market pressures in the form of labour shortages or surpluses exist. The 2017 model, which includes forecasts from 2018-25, projects growth in employment coming mostly from services, particularly healthcare and social assistance, education and training and professional services.

While the model is capable of forecasting at both the national and state level, it is mostly contracted out to state-level governments in Australia.

Source: Dixon, J. (2017), “Victoria University Employment Forecast (VUEF): 2017 Edition,” CoPS Working Paper G-277, <http://www.copsmodels.com/ftp/workpaper/g-277.pdf> ; Bent, P (2018, unpublished), “Scoping of Labour Force Modelling and its Application to VET subsidisation.”

Analysis of skill needs in remote and rural regions

While not common, some states also run exercises to assess skill needs in remote and rural areas. Assessing skill needs in sparsely populated regions can be costly and time-consuming, and national-level data sources like the Census do not always capture this level of disaggregation accurately. Notwithstanding the cost, the results of such an exercise can be worthwhile. The Northern Territory government currently conducts a census of employers in small and remote towns within the Territory, and Victoria recently piloted a skill needs assessment in a rural area based on employer consultations which resulted in well-targeted policy recommendations about how to better address the region’s skill imbalances (Box 2.6). Western Australia conducted a similar pilot skill needs assessment in the Goldfields region, based on an employer survey. It intends to use the results of this exercise to inform annual discussions between the state and technical and further education (TAFE) colleges around funding and course provision.

Box 2.6. Skill Needs Exercises in Rural and Remote Regions

Victoria: A Skill Demand Profile of the Mallee Region

The Victorian Skills Commissioner recently piloted a taskforce to prepare a “skills demand profile” for the Mallee region, a largely agricultural district in Victoria. The taskforce consulted with local employers to first identify the industries where jobs would be coming from, based on where investments had been made. They then worked with employers and education providers to identify training needs in terms of VET qualifications and particular skills.

Many region-specific challenges emerged: difficulty accessing training infrastructure or suitable teachers due to geography; employees facing geographical barriers in reaching facilities of training providers; or lack of formal pathways to transition high-quality workers into managerial roles. The taskforce worked with employers to identify solutions to these challenges. For instance, to address some of the geographical challenges in participating in standard vocational training models in the horticultural sector, the report recommends “adopting models that take training to individual employers where possible” given that many employers in this region and sector have invested in customised equipment and processes to support farm operations.

Northern Territory: Census of Businesses in Remote Towns

The Northern Territory government currently conducts a census of employers in small and regional towns within the Territory. Carried out once every three years (2011, 2014, and 2017), the census picks up information useful to labour force analysis (vacancy fill rates, employment profiles, ANZSCO and ANZSIC employment distributions, and age profiles by occupation).

Source: Victorian Skills Commissioner (2017), “2017 Regional Skills Demand Profile: The Mallee.”; Bent (2018), “Scoping of labour force modelling and its application to VET subsidisation”

2.3. Limitations with SAA exercises and strategies for addressing them

As the previous sections have demonstrated, Australia has a number of exercises in place to assess and anticipate skill needs. Each approach is associated with advantages and weaknesses, which are summarised in Table 2.4. This section discusses these in more detail, and analyses approaches that are being taken to address them.

Table 2.4. Advantages and disadvantages of different types of skill assessment and anticipation exercises

Approach	Advantages	Disadvantages	In Australia
Surveys of employers	Direct user/customer involvement. Easy to set up and carry out.	Can be subjective and inconsistent across different surveys, with focus on marginal or temporary cases.	Employer surveys form the backbone of the skill shortage research in Australia. Jobs and Small Business' Survey of Employers who Recently Advertised (SERA) is carried out in a consistent manner over time and across states and territories. Findings are validated by cross-checking with other states, with other sources of labour market information and by consulting with industry groups. DET's new Employer Satisfaction Survey also monitors employers' levels of satisfaction with the quality of graduate training and employability.
Forecast-based projections and quantitative models at the national level	Allows for forward-thinking policy planning. Can provide a comprehensive picture of skill imbalances in the labour market, while being transparent about assumptions.	Data demanding, costly; not everything is quantifiable, and may provide a false impression of precision/certainty.	National forecasts are contracted out to external bodies (academics, consultants).
Focus groups/round tables, Delphi style methods, scenario development	Holistic method (considers a broader range of factors than just economic). Direct "user/customer" involvement.	Can be non-systematic, inconsistent, and/or subjective.	National foresight exercises are conducted by CSIRO.
Sectoral/occupational/regional studies	Picks up dynamics that are missed in national level analysis.	Can introduce inconsistency across sectors.	Industry Skills Forecasts scan skill needs in particular industries in a qualitative way. Certain sectors conduct more in-depth analyses (e.g. health and construction). Limited regional skills assessments for remote and rural regions.
Surveys of workers or graduates	Useful for career guidance, and for understanding the returns to education.	Survey of graduates does not capture demand for experienced workers.	DET oversees the Graduate Outcomes Survey (formerly, the Graduate Destination Survey) which provides employment outcomes for university graduates, while the NCVER conducts similar analysis for VET graduates.
Labour market information system	Incorporates a variety of labour market information, and allows for tracking labour market pressures over time.	Subjectivity involved in how to weight different sources of information.	Jobs and Small Business' skill shortage research aims to identify shortages in skilled occupations where long lead times for training mean that shortages cannot be quickly addressed. Jobs and Small Business is also responsible for providing updates to the skilled occupation lists for migration, drawing on labour market demand and supply factors, economic modelling, survey results and submissions from stakeholders.

Source: Adapted from Cedefop (2008_[6]) and OECD (2016_[13]).

2.3.1. Employer surveys: Reducing subjectivity and validating results

Employer surveys are a cornerstone of Australia's SAA system, and have the advantage of being fairly easy tools to set up, as well as providing direct input from the "users" of skills. Employer surveys generally focus on skill shortages and are not used to assess skills surpluses.

One weakness of this approach is that employer surveys can be subjective. The employer perspective is usually in terms of recruitment difficulties experienced by individual employers, and these difficulties do not necessarily reflect an actual lack of the sought skill in the labour market, though they may lead to rising labour costs that the employer regards as a shortage (Shah and Burke, 2005^[14]). Employers may also report skills shortages when in fact they are unwilling to increase their wages to a competitive level. Furthermore, employers do not interpret "skill shortages" in a uniform or consistent way: evidence shows that many employers equate skills shortages with unfilled vacancies, while others view internal skill deficiencies as equivalent to skills shortages (Green, Machin and Wilkinson, 1998^[15]).

The SERA methodology is designed to mitigate these issues of potential subjectivity and inconsistencies in several ways. First, a possible advantage of the SERA employer survey over other types of employer surveys is that it is limited to employers who have actually posted a job vacancy in the given occupation within the last 6 months. This excludes the opinions of employers who are not in the process of recruiting. At the same time, however, it misses all employment activity where jobs are not advertised, e.g. where networks are used to fill positions. Second, the survey determines whether vacancies are still unfilled after four weeks (six weeks for professional occupations). Hard-to-fill vacancies are defined as those that are not filled after this period, which provides a consistent and objective benchmark between states and territories and over time.

The robustness of employer survey findings can be further strengthened through validation exercises. For instance, in Sweden, employers' survey responses are checked for logical inconsistencies as a means of validation. Where inconsistencies are found to be substantial, Statistics Sweden contacts respondents by phone or email to collect additional information and to validate the information collected (OECD, 2016^[13]). Jobs and Small Business already employs several approaches to validate the results of its SERA employer survey. First, it conducts quarterly moderation discussions among researchers, including those from its state offices, to interpret findings and ensure consistency in use of collected data. Researchers are asked to justify their findings, particularly where their determinations appear to be in conflict with the national consensus. Second, Jobs and Small Business conducts an annual conference amongst SERA researchers which provides an opportunity to discuss broader methodological issues and ways of validating research results. Third, Jobs and Small Business supplements the SERA results with a range of other quantitative labour market information, and consults with selected employer and industry groups about the final list of occupations in shortage, as an additional robustness check.

2.3.2. Forward-looking SAA exercises: Building credibility

Forward-looking SAA exercises at the national level are relatively undeveloped in Australia, compared to those carried out in other OECD countries (see Box 2.7). While foresight exercises are carried out by CSIRO on an ad hoc basis and 5-year employment projections are regularly produced by Jobs and Small Business (see Section 2.2.2), a regular national-level forecast exercise is not undertaken, though DET is in the process of

commissioning a long-term forecast model of demand and supply of qualifications. Many stakeholders acknowledged the need to develop more regular forward-looking SAA exercises in order to better position Australia strategically for changing demand for skills and jobs as a result of global trends, including technological change. Maintaining a regular national forecast exercise with results published every two or three years is viewed as best practice (Thomas, 2015^[7]), since this ensures that major structural changes in the economy are captured in the time trends used in the model's estimation process, and that assumptions can be altered in the face of new economic or social developments.

In addition to more frequent forecasting, new methods could be explored to model the possible impact of technological change on different occupations. It is common for forecasting models to assume uniform technological change across occupations, even though the impact of technological change on employment varies by occupation. In their recent report, CSIRO emphasised the need for forecasting tools which can model the possible impact of automation on jobs and even tasks (Hajkowicz et al., 2016^[9]).

One of the challenges with forward-looking SAA exercises is defining clear expectations for users and policy-makers. Forecast and foresight exercises are not meant to predict the future demand and supply of skills with certainty or precision. Rather, they provide an internally-consistent framework within which to explore the impact of possible scenarios. By way of clarifying expectations, and building credibility around forward-looking exercises, two practices merit consideration.

First, anchoring foresight exercises with empirical evidence helps to allay criticisms that the method is not a useful activity because it can be dominated by intuition, impulsiveness and sometimes inexperience of practitioners (Policy Horizons Canada, 2016^[10]). Similarly, OECD (2016) argued that foresight advice should be “whenever possible backed up by empirical evidence, so that it can be contested and debated by others in the policy domain.” CSIRO's recent foresight exercise was grounded in empirical evidence in this way.

Second, foresight exercises can help to temper expectations from forecast exercises by widening the set of scenarios that are modelled. Doing so reduces focus on a specific number (e.g. employment growth), which may not be reliable, and instead shifts focus to mitigating risks and preparing for a range of possible future scenarios. Foresight can be a useful complement to forecast exercises in this way, by allowing the user to scan for possible disruptive events and to consider alternative scenarios. In addition, foresight helps to establish credibility around forecast estimates by building bridges between the different types of experts in order to improve readiness to face future challenges (OECD, 2016^[16]).

For example, the former Australian Workforce Productivity Agency (AWPA, earlier “Skills Australia”) used to conduct foresight exercises to gain insight into possible future scenarios around the demand and supply of skills. These scenarios were then used to define forecast modelling exercises. In their 2013 study (Australian Workforce and Productivity Agency, 2013^[17]), AWPA developed four scenarios that described plausible futures for Australia, taking into account the broad drivers that could be expected to influence work and workplaces to 2025 (e.g. social, demographic and cultural trends; economic trends, labour force and workplace trends, science and technology, governance and sustainability). These scenarios formed the basis for economic modelling of the supply and demand for qualifications, which was conducted by an external consultant.

Box 2.7. Examples of regular national-level forecast exercises

The **Canadian Occupational Projection System (COPS)** has been used in Canada for over 30 years to assist policy makers and to provide labour market information to assist Canadians and potential immigrants in their education and career decisions. Employment and Social Development Canada (ESDC) developed the model and every two years they publish detailed ten-year labour market forecasts at the national level. Their projections identify the potential level, composition and source of labour demand and labour supply in the future Canadian labour market, and highlight occupations where labour market imbalances may arise. Projections are made for 140 occupations at the three-digit National Occupational Classification (NOC) level. The projection models both expansion demand and replacement demand (including retirements, deaths, voluntary quits and involuntary firings) to arrive at a predicted path of labour requirements for each occupation. In addition, the COPS model estimates occupational supply by combining projections for immigrants, graduates, dropouts and re-entrants with forecasts for labour force participation rates. The model has large data requirements due to the detailed nature of the work, and the methodology is regularly updated to improve the quality of the model outputs.

The **United States** Bureau of Labor Statistics (BLS) undertakes occupational forecasting every two years through a program called Employment Projections (EP). The EP program develops ten-year forecasts of industry and occupational employment, covering 334 occupational profiles which represent approximately 84% of available jobs in the United States. Unlike COPS, the BLS projections do not carry out supply side estimations, choosing instead to focus on demand side estimation. EP also assumes a labour market in equilibrium where total labour supply meets labour demand except for some frictional unemployment, so it is not possible to predict where future labour market imbalances may arise.

The **New Zealand** Department of Labour (NZDoL) produces five-year and ten-year forecasts using a “top down” approach; meaning that it uses aggregate economic industry-level forecasts to generate forecasts for occupation growth. These projections are updated every six months and are produced at the three-digit level for 96 occupations.

Sweden’s statistical agency publishes results of its 20-year forecast every three years. Assuming that supply follows past trends, the forecast focuses on modelling the demand side.

Source: (Thomas, (2015), “Review of Best Practices in Labour Market Forecasting with an Application to the Canadian Aboriginal Population.” *Centre for the Study of Living Standards*; (OECD, 2016), “Getting Skills Right: Sweden.”

2.3.3. State/territory, regional and sectoral SAA analyses: Managing inconsistencies

Australia has several sub-national SAA analyses which help to identify skill imbalances that may not be evident in national-level analysis, and can facilitate the development of more effective policies which are well-targeted to the needs of particular regions or sectors.

A common challenge with sub-national analyses, however, is that they introduce inconsistencies in the way skill needs are measured across regions or sectors. This can complicate the interpretation of skill imbalances, which makes coming to a consensus about skill needs more difficult. It also represents unnecessary costs where resources could be saved by coordinating and sharing methods.

In Australia, the sub-national SAA exercises differ in the degree to which this potential inconsistency is managed. For the SERA research, there are templates to ensure that a similar methodology is employed for employer telephone surveys across states/territories. Jobs and Small Business also organises an annual training at the national level to bring together state/territory researchers to review and receive updates about the methodology. A national coordinator also liaises across states/territories to aid coordination. Finally, the annual conference mentioned above as a validation device is also useful in preserving the consistency of the methodology.

On the other hand, there is considerable inconsistency in the analyses conducted by states and territories to determine which VET qualifications to subsidise. Most states/territories follow a quantitative indicator approach in the style of the one introduced by NILS (Mavromaras et al., 2013^[12]), but there is variation in the types of indicators used and whether forecast results are considered. Tasmania does not use a quantitative method at all but relies solely on consultations with employers. There is very little coordination between states/territories around their methodologies and this makes it difficult to achieve consensus on skill needs. As noted above, the recent review of these approaches commissioned by DET could inform a more consistent approach across states and territories in the future, potentially encouraging more knowledge sharing around methods and data.

Similarly, although steps have been taken to try reduce inconsistencies in Industry Skills Forecasts (use of template), there is still large variation in the degree of rigour that IRCs and SSOs apply in their analysis of the skill needs of each sector. The experience of the United Kingdom in building a common framework for sectoral analysis could be instructive in establishing greater consistency and rigor in Industry Skills Forecasts (Box 2.8).

Box 2.8. Common SAA framework for UK Sector Skills Councils

Introduced in 2002, the Sector Skill Councils (SSC) used to play a central role in identifying and meeting skill needs in the United Kingdom. Licensed by the government, SSCs were required to collect sector-level data on the drivers of skill demand, current skill needs and anticipated future skill demand. The (former) UK Commission of Education and Skills outlined a common framework approach for all SSCs to follow when collecting this data, which facilitated comparison of labour market performance between sectors. SSCs were required to provide labour market information for all countries in the United Kingdom, identifying any differences across countries and regions and highlighting the most serious skill issues. SSCs were encouraged to take a holistic approach to forecasting local skill needs; an approach which included the use of econometric methods, surveys of employers' opinions, skill audits, Delphi methods, case studies, focus groups, scenario development and consultation with experts and employers.

Source: (UKCES, 2009^[18]), "Information to Intelligence: A Common LMI Framework for Sector Skills Councils."; Cedefop (2008), "Systems for Anticipation of Skill Needs in the EU Member States," *Cedefop Working Paper*, No 1.

2.4. Relevance of SAA exercises to policy making

Australia's current SAA exercises are generally useful in policy making, though improvements could make them more so.

In education and training policy, the lack of a regular national-level forecast exercise is a limitation to setting of skills targets and designing policy to steer investments in education. Regular forecast exercises would also provide a much-needed forward-looking dimension to inputs to the Medium and Long Term Strategic Skills List (MLTSSL) in order to ensure that skilled migrants accepted for permanent migration have good long-term labour market prospects. Australia should consider conducting national-level forecasts every 2-3 years. These forecasts should ideally have a 5-10 year time horizon which would enable individuals to potentially alter their education investment decisions based on projected labour market imbalances. A time horizon beyond 10 years, however, is not advised since assumptions are more likely to prove incorrect over that long of a period (Thomas, 2015^[7]).

With respect to employment policy, existing SAA exercises at the national level are not suitable for informing the training content of training for job seekers. Despite having a short-term time span, they are concentrated on highly-skilled occupations. This limits their suitability since most training for job seekers takes place at Certificate Level 3 and below, and the long-term unemployed (who benefit the most from training) are often less educated and may not have the pre-requisites to train for occupations which require a Certificate 3 or Certificate 4. State-based assessments of which VET qualifications merit a subsidy may be better suited to inform training for job seekers.

For informing the selection of temporary migrants, the methodology proposed by Jobs and Small Business to review the Short Term Skilled Occupation List (STSOL) appears to be an improvement over the old methodology in that it is well-grounded in a range of relevant quantitative data sources. The analysis covers occupations at Skill level 1-3,

which is appropriate to policy needs. The lists rely heavily on national-level data due to lack of reliable bottom-up evidence; for this reason, the ongoing formalised consultations with stakeholders are important to validate the results.

Based on the few SAA exercises that are conducted in remote and rural regions in Australia, it appears that these can be effective at tailoring policy response to the specific needs of non-metropolitan regions. However, evaluations of pilot initiatives should be conducted to assess whether the benefits justify the costs.

Furthermore, in order to position itself to respond to changes in skill demand that arise due to technological change and other global trends, Australia should consider developing more sophisticated proxies for skills, and exploring ways to track demand in emerging occupations.

