



PC NEWS



CONTENTS

Reducing the regulatory burden on Australian agriculture	3
Improving education outcomes through evidence-based policy and practice.....	7
Indigenous primary school achievement... .	11
Digital disruption – how should governments respond?	14
Regulation of Australia's marine fisheries and aquaculture.....	18
Australia's productivity performance	22
Commission news	24



The Productivity Commission is the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians.

Chairman Peter Harris

Deputy Chair Karen Chester

Commissioners

Julie Abramson

Ken Baxter

Melinda Cilento

Jonathan Coppell

Robert Fitzgerald (on leave)

Stephen King

Paul Lindwall

Angela MacRae

Richard Spencer

Head of Office

Nina Davidson (Acting)

Executive Managers

Ralph Lattimore, Canberra

Nina Davidson, Melbourne

Principal Adviser Research

Jenny Gordon

Media and Publications

Leonora Nicol (Media Director)

Ph: 02 6240 3239

maps@pc.gov.au

Melbourne Office

Locked Bag 2

Collins Street East

Melbourne VIC 8003

Level 12, 530 Collins Street

Melbourne VIC 3000

Ph: 03 9653 2100

Fax: 03 9653 2199

Canberra Office

PO Box 1428

Canberra City ACT 2601

Level 2, 15 Moore Street

Canberra City ACT 2600

Ph: 02 6240 3200

Fax: 02 6240 3399

Website www.pc.gov.au

Email pcnews@pc.gov.au

Twitter @ozprodcom

Requests to be placed on the mailing list for PC News are welcome. Contact the Media and Publications Unit (03 9653 2244 or email maps@pc.gov.au). Copies are also available on the Commission's website.

Latest releases

10 November 2016

Increasing Australia's Future Prosperity

Discussion Paper (5 year Productivity Review)

Data Availability and Use

Draft Report

Productivity Commission Annual Report 2015-16

Introducing Competition and Informed User Choice into Human Services:

Identifying Sectors for Reform

Preliminary Findings Report

Superannuation: Alternative Default Models

Issues Paper

National Partnership Agreement on Essential Vaccines 2015-2016

Performance Report

Migrant Intake into Australia

Inquiry Report

National Education Evidence Base

Draft Report

Marine Fisheries and Aquaculture

Draft Report

How to Assess the Competitiveness and Efficiency of the Superannuation System

Draft Report

A Rationale for Developing a Linked Employer-Employee Dataset for Policy Research

Staff Research Note

Trade and Assistance Review 2014-15

Regulation of Agriculture

Draft Report

Consumer Law Enforcement and Administration

Issues Paper

Digital Disruption: What Do Governments Need to Do?