2.4.1. Develop more sophisticated proxies for skills

As underlined at the start of Chapter 1, this report has generally referred to “skills” in a wide sense, to include qualifications, fields of study, and cognitive and non-cognitive abilities. This is because most countries approximate the measurement of skill needs in some way, as direct measures are difficult to obtain. Common proxies of skills include qualification level, field of study or occupation. The use of such proxies in SAA exercises is acceptable to the extent that the proxies map easily to variables that are relevant for policy making. For instance, information about which qualifications are in demand is useful to inform education policy, and migration policy requires an understanding of which occupations are in demand. However, misalignment between the skill proxies used in SAA exercises and their policy uses was reported by 50% of OECD ministries interviewed in a questionnaire on anticipating and responding to changing skill needs.³ A key challenge facing all OECD countries, including Australia, is to develop more sophisticated proxies for skills, which would enable a more flexible response to changing skill demand, as the existing proxies have certain limitations.

For example, education credentials do not necessarily map to skills on the job, and there is variability among individuals with the same credentials in terms of their skills (Quintini, 2011^[19]). Similarly, the skill requirements of an occupation are never fixed, and the task content of occupations changes over time in response to technological and organisational change, the demands of customers, and in response to the evolution of the supply of labour (OECD, 2013^[20]). The use of occupations as a proxy for skills fails to take into account the changing skill demands of occupations, as well as variation in skill requirements between jobs in the same occupation.

A skills-based approach to SAA exercises would enable a flexible response to changing skill demand, including by facilitating a modular approach to adult learning whereby workers can build on their existing skills by acquiring new ones that are high in demand, as opposed to retraining for new occupations from scratch. Such a skills-based approach to SAA would help to better leverage Australia’s competency-based framework for vocational education and training (VET) which is already set up for this type of modular learning.

While existing SAA exercises in Australia are more geared towards qualifications and occupations than towards skills, there are already a number of highly promising developments underway. A report from the Foundation for Young Australians recently made the case for a new mindset towards the labour market that is focused on skill “clusters” rather than occupations. Using online job vacancy data from Burning Glass, an

online data analytics company, together with clustering techniques, they identify sets of jobs that share similar skill requirements. This analysis also has a forward-looking dimension, in that it analyses skill requirements of occupation clusters that have experienced recent growth and that are less vulnerable to automation (see Box 2.9).

Box 2.9. Identifying transversal skills

While the demand for skills is changing rapidly, some skills have a high degree of transferability between different occupations and sectors and are likely to continue to be in high demand. The European Union recommends the use of the term “transversal skills” to refer to the category of skills which are, by nature, transferable across all sectors and occupations and have an important impact on success in life. **Transversal skills** can include soft skills – those that are non-job-specific and closely connected with attitudes (e.g. teamwork, leadership, entrepreneurship), but also generic hard skills, which are technical and job-specific abilities which can be applied effectively in most jobs (e.g. digital skills, communication in foreign languages).

“Skills clustering” is a tool used to identify skills which are highly transferable across the economy or within sectors. The Foundation for Young Australian’s new report, *The New Work Mindset*, uses a rich database of online job vacancies from Burning Glass and exploits clustering techniques to divide 625 occupations into seven “job clusters” which are defined on the basis of overlapping skill requirements. For example, the *Technologists* cluster includes jobs requiring “skilled understanding and manipulation of digital technology,” while the *Artisans* cluster comprises jobs requiring skill in “manual tasks related to construction, production, maintenance, or technical customer service.” The FYA estimates that when a person trains for one job, they gain skills in an average of 13 other jobs.

Using skills clustering techniques to identify transversal skills has numerous potential policy applications. Skills identified as highly transferable should be included in a consistent way in VET training packages. There is also potential to apply this methodology to processes of recognition of prior learning, and career guidance.

Source: European Union (2011), “Transferability of Skills across Economic Sectors.” ; Foundation for Young Australians (2017), “The New Work Mindset: 7 new job clusters to help young people navigate the new work order.” <https://www.fya.org.au/wp-content/uploads/2016/11/The-New-Work-Mindset.pdf>

A similar approach is being considered by New South Wales (NSW) for the assessment of VET qualifications deserving of subsidy. NSW currently assesses which VET qualifications to subsidise using an indicator method which draws upon a number of elements related to occupation demand, and then maps from occupation to qualification. However, NSW has recently partnered with the University of Sydney on a research project around “qualification clustering.” The idea of the project is to group together qualifications which are similar in terms of units of competency, and to give such qualifications a similar ranking in the funding assessment. Not only would this facilitate more rational funding decisions, but the clusters are also intended to inform general training package reform at the national level (Bent, 2018^[11]).

Jobs Queensland, a newly-established statutory authority created to provide advice to the Queensland government, is also exploring more sophisticated proxies for skills. A team of consultants has been commissioned to produce regional labour force forecasts with scenario analysis, to measure expected growth and shortage by occupation and industry. Jobs Queensland would like to undertake “Skills Forecasting” by applying a skills-based occupational framework (like O*NET in the United States) to their employment forecasts (Bent, 2018^[11]).

NCVER notes in their recent review of international practices for identifying skills (Siekmann and Fowler, 2017^[21]), that the lack of “an integrated skills information framework” in Australia means that individuals may fail to develop the appropriate set of skills for work and employers may have trouble finding people with the right skill sets. It also means that the full potential of Australia’s existing information about skill supply (e.g. the competency-based Australian Qualifications Framework) cannot be fully realised, given the lack of good data about demand for skills.

To facilitate the development of data about the demand for skills, Australia could consider investing in a database of skill-based occupational definitions, designed to be consistent with the ANZSCO occupational framework. The current ANZSCO occupational classification framework includes a list of the principal tasks associated with each occupation, but not in a systematic way that allows comparison of the importance and use of the task across occupations. This latter approach is a key feature of the occupational classification system of the US Bureau of Labour Statistics (Standard Occupational Classification, SOC) which is supplemented by O*NET, a database of occupational definitions managed by the U.S. Bureau of Labour Statistics (Box 2.10). O*NET is compatible with the SOC occupational framework, and users can search by SOC occupation (six-digit) to obtain detailed information about the knowledge, task, and skill requirements of occupations based on surveys of job incumbents and occupational experts.

Box 2.10. Mapping occupations to skills requirements

While the approach is not widespread, exercises in several countries link occupation-based assessment and anticipation information to specific skills through comprehensive occupational standards or descriptions of what skills are required in each occupation.

O*NET (“Occupational Information Network”) in the United States is a database containing detailed information about the knowledge, skills and ability requirements of more than 800 occupations. The database is sponsored by the US Department of Labour/Employment and Training Administration (USDOL/ETA). Originally populated by data collected from occupation analysts, the database is now continually updated by surveys of workers in each occupation as well as occupational experts.

Following O*NET’s model, and as a part of the **Occupations, Employment and Needs survey** (*Professioni, Occupazione e Fabbisogni*) Italy conducts a survey to identify the skill, knowledge, values and attitudes required by 800 occupations. An online career guidance tool allows users to browse the employment outlook of each occupation and learn about the types of skills and knowledge which are and will be required by the labour market.

At the European level, the **European Skills, Competences, Qualifications and Occupations** (ESCO) database links occupations to the knowledge, skills and competences that are essential or optional when working in a specific occupation. Unlike O*NET, ESCO does not provide information on the importance of particular skills to each occupation.

Source: OECD (2016), *Getting Skills Right: Assessing and Anticipating Changing Skill Needs*; OECD (2017), *Getting Skills Right: Skills for Jobs Indicators*.

2.4.2. Track demand in emerging occupations

Australia’s two skill assessment exercises are linked to the ANZSCO occupational classification. But this excludes emerging occupations that are not yet included in the ANZSCO classification, like cyber security and artificial intelligence experts. Understanding the demand for such emerging and often specialised skill occupations is critical to responding to skill shortages and keeping up with technological progress.

Jobs and Small Business has expressed interest in securing more real-time data which would be capable of keeping a pulse on emergent trends in demand for occupations and skills, as well as the changing composition of skills within an occupation. Online job vacancy series are potentially valuable as a source of labour market information given their large sample size and high frequency compared to traditional surveys. Such data provide more detailed information about job vacancies and skill requirements, as well as more regional level data. Policy applications could be vast, including assisting job seekers in deciding how to reskill or upskill based on the skills that employers actually need.

But online job vacancy data also has its limitations; for instance, postings may not be fully representative of all job openings. Souto-Otero and Brown (2016_[22]) compare vacancies in the United Kingdom using proprietary data from Burning Glass to employment estimates from the Labour Force Survey. They find that online job vacancies have a strong bias towards high-skilled occupations. Different information and

communications technology (ICT) penetration rates across segments of the labour also mean that jobs advertised on the internet may not be representative of the whole labour market. There are also questions about the degree to which employers articulate the skills they need explicitly in job vacancies. A recent working paper (Gekara et al., 2017^[23]) analyses Australian online job vacancies and finds that of the 1708 job vacancies searched, only 12% mentioned digital skills, despite the evident wide-reaching importance of such skills across occupations (Loveder, 2017^[24]).⁴

2.5. Dissemination of SAA information to end users

Ultimately, the goal of SAA exercises is to disseminate information about skill needs to policy makers to assist in their policy decisions, as well as to a wider range of actors, including educational institutions, workers, job seekers and students. Disseminating labour market information in a user-friendly way helps to resolve a fundamental market failure, that individual actors sometimes lack analytical tools necessary to navigate a complex labour market and to make rational career decisions.

Jobs and Small Business, the primary producer of SAA information in Australia, has a multi-pronged dissemination strategy. It publishes the results of its skill shortage research, employment projections, Internet Vacancy Index, and Survey of Employer Recruitment Experience as accessible reports online. It also produces and updates two web portals.

The first web portal, **Job Outlook**, allows users to browse by four-digit ANZSCO occupation to learn about the skillset required for that particular occupation, the educational pathways available, and the 5-year employment projections. Since Australia does not yet have its own skills classification, it applies the O*NET classification developed by the United States. Data is presented at the national level and by state.

The second web portal, the **Labour Market Information Portal** (LMIP), is focused on disseminating information about employment and unemployment rates at a fine regional level (e.g. economic regions, labour force regions, and employment service areas). The LMIP showcases the Department of Jobs and Small Business' employment projections, the Vacancy Report, and the Employers' Recruitment Insights based on the Survey of Employers' Recruitment Experiences.

Jobs and Small Business also publishes the annual *Australian Jobs* report, which synthesises a wide array of labour market information into a useful resource for career counsellors, job seekers and students. It reviews broad labour market trends at the national and state level, summarises the employment prospects of education and occupation pathways, and offers useful insights for job seekers from the Survey of Employers Recruitment Experiences, including tips on how to best market one's skillset.

Jobs and Small Business publishes the *Australian Labour Market Update* (ALMU) quarterly, to aid the understanding of the labour market for those seeking jobs in Australia, particularly migrants. The ALMU is intended to better inform recent migrants and potential temporary/permanent visa applicants on the Australian labour market, and is less technical than other labour market reports produced by the Department. Each edition includes a hot topic which is selected based on feedback from stakeholders (including Australian assessing authorities and industry bodies) on issues of concern or interest to the target audience.

A new web portal, the **National Industry Insights resource**, was recently developed by NCVER for the AISC in order to assist industry in preparing for future skill needs by providing easy-to-access information on economic and employment trends, education and training patterns by sector. It also shows priority skills by sector, as identified by industry skills forecasts (as they become available).

DET, NCVER and ABS also disseminate the SAA information they produce in a user-friendly way. Their dissemination strategy will be discussed more in the next chapter on how SAA is used in education policy.

2.6. Recommendations

- Pursue initiatives to build a more skills-based approach to SAA exercises. Australia should pursue efforts to build a skill-based occupational classification, which could help to inform VET training packages, and leverage the existing competency-based VET framework to support a modular approach to adult learning.
- Applying skills clustering techniques to identify skills with a high degree of transferability between occupations and within sectors is also encouraged to facilitate career transitions in the context of structural adjustment.
- While Jobs and Small Business currently conducts 5-year employment projections on an annual basis, these projections do not take into account the complexities of a dynamic economy. Australia should consider investing in a more sophisticated forecasting exercise, as countries like Canada, the United States and Sweden have done. Regular national-level forecasts (i.e. every 2-3 years) are needed to identify potential longer-term labour market imbalances (10-year time span), so that policy makers can develop policy to avoid these imbalances. Such forecasts could inform education and training policy, as well as permanent migration policy, particularly the construction of the Medium and Long Term Strategic Skills List (MLTSSL).
- Support efforts to promote sharing of knowledge and SAA methodologies between states and territories, national government, and between IRCs, for example, by expanding use of the new National Industry Insights web-based resource. Promoting consistent SAA methodologies between national government and states and territories could facilitate reaching consensus about skill needs, and also promote labour mobility.
- Evaluate pilot initiatives of regional SAA analyses and expand to more regions if benefits in terms of more tailored policy response seem to justify the costs. Innovative use of big data could also be explored to obtain a finer level of disaggregation.
- ANZSCO should be updated to reflect emerging occupations, many of which have specialised skill requirements. Explore options to track demand for emerging occupations, which are not yet included on the ANZSCO classification, and therefore do not show up on the skilled occupation lists for migration purposes.

Notes

¹ Most EU countries use targeted or non-targeted sampling stratified/weighted by type and size of enterprise/organisation/establishment (in terms of number of employees), sector and region. (Cedefop, 2008).

² For instance, Australia's employment projections are unable to capture complexities in the demand for labour, including the impact of the macroeconomic health of the domestic and global economy, capital investment and its allocation between industries, the pace of technological change, and changes in government policy (Meagher, Adams and Horridge, 2000^[25]).

³ The OECD in collaboration with the European Centre for the Development of Vocational Training (CEDEFOP), the European Training Foundation (ETF) and the International Labour Organisation (ILO) developed a questionnaire to identify effective strategies among countries for improving skills governance and turning qualitative and quantitative information on skill needs into relevant action for policy. A questionnaire was distributed to governments (Ministry of Labour and Ministry of Education) as well as to social partners. Replies from 29 OECD countries were received. (OECD, 2016^[1])

⁴ Online job vacancies are also more susceptible to double-counting which inflates estimates of demand; however, online data analytics companies have made strides in recent years to develop algorithms to sidestep this problem.

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Chapter 3. Uses of skills assessment and anticipation information in Australia

The use of SAA information spans multiple policy domains, including employment, education and training, and migration. This chapter provides an overview of how SAA information is used to inform policies in Australia, and highlights challenges hindering even further exploitation of such information for policy purposes.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Countries invest in SAA exercises in order to design policy that is informed by skill needs, and as a result, should lead to a better matching of skill demand and supply. As noted in Chapter 2, SAA exercises are a tool to improve the allocation of resources in Australia's largely market-driven labour market.

The use of SAA information to mitigate skill imbalances spans multiple policy domains. SAA information can be used in employment policy to shape active labour market policies and to inform structural adjustment policy; in education and training, to help ensure that students' and adults' skill investments pay off and employers have access to a pipeline of relevant skills. Migration policy can also use SAA information to facilitate the entry of migrants who have skills that are in demand.

This chapter provides an overview of how SAA is used to inform policies in Australia, and also highlights challenges hindering better exploitation of such information for policy purposes.

3.1. Main Findings

- In employment policy, the Job Seeker Classification Instrument (JSCI) is used to profile job seekers to determine the type of employment services they receive. But the JSCI does not currently make use of SAA information. Existing SAA information could be better used in profiling so that job seekers with skills in low demand receive more intensive employment services. Given practical considerations which make use of SAA in JSCI profiling difficult, it may fall to employment service providers to use SAA information to inform which type of services they provide to job seekers.
- SAA information could also be used to inform the content of training offered to job seekers within employment services. However, Australia spends very little on training for the unemployed within employment services compared with other OECD countries. Furthermore, employment service providers face disincentives to offer training, including substantial "red tape." To encourage employment service providers to offer training in high-demand areas, upfront costs to providers could be removed for assigning training in high-demand modules or qualifications. For a list of in-demand skills, the requirement to request approval for non-accredited training could also be removed.
- But not all unemployed access subsidised or no cost training via the employment services system. State and territory education and training systems vary, but many offer higher subsidies for courses in higher demand, and these subsidies are available to both unemployed and employed workers.
- Employer engagement in *jobactive* is currently low. Better communication between employers and employment service providers is needed to clarify skill needs. Employers (especially small and medium-sized enterprises) would benefit from assistance in measuring their skill needs and in communicating them.
- Recent structural adjustment initiatives in Australia have been well founded on SAA information. Transition centres located within closing plants have provided career guidance and retraining opportunities that are targeted to occupations and sectors in demand. Some thought could be given to taking a similar approach with a wider range of displaced workers, or those at risk of displacement.

- In education policy, SAA information is used to inform potential learners about the labour market via websites, to update and develop new qualifications, to decide which courses to fund, and to steer students towards skills and qualifications which have good labour market prospects in vocational education and training and adult training. SAA information is not used to inform provision and acquisition of education in the higher education sector.
- SAA information is used to feed the development and review of VET qualifications, but care should be taken to put sufficient focus on transversal skills, as these are often overlooked in SAA exercises which focus more on occupations/qualifications in demand.
- In migration policy, Australia uses results from SAA exercises to select migrants with skills, qualifications and work experience that are in high demand. As a result of this targeting, skilled migrants to Australia have very good labour market outcomes compared with migrants to other countries.
- Recent reforms to the skilled occupation lists for migration constrain the number of occupations included on the lists and are more geared towards higher-skilled occupations in an effort to make the lists more closely aligned with labour market demand.
- One limitation with the skilled occupation lists for migration is that they do not track demand for emerging occupations, like cyber security or artificial intelligence experts, which are not yet included on the ANZSCO classification. Since occupations which emerge due to technological progress may involve specialised skills, the ANZSCO classification should be updated to prevent worsening skill shortages. The new Global Talent Scheme, being piloted from 1 July 2018, should also help by providing access to Temporary Skill Shortage visas for people with highly specialist skill sets.
- Good data on regional skill needs is sparse and therefore regional skill requirements are not well represented on skilled occupation lists, which hinders policy development (e.g. the selection of skilled migrants or the profiling of job seekers based on regional skill needs.)

3.2. Use of skill needs information in employment policy

The information from skill assessment and anticipation exercises can feed into the development of employment and activation policies. However, in Australia, SAA information is not generally used in this way and could be better exploited to improve the matching of supply and demand of skills. An exception is with the Skills and Training Initiative, where support for displaced workers in businesses affected by the closure of Australia's car manufacturing industry has been centred on results from SAA exercises, and can be viewed as a best practice.