Commission Research Paper

Indigenous Primary School Achievement

Commission Research Paper

Telecommunications Universal Service Obligation

Issues Paper

PC Productivity Update 2016

All publications can be downloaded from the Commission's website:
www.pc.gov.au



Reducing the regulatory burden on Australian agriculture

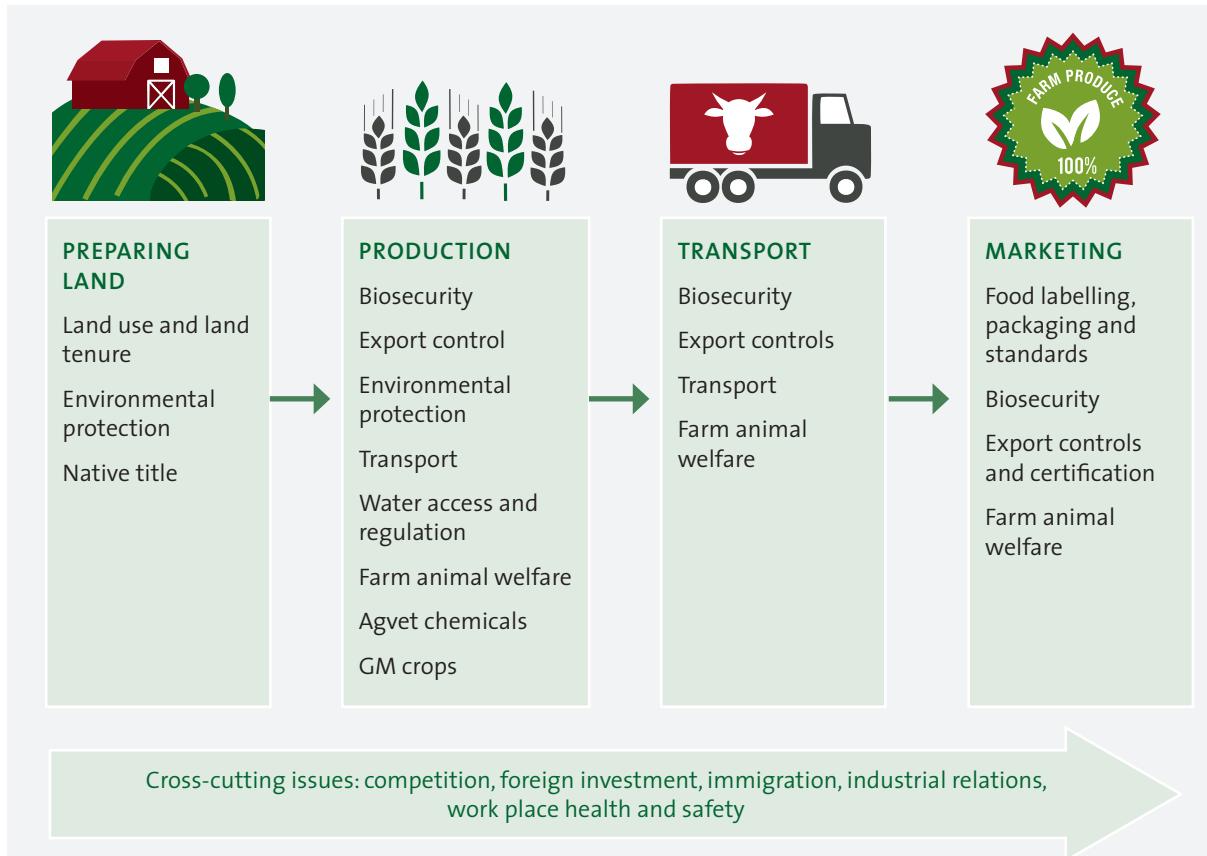
A Commission draft report released in July makes recommendations on ways to reduce unnecessary regulatory burdens on farm businesses.

Farm businesses in Australia are subject to a vast and complex array of regulations. At each stage of the agricultural supply chain there are regulations in place, including for land acquisition and preparation, capital and labour use, transport of inputs and outputs, marketing and product sales (figure 1). The number and complexity of regulations affecting farm businesses means that the cumulative burden of regulation on farmers is substantial. One of Australia's largest beef producers, for example, estimated that it complies with, or is affected by, over 300 Acts, regulations and codes.

Farmers acknowledged the benefits, not just the costs, of regulation

The need for regulation is not disputed by farm businesses. In fact, some regulations, such as biosecurity and food safety regulations, were highlighted by participants in the Commission's inquiry as providing clear benefits to Australian farmers. Rather, Australian farmers want 'better' (or less burdensome) regulation.

Figure 1: Farm businesses face regulations at every stage of the supply chain



Why regulatory burden matters

Regulatory burden matters because it can weigh heavily on farm businesses and the agricultural sector's productivity and competitiveness. For farm businesses, reducing the regulatory burden can mean less time spent dealing with regulation and more time spent on productivity-enhancing activities. For the community, it can mean lower prices (because farmers face lower costs) and fewer taxpayer dollars spent on regulation.

Improving the efficiency and effectiveness of the regulatory environment is important for all sectors of the Australian economy, but particularly for the agriculture sector given its high dependence on international markets – about two-thirds of Australia's agricultural production is exported. Also, most Australian farms are small businesses, and regulatory burdens can have a significant and disproportionate impact on small businesses.

The Commission's approach

To identify regulations that impose unnecessary burdens on the agriculture sector, the Commission asked four questions:

- What are the objectives of the regulation?
- Are the objectives of the regulation clear and relevant (that is, do the objectives address an economic, social or environmental problem)?
- Does the regulation achieve these objectives (is it effective)?
- Could the costs of the regulation be reduced or the benefits increased (is there a more efficient way to achieve the same objectives)?

Some questionable, unclear or conflicting regulatory objectives

The Commission found that some regulations lack a sound policy justification. Examples include:

- restrictions on the use of land held under pastoral lease arrangements
- state bans on cultivating genetically modified crops
- barriers to entry for foreign shipping providers
- statutory marketing legislation relating to rice in New South Wales and sugar in Queensland.

The Commission also found that some regulations and regulatory systems need reforming so they can more fully achieve their objectives.

- Native vegetation and biodiversity conservation regulations need to be changed so that risks and impacts are considered at a relevant landscape-wide scale (not just at the level of the individual property).
- The process for setting standards for farm animal welfare could be improved by applying scientific principles and building the evidence base on community expectations.
- International evidence could be put to greater use in assessing agricultural and veterinary (agvet) chemicals, reducing the time and cost taken to register agvet chemicals.

In addition, inconsistent regulatory requirements across jurisdictions make it difficult for farmers to understand their obligations and add to the cost of doing business. A more consistent approach would improve outcomes in the areas of heavy vehicle regulation and road access, and the use of agvet chemicals.

Governments could also reduce the regulatory burden on farm businesses by:

- improving their consultation and engagement practices – there is scope to better support landholders to understand environmental regulations, and to reduce duplicative and unnecessary



information gathering regarding water management by farm businesses

- doing more to coordinate their actions, both between agencies and between governments
- ensuring that good regulatory impact assessment practices are used as an analytical tool to support quality regulation making, not as a legitimising tool or compliance exercise.

Summary of key draft findings and recommendations*

Environmental regulation

Farmers often bear the costs of conserving species and ecosystems for the benefit of the wider community. Regulators can also be narrowly focused on environmental protection, and fail to adequately consider the social or economic effects of their regulations.

Native vegetation and biodiversity conservation regulations should be risk based and consider economic, social and environmental factors. Better use could also be made of market-based approaches – if governments were required to buy environmental services from landholders, this would provide a discipline on government demand for conservation on private land.

Regulation of farm animal welfare

Farm animal welfare is a policy area that is expected to evolve over time as community attitudes change and as new scientific evidence becomes available. The policy challenge is to have arrangements in place that can transparently deliver balanced outcomes over time.

There is scope for greater rigour and balance in the process of developing national farm animal welfare standards and guidelines. The Commission recommends the establishment of an independent body tasked with developing national standards and guidelines. The body could also be responsible for regularly providing an independent assessment of the effectiveness of monitoring and enforcement activities, and assessing the performance of the live export regulatory system.

Key draft recommendations and findings continued on next page >

Summary of key draft findings and recommendations* ...continued

Genetically modified crops

There is no economic or health and safety justification for banning the cultivation of genetically modified (GM) crops. The successful coexistence of GM and non-GM crops is possible and has been demonstrated both in Australia and overseas. This means that if there are any market access or trade benefits (including price premiums for non-GM products), they would be achieved regardless of whether GM crops are in the market. Removal of the bans should be accompanied by the provision of accurate information to the community about the risks and benefits of GM technology and the gene technology regulatory framework in Australia.

Foreign investment

Foreign investment has been, and will continue to be, important for improving the competitiveness and productivity of the Australian agriculture sector. However, many Australians are concerned about foreign investment, particularly foreign investment in agriculture. The Treasurer's prior approval is required for foreign acquisitions of agricultural businesses and land valued above prescribed thresholds. In 2015, the Australian Government significantly lowered these thresholds for agribusinesses (from \$252 million to \$55 million) and agricultural land (to \$15 million, based on cumulative land holdings). The Australian Government also established a national register of foreign ownership of agricultural land and introduced application fees for all foreign investment proposals.

The lower screening thresholds (combined with different thresholds depending on the investor's country of origin) will increase the cost and complexity of investing in Australian agriculture. There is a risk that this will deter foreign investment in the sector without offsetting public benefits.

It is unclear what additional public benefits will be derived from the lower thresholds, particularly given that other measures (such as the Register of Foreign Ownership of Agricultural Land) are in place to increase transparency and public confidence about foreign investment in Australian agriculture. Lowering the screening thresholds is unlikely to be the most effective or efficient way of addressing community concerns about foreign investment in agriculture, particularly as some concerns appear to be misplaced and based on a misunderstanding of the effects of foreign investment.

The Australian Government should raise the screening thresholds for agricultural land and agribusinesses to \$252 million — in line with the thresholds that applied to agriculture prior to 2015, and those that currently apply to business acquisitions and developed commercial land for investors from most countries.