3.2.1. Profiling job seekers

The Job Seeker Classification Instrument (JSCI) is used to measure a job seeker's relative disadvantage in gaining and maintaining employment to determine the type of employment services (e.g. job search assistance, training, etc.) that job seekers should receive. Such services are nearly entirely privatised in Australia (see Box 3.1). Job seekers are assessed using the JSCI when they first register for income support or job

search assistance with DHS/Centrelink, and there are also processes in place to ensure that a job seeker's JSCI record accurately reflects their current circumstances¹. JSCI is used to allocate job seekers to one of the first two levels of employment assistance – Stream A or B as appropriate to their needs. It also identifies job seekers with complex or multiple barriers to employment who may require a more comprehensive assessment for serious non-vocational issues which could place them in Stream C, or other employment services such as disability employment services. In 2017, 41.7% of job seekers who registered were considered work ready and placed in Stream A, 41.5% were identified as having barriers to employment and placed in Stream B, and 16.5% were deemed to have serious non-vocational issues, e.g. physical or mental health issues, and were placed in Stream C.

The JSCI assessment involves two main steps: information collection using both an interview and existing data about the job seeker, and the calculation of the job seeker's JSCI score using statistical techniques. During the interview, information is collected about 18 factors which are used to calculate the JSCI score. Four of these factors relate to work experience, education and skills. The remaining 14 factors capture personal characteristics like origin, age and gender, job seeker history, indigenous status, access to transport, criminal convictions, and living circumstances, among others. The higher a job seeker's score, the higher their relative level of disadvantage in the labour market.

SAA information is not used to assign weights to factors in the JSCI assessment. Instead, the weights are derived using statistical techniques based on data which captures the characteristics of all individuals present in *jobactive* at a particular point in time. Lower levels of education are assigned a higher weighting, for instance, since this represents a higher level of disadvantage in the labour market. Job seekers are also asked whether they consider their qualifications to be “work related.” While this question is a simple way to assess the relevance of the qualification to the labour market, it is a highly subjective measure. Better use of SAA could be made in assigning weights to work experience, qualifications and even specific skills (see Box 3.2 for an example) based on their demand in the labour market. Job seekers with skills, qualifications or work experience in low demand (perhaps due to structural changes in the economy) could receive a higher JSCI score and therefore receive more intensive employment services.

However, there are practical considerations which may limit the feasibility of using existing SAA information to assign weights to factors in the JSCI assessment. One issue raised by stakeholders is whether, with only three possible employment streams (Streams A, B, and C), the additional information would produce enough difference in how job seekers are allocated to justify the additional trouble and cost. Also, weights for factors should ideally vary depending on regional labour market conditions, but as has been noted previously, such data is not readily available or reliable.

Box 3.1. Australia's quasi-market system of employment services

A network of for-profit and not-for-profit service providers operates throughout Australia and is selected through competitive bids (the next bid is in 2020). Providers' performance is assessed in part by a Star Rating system, which measures provider success in placing job seekers into jobs, taking into account differences in caseload and regional labour market characteristics. Providers are funded through a combination of per-client administration fees and outcome-based fees, which reward employment matches if a job seeker remains employed for four weeks, 12 weeks, and 26 weeks.

Since July 2015, this network of providers has been called *jobactive*. Previously, it was called *Jobs Services Australia* (2009-15), and before that, *Job Network* (1999-2009). The full privatisation of employment services took place in 1998 and was driven by multiple policy goals; among them, to provide greater support to disadvantaged job seekers; to structure fees to encourage sustainable employment outcomes; and to strengthen demand-side support through requirements to engage better with employers.

The OECD has identified the quasi-market delivery system of employment services as contributing to progressively increasing the labour market participation rate in Australia and contributing to low rates of unemployment (OECD, 2012^[1]; 2017^[2]).

Under the current network of providers, *jobactive*, 60.6% of job seekers who exit the program are employed a month later. After 6 months, 29% are still employed (Table 3.1). International comparisons are difficult to make; however, the quasi-market arrangements in the United Kingdom's Work Programme provide a reasonable comparison. The Work Programme, which ran from 2011 to 2017 and targeted the long-term unemployed, had 26-week employment outcomes for 37.8% of job seekers¹. This is quite a bit higher than the comparison group in Australia (22.1%, see Table 3.1), though there are many differences in program design. An important difference is that the UK Work Programme offered outcome payments only after 26 weeks and thereafter continued to offer outcome payments to providers for one year, whereas the Australian system stops outcome payments at 26 weeks.

Table 3.1. *Jobactive* employment outcomes, by unemployment duration

Share of job seekers who left *jobactive* between July 2015 to October 2017.

	Share employed after 4 weeks	Share employed after 12 weeks	Share employed after 26 weeks
Short-term unemployed	76.9	64.9	40.8
Long-term unemployed	51.0	40.5	22.1
All job seekers	60.6	49.6	29.0

Note: Short-term unemployed job seekers have been registered with employment services for less than 12 months, and long-term unemployed job seekers have been registered with employment services for 12 months or more. *Source:* Department of Jobs and Small Business data; OECD calculations.

Source: OECD (2012) *Employment and Skills Strategies in Australia*; data from Department of Jobs and Small Business. ¹ Department for Work and Pensions, Work Programme Statistics – March 2018, Table 2.8.

Box 3.2. Skills profiling tools

There is growing interest among OECD countries in using skills profiling tools to improve skills matching. Skills profiling tools diagnose the strengths and weaknesses of an individual with respect to a set of skills. They have a range of applications, including use by employers to identify the training needs of their workforce, by educational institutions to diagnose the skills of incoming students, or by government organisations to assess the learning needs of unemployed individuals, those at risk of unemployment, or economically-disadvantaged groups.

Several countries have experimented with Education & Skills Online, an assessment tool designed to produce individual-level results that are linked to the OECD Survey of Adult Skills (PIAAC) measures of literacy, numeracy and problem-solving in technology-rich environments. For example, the public employment service in Italy is using Education & Skills Online to profile the skills of job seekers, and to point them to relevant training. In addition to measures of cognitive abilities (literacy, numeracy and problem-solving in technology-rich environments), the assessment also contains non-cognitive measures of skill use, career interest, health and well-being, and behavioural competencies, e.g. team work, leadership, etc.

3.2.2. Retraining or upskilling job seekers within employment services

Job seekers can access subsidised training in Australia through one of two ways: through state/territory-specific training programs, or through employment services. Subsidies for training offered by states and territories, which are available to both employed and unemployed workers, are targeted on qualifications deemed to be priority areas for the state or territory, and the criteria for placing qualifications on the priority list are often linked to measures of labour market demand. State and territory training programs for adults will be discussed in more detail in Section 3.3, while this section will focus on training provided within employment services.

Once a job seeker is assigned to Stream A, B, or C, they select or are assigned to an employment service provider. The provider meets with the job seeker to design a Job Plan which could include help in looking for a job, help overcoming a non-vocational issue where relevant, or an approved activity. Approved activities include *Work for the Dole*, an unpaid work placement to gain experience, confidence and to demonstrate skills to potential employers. Approved activities also include part-time work, part-time study in an eligible course, participation in accredited language, literacy and numeracy training, or volunteer work. A number of targeted employment services offer skills training based on assessed needs of particular cohorts of the labour market (e.g. the Youth Jobs PaTH provides employability skills to young people). Providers have considerable flexibility in tailoring services and each has their own approach to deciding which services to offer based on the JSCI assessment of the job seeker's needs. Individuals participating in *jobactive* may also be eligible to access financial assistance for training through other federal or state government programs (see Table 3.5).

The government does not publish data on the content of training supported by *jobactive*, so it is not possible to assess how well it addresses the skill and training needs of employers in the labour market. All accredited training that is supported by *jobactive* is in vocational education and training, with just less than half of job seekers who receive

accredited training undertaking Certificate 3 level courses (46.9%), and just less than half pursuing skills or units of competency at an unspecified level (46.5%)².

But while it is not possible to assess how well the training offer aligns with employers' needs, the general impression based on the OECD team's meetings with employment service providers is that SAA information is not widely used by providers to assign job seekers to training programmes. This assessment is loosely supported by survey evidence which suggests that only 37% of *jobactive* participants are satisfied with the help they receive in gaining skills for work (Table 3.2).

Table 3.2. Job seeker satisfaction with the help they received to gain skills for work

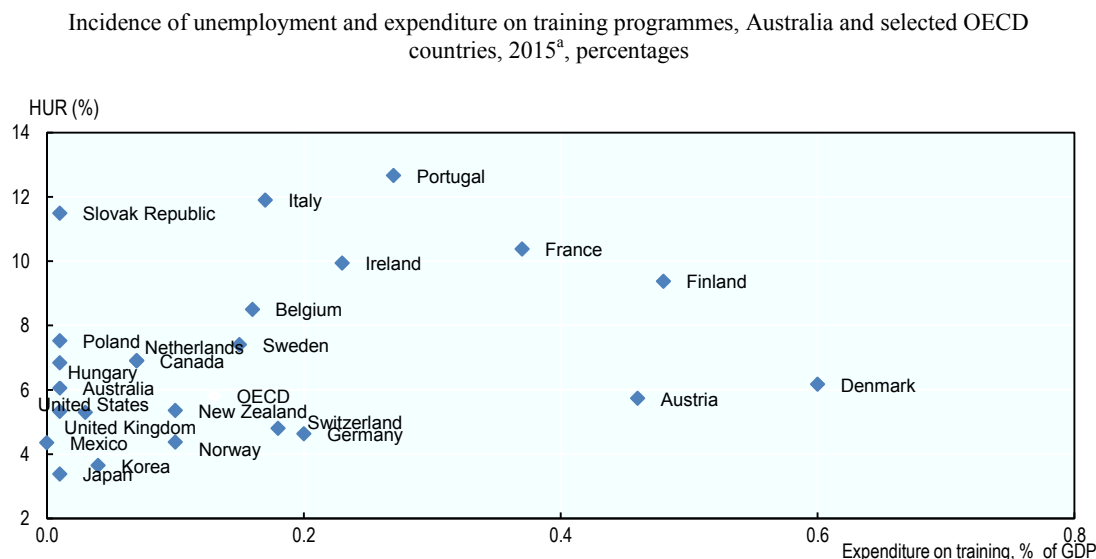
Share of job seekers who received assistance between Jan 2016 and Dec 2016			
	Satisfied or Very Satisfied (%)	Neither Satisfied or Dissatisfied (%)	Dissatisfied or Very Dissatisfied (%)
All participants	36.9	30.9	32.3
Stream A	31.7	31.9	36.5
Stream B	42.4	30.6	27.0
Stream C	46.9	27.2	25.9

Note: Outcomes were measured three months after December 2016.

Source: Employment Services Outcome Report, January 2016 to December 2016 – *jobactive*.

In some OECD countries, the PES uses SAA information to assign job seekers to training which is in high demand in the labour market. For instance, in Austria, most training for the unemployed is decided upon in agreement with the public employment service (PES), and always takes into account actual skills shortages in the labour market. Similarly, in Sweden, an employment officer assesses the applicant's situation on the labour market, and takes into consideration his/her vocational area, experience and the current state of the labour market to decide whether a labour market training programme would be a good option for the applicant. In Korea, job seekers receive counselling about the labour market prior to being issued with a voucher for training, and in Estonia, vouchers can only be used on a list of training programmes in areas of labour market need (OECD, 2017^[3]).

One challenge to aligning training programmes for the unemployed with demand is that spending on training for the unemployed, as well as the incidence of such training, is quite low in Australia. According to the internationally-harmonised data collected by the OECD, only 0.01% of GDP is allocated to skills training in Australia, which represents one of the lowest expenditures on training across OECD countries, even among countries with a similar or lower level of unemployment (e.g. Denmark, Austria, Switzerland, Germany, New Zealand and Norway, see Figure 3.1). Low spending on training reflects both a low share of unemployed persons participating in training programmes and a small amount spent on each participant – among the lowest in the OECD (OECD, 2016). According to the Department of Jobs and Small Business' administrative records, only 12.3% of active *jobactive* participants had commenced any education or training activity as of October 2017 (Table 3.4). Job seekers in Streams B and C had a higher-than-average incidence of training (16.2% and 14.1%, respectively), though still low. With few job seekers receiving training and relatively little being spent on training, there is less scope for assigning job seekers to training programmes based on high demand.

Figure 3.1. Spending on training is low in Australia

Note: ALMPs: Active labour market programmes; GDP: Gross domestic product; HUR: Harmonised unemployment rate, percentage of the labour force. Data refer to fiscal years (FY) for Australia, Canada, Japan, New Zealand, the United Kingdom and the United States.

Source: OECD (2014), “Harmonised unemployment rates (HUR)” (indicator), <http://dx.doi.org/10.1787/52570002-en> for harmonised unemployment rates; and OECD/Eurostat Labour Market Programme Database, <http://dx.doi.org/10.1787/data-00312-en> for expenditure on ALMPs.

Note: GDP: Gross domestic product; HUR: Harmonised unemployment rate; percentage of the labour force. Data refer to fiscal years for Australia, Canada, Japan, New Zealand, the United Kingdom and the United States. Expenditure on state and territory programmes are not included.

a) Data refer to 2011 for the United Kingdom and 2014 for New Zealand for expenditure on ALMP.

Source: OECD (2014), “Harmonised unemployment rates (HUR)” (indicator), <http://dx.doi.org/10.1787/52570002-en> for harmonised unemployment rates; and OECD/Eurostat Labour Market Programme Database, <http://dx.doi.org/10.1787/data-00312-en> for expenditure on training.

Another barrier that providers face in assigning job seekers to training programmes in general, and to training programmes that are in high demand in particular, is tightened restrictions on use of the Employment Fund. Skills training is predominantly financed through the Employment Fund, from which providers can seek reimbursement for eligible work-related expenditures, including training. Providers can use this money for three types of work-related training: accredited training (79% of total training spending), non-accredited training which is a direct requirement of the employer to prepare the job seeker for a specific job (3%), or non-accredited targeted pre-employment training, to address employability and foundational skills, like numeracy and literacy (18%).

A clampdown on publicly-funded training was carried out after criticism in the 2014 Forrest review about “training for training’s sake” in employment services³, with training offered by providers purportedly poorly aligned to employer needs (Forrest, 2014^[4]). Providers must now obtain approval from the national Department of Jobs and Small Business for non-accredited training in order to be sure to receive reimbursement through the Employment Fund. Such restrictions are enforced by random audits, and by tying funding and business allocation to compliance. As a result, the policy around training has become highly compliance-driven. Several stakeholders argued that this focus on compliance has negatively influenced providers’ willingness to offer non-accredited training.

Providers face additional disincentives to provide training in high-demand areas based on SAA information. Under *jobactive*, there has been an increased focus on getting job seekers into a job as quickly as possible (OECD, 2017^[2]). Linked to this, providers are now rewarded for finding job seekers short-term jobs of only four weeks (e.g. seasonal work), while under the previous model, *Job Services Australia*, outcome payments were only eligible at 12 and 26 weeks. By putting focus on getting job seekers into a job as quickly as possible, the “work first” design of the outcome-based fee structure reduces providers’ incentives to deliver longer-term training that addresses skill needs. Furthermore, to assess a provider’s Star Rating (and thus their funding for the following year), 12 months of performance data are taken into account. Employment service providers cannot therefore reap the rewards of longer-term skills training, even if doing so would result in better matches. International experience of training programs for the unemployed finds neutral or even negative employment effects in the short-term⁴, while positive employment effects are evident 2-3 years after completion of the program (Card, Kluve and Weber, 2015^[5])⁵.

Together, these challenges contribute to explaining why providers may be reluctant to offer high-demand training to job seekers based on SAA information.

Some thought could be given to reducing “red tape” for skills training in high-demand areas. This approach encourages employment service providers to offer training, while also steering the training content towards high-demand skills based on SAA information. Though the system is very different to Australia’s, Finland is an example of a country that steers the delivery of training courses for the unemployed towards high-demand areas. Training courses for the unemployed are purchased through public procurement by regional centres of economic development, transport and environment. The choice of courses to purchase is based on estimated regional labour market needs obtained through the help of various short-, medium- and long-term skills anticipation tools (OECD, 2017^[3]). In Australia, Jobs and Small Business could remove the upfront costs that providers pay when they assign job seekers to accredited training for skills in demand, rather than require that they apply for reimbursement. For a list of in-demand skills, the requirement to request approval for non-accredited training could also be removed.

The success of such policies, of course, hinges on having suitable data with a short-term outlook on skills or qualifications in demand. As outlined in the previous chapter, the Department of Jobs and Small Business’ skill shortage research produces a list of occupations in demand in the short-term at both the national and state level. However, the focus on occupations at ANZSCO skill levels 1-3, which require a minimum of two years of education or training mean that the results of this exercise may not be suitable for informing training programmes for the unemployed since the long-term unemployed who are often low-educated (and stand to benefit the most from training) may not have the pre-requisites to train for occupations which require a Certificate 3 or higher.

The state-specific SAA exercises used to identify VET qualifications in demand could potentially be used for the purpose of informing training of job seekers. Though methodologies vary by state, most assess immediate or short-term qualification needs, and are expressed as qualifications – which are more useful for informing training content than occupations.

3.2.3. *Helping employers to clarify and communicate their skill needs*

Close engagement with employers can sometimes act as a substitute for SAA information, provided that employers can communicate their skill needs well.

Currently, however, employer engagement in *jobactive* is low. According to the *Survey of Employers' Recruitment Experiences* run by the Department of Jobs and Small Business, 79% of employers were satisfied by the assistance provided by a *jobactive* organisation in 2017⁶. However, few employers recruit using *jobactive*. While 13% of all employers used recruitment agencies (including *jobactive*) when recruiting, only 5% used *jobactive*. Employers were twice as likely to use *jobactive* when recruiting for a lower-skilled vacancy compared with a higher-skilled vacancy, indicating employers' perspectives on the ability of providers to supply suitable applicants.

Even so, employer engagement could be improved with better communication between employers and employment service providers. Such communication could be encouraged by supporting employers to better measure their skill needs, and to start thinking in terms of skills. For example, the Swedish PES is refining its digital matching tool to allow job seekers and employers to search for one another through a system of skill tags (OECD, 2016^[6]). Job seekers can input specific skills they have acquired both formally and informally (e.g. on the job) into their profile. In turn, employers can search by skills, rather than be constrained to search by job title or qualifications; proxies that are unable to capture their specific skill needs. Similarly, the French PES has also moved away from matching based on qualifications towards matching by skills. To help employers identify skill requirements, a labour market reference framework was set up, and skill suggestions are given based on skill requirements in similar job postings. Employers can indicate which skills are essential and which would be desirable, and they are free to add any skills beyond the reference framework. In addition to basic and specific skills, employers can also add soft skills (*qualités professionnelles*).