Competition

The Commission recommends that remaining statutory marketing arrangements (which constrain competition and productivity) should be removed — this includes repealing the New South Wales *Rice Marketing Act (1983)* and the amendments made by the *Queensland Sugar Industry (Real Choice in Marketing) Amendment Act 2015*, and deregulating the Western Australian potato market.

* A complete list of the Commissions findings and recommendations is available in the overview of the draft report.

Regulation of Agriculture

- > Draft Report
- > Released 21 July 2016.
- > The Inquiry Report is due to be provided to the Australian Government by 15 November 2016.



Improving education outcomes through evidence-based policy and practice

A new Commission draft report recommends improvements to the national education evidence base to enhance policy development and outcomes in school and early childhood education.

Australian governments have committed to goals emphasising the importance of excellence and equity in the education system. Like other developed nations, Australia has sought to achieve these goals through increased investment in education, and by implementing reforms focused on monitoring outcomes, performance benchmarking and reporting against national standards. However, Australian students' performance on national and international assessments has stalled or, in some cases, declined.

Although resourcing and accountability matter, there is growing consensus that they alone are insufficient to improve outcomes.

In March 2016, the Australian Government asked the Commission to investigate improving the national education evidence base to better inform policy development and improve education outcomes in early childhood and school education.

In its draft report, released in September 2016, the Commission argues that the path to better education outcomes lies in identifying and evaluating the policies, programs and teaching practices that work best, and applying this evidence across the nation's early childhood and school education systems.

What is a national education evidence base?

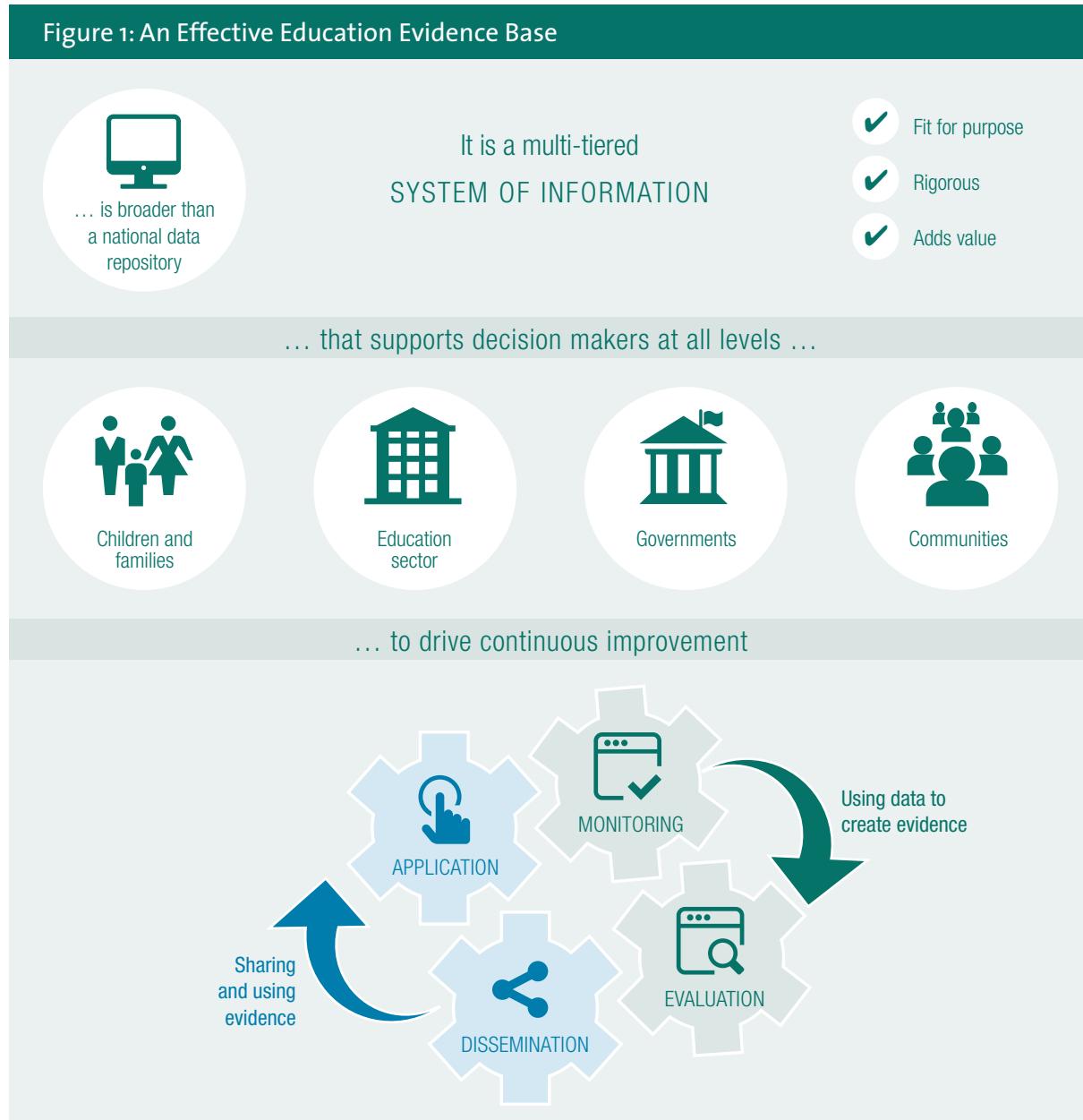
An education evidence base is more than an accumulation of data in a single collection or data ‘warehouse’ (figure 1). It should:

- meet the diverse needs of decision makers throughout the education system
- provide high-quality data and evidence to inform decisions
- drive improved student achievement through performance monitoring, evaluation of what works best, dissemination of evidence and application of that evidence
- generate benefits in excess of the costs incurred in collecting and processing data and in creating, sharing and applying evidence.

The national education evidence base should have two capabilities:

- A ‘top-down’ capability, for monitoring, benchmarking and assessing performance, as well as promoting transparency and accountability, and informing resource allocation.
- A ‘bottom-up’ capability that evaluates the effectiveness of education policies, programs and teaching practices, enabling systematic identification of ways to improve student achievement. Bottom-up evaluation includes prioritising, developing, testing, reporting and applying what works best in education.

Figure 1: An Effective Education Evidence Base





Action is required to improve evidence creation

A lot of data are collected to monitor and report on the outcomes of students, schools and early childhood education. But there is relatively little high-quality evidence about which policies, programs and teaching practices work best in Australia (and few systematic processes to evaluate the initiatives that are in place). This is the largest gap in the Australian education evidence base. To address it, we need to build our bottom-up capability.

The Commission recognises that teachers have the greatest impact on student performance, after accounting for the characteristics of students themselves. Looking within the classroom, particularly at teaching practices, can improve outcomes across the education sector. We also know there are some schools whose students perform better than expected compared with similar schools. Governments should be lifting the bonnet on those schools to find out what they are doing, and carefully evaluating whether their methods can be applied systematically across other schools.

Ideally, evaluations of what works best should use rigorous research techniques, particularly trials run in classrooms and schools that compare the outcomes for children taught using a certain program or practice with those of similar children who don't receive that intervention.

Government leadership is needed

In Australia's federated system, responsibility for the funding and delivery of early childhood and school education is spread between the Australian, state and territory governments. All governments must take a shared and co-operative approach to implementing a high-quality and relevant education evidence base, particularly focussing on the bottom-up capability, by:

- putting in place a new Education Agreement (building on previous agreements) that defines the objectives of, and framework for, commissioning and applying evaluative research about what works best

- assigning an institution to be responsible for the implementation of the evaluative research framework, which is accountable to, and funded by, all governments
- specifying the assigned institution governance arrangements, functions and operations.

The institution would ensure that:

- national research priorities are developed
- high-quality research is commissioned using rigorous processes, including provision of guidelines to applicants about the nature of research that will be considered
- research quality is verified
- capacity in high-quality education research is fostered.

To distil and communicate the findings of this research, a central repository of trusted, high-quality evidence, including resources to support practitioners, is needed.

But simply creating evidence and making it available to education professionals is not enough. Evidence only leads to improved education outcomes if it is used to inform decision making and changes the behaviour of practitioners. Research also needs to focus on how evidence can most effectively be translated into improvements in practice.