3.2.4. *Assisting workers in transition*

The results of SAA exercises have been central to the design of structural adjustment programmes in Australia, particularly those programmes related to the declining automotive manufacturing sector. Australia's response to the closure of the automotive manufacturing industry could be considered a best practice example of how a national effort of support which involves both government and car manufacturers can be effective in helping displaced workers to transition to jobs in demand following a significant adjustment event.

Australia does not have employment insurance, unlike most other OECD countries, and most people who lose their job are only eligible for limited income support due to stringent means testing rules (OECD, 2016^[7]). Since access to more intensive employment services through *jobactive* is conditional on being on income support, this means that many displaced workers cannot count on assistance from *jobactive* to upskill and find a new job.

Workers who are displaced due to large-scale industry-specific closures (e.g. automotive manufacturing industry, mining, forestry) are an exception, as extra government support is often available to assist these workers to upskill or retrain as part of a structural adjustment initiative. For instance, the Skills and Training Initiative is part of the AUD 155 million Growth Fund which was co-financed by government and industry and designed to support businesses and regions affected by the closure of Australia's car manufacturing industry. The Skills and Training Initiative took advantage of long lead times in advance of factory closures to prepare workers to transition to new jobs in high demand sectors and occupations, based on a review of industry demand in affected regions (Department of Industry, 2014^[8]). These primarily included opportunities in advanced manufacturing, food and agriculture, health and biomedical, mining services, tourism and education. In advance of the Holden plant closure in Adelaide (South Australia) in 2017, Transition Centres were

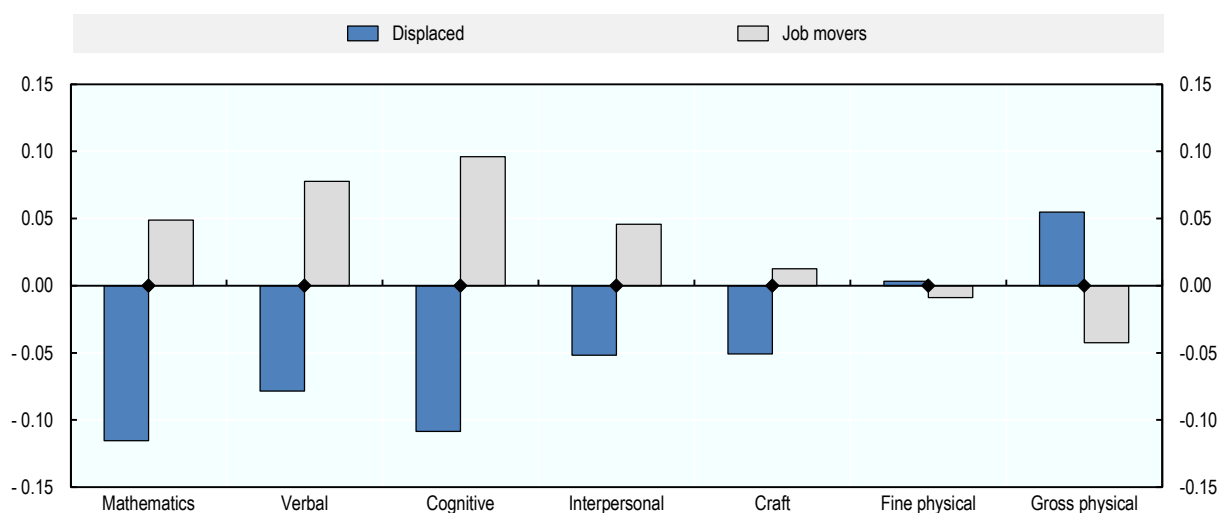
set up within the plant which offered informed career guidance, opportunities for retraining based on sectors and occupations in demand, as well as incentives for employers to assess their employees' skills, and in some cases have them recognised as a qualification. About 84% of former Holden employees had reportedly found new employment or entered retirement at the time of the plant closure (Box 3.3).

The combination of an early response, informed career guidance, recognition of prior learning, and retraining based on occupations and sectors in demand has proven successful for industry-specific structural assistance programs in Australia. A recent analysis by the Productivity Commission raised concerns, however, that those benefiting from the assistance program may crowd out other job seekers in the region – an equity issue that is particularly valid in regions that already have a high rate of unemployment (Productivity Commission, 2017^[9]). Consideration could be given to offering a similar combination of support to a wider range of workers in sectors at risk of decline, or who have skills that are in low demand. Assisting such workers to transition to occupations and sectors in high demand well before they lose their jobs could help to avoid the downgrade in the use of qualifications and skills which is currently observed among displaced workers in Australia (see Figure 3.2).

Several recent measures take steps to widen access to such employment services for workers in transition. The Career Transition Assistance program, which will be trialled in five employment regions as of July 2018 then rolled out nationwide in July 2019, will give mature job seekers a skills assessment which will inform the development of a personalised Career Pathway Plan that provides participants with information on retraining opportunities in line with their local labour market needs. In addition, between 1 July 2018 and 30 June 2020, retrenched workers in certain regions affected by structural change will be assisted in transitioning to new jobs with access to career advice, training and recognition of prior learning, skill assessment, and access to training in basic skills, digital skills and online job search assistance.

Figure 3.2. Displaced workers use less mathematics, verbal and cognitive skills in new jobs

Year-to-year change in skill use for re-employed workers (units of a standard deviation)



Note: Skill requirements are measured by indices with mean zero and unit standard deviation.

Source: OECD (2016), "Back to work: Improving the re-employment prospects of displaced workers." (Figure 1.18)

Box 3.3. Skills and Training Initiative – Holden case study

The Skills and Training Initiative is part of the Growth Fund, which is a AUD 155 million fund to support businesses and regions affected by the closure of Australia’s car manufacturing industry. The Growth Fund is co-financed by government and industry: the Australian government contributed AUD 101 million, the Victorian and South Australian governments each contributed AUD 12 million, and two car manufacturers (Holden and Toyota) each contributed AUD 15 million.

In the case of Holden, the company learned from the experiences of similar auto closures (e.g. Mitsubishi, Ford, Toyota). By the time the plant closed in October 2017, 84% of former Holden employees had reportedly found new employment or entered retirement. Some best practices from Holden’s closure include:

- *Early notice.* Learning from the Mitsubishi closure which occurred with little lead time, Holden gave employees and government notice that the auto plant was going to close 4 years in advance of its shutdown, allowing employees time to accept the new reality and make plans for a career shift.
- *Transition Center.* Holden set up an onsite Transition Center to offer workers access to career counsellors, skill assessment, recognition of prior learning and training, particularly in digital skills. Counsellors helped workers to take stock of their skills and provided guidance on career options based on sectors in high demand. The Transition Center will remain open for workers and those in the supply chain for at least a year following the shutdown.
- *Involvement with other employers.* Holden invited employers to the factory to see the type of work that employees were doing and the skills that they possessed, in order to facilitate re-employment.
- *Consider the supply chain.* The Transition Center was made available to workers in Holden’s supply chain, who were themselves affected by the Holden closure. The Australian Government also guaranteed that all people identified to be in the Holden supply chain would receive “Stream B” employment services.
- *Tracking outcomes.* The government is following the employment outcomes of former Holden workers.

Source: [16 October, 2017. Griffiths, “Last week of Holden: How Holden preparing itself, and its workers, for the future.” The Advertiser.](#) ; <https://www.business.gov.au/Assistance/Growth-Fund>.

3.2.5. Recommendations

- Existing SAA information could be better used in profiling so that job seekers with skills in low demand receive more intensive employment services. Reflect on where in the process this could be best operationalised – whether at the statistical profiling stage, or by the employment providers.

- Disseminate list of qualifications in high demand (state-level) to employment service providers on a regular basis.
- For accredited training in high demand in the labour market, consider reducing the disincentives that employment service providers face in offering training to job seekers, e.g. remove upfront costs rather than require that they apply for reimbursement. Consider also removing the requirement to ask the Department of Jobs and Small Business' approval of non-accredited training for a list of in-demand skills.
- Encourage better communication between employers and employment service providers in order to improve understanding about skill needs. Provide support to employers (especially SMEs) to better measure their skill needs and to communicate them well.
- To assist evaluation, employment service providers should be required to keep precise records of training content (i.e. name of VET qualification, skill set, or unit of competency) assigned and carried out.
- Consider expanding employment support for displaced workers (and those at risk of displacement) following the successful example of the Skills and Training Initiative, which put a strong focus on career guidance and retraining based on sectors and occupations in demand.

3.3. Use of skill needs information in education and training policy

The results from skill assessment and anticipation exercises also feed into education policy. This can ensure that individuals do not just develop *more* or *higher* skills, but that they develop the *right* skills that respond to labour market needs, which is critical to ensuring that Australia reaps the benefits of a highly-skilled workforce. Unless employers recognise and value the skills being developed, investing in the acquisition of skills will not achieve desired effects of productivity, innovation and growth for the Australian economy, and strong employment outcomes and job satisfaction for individuals.

In Australia, SAA information is used to update and develop new qualifications, to decide which courses to fund, and to steer students towards skills and qualifications which have good labour market prospects. It is also used to provide potential learners (both young people and adults) with access to high-quality information about the labour market via user-friendly websites. The way SAA information is used in Australia is shaped by Australia's federated system. Schools and vocational education and training (VET) are administered by the states and territories, with funding contributions from the national government, while higher education is funded and administered by the national government.

3.3.1. Providing information to students, families and workers about the labour market

Most OECD countries have developed career websites to disseminate SAA information to young people and adults (OECD, 2017_[10]). In Australia, DET supports several websites that provide useful information about careers and education pathways, and their employment outcomes. For higher education, the *Quality Indicators for Learning and Teaching (QILT)* website enables comparisons of the quality of higher education institutions in terms of graduate satisfaction and employment outcomes by broad study

area. For vocational education, the website, *MySkills*, sets the bar high. *MySkills* is a national directory of vocational education and training providers and courses. Users can search VET qualifications by industry, and are presented with digestible summaries of average course fees, course length, subsidy information, and average employment outcomes by VET qualification. Rare among vocational education websites, *MySkills* also allows users to compare training providers on the basis of location, course fees, and course duration. Employment outcomes by VET qualification are expected to become available at the provider level as well.

As described in Section 2.5 the Department of Jobs and Small Business also disseminates labour market information about occupations through their *Job Outlook* and *Labour Market Information Portal*. Several states also have their own career websites which exploit state-level analyses of the skill demand and supply dynamics in their own state.

The *Job Jumpstart* website, an initiative of Jobs and Small Business, is a careers website where young people can go to access links to relevant information (e.g. *Job Outlook* and the *Labour Market Information Portal*), as well as helpful quizzes and tips on topics like how to impress employers, how to transition from study to work, and how to tailor applications to a specific job and employer. Centralizing existing labour market information and SAA data into a single online platform helps to overcome the observed “information overload” problem, where young people demonstrate lack of knowledge about their career options despite having access to relevant information (Behavioural Insights Team, 2016^[11]).

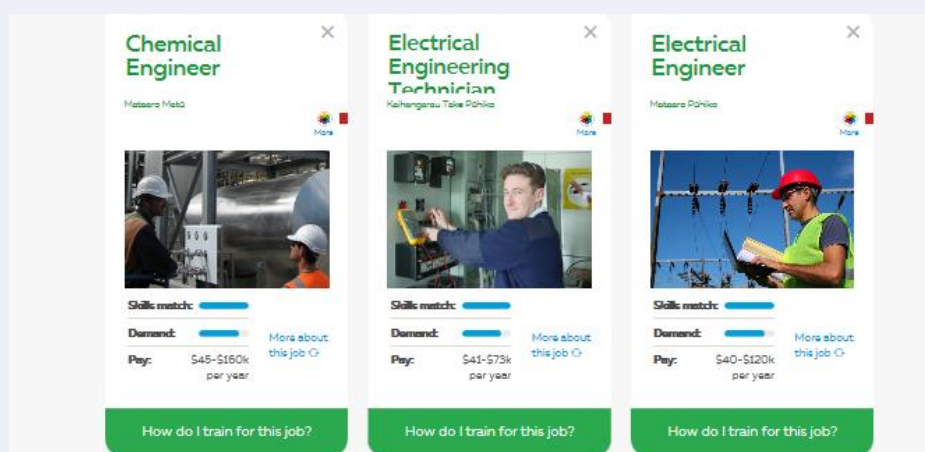
New Zealand’s careers website provides an excellent example of a careers website that centralises a wide variety of labour market information, and allows users to search by skills, occupation, qualification, or field of study. New Zealand’s Skills Builder tool, on the same website, assists users in building an inventory of their skill set, and then presents them with a list of occupations which would be a good fit (see Box 3.4). Users can also search by the occupation they are interested in, and learn which skills and training they would need, as well as other useful information like pay and employment prospects. With its focus on skills, this type of tool is particularly useful in the context of facilitating career transitions for older workers, where they may not have formal qualifications and prefer to search by skills.⁷

Box 3.4. New Zealand's Career Guidance Website

New Zealand's careers website allows users to learn about education and career pathways by searching by degree type and level, skills and occupation. With the Subject Matcher tool, users can find out which occupations they are qualified for when they input their degree and the courses they have taken. Likewise, users can search by occupations that interest them to learn which additional degrees and courses they would need in order to work in those occupations, and the average employment and salary for workers in that occupation.

The Skill Builder is another highly useful tool included on New Zealand's careers website for adults considering a career transition. The tool assists users in building an inventory of their own skills, based on the positions they have held in the formal and informal labour market. For instance, entering "Mining Engineer" as a previous occupation will automatically build a list of skills, among them: to design industrial equipment, prepare detailed work plans, and advise others on health and safety issues. One can add or subtract skills from this automatic list until one feels that it accurately represents one's skillset. The tool then identifies a set of alternative occupations based on one's skillset. See below some sample job suggestions for former mining engineers based on their skills. Skill Builder also informs users about the additional qualifications or courses needed to work in a given occupation.

Figure 3.3. Snapshot of the top results from a Skill Builder search: Mining Engineers



Source: <https://www.careers.govt.nz/tools/skills-builder/>.

3.3.2. Career guidance in schools

For youth transitioning from school to further education, training or work, in-school career guidance can be influential. For this reason, it is important that career guidance counsellors regularly update their knowledge of the labour market by consulting SAA information. However, this was identified as an area for development during consultations with Australian stakeholders.

Reports from school graduates on their experience with career guidance confirm this weakness area. According to a survey of school completers in Victoria, for instance, less

than 33% indicated that they received very useful career advice in 2014, down from 44.4% in 2010. Furthermore, high-school students in New South Wales reported that information about university courses was given higher priority than VET among the careers advice and guidance they received in school (Table 3.3), despite VET graduates having similar employment outcomes as graduates from bachelors programs, on average.

Table 3.3. Career guidance in schools focuses on university courses

Student reports of career advice and guidance activities received when at school			
Career Activity/Guidance Received	Yes	No	Don't know/refused
Show you how to develop a plan about your future study and work, including planning which school courses would help you reach your goals	70.6%	28.9%	0.5%
Provide information about different jobs	80.4%	19.1%	0.4%
Find out what kinds of jobs are suitable for you	57.1%	42.4%	0.4%
Encourage you to consider jobs traditionally done by men (e.g. electrician, builder, engineer)? (Asked only of female participants)	40.6%	58.7%	0.7%
Provide information about different university courses	85.6%	14.2%	0.2%
Provide information about different VET or TAFE courses	81.9%	17.7%	0.3%

Note: Based on a survey of a sample of Year 10, 11, and 12 students in New South Wales.

Source: Calvitto et al. (2013). "Expectations and Destinations of NSW Senior Secondary Students: Volume 1: Research Report."

Without ongoing engagement with industry and employers, career guidance counsellors can quickly become misinformed about the skills required in the labour market. Australia could follow the practice of other countries, like Sweden, which have instituted regular labour market information training sessions for teachers and career counsellors. In Sweden, these training sessions are organised in close collaboration with the public employment service and representatives from firms. During these two-day sessions, the PES provides information on its SAA activities (e.g. forecasts and current assessment of skill needs) and makes suggestions about how to disseminate labour market and SAA information to students and teachers (OECD, 2016_[6]). As the Australian Government is currently developing a National Career Education Strategy, with input from a wide range of school, industry, careers industry, parent and youth stakeholders, it could consider such practices in its strategy.

3.3.3. Allocating national funding and deciding which qualifications to fund

The Australian government has recently negotiated a new national funding partnership between states/territories for the Skilling Australians Fund which will provide estimated funding of AUD 1.5 billion from 2017-18 to 2020-21. The Fund will support growth in the numbers of apprentices and trainees across a range of agreed priority areas, including occupations in demand. Employers who sponsor overseas workers through the temporary or permanent employer-sponsored migration programmes will be required to pay the Skilling Australians Fund levy.

International experience suggests that this type of fund is successful at addressing skill imbalances to the extent that the distribution of training funds prioritises regions or occupations which draw the most skilled migrants (OECD, forthcoming_[12]). Supporting occupations and regions where skilled migrants are sponsored is certainly a factor in deciding which proposals to fund under the Skilling Australians Fund, but other broader

criteria are considered as well. To receive funding, states and territories must match national funding, and submit proposals that align with criteria agreed between the Australian and state and territory governments. These criteria include: supporting apprenticeships and traineeships for occupations in demand or occupations with a reliance on skilled migration; trade apprenticeships; in sectors or industries with projected growth; or which target rural and regional areas and industries and communities experiencing structural adjustment.

3.3.4. Deciding which qualifications to fund

SAA information can also be used to inform policy which steers individuals towards skills and qualifications with good labour market prospects, and provides incentives to employers and education institutions to offer education and training which is in demand.

But there are challenges to the use of SAA information in steering provision and acquisition of education and training. As discussed in Chapter 2, existing SAA exercises in Australia do not have a long forward-looking time horizon, or else are carried out on an ad hoc basis. Several stakeholders expressed reservations about the practice of subsidizing courses or qualifications which may be currently in demand, but which may no longer be relevant to the labour market at the time of graduation. The reliability of forward-looking exercises also seems to be a factor limiting wider use of SAA in education policy. Furthermore, with a third of adults working in a field of study other than the one in which they specialised, some stakeholders expressed doubts that supporting a given qualification or course would help to reduce shortages in a given occupation.

In Australia, SAA information is used in both tertiary education and in adult training to inform which qualifications receive subsidies.

Tertiary education

From 2012 to 2017, Australia's higher education system was "demand-driven," the result of reforms which gradually relaxed "caps" on student numbers (OECD, 2017^[31]). Funding for bachelor-level higher education was driven by student enrolments and provision of courses was not linked to labour market demand or SAA information. This funding system led to significant increases in enrolments and cost to taxpayers. In December 2017, the Australian government announced that it was freezing funding for bachelor-level enrolments at 2017 levels for 2018 and 2019. From 2020 onwards, increases in funding will be based on performance and limited to growth in the national population. While the government is consulting on the exact metrics for measuring performance, it has expressed interest in ensuring that institutions deliver those courses that are in demand in the labour market. This would be consistent with a number of other countries that base an element of the funding formula on the employment outcomes of graduates through performance-based funding. In Korea, for example, the government provides special funding to the 50 universities with the best performance in terms of: i) graduate employment rates; ii) the proportion of teachers with industry experience; and iii) the proportion of students who took part in internships or fieldwork. Estonia also uses a funding model for higher education which allocates up to 20% of funds based on performance, and one of the six indicators is the labour market outcomes of graduates (OECD, 2017^[31]).

Compared to higher education, there seems to be more appetite for basing funding decisions on SAA information in vocational education and training (VET). With shorter

course durations in VET than in higher education, as well as a stronger emphasis on preparation for employment, the scope for steering provision and acquisition of training based on SAA information is viewed as stronger.

Each state and territory subsidises a list of VET qualifications, and SAA information is used by state and territory training authorities to determine which VET qualifications to subsidise and by how much (Bent (2018^[13]); see Chapter 2 for details on the different methodologies used). Eligibility for subsidies generally depends on whether the field of study is in high demand. Subsidies are allocated directly to education institutions and go to lowering the cost of VET qualifications for students.

The national government also uses the state and territory subsidy lists as part of its determination of the VET Student Loans Eligible Course List and Loan Caps methodology under the VET Student Loans (VSL) programme. The VSL programme offers income-contingent loans, up to a capped amount. But unlike the former VET FEE-HELP programme⁸, which the VSL programme replaces, the loans are limited to students pursuing certain VET qualifications (diploma level and above) determined by the Australian government. The current methodology for setting the VSL eligible course list and loan caps looks at those courses which have a high national priority, meet industry needs, contribute to addressing skill shortages and align with strong employment outcomes.⁹ Courses are approved if they are current (that is, not superseded by a new course) and on at least two state and territory subsidy lists, or are a STEM course or tied to licensing requirements for a particular occupation. The equivalent national student loans programme in higher education, Higher Education Loan Programme, is not restricted to courses linked to an occupation in shortage.

Some incentives are targeted specifically at apprentices pursuing trades that are in shortage, and at their employers. Trade Support Loans are designed to assist apprentices with everyday costs while they complete their apprenticeship and eligibility is based on a priority list which identifies occupations and qualifications in high demand (see Table 3.4 for a summary of lists used to govern national-level financial incentives for VET). This list includes Certificate 3 or 4 qualifications leading to certain priority trade occupations that appear on the National Skill Needs List, as well as a number of agriculture and horticulture qualifications at the Certificate Levels 2, 3 and 4. Financial incentives are also available to employers who hire apprentices in trades that are considered to be experiencing a national skills shortage based on the National Skills Needs List. The National Skills Needs List identifies traditional trades that are seen as experiencing a national skills shortage. The occupations on the list are determined by the Department of Education and Training, considering analysis provided by the (former) Department of Employment.

Table 3.4. National lists used to govern financial incentives for VET

	National Skill Needs List	Trade Support Loan Priority List	Eligible courses for VET Student Loans
Governing body	DET	DET	DET
Purpose	Determines eligibility for employer apprenticeship incentives and personal benefits for apprentices	Identifies occupations and qualifications that are eligible for Trade Support Loans.	Determines eligibility for VET Student Loans.
Unit	Occupation	Occupation/qualification	Qualification
Coverage	Occupations requiring Australian Apprenticeship and undertaking a Certificate 3 or 4 qualification	Includes Certificate 3 or 4 level qualifications for occupations on the NSNL, in addition to a set of agriculture and horticulture qualifications from Certificate 2 to 4.	Diploma and above VET qualifications
SAA exercise or methodology	DET request labour market analysis from Department of Jobs and Small Business to guide the composition of the list.	DET request labour market analysis from Department of Jobs and Small Business to guide the composition of the list..	State-specific SAA analysis. Courses are eligible if they are current (not superseded) and on at least two state and territory subsidy lists, STEM-related or lead to a licensed occupation.

Adult training

In Australia, each state and territory offers its own set of partial or full subsidies for adult training activities (Table 3.5). These are generally open to both employed and unemployed workers¹⁰ and eligibility requirements limit the subsidies to Australian citizens, permanent residents or eligible visa holders. Training must be delivered by approved providers, and individuals must reside in the state or territory in question, be out of school (except for school-based apprenticeships and traineeships), and some states restrict how many qualifications can be subsidised at the same level for the same student.

Most states and territories offer targeted subsidised training in qualifications deemed to be priority areas for the state or territory. Criteria for placing qualifications on the priority list vary by state, but many are linked to measures of labour market demand. In Queensland, for example, courses are assessed for their public value, taking into account a number of factors including: the alignment with government priority industries, industry growth prospects, and the strength of the employment outcome from the qualification. The list is routinely updated. Similarly, the New South Wales Skills List which informs government subsidies under the NSW Smart and Skilled programme is developed through extensive industry and community consultation and labour market research (OECD, 2017^[3]).

Table 3.5. State-subsidised training activities

	Name of Programme	Eligible training for subsidy
New South Wales	Smart and Skilled	Up to Certificate 3; higher lever courses in priority areas
Queensland	Certificate 3 Guarantee	Up to Certificate 3 in priority areas; foundational skills
	Higher Level Skills	Certificate 4 in priority areas
	Fee-free Training for Year 12 Graduates	Apprenticeships, traineeships and training in priority skill areas for those who graduated from Year 12 within the last 12 months.
Victoria	Victorian Training Guarantee	Victorian Certificate of Education, Victoria Certificate of Applied Learning, apprenticeship, Foundational Skills course, upskilling to a higher vocational qualification
	Skills First	Vocational training to address state's skill shortages
Australian Capital Territory	Skilled Capital	Training in priority qualifications, as well as Certificate 2 pathway qualifications that may lead to further training at a higher level
South Australia	WorkReady	Foundation skills, training in priority courses, up to five bridging units at every qualification level (if needed)
Western Australia	Jobs and Skills	Foundation skills, priority qualifications and general industry training, including all apprenticeships and traineeships
Tasmania	Rapid Response Skills Initiative	Two levels of funding: 1. Up to AUD 1 500 for people who don't have a job offer; can be eligible for a further AUD 1 500 if they get a job offer 2. Up to AUD 3 000 for people with a job offer or working who have been told by their employer that they require specific training to start or keep the job
	Skills for Work	Training in targeted areas
Northern Territory	Northern Territory Training Entitlement	Certificate 3 qualifications and above, foundation skills or lower level qualifications needed to complete Certificate 3 or above

Source: Upskilled (2017), "Guide to Financially Assisted Training in Australia, Upskilled"; OECD (2012), "Employment and Skills Strategies in Australia."

3.3.5. Updating and designing new qualifications

The review and development of VET training packages draws upon results from skill assessment and anticipation exercises and aims to ensure that training packages reflect industry-relevant skills. Under the new operating framework introduced in 2016, IRCs are required to gather intelligence for their industry sectors (with the support of their SSOs), in order to inform the advice they provide to the AISC about training package development and review. Each IRC develops a four-year work plan which includes industry analysis of new and emerging skills and training needs for the industry, as well as a proposed plan for reviewing and developing relevant training packages. This work plan is then submitted to the AISC which then develops a national schedule for training packages to be reviewed or developed. In deciding which training packages should be prioritised, the AISC considers a range of factors including strategic industry and government priorities, economic impact, and current levels of VET activity (AISC, 2016^[14]).

Australia's industry-led system of developing and updating VET training packages has clear advantages, most notably by giving industry a formal, expanded role in policy direction and decision-making for the VET sector. However, one risk with this model is that training packages put too much focus on job-specific skills, and overlook the important role of transversal or foundation skills, like literacy, numeracy and digital skills (see Box 2.9). SAA exercises also tend to focus on specific occupations or qualifications which are in demand, and often overlook the importance of foundational or transversal skills. For instance, a review of the digital skills content of 11 training packages revealed that while they contained significant digital training content, a large number of the units

of competence which contained digital training content were elective rather than core to the qualifications of the respective occupations (Loveder, 2017^[15]). An NCVER report finds that even though employability skills are embedded in VET training packages, they do so in an occupation-specific way, which limits their transferable potential (Snell, Gekara and Gatt, 2016^[16]). The report concludes that the current design of VET training packages may not be facilitating transferability to its full potential in ways that develop generic competencies that can be used across any occupation.

A key challenge in making VET responsive to the labour market is ensuring a good balance between job-specific and common, cross-cutting skill needs in training packages, as such transversal skills promote a more resilient labour market. With this in mind, the AISC has established a series of cross-sector projects to address common skill needs across training packages, to minimise duplication of units within training packages, to consolidate existing units and to remove units that are no longer being used.

Whereas the updating and design of new qualifications in the VET sector is strongly linked to the skill needs of employers through the work of the IRCs, a parallel process is not yet in place for higher education. Considering that participation in higher education is rising and involves substantial financial and time investments from both government and individuals, there could be merit to establishing a similar type of coordination process for higher education. Better linking the design and updating of qualifications in higher education to skill needs could help to reverse the softening of labour market outcomes that has been observed for higher education graduates in recent years.

3.3.6. *Recommendations*

- Centralise existing labour market and SAA information and data into a single online platform to facilitate career decisions.
- Offer regular labour market information training sessions for teachers and career counsellors.
- As recommended in OECD (2018), ensure there continues to be a clear link between allocation of funds from the new Skilling Australians Fund and the geographic areas and sectors facing limited supply of skills.
- VET training and adult learning curricula should have sufficient focus on development of transversal skills, which are often overlooked in SAA exercises that focus on occupations/qualifications in demand, as well as in employer-led approaches to training package development.
- The work of the Industry Reference Committees helps to ensure a strong link between the skill needs of employers and the content of VET qualifications. Explore the possibility of introducing a similar coordination process for higher education, to improve the employability of higher education graduates.
- To provide a sense of how well current SAA information is reaching end users, pursue evaluation efforts to assess the quality and quantity of SAA information that is provided to students, workers, and job seekers. This would provide a basis to inform possible shifts in policy approaches to career guidance and SAA information dissemination.

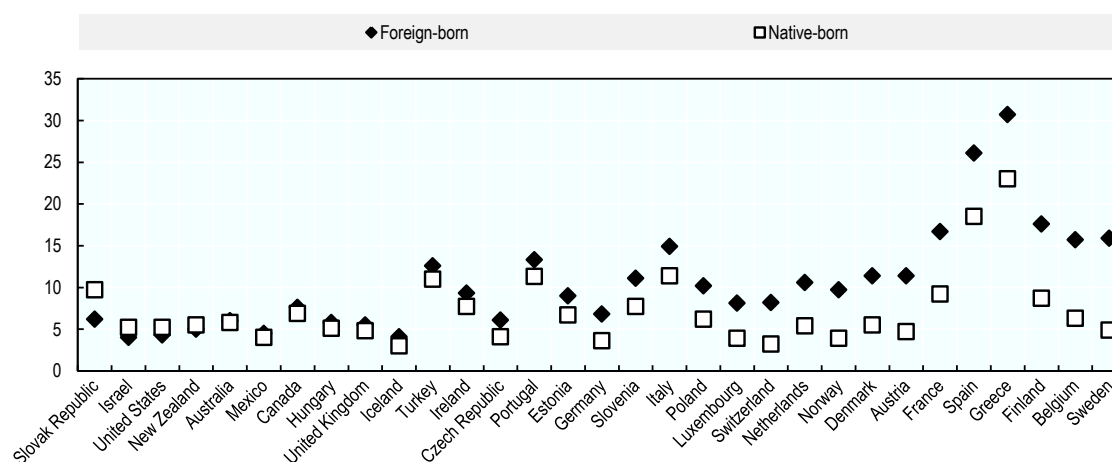
3.4. Use of skill needs information in migration policy

Australia is one of a handful of countries (including Belgium, Canada, Denmark, Ireland, France, New Zealand, Sweden and the United Kingdom) that use results from skill assessment and anticipation exercises to inform migration policy (OECD, 2016^[17]). Australia relies upon significant flows of skilled workers from other countries to supplement its labour and skill requirements. In doing so, it uses SAA information to select migrants with skills, qualifications and experience which are needed by employers based on skilled occupation lists.

3.4.1. Selection of migrants

In Australia, skills assessment and anticipation information is used to select migrants who have skills that meet Australian standards in an occupation on one of the skilled occupation lists for migration. As a result of this highly selective approach, migrants to Australia integrate well into the labour market. In 2016, the unemployment rate of the foreign-born population was 6%, negligibly higher than the unemployment rate of the native-born population at 5.8%. In most other OECD countries, this gap is much wider (Figure 3.4).

Figure 3.4. Unemployment rate by place of birth, 2016



Note: Rates as defined by the International Labour Organisation. For instance, the native-born unemployment rate is calculated as the share of unemployed native-born persons aged 15-64 in the native-born labour force of that same age.

Source: OECD International Migration Statistics

Prior to the reforms announced in April 2017, the skilled occupation lists were the Skilled Occupation List (SOL) and the Consolidated Sponsored Occupation List (CSOL). DET was responsible for compiling the SOL, and the (former) Department of Immigration and Border Protection updated the CSOL (see Chapter 2 for details on the methodology used to review these lists).

In addition, each state/territory maintains an occupation list called the State Migration Plan (SMP). General applicants for state/territory nomination are, in theory, required to have a nominated occupation on the SMP. In practice however, states/territories can nominate any applicant with a point score above the threshold and a nominated

occupation on the national list, regardless of whether or not their occupation is on the SMP. In most states/territories, SMPs appear to be used as a guide to inform migrants about which occupations are most in demand in each state/territory rather than to strictly screen applicants (OECD, forthcoming_[12]). To construct their SMP, many states/territories exploit the same analysis as to assess qualifications eligible for VET subsidies (Bent, 2018_[13]). These lists have significant overlap with the national skilled occupation lists for migration (OECD, forthcoming_[12]).

Under reforms to the migration programme announced in April 2017, the SOL and CSOL have been replaced by the Medium and Long Term Strategic Skills List (MLTSSL) and the Short Term Skilled Occupation List (STSOL), respectively (see Chapter 2 for details on the proposed methodology for reviewing these lists). A Regional Occupation List (ROL) has also been introduced which identifies occupations that are in specific need in regional Australia. Details about the data sources and methodology that have been used to construct this list are not yet available. As discussed in Chapter 2, from 1 July 2017 Jobs and Small Business became responsible for providing advice to the Australian government on updates to all of these lists. Table 3.6 compares the relevant skilled occupation lists for the main skilled visas before and after the reforms.

Table 3.6. Relevant skilled occupation list*, by skilled visa

Skilled Visa Subclass	Prior to reform	Current
Permanent		
Employer-sponsored		
Employer Nomination Scheme (186)	CSOL	MLTSSL
Regional Skill Migration Scheme (187)	CSOL	MLTSSL and ROL
Points-tested		
Skilled Independent (189)	SOL	MLTSSL
State and Territory Nominated (190)	CSOL	MLTSSL and STSOL
Skilled Regional (489)		
State/territory government nomination	CSOL	MLTSSL, STSOL and ROL
Family nomination	SOL	MLTSSL
Temporary		
Temporary Work Skilled (457)	CSOL	MLTSSL and STSOL
Temporary Skill Shortage Visa (482)		
Short-term stream	N/A	STSOL
Medium-term stream	N/A	MLTSSL and ROL

Note: ()* Note that the number of occupations available on each list differs by visa subclass and stream.

Fewer occupations are included on the new skilled occupation lists than the old lists, and the skill composition is more concentrated on high-skilled occupations. The new occupation lists are more responsive to changing labour market conditions, while the former CSOL was simply a list of ANZSCO Skill Level 1-3 occupations (with a small number of omissions where Australian citizenship is a requirement for employment, and the addition of a small number of Skill Level 4 occupations). According to an official update from Department of Home Affairs (DIBP, 2017_[18]), an initial review in April 2017 led to a contraction of the lists used for temporary and permanent employer-sponsored skilled migration visas from 651 to 435 occupations, with 216 occupations removed, and access to 24 occupations restricted to regional Australia – mainly in occupations related to farming and agriculture. Occupations were removed to ensure the lists remained

focussed and responsive to genuine skill needs and regional variations across Australia (DIBP, 2017^[19]). A review in March 2018 made additional updates to the occupation lists. A comparison (Table 3.7) indicates that together the new lists are focused on ANZSCO Skill Level 1-3¹¹, as before, with slightly more concentration in the highest skill level than previously (64% of occupations are now in Skill Level 1, compared to 58% previously). The downturn in the resource sector has contributed to there being fewer Skill Level 3 occupations on the lists.

Table 3.7. Skill Level Comparison of old (SOL and CSOL) and revised (MLTSSL, STSOL, ROL) skilled occupation lists for migration

ANZSCO Skill level	SOL	CSOL	Combined	MLTSSL	STSOL	ROL	Combined
1	132	248	380	159	140	26	325
2	9	95	104	8	46	17	71
3	42	123	165	41	56	16	113
4	0	2	2	0	0	0	0
5	0	0	0	0	0	0	0
Total	183	468	651	208	242	59	509

Note: the MLTSSL, STSOL and ROL are mutually-exclusive lists. New lists as revised in March 2018.

Source: Department of Home Affairs.

Employers wishing to sponsor migrants to work in their businesses are now more constrained by these lists than they were previously, since there are now fewer occupations on the lists. Under the reforms, employers can only nominate migrants for the Temporary Skill Shortage visa who have at least two years of work experience in one of the occupations listed on the MLTSSL or the STSOL. Some exemptions are possible: employers can still recruit overseas workers to skilled occupations which are not on these lists if they meet the genuine or specialist needs of Australian companies, as defined by industry Labour Agreements and company-specific Labour Agreements.