There is also scope to improve the collection and use of existing data

Better use could also be made of the data that are already collected. Access to data for research in the public interest could be improved through changes to privacy protections, and if those providing data were asked to consent to its use for research purposes when data are collected. Smoother processes for linking information from different datasets would also help, and the use of linked data could reduce the costs of evaluations of what works best.

Schools and early childhood education face a serious burden in collecting data, which could be reduced by better use of existing data and more cost-effective collection. Use of fit-for-purpose collections is important. While national data are needed for some monitoring and benchmarking purposes and funding, data from samples of students (which impose a lower collection burden) are sufficient for other purposes. The Commission also recommends that data collection agencies remove duplication in data collection and processing, and that data providers are given plenty of lead time to update their systems when changes to existing collections need to be made.

Summary of key draft recommendations*

Developing the evidence base

The Australian, state and territory governments should pursue a national policy effort to develop a high-quality and relevant Australian evidence base about what works best to improve school and early childhood education outcomes, including: development of research priorities; commissioning of high-quality education research; adoption of rigorous research quality control processes; dissemination of high-quality evidence; and development of researcher capacity.

The Australian, state and territory governments should task the COAG Education Council to develop a new Education Agreement, which would build on prior agreements and define the:

- objectives, and nature of the research to be undertaken in the bottom-up evaluation of what works
- evidentiary standards or frameworks to be applied, including assessment of cost effectiveness
- requirement for translation of evidence into guidelines accessible by schools, early childhood education and care services and teachers.

Governments should also request the Education Council to assign an institution to be responsible and accountable for implementation of these functions and the evidence base. The assigned institution's governance arrangements, functions and operations should include promoting a culture of using the evidence base by policy makers and educators.

Burden of data collection, privacy and consent

To reduce administration costs and compliance burden, agencies collecting data should only collect fit-for-purpose data (for example, sample data in situations where census data are unnecessary); remove duplication in data collection and processing; and avoid frequent changes to reporting requirements.

The Australian Government should amend the Privacy Act 1998 (Cwlth) to extend arrangements for collection, use or disclosure of personal information without consent in the area of health and medical research to cover public interest research more generally. State and territory governments should seek to have consistent legislation and to establish policies where the onus is on data custodians to share data.

The ACT Government should enact in its privacy law an exception to cover public interest research.

In Western Australia and South Australia where there is not a legislated privacy regime, their privacy arrangements should reflect a similar public interest research exception.

Agencies responsible for education data collections should amend their processes for collecting personal information from parents/guardians to incorporate formal consent and notification procedures regarding the use and disclosure of personal information at the initial point of collection.

Data and data gaps

The agencies that conduct the *Longitudinal Study of Australian Children* and the *Longitudinal Study of Indigenous Children* should be funded to establish new cohorts of children at regular intervals.

In assessing whether to improve the quality of existing education data, governments should examine whether: there is a need to improve the quality of the data so it is fit for purpose; data quality improvements are feasible given the context of data collection; other options are available; and the benefits of improving data quality exceed the costs.

Australian, state and territory governments should support greater use of value-added measures of education outcomes.

* A complete list of recommendations is available in the overview of the draft report.

National Education Evidence Base

> Productivity Commission Draft Report > Released September 2016

> The Inquiry Report is due to be provided to the Australian Government in December 2016.



Indigenous primary school achievement

In a recent self-initiated research project the Commission investigated the factors that contribute to the education achievement of Indigenous primary school students to better understand what might work best to lift achievement among Indigenous students.

Despite a long history of policy attention, there has been a lack of improvement in the literacy and numeracy achievement of Indigenous primary school students. To gain a better understanding, the Commission analysed Indigenous achievement using recently available de-identified data from the Australian Curriculum, Assessment and Reporting Authority (ACARA).

The data contain National Assessment Program – Literacy and Numeracy (NAPLAN) test scores of primary school students, students' demographic characteristics, and information about the schools that students attend. This analysis (the first of its type in Australia) was supplemented by a literature review of what might work best to improve Indigenous students' achievement.