Jobs and Small Business published a proposed methodology for updates to the STSOL and MTSSOL and invited stakeholders to comment (see Chapter 2.2.1 for details on the proposed methodology). Two of the most common concerns were that: i) the proposed methodology is not sufficiently transparent, and ii) the proposed methodology risks excluding applicants in high-demand but emerging occupations, which are not represented in the ANZSCO classification.¹²

Regarding the first concern about transparency, the Department of Jobs and Small Business' proposed methodology for reviewing the STSOL and MTSSL includes a comprehensive list of data sources but neglects to include details about which indicators will be used. For instance, "vacancies by occupation and skill level" is listed as a source of data, but the methodology is silent about how this data will be used to construct an indicator of skill shortage (e.g. measure, threshold values). Furthermore, data sources will be classified as primary or secondary factors, based on their robustness and reliability, with more weight given to primary factors. Beyond this, however, little clarification is offered regarding how the indicators will be weighted and aggregated. Jobs and Small Business intends to continue to refine its methodology as additional datasets become available.

Similar to Australia, the Migration Advisory Committee (MAC) in the United Kingdom combines labour market analysis with stakeholder consultation in constructing its skilled occupation lists for migration. In doing so, it is fully transparent about how it measures

occupational shortages based on its top-down labour market analysis (Box 3.5). But it allows judgement to enter into the calculation through the bottom-up part of its methodology, as occupations are only included on the shortage occupation list if sectoral and occupational data sources, as well as consultations with stakeholders, confirm that they are indeed in shortage.

Box 3.5. Constructing the UK's Shortage Occupation List

The Migration Advisory Committee (MAC) is a non-governmental public body commissioned by the UK Government to develop and periodically review the high-skill shortage occupation list that governs Tier 2 (i.e. skilled workers with a job offer) immigration decisions for non-EU work migrants. The MAC uses both a “top-down” and “bottom-up” method to produce a list of occupations deemed to be facing skill shortages. Top-down evidence comes from an examination of national-level data sources, while bottom-up evidence stems from an examination of individual occupations and job titles and is informed by engagement with stakeholders. Occupations are included on the shortage list if they pass set thresholds for the majority of top-down quantitative indicators (Table 3.8), and if bottom-up evidence confirms that they should be included on the list. Consultation with stakeholders can result in the addition or removal of occupations to or from the list.

Table 3.8. Migration Advisory Committee's twelve indicators of occupational shortage

	Indicator	Data source
Employer-based indicators	Skill shortage vacancies as a percentage of employment by occupation	ESS
Price-based indicators	Per cent change in median real pay (1 year)	ASHE
	Per cent change in median real pay (3 years)	ASHE
	Relative premium to a skilled occupation, holding age and region constant	LFS
Volume-based indicators	Change in claimant count by occupation (%)	NOMIS
	Change in employment (%)	LFS
	Change in median hours for full-time employees (%)	ASHE
	Change in proportion of workers in occupations for less than one year (i.e. new hires)	LFS
Indicators of imbalance	Ratio of vacancy postings to unemployment in the occupation	Burning Glass and NOMIS

Note: ASHE: Annual Survey of Hours and Earnings, ESS: UK Employer Skills Survey, LFS: Labour Force Survey, NOMIS: Office Labour Market Statistics. The LFS provides monthly labour market information about employment and unemployment by occupation, while the ASHE provides annual wage data and hours worked by occupation.

Source: Migration Advisory Committee (2017), “Assessing labour market shortages: A methodology update”, Migration Advisory Committee, London.

A second concern voiced by stakeholders is that the proposed methodology is anchored to the ANZSCO occupation classification, which does not yet include emerging occupations like cyber security or artificial intelligence experts. Occupations which emerge with technological progress may require specialised skills which contribute to skill shortages. Neglecting to consider such occupations in reviewing skilled occupation lists could prevent the flow of specialised skills into Australia, negatively affecting productivity.

The new Global Talent Scheme, being piloted from 1 July 2018, should help by providing access to Temporary Skill Shortage visas for people with highly specialist skill sets for emerging occupations which cannot be adequately defined by ANZSCO. As part of the program, technology-based and STEM-related start-up businesses will be able to sponsor experienced people with specialised technology skills.

Consultation with industry and employer groups at the state and regional level will continue to be vital to constructing skilled occupation lists for migration which represent the real needs of employers across Australia. In addition to formal consultation with industry and employer groups, the use of big data could also be explored to track demand for emerging occupations, although caveats associated with the use of big data should be kept in mind (see discussion in Chapter 2). The UK's MAC has begun to use online vacancy data on an experimental basis as a substitute for a discontinued occupational vacancy data set (MAC, 2017^[20]). As they note in their methodological report, MAC plans to use this data to “provide extra contextual data on the demand for an occupation and how it varies across the UK, across job titles within the occupation, and whether there are any specific skills that are particularly in demand within the occupation.”

3.4.2. Recommendation

- Publish clear details about how the occupation lists for skilled migration will be reviewed and updated, including specific measures, thresholds, and possibly weights.

Notes

¹ Employment service providers may also conduct the initial JSCI if the job seeker is a direct registrant volunteer. If a job seeker's personal circumstances change, a JSCI Change of Circumstances Reassessment (CoCR) is required. Their JSCI can also be updated as a result of an automatic update using data sourced from the job seeker's income support application process.

² Department of Jobs and Small Business, Employment Fund Accredited Training expenditure by stream, 1 July 2015 to 31 October 2017.

³ While the review focused on employment services for indigenous people, it led to changes in the employment services system as a whole.

⁴ Negative short-term impacts can generally be attributed to "lock-in effects," whereby participants withdraw from the labour market temporarily while training.

⁵ The OECD has previously recommended paying for employment outcomes beyond 26 weeks in order to reward the delivery of pre-placement training and better matches more generally (e.g. (OECD, 2014)). The United Kingdom has experimented with longer-term outcome payments in the payment model of the UK Work Programme, which offers contracted out employment services for the long-term unemployed. Outcome payments for providers are still available for 1.25 up to 2.25 years after the initial placement for providers who achieve employment retention.

⁶ Department of Jobs and Small Business, *Survey of Employers' Recruitment Experiences*, 2017.

⁷ Budget 2018 announced plans to launch a Skills Transferability Tool on Job Outlook in July 2019. The tool will identify a user's skill profile based on their previous experience, education and lifestyle, and then identify occupations with matching skill requirements. It will also inform users about the gap between the skills they currently have and those required to perform a given occupation, and offer information on how to develop those skills. The tool is intended to support those who are looking for a job or transitioning from one occupation to another.

⁸ The VSL programme came into effect from 1 January 2017, replacing the VET FEE-HELP scheme.

⁹ The Australian Government reviewed the methodology of the VSL approved course list and loan caps in 2017. The review involved an extensive consultation process including with state and territory governments. The review concluded that there was insufficient evidence to warrant significant change to the methodology and the loan cap amounts at this early stage of the program. As VSL matures and more data becomes available the department will develop more in-depth labour market analyses of the program. For more information about the review see Department of Education and Training (2017) *Review of the VET Student Loans Approved Course List and Loan Caps Methodology* <https://www.education.gov.au/vet-student-loans/VSLmethodology>, 11 December.

¹⁰ About 22.5% of government-funded students are unemployed (NCVER, Internal data cube, National VET Provider Collection, 2016).

¹¹ In ANZSCO, occupations are grouped into skill levels (ranging from 1 to 5) based on the required education and training as well as required previous experience. Skill Level 1 is commensurate with a bachelor degree or higher, or at least five years of relevant experience. In Skill Level 5, occupations have a level of skill commensurate with either compulsory secondary education, NZ Register Level 1 qualification, AQF Certificate 1, or a short period of on-the-job training.

¹² Department of Jobs and Small Business, Skilled Migration List Review: Methodology Consultation (October 2017); review of online submissions conducted by the OECD on March 2, 2018.

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Chapter 4. Governance and stakeholder involvement in SAA in Australia

Wide collaboration across stakeholders ensures that the skill assessment and anticipation system is designed to meet the needs of a variety of users. This chapter focuses on the governance of the skill assessment and anticipation system in Australia, and maps out how stakeholders are involved in discussing findings and shaping the policy response. The first section describes the general governance model. The second section identifies the main mechanisms in place to support coordination across levels of government, while the third section focuses on how different ministries coordinate with one another. The role of social partners is discussed in the fourth section. The final section describes how Australia resolves conflicts when they arise in regard to the interpretation and use of SAA information, and suggests how this process could be improved.

As skill challenges span multiple policy domains and levels of government, finding policy solutions that work requires concerted collaboration across stakeholders. Wide collaboration ensures that the SAA system is designed to meet the needs of a variety of users. For instance, local vocational education and training institutions often require information about skill needs at highly disaggregated levels, and in terms that can be translated to education qualifications. On the other hand, national policy makers who want to ensure that the right skills are available in the country to meet current and future demand will need data that is more aggregated and forward-looking.

Collaboration also helps to bring about consensus about skill needs. Without such a consensus, policy makers will struggle to design an appropriate and cohesive policy response.

But multiple actors and a diversity of interests and institutional objectives can make such collaboration challenging. In Australia, all three administrative levels (national, state/territory, and local) play a role either in the assessment and anticipation of skill needs and/or in the design and implementation of the policy response to skill imbalances. National and state-level governments are involved in collecting information about skill needs, while the design of employment, education and migration policy takes place predominantly among national ministries. For the most part, implementation of such policies takes place at the local and state levels.

This chapter focuses on the governance of the skill assessment and anticipation system in Australia, and highlights how stakeholders are involved to discuss findings and shape the policy response. The first section describes the general governance model of Australia's SAA system. The second section identifies the main mechanisms in place to support vertical coordination (i.e. across levels of government). The third section focuses on how ministries from different policy domains coordinate with one another horizontally to exchange information, reach consensus about what the skill needs are, and work jointly on policy priorities. Social partners (i.e. employer organisations and trade unions) also collaborate on skill policy, and their involvement is discussed in the fourth section. Finally, the last section describes how Australia resolves conflicts when they arise, and makes suggestions for how this process could be improved.

4.1. Main findings

- In Australia, governance of the SAA system is characterised by the “hybrid model,” which lies between the policy and independent models. The hybrid model describes a SAA system where the primary producer of SAA information has a strong policy orientation (in Australia, the Department for Jobs and Small Business), but is not the final user of this information.
- In discussing the results of SAA exercises and agreeing on a policy response, there is strong collaboration in Australia between the Department of Education and Training and state/territory governments via the COAG Industry and Skills Council. However, as in most OECD countries, there is relatively little involvement of local bodies in discussing results of SAA exercises and providing input into the national policy response.
- The results of SAA exercises are used across many ministries, including education, employment and migration. While Australia does not have a national skills policy in place to offer leadership on skill issues across policy domains, an assortment of inter-ministerial committees and taskforces promotes consultation

about the results of SAA exercise and the policy response. However, while states and territories are involved in processes relating to education, they are not generally involved in processes relating to skills and labour market policies more generally.

- The social partners in Australia are involved in discussing the results of SAA exercises and also in influencing the policy response, through the Industry Reference Committees (IRC). While trade unions are engaged through the IRCs, discussion of SAA results is led by employers. More equal involvement of trade unions in a more tri-partite arrangement could help to balance shorter-term priorities of employers in the development of VET training packages, with longer-term priorities, e.g. the teaching of transversal skills.
- IRCs include employer organisations as part of their membership (along with other key industry stakeholders) in the development and updating of VET training packages. But small and medium-sized firms (SME) may be constrained from participating due to the voluntary nature of the role and time and cost constraints which are specific to SMEs. This may compromise SME representation, noting that SMEs represent 70% of employment in Australia.
- Differences in the nature and design of SAA exercises can contribute to disagreements about skill needs across actors, as different SAA exercises sometimes yield conflicting results. More efforts may be needed to promote an understanding of the scope and comparability of the different SAA exercises, perhaps through the use of workshops or conferences as is done in Canada and Norway.
- Stronger leadership could stimulate cooperation between policy domains on skill policy, particularly in setting clear and shared policy objectives. Inter-governmental committees and taskforces have been successful in doing this in VET policy, but policy objectives that span all of education, migration and employment policy are needed.
- In some countries, social dialogue about skill needs is encouraged by having an independent organisation carry out skill assessment and anticipation exercises using a well-reputed methodology. In Australia, the Australian Workforce Productivity Agency (AWPA) used to encourage dialogue among employer groups and trade unions in this way, though the AWPA is now closed.

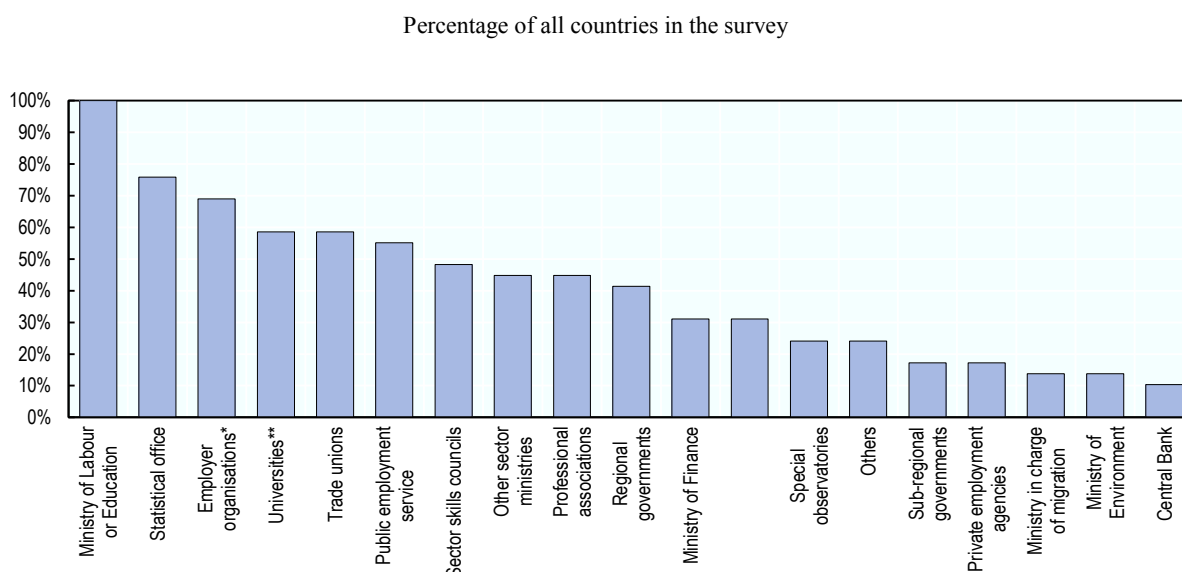
4.2. Models of governance in SAA

The involvement and collaboration of relevant actors in SAA can ensure that: i) the exercise is designed in such a way as to meet the needs of its users; ii) a consensus is reached about skills needs; and iii) the policy responses adopted across actors are coherent and complementary.

In Australia, the information generated by SAA exercises is used by many actors. Figure 4.2 outlines which national ministries and agencies make use of SAA information and how. According to an OECD survey about SAA governance structures, the actors most frequently involved in SAA activities are the Ministries of Labour and Education, statistical offices and employer organisations (OECD, 2016^[1]). This is consistent with the governance structure in Australia where the Department for Jobs and Small Business is the main producer of SAA, along with the Department for Education and Training

(DET), the National Centre for Vocational Education and Research (NCVER), and the Australian Bureau of Statistics (ABS). Employer organisations also contribute to developing SAA information, including via Industry Reference Committees. In contrast to 60% of surveyed countries where sub-national governments do not participate in SAA production, state and territory governments play an important role in developing skill assessment and anticipation exercises in Australia. On the other hand, trade unions are relatively absent from the development of SAA in Australia, compared with 60% of countries surveyed where they are more involved.

Figure 4.1. Government and stakeholder involvement in the development of skill assessment and anticipation exercises



Note: See OECD (2016), “Getting Skills Right: Assessing and Anticipating Changing Skill Needs.”

Source: OECD (2016), “Getting Skills Right: Assessing and Anticipation Changing Skill Needs”; Data from the Questionnaire on Anticipating and Responding to Changing Skill Needs (questionnaires from Ministry of Labour and Ministry of Education).

The model of governance of SAA exercises has an impact on their design and policy relevance. In particular, the degree of independence between the body/bodies who collect(s) SAA information and those that use it for policy purposes must be considered.

OECD (2016^[1]) proposed the following classification of SAA governance structures: the independent model, the policy model and the hybrid model (Box 4.1). Australia can largely be characterised by the hybrid model of SAA governance, which lies in between the independent and policy models. The primary producer of SAA information in Australia is Jobs and Small Business, a national ministry with a clear policy orientation, yet Jobs and Small Business is not the final user of this SAA information. For instance, the skill shortage research is used by many states/territories to inform their decisions about which VET qualifications to subsidise and the Department of Jobs and Small Business’ review of skilled occupation lists is used by Home Affairs to select skilled migrants. In a similar way, Industry Reference Committees, made up of representatives from employer and industry groups, provide recommendations to the Australian Industry and Skills Committee about updates to VET training plans based on their industry skill forecasts – but do not themselves make the policy decisions.

The hybrid model is common across federal countries. For instance, in Canada, the Department of Employment and Social Development Canada (ESDC) undertakes the COPS forecast exercise. Findings are primarily used not by ESDC, but to assist individuals in their education and career decisions. The hybrid model has the advantage that exercises are not so narrow as to be applicable only to a single use. In addition, exercises under the hybrid model are closely connected to the needs of policy makers, since they are often produced by ministries with a policy orientation, as with Jobs and Small Business.

While the hybrid model best characterises most SAA exercises in Australia, some producers of skill needs information are more independent from policy making, including the NCVET and the ABS. These bodies are nonetheless responsive to the needs of policy makers.

Box 4.1. Models of SAA Governance

In the **independent model**, SAA information is collected for general purposes and aimed at a wide audience. The information produced under this approach is not usually subject to political influence. One risk with this model is that the characteristics of the output may not suit policy-making purposes. For instance, the output may be too technical, or at too broad of level of disaggregation to suit certain users (e.g. sub-national stakeholders). Alternatively, the proxies used to map skills may be difficult for policy makers to use in the design of concrete policy initiatives. Examples of independent bodies that undertake SAA analyses are the statistical offices (Norway, Sweden) or universities or research institutes (ROA in the Netherlands, and Denmark's DREAM forecast model).

In the **policy model**, SAA exercises are linked to specific policy objectives and the exercise is designed by its final users. This approach has the advantage of feeding directly into evidence-based policy making. That said, the exercises developed under this model are narrower in focus, which could prevent other users from benefitting from using the information. Examples of the policy model include the public employment services in Austria, Belgium (Flanders and Wallonia), France, Poland, Sweden, and Turkey which conduct SAA to inform their policies and programmes. Other examples include exercises carried out by agencies in charge of vocational education and training (VET) or updating of occupational standards, employer organisations, or individual employers.

In between the above two models is the **hybrid model**. It covers exercises that are led by ministries yet remain independent from their ultimate use (e.g. Canada's COPS forecast model or the United States Bureau of Labour Statistics employment projections). It also covers exercises that are led by skill councils (e.g. Canada, Ireland) or IRCs in Australia, given that skill councils are independent bodies that provide recommendations to other bodies to decide on and implement policies and programmes.

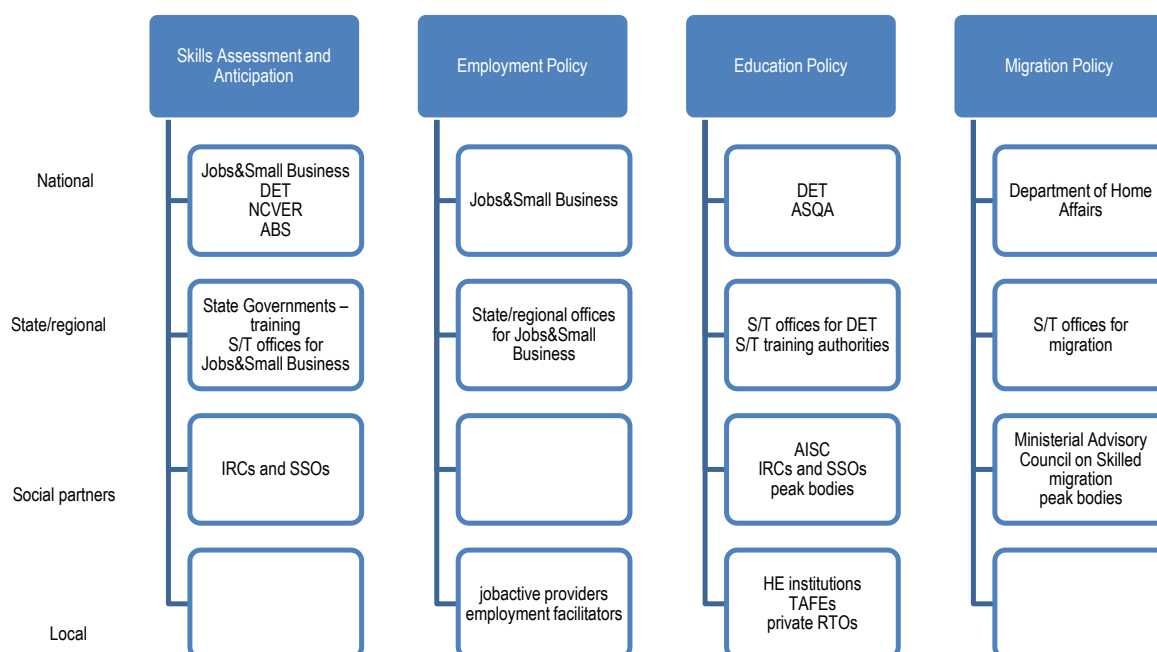
Source: OECD (2016), "Getting Skills Right: Assessing and Adapting to Changing Skill Needs."

4.3. Collaboration across administration levels in developing a policy response

Figure 4.2 sketches the institutional arrangements across levels of government which govern the planning and/or implementation of SAA exercises, as well as employment, education and migration policy in Australia.

Figure 4.2. Australian governance of SAA and skills policy

Main actors in SAA and skills policy, by policy domain and level of jurisdiction



Notes:, DET: Department of Education and Training, NCVER: National Centre for Vocational Education and Research, ABS: Australian Bureau of Statistics, ASQA: Australian Skills Qualification Authority, IRC: Industry Reference Committee, AISC: Australian Industry and skills Committee, SSO: Skills Service Organisation, TAFE: Technical and further education colleges, RTO: Registered Training Organisation, S/T: state or territory.

Involving actors from all administrative levels helps to validate the results of SAA exercises, adds nuance to the conclusions reached and promotes a flexible policy response. Most countries involve sub-national governments in the discussion of the results of SAA exercises and/or the policy response (OECD, 2016^[1]).

In Australia, the federated nature of skills policy requires strong vertical cooperation between national ministries and state and territorial governments. The Australian government has primary responsibility for public funding of higher education, but both the federal and the state and territory governments share obligations for developing and maintaining the VET system, with states and territories contributing about 35% of total operating revenue and the national government about 41% (NCVER, 2017^[2]).

The primary mechanism for collaboration between the national and state/territory governments about the results of SAA exercises and the national policy response is the Council of Australian Governments (COAG). Similar in format to Canada's Forum of Labour Market Ministers, COAG is the peak inter-governmental forum in Australia. It meets at least twice a year on issues of national significance or those that need coordinated action by all Australian governments, including skills and education. The COAG Industry and Skills Council (CISC) began meeting in April 2014; prior to that, the COAG Standing Council on Tertiary Education, Skills and Employment held their last meeting in 2013. CISC develops the agenda for skills and training in the vocational education and training sector, with special focus on funding arrangements and issues

related to quality. CISC meetings of ministers with responsibility for vocational education and training are chaired by the Commonwealth Minister and attended by state and territory ministers with portfolio responsibilities for skills. The Government of New Zealand is also a member of the Council. CISC skills ministers are supported by the Skills Senior Officials Network (SSON) comprised of government officials from national and state and territory departments that hold portfolio responsibility for education and training. While CISC promotes coordination between the national and state and territory governments on issues related to skills, it does not involve governments from other policy domains (e.g. employment, migration).

Based on discussions about the country's skill needs, COAG sets national skills targets with the aim of engaging collaboration across national and state/territory governments. For instance, under the National Foundation Skills Strategy for Adults established by the former COAG Standing Council on Tertiary Education, Skills and Employment, all Australian states and territories have agreed to a ten-year target that by 2022 two-thirds of working-age Australians will have literacy and numeracy skills at Level 3 or above (based on the Adult Literacy and Life Skills Survey).

More recently, the National Partnership Agreement on Skills and Workforce Development, in place since 2012, set two targets to make VET more responsive to the changing needs of the economy:

- Halve the proportion of Australians aged 20-64 without qualifications at Certificate 3 level and above nationally between 2009 and 2020.
- Double the number of higher-level qualification completions (diploma and advanced diploma) nationally between 2009 and 2020.

To reach these targets, most states and territories now offer subsidies for individuals to pursue training up to Certificate 3 level, and some also offer subsidies for higher level qualifications (see Table 3.5). A report on performance (COAG, 2016^[3]) found that while Australia has made some progress on both of these indicators, it is not currently on track to meet either target. While progress appeared to be on track between 2009 and 2012, it has slowed since 2012. The report attributes the slowing activity in training partially to slackening economic activity since 2012, as the availability of relevant employment pathways upon completion of training contributes to VET uptake (Wheelahan, Buchanan and Yu, 2015^[4]).

National and state and territory governments also collaborate to discuss results from SAA exercises and the migration policy response. Home Affairs convenes the Skilled Migration Officials Group to consult with state and territory governments on skilled migration policy, including the methodology for the new skilled occupation lists for migration. There are also plans to hold workshops with state and territory governments to discuss the Regional Occupation List methodology.

But while COAG and the Skilled Migration Officials Group promote the involvement of state/territory governments in discussions with the national government about the results of SAA exercises and the policy response, local authorities are largely absent from such discussions in Australia. Local bodies, like employment services providers and training institutions, are heavily involved in the implementation of employment services and VET provision but are not involved in policy and planning. Many local councils have explicit skilling or education, training and employment strategies which commit the local government to facilitate skill formation in an industry or ensure access to skill development opportunities for the whole community (OECD, 2014^[5]). But local councils

are not generally involved in national discussions about the results of SAA exercises or the corresponding national policy response.

Lack of involvement of local authorities in the development of a national policy response to skill needs is quite common across countries (OECD, 2016^[1]). In some countries this is because local authorities lack the capacity to participate in the development of a policy response. For example, in Canada, the results of certain exercises (e.g. COPS forecast) are not available at a sufficiently disaggregated level to permit the involvement of local actors. This is also a constraint in Australia, where SAA information at highly disaggregated geographic levels is limited primarily to five-year Census data due to the significant financial costs involved, as well as by the unreliable nature of collating comparative data through surveys. Alternatively, some countries report that there is no body to coordinate the local governments' involvement.

While coordination between national and local governments on skills policy is limited in Australia, coordination across the three levels of government (national, state/territory, and local) does take place around specific large-scale and local projects, as with the new City Deal model.

City Deals bring together all levels of government to develop a shared vision for infrastructure and investment, liveability and sustainability, innovation, governance and housing, as well as jobs and skills in a specific geographic area. Three City Deals have been signed in Australia to date in Townsville (Queensland), Launceston (Tasmania) and Western Sydney (New South Wales). Driving improved skill outcomes is often a key focus of these projects. As an illustration, under the Western Sydney City Deal, the three levels of government agreed to establish training facilities that will provide a pathway to jobs in local growth sectors. This will include a TAFE Skills Exchange near the site of the new Western Sydney airport to train the local workers needed to construct the airport and other major projects in Western Sydney. With the Launceston City Deal, part of redeveloping University of Tasmania's main campus involves establishing a Jobs Pathway Director, who will be responsible for creating stronger linkages between education and industry, and adapting national and state employment and training programs to local needs.

4.4. Inter-ministerial collaboration in developing a policy response

As discussed in Chapter 3, results from SAA exercises are used by several ministries, including those related to employment, education and migration policy (see Table 4.1 for a summary). Given the inter-ministerial nature of skills policy, the development of policies benefits from joint discussions across multiple ministries about what the skill needs are and what the policy response should be.

Australia does not have a national skills policy or plan in place to bring leadership and coordinated action to skills outcomes. Nevertheless, the country has a long tradition of inter-ministerial collaboration. Horizontal coordination on skills policy in Australia is not systematic, but occurs primarily through informal meetings, as in other OECD countries like Estonia, Belgium (Flanders), Sweden and the Netherlands (OECD, 2016^[1]).

For example, Jobs and Small Business (since assuming responsibility for updates to the skilled occupation lists for migration) consults regularly with the Department of Home Affairs, as well as other relevant departments (DET, Department of Foreign Affairs and Trade, Department of Health, and Department of Industry, Innovation and Science), in order to come to consensus about which occupations should be included on the skilled

occupation lists for migration, and the appropriateness of any caveats (e.g. whether an occupation should only be on the list for positions in regional Australia).

In the context of the new forecasting exercise that DET has commissioned, an inter-departmental steering committee has been set up to build engagement and discussion across departments on the issue of future skill needs. Jobs and Small Business also convened a Future of Work taskforce in 2017, made up of champions across ministries who meet every two months. The objective of the taskforce is to build a knowledge base across government around the future of work trends (broadly characterised as globalisation, technology, automation of jobs, and an ageing population), and to identify data gaps. The Future of Work taskforce is particularly focused on reaching a consensus across government about the narrative around the future of work and an appropriate policy response.

Coherence between migration and education policies is clearly important. With labour market outcomes for tertiary graduates in Australia having softened in recent years, it is vital that skilled migrants who enter the country complement the workforce rather than displace domestic workers or compromise their labour market outcomes. Prior to March 2018, DET was responsible for convening an inter-departmental committee which provided advice to the Government on the shortage occupation list (SOL) for independent points-tested permanent skilled migration. This committee offered a formalised channel through which the education ministry could weigh-in to migration policy. Under recent reforms, DET is no longer responsible for updating skilled occupation lists for migration, and Jobs and Small Business will review the Short Term Skilled Occupation List (STSOL), the Medium and Long Term Strategic Skill List (MLTSSL) and the Regional Occupation List (ROL). But DET and DHA still collaborate in other less formal ways. Jobs and Small Business convenes a Skilled Migration Occupation List inter-departmental committee, which DET and DHA are a part of in addition to several other departments. The committee is intended to ensure the views of government stakeholders are represented at all key milestones of the skilled migration occupation list review.

Finally, Australia also has inter-ministerial committees to coordinate on skill issues related to particular industries. As an example, Austrade convenes the Tourism and Hospitality Labour and Skills Roundtable to work together on skills issues facing the tourism industry. Comprised of Australian government agencies, state and territory tourism agencies, industry representatives, the Roundtable discusses policy issues like enhancing education and training outcomes in tourism, developing regional approaches to meeting skill needs, attracting migrants, better utilizing temporary and permanent migration to build a pipeline of tourism workers, and harnessing alternative sources of labour, like youth and mature-age workers.

Table 4.1. National departments and agencies' involvement and coordination in the Australian SAA system

Stakeholder	Broad activities	SAA involvement	Recent use of SAA information	Co-operation with other stakeholders
Department of Jobs and Small Business	National policies to improve employment outcomes and skill matching. Coordination of private employment services.	Lead the skill shortage research and produce employment projections. Labour market analysis and engagement for updates to the skilled occupation lists for migration.	Inform students, career counsellors, parents, etc. about where the jobs are likely to be. Inform the review of updates to the skilled occupation lists for migration.	Consult with relevant industry groups on skill shortage research. Consult with Home Affairs and other relevant departments on the skilled occupation lists for migration.
Department of Education and Training (DET)	Responsible for national education and training policy. Has ministerial portfolio responsibility for early childhood, schools, VET and higher education.	Compiles a range of information to support career websites (My Skills, QILT), including graduate outcomes and employer satisfaction survey data.	Industry Skills Forecasts helps DET to maintain an evidence-based approach to assigning priority to the development of training products and to inform the development of training policy and future research priorities.	Industry Reference Committees develop the Industry Skills Forecasts, and other stakeholders are involved (employer organisations, trade unions, and professional associations).
Australian Industry and Skills Committee (AISC)	Represents industry's voice in setting VET training packages	Industry Reference Committees produce Industry Skills Forecasts used by AISC	AISC endorses VET training packages using input from the Industry Reference Committees, including their Industry Skills Forecasts.	Consult with employers and employees and their representatives, industry advisory groups, training providers, governments, students and general public.
Department of Home Affairs	Obtains policy approval for the composition of the skilled occupation lists and to implement legislation to give them effect.	Contributes to analysis of skill needs for the skilled occupation lists for migration by providing visa data.	Uses the skilled occupation lists to facilitate entry for persons with skills appropriate to the need of the Australian labour market and economy.	Jobs and Small Business is responsible for reviewing the skilled occupation lists for migration.
Australian Bureau of Statistics (ABS)	Lead organisation for official statistics.	Contribute to skill assessments with official statistics (Labour Force Survey, Survey of Education and Work, Characteristics of Employment, etc.)	Updating occupational standards and qualification frameworks.	
National Centre for Vocational Education Research (NCVER)	Conduct and disseminate research on VET in Australia	Longitudinal Surveys of Australian Youth and national VET statistics and survey data	Feed discussions about VET policy in the COAG Industry and Skills Committee.	
Department of Health	Oversees and runs Australia's health system.	Conducts supply and demand modelling for health professionals	Use their modelling exercises to lobby other departments, e.g. DET and DHA	Health workforce modelling is a labour market factor considered by Jobs and Small Business in reviewing the skilled occupation lists for migration

4.5. Collaboration with social partners and other stakeholders in developing a policy response

Across OECD countries, employer organisations, trade unions, VET providers and other stakeholders are often invited to discuss the findings of SAA exercises, but it is less common for them to be involved in developing a policy response (OECD, 2016^[1]). In Australia, there are opportunities for social partners and other stakeholders to both discuss results of SAA exercises with policy makers, and to make recommendations about what the policy response should be.

For instance, stakeholders are regularly consulted to discuss the findings of SAA exercises. DET set up the Quality Indicators for Learning and Training (QILT) Working Group which comprises representatives from government, the higher education sector and business groups. The Working Group provides governance and oversight of higher education surveys (students, graduates and employers) which measure the performance of the higher education sector in meeting skill needs. Similarly, Jobs and Small Business consults with key industry groups about the results of its skill shortage research.

But while employer and industry organisations are consulted to discuss the findings of SAA exercises, there seems to be few opportunities for trade unions to do so. Several stakeholders who the OECD team met with noted that the former Australia Workforce and Productivity Agency used to convene state-level experts and social partners – both employer organisations and trade unions – to discuss the findings of SAA exercises (see Box 4.4). This type of tri-partite discussion about the findings of SAA exercises seems to be absent in Australia now. In some countries, tri-partite involvement of social partners in the interpretation of SAA findings is regular and systematic. For example, in Finland, social partners participate in the National Education and Training committees, tri-partite organisations which act as expert advisory groups to the Ministry of Education and Culture. Without consensus from these tri-partite committees on the interpretation of SAA results, the findings cannot be released.

The primary channel through which social partners and other stakeholders may influence skills policy in Australia is through Industry Reference Committees' review and development of VET training packages. Under new arrangements which came into operation in January 2016, the system was reformed from one that engaged with industry, to a system which places industry in the driver's seat in the development of VET training packages. Industry Reference Committees are volunteer bodies made up of industry experts from businesses, employers, peak bodies, unions and sometimes training providers. IRCs conduct assessments of the skill needs of their industry through industry skill forecasts, and then give advice to the AISC regarding updates to VET training packages based on these assessments. In some ways, IRCs are similar to sector skill councils in other countries, like Canada, where sector skill councils are responsible for updating national occupation standards, or in the Czech Republic, where sector skill councils work towards the definition of qualification frameworks. In Estonia, sector skill councils develop occupational standards which are then used in curriculum design.

However, while IRCs provide a channel through which employer organisations and other stakeholders may shape the policy response, IRCs may not be fully representative of employers. Each IRC is intended to draw from both small and big business, as well as from unions. However, the time and cost of participating in such a voluntary committee may be overly prohibitive for small businesses, thus limiting their participation. Many of the stakeholders with whom the OECD team met expressed concerns that in practice, the

IRCs are not fully representative of industry requirements and may specifically overlook the considerations of small business, which make up 70% of employment in Australia (Department of Industry, Innovation and Science, 2011^[6]). A key challenge in giving SMEs a stronger voice in skills policy is lack of advocacy and a means through which SMEs in the same sector can communicate their skill needs to education providers. A recent initiative in South West Sydney has made progress towards developing a knowledge-sharing platform for SMEs in the manufacturing sector which will, among other things, help to aggregate the views of SMEs in the manufacturing sector about what their skill needs are (Box 4.2). Ireland's Skillnets provide another example of how building networks for SMEs in close cooperation with VET providers can help to define their skill needs and shape the policy response (Box 4.3).

On migration policy, the Ministerial Advisory Council on Skilled Migration (MACSM) is a tri-partite council that advises the government on skilled migration issues. While the MACSM provides opportunities for social partners to feed into the policy response around skilled migration, the OECD team heard from several social partners (both employer groups and trade unions) that in recent reforms to the temporary skilled migration programme, their concerns regarding implications for skills shortages were not taken into account.

Box 4.2. Aggregating SME voices in the manufacturing sector

In 2014, the South West Sydney Manufacturing and Engineering Skills Taskforce, facilitated by Regional Development Australia Sydney and Manufacturing Skills Australia, surveyed 81 manufacturing firms in the region, mostly SMEs, about the essential workforce skill needs to drive growth and innovation.

Despite declines in manufacturing employment in recent years, survey participants reported that they sometimes cannot accept new contracts because they do not have enough workers, particularly tradesmen in engineering and manufacturing with the technical and digital skills and abilities demanded by more sophisticated manufacturing environments.

The survey also revealed lack of a central body to advocate on policy issues for SMEs in the manufacturing sector as a major barrier to manufacturing growth. SMEs sensed that there was no single voice that they could present to government on behalf of the manufacturing sector. In response, a central body, called “the Lighthouse,” was recommended to provide a two-way conduit between the manufacturing industry and government. The hope is that the Lighthouse may aggregate information and views about the skills needed now and in the future in order to meet the projected requirements of an innovating manufacturing environment. Whether the Lighthouse proposal moves forward will depend on securing adequate government support.

Source: “Manufacturing Lighthouse: An analysis of focus groups findings” (2016), South West Manufacturing and Engineering Taskforce.

Box 4.3. Ireland's Skillnets

Skillnets were established in Ireland in 1999 to promote and facilitate workplace training and upskilling by SMEs. Skillnets is a state-funded, enterprise-led body that co-invests with enterprises, particularly SMEs, when they cooperate in networks to identify and deliver training suited to their workforces. A network of SMEs, which are mostly sectoral or regional, Skillnets is guided by a steering group of the local enterprise representatives. The steering group gives strategic direction and guidance to a network manager who coordinates all operational activity to the delivery of an agreed training plan with learning interventions suited for the member company workforces, while working closely with vocational education and training (VET) providers.

While Skillnets has a national impact, its influence is largely confined to SMEs which accounted for 94% of its 10 000 member companies in 2011. Originally set up to cater exclusively for the employed, since 2010 Skillnets has a mandate to include the provision of training for job seekers. This happens both in an integrated manner with job seekers attending programmes with employees, and also by focusing exclusively on the needs of job seekers through the provision of dedicated longer-term programmes (e.g. the Jobseeker Support Programme) which includes work placements. Skillnets launched a pilot training initiative, ManagementWorks, providing management training to the SME community with a key focus on owner-managers.

Source: OECD (2014), *Employment and Skills Strategies in Ireland*, OECD Reviews on Local Job Creation, OECD Publishing.

4.6. Reaching a consensus on skill needs and the policy response

As noted in the previous sections, Australia involves a range of ministries, government agencies, state and territory governments and social partners in discussions of the results from skills assessment and anticipation exercises, as well as involving them in the development of an appropriate policy response. However, even when opportunities for collaboration exist, it may still be difficult to reach agreement on skill needs and the appropriate policy response.

4.6.1. Difficulty agreeing on skill needs

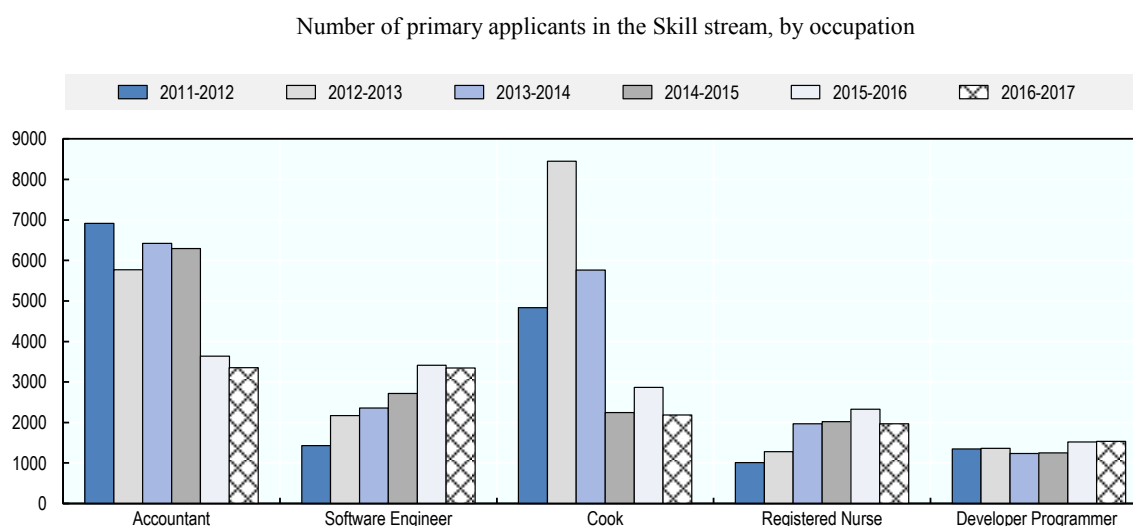
SAA exercises produce useful information which feeds into discussions about current and future skill needs and where the policy priorities should lie. But given the different interests of the various actors involved, as well as differences in methodologies used, it is not surprising that disagreements arise around which skills are needed and what the policy response should be.

Disagreements may arise for several reasons. Reconciling results from different SAA exercises is complicated by differences in their nature and design. With diverse methods, time horizons and assumptions, it can be difficult to compare results, which hinders agreement. Alternatively, an incomplete understanding of the scope and characteristics of SAA exercises can also lead to difficulty in agreeing on results. Finally, stakeholders may simply interpret the same set of SAA findings in multiple ways, leading to disagreements.

As an illustration, the 2016-17 skill shortage research and the former SOL for migration had different objectives, methodologies and time horizons, and as a result, their respective assessments of skill needs sometimes appeared to be at odds. In 2016-17, the top five occupations in the Skill stream for migration, as measured by the number of primary applicants in the stream, were accountants, software engineers, cooks, registered nurses and developer programmers (Figure 4.3). Each of these occupations appeared on the former SOL (developed by DET). As part of its skill shortage research, the (former) Department of Employment assessed accountants, registered nurses and developer programmers in 2016-17 (it did not assess software engineers or cooks in that year). None of these three assessed occupations were considered by Jobs and Small Business to be in shortage in Australia in 2016-17, despite being on the former SOL.¹

An important driver behind these seemingly opposing findings is a difference in time horizons and objectives. The former Skilled Occupation List (SOL) (and now the MLTSSL) outlines those occupations which are of high value to the economy with a long training lead time, and which will assist in meeting Australia's medium and long-term skills needs. By contrast, the Jobs and Small Business' National Skill Shortage list puts more emphasis on identifying immediate skill needs.

Figure 4.3. Top five occupations through the Skill stream, last five years



Source: “2016-2017 Migration Programme Report,” Department of Immigration and Border Protection, Australian Government.

Regarding the supply of accountants, Jobs and Small Business found little evidence that employers have difficulty attracting applicants for their accountant vacancies – on the contrary, over half of employers attracted 40 or more applicants. However, many degree-qualified applicants were considered by employers to be unsuitable for their vacancy for reasons including inadequate or non-relevant experience or poor communication skills. The Jobs and Small Business' occupational report for accountants noted that “there is some evidence to suggest that international students in particular have difficulty finding entry level positions once they finish their degrees.”

Similarly, results from the Department of Health's supply and demand modelling of health professionals and the Jobs and Small Business' skill shortage research may appear at odds, largely owing to differences in methodology and time horizon. The Jobs and

Small Business' occupational report for nurses notes that the supply of nurses has increased in recent years, with nursing graduate numbers at historically high levels. That said, it concedes that pockets of shortages of registered nurses are evident in certain regions, including the Northern Territory and Victoria. Unlike the Jobs and Small Business' analysis, the Department of Health's (DoH) supply and demand modelling has a forward-looking time horizon. The DoH modelling work showed no significant divergence between the demand and supply of nurses until 2016, after which, "in the medium to long-term Australia's demand for nurses will significantly exceed supply, with a projected shortfall of approximately 85 000 nurses by 2025, and 123 000 nurses by 2030 under current settings." (Health Workforce Australia, 2014^[7])

4.6.2. Difficulty agreeing on the appropriate policy response

Even when a consensus has been reached about skill needs, it can be difficult to achieve agreement on what the policy response should be. For example, the recent reforms to abolish the temporary work skilled (457) visa and reduce the list of eligible skilled occupations for migration were made with the intention to better align skill supply and skill demand, while preserving the labour market outcomes of skilled Australians. However, based on OECD consultations, the reform was met with opposition among social partners who worried it would reduce needed flexibility in the labour market. In a similar way, trade unions often argue that more emphasis should be placed on transversal skills in VET training packages, to promote a workforce that is more resilient to changing economic conditions. On the other hand, employer groups who lead the development and review of VET training packages may see a more pressing need for job-specific skills that can help to address skill shortages.

Most often, such disagreements are a result of the differing or even opposing interests across different stakeholders. They can also reflect the characteristics of social dialogue in a country more generally. They may also come about as a result of a lack of political will to search for consensus, or as a result of the distribution of responsibilities in skills policy.

This is the case in Australia, as in France, Canada, Switzerland and Canada, where the distribution of responsibilities across many actors can make it difficult to come to a consensus when it comes to skills policy. Many actors are involved in the development of skill policy, making it difficult for one actor to take a leading role unless this has been specifically agreed among all parties. It can be particularly difficult in Australia to align the national and local policy responses, as economic conditions vary so much across regions and highly-disaggregated data is not available.

4.6.3. Mechanisms to facilitate consensus

Countries employ a variety of mechanisms to facilitate consensus-building and to overcome conflict in agreeing on skill needs and the appropriate policy response. These include involving stakeholders in workshops and conferences about SAA exercises; having an independent organisation conduct SAA exercises and coordinate the use of their results in policy; and securing strong political leadership which sets a national vision for skills policy, including measurable targets.

More efforts may be needed to facilitate comparisons between exercises since inconsistency between SAA exercises (e.g. use of different data, methods, time frames and assumptions) can yield conflicting results and impede the building of consensus. Other OECD countries have introduced workshops to encourage such comparisons, and

to clarify the scope of exercises among actors. For example, in response to employers having expressed perplexities about official forecasts, the Canadian Department of Employment and Social Development (ESDC) engaged with stakeholders directly and in ad-hoc workshops to provide a better understanding of the forecasts and what they can and cannot do. In Norway, narrowly-themed conferences promote consensus reaching about skill needs, as was the case of a conference on skills needs in the engineering sector and another one on skills brought by immigrant workers.

Box 4.4. Australian Workforce and Productivity Agency

The **Australian Workforce and Productivity Agency (AWPA)** was an independent statutory body that provided advice to the Australian government on the country's current, emerging and future skills and workforce development needs. It was established in 2012 as a successor to Skills Australia, taking on a broader research agenda and greater role in advising the Australian government on workforce development issues. With an annual budget of AUD 9 million, AWPA carried out a variety of SAA activities: macroeconomic modelling, scenario planning, research into specific sectors, industry engagement and horizontal coordination across federal government agencies. AWPA was dismantled in July 2014 following a change of government. Responsibility for the skills and VET portfolio was transferred first to the Department of Industry and Innovation, and since December 2014, to the Department of Education and Training (DET).

While its recommendations were not enforceable, AWPA played a leadership role in setting a future direction for skills policy in Australia, carrying out considerable work in the anticipation of skill needs. AWPA produced a flagship publication on Australia's national workforce development strategy¹ and numerous reports on workforce development issues at a sectoral level. It also conducted foresight exercises and engaged widely with stakeholders from industry, the education and training sector, state training boards, trade unions, enterprises and not-for-profit organisations.

Source: Townsend, T. (2015), "*The What Works Lab Process*" Report for the Skills and Employment Branch, Employment and Social Development Canada, page 13; Former Australian Workforce and Productivity Agency publication www.education.gov.au.

¹ See for example, Australian Workforce and Productivity Agency (2013), "*Future Focus: 2013 National Workforce Development Strategy*".

As discussed above, trade unions in Australia are engaged through IRCs and the MACSM, but the discussion of SAA results is led by employers. AWPA used to convene state-level experts and social partners – both employer organisations and trade unions – to discuss the findings of SAA exercises but this type of tri-partite discussion about skill needs seems to be largely absent in Australia now.

Having an independent and well-reputed organisation, like the former AWPA, conduct skill assessment and anticipation exercises using a respected methodology is often an asset to facilitating social dialogue about skill needs, as is the case in Belgium (Flanders) and Norway, and in the United Kingdom (Migration Advisory committee). Canada's Future Skills Centre is being designed as an independent research body that will actively involve a wide range of stakeholders in dialogue about skill needs (Box 4.5). In designing

such institutions, consideration must be given to delinking funding of the organisation to political cycles in order to support investments in longer-term analysis and modelling. When the UK Commission for Education and Skills (UKCES) was dismantled during a change in government, for example, responsibility for some of the SAA exercises they undertook were carried over to the Department of Education (e.g. the Employer Skills Survey and the Employer Perspectives Survey) but some SAA exercises were dropped, including the long-term forecasting model “Working Futures.”

Australia could also benefit from stronger leadership in setting policy objectives around skill needs across policy domains. An effective institutional coordination process requires strong political commitment on the part of relevant stakeholders, with clearly-defined policy objectives, priorities and criteria for assessing progress. Australia’s CISC already does a lot to coordinate between the national and the states/territory governments in setting policy objectives for VET. However, these objectives are generally limited to VET policy. Australia could benefit from setting a big picture “vision” of skill policy, which includes clearly-defined policy objectives spanning policy domains and levels of government. The UK has had a string of such national skill policies, including the recent *Post-16 Skills Plan* (2016), which set targets for skills across countries in the UK and across policy domains. A key challenge with setting such national-level targets is that Australia’s federated structure means that responsibilities for education, employment and migration policy are divided between state/territory and national governments. Overcoming this challenge to build a coordinated and big picture vision in regards to skill policy could be tackled through the COAG infrastructure, perhaps by extending participation in CISC to employment and migration ministries.

Another challenge with such national skills policies is that there is a temptation to change them at the start of each new political term, which compromises the country’s ability to measure progress against long-term objectives. Grounding national skill policies on rigorous evaluations and SAA information generated by independent and well-reputed organisations may help to mitigate this tendency towards short-termism in policy planning.

Box 4.5. Canada's Future Skills and Labour Market Information Council

The **Labour Market Information Council (LMIC)** was officially launched in 2017 with the broad mission to empower individuals and policy makers with reliable and timely information about the labour market. The LMIC is a pan-Canadian not-for-profit led by a Board of Directors composed of senior government officials from federal, provincial and territorial governments and Statistics Canada. Priorities are conceived through engagement with the Board, Canadians, partners and stakeholders, notably via its two expert advisory panels. Funding for the LMIC is provided by government for the 2018-20 period. Three goals were set for the inaugural three-year strategic plan: (i) to gather and improve the availability of relevant labour market information, especially as pertaining to local, granular insights; (ii) to undertake high-quality analyses of labour market information, with a view to better understanding the jobs of today and tomorrow; and (iii) to ensure dissemination of labour market information in a manner that addresses the diversity of user needs.

Future Skills was announced in Budget 2017 and reaffirmed in Budget 2018 to support skills development and measurement in Canada and to build a highly-skilled and resilient workforce. It will identify the skills sought by employers now and into the future, explore new and innovative approaches to skills development through co-financing of pilot programmes, and share insights to inform future investments and programming. Working in collaboration with provinces and territories, the private sector, educational institutions, labour and not-for-profit organisations, Future Skills will include

- Future Skills Council to advise on emerging skills and workforce trends, and;
- Future Skills Centre, at arms-length to the government, focusing on developing, testing and rigorously measuring new approaches to skills assessment and development.

LMIC and Future Skills will work closely together to build on each other's respective efforts, mitigate duplication and collaborate in areas of mutual interest.

Source: Labour Market Information Council website (<https://lmic-cimt.ca/strategic-plan.html>); Federal Budget 2018, "Equality and Growth, A Strong Middle Class"; Advisory Council on Economic Growth (February 2017), "Building a Highly Skilled and Resilient Canadian Workforce through the FutureSkillsLab".

4.7. Recommendations

- Explore options to improve the coordination of the development and use of SAA information across levels of government and across policy domains. Consider the applicability of practices employed in other countries: stakeholder workshops to promote an understanding of the scope and comparability of different SAA exercises; assigning an independent organisation to conduct SAA exercises; and/or building a national skill policy which sets targets that span policy domains.
- Consider giving trade unions a more formalised role in discussion about SAA findings. More equal involvement of trade unions in a more tri-partite arrangement could help to balance shorter-term priorities of employers in the development of VET training packages, with longer-term priorities, e.g. the teaching of transversal skills.

Note

¹ While developer programmers were not found to be in shortage, the skills shortage research found a “recruitment difficulty” for senior and/or specialised programmers.

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Getting Skills Right

Australia

The costs of persistent misalignment between the supply and demand for skills are substantial, ranging from lost wages for workers to lower productivity for firms and countries. Addressing skills imbalances has become a pressing priority as OECD governments reflect on the implications of technological progress, digitalisation, demographic change and globalisation for jobs and work organisation. In light of these challenges, the OECD has undertaken new research to shed light on how countries measure changing skill needs while ensuring that employment, training and migration institutions are responsive to the emergence of new skill requirements. The Getting Skills Right in Australia review offers an in-depth analysis of the existing skill assessment and anticipation system in Australia, and makes recommendations for how it could be further improved. In addition to providing a summary of the state of skill imbalances in Australia, the report provides an assessment of practices in the following areas: i) the collection of information on existing and future skill needs; ii) the use of skill needs information to guide policy development in the areas of employment, education and training, and migration; and iii) the effectiveness of governance arrangements in ensuring strong co-ordination among key stakeholders in the collection and use of skill needs information.

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