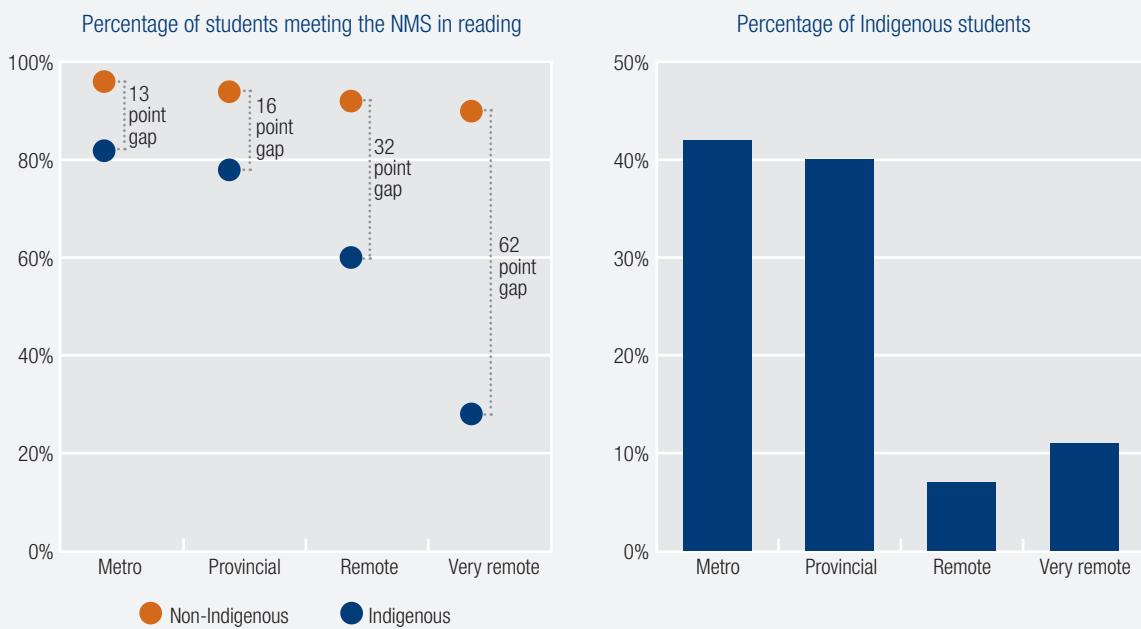
Achievement gaps exist across all levels of remoteness

Indigenous students are both widespread and sparsely concentrated across schools. While Indigenous students make up just 5 per cent of primary school students across Australia, 77 per cent of all schools with primary school students have at least one Indigenous student. Furthermore, half of all Indigenous primary students attend schools where Indigenous students make up less than 15 per cent of total student enrolments.

Analysis of the ACARA data shows that Indigenous primary school students are more likely to record lower NAPLAN scores, and less likely to record higher scores, than non Indigenous students. Although achievement gaps are greatest in more remote areas, metropolitan and provincial areas account for about 55 per cent of the national gap in reading scores because that is where most Indigenous students (some 80 per cent) attend school. Achievement disparities remain even after other student and school characteristics that are observed in the ACARA data are taken into account.

Figure 1: Gaps in education achievement increase with remoteness, but most Indigenous students do not attend school in remote areas^{a,b}

Year 5, 2014



^a Excludes 1975 Indigenous students (14 per cent) and 16 454 non Indigenous students (6 per cent) who either did not participate in the reading test or had no defined region. ^b 'NMS' is an acronym for national minimum standard.

Source: Commission estimates based on ACARA data (unpublished).

Differences between students explain most of the variation in achievement

The Commission sought to unpack the factors that explain literacy and numeracy achievement for Indigenous and non-Indigenous primary school students. The study first examined how much of the total variation in achievement was explained by student-level and school-level characteristics (both observed and unobserved in the data). It found that differences between students are much more important in explaining variation than differences between schools – differences between students explained at least three quarters of the variation in NAPLAN scores for both Indigenous and non-Indigenous students.

Consistent with past research, the Commission's analysis found that, of the characteristics available in the data, students' own socioeconomic backgrounds explained the largest amount of variation in achievement. Also important was the socioeconomic background of all students at a school. In addition, the average attendance rate of the school and the proportion of Indigenous students in a school's enrolment were both relatively important in explaining achievement for Indigenous students.

Despite these findings, characteristics observed in the ACARA data explained less than one third of the total variation in student achievement. Most of the variation that remains unexplained reflects differences between students, rather than between schools. State and territory data collections contain extra information, such as student health and individual attendance rates, that may be useful in explaining additional variation in achievement. However, these data were not available for the Commission's research.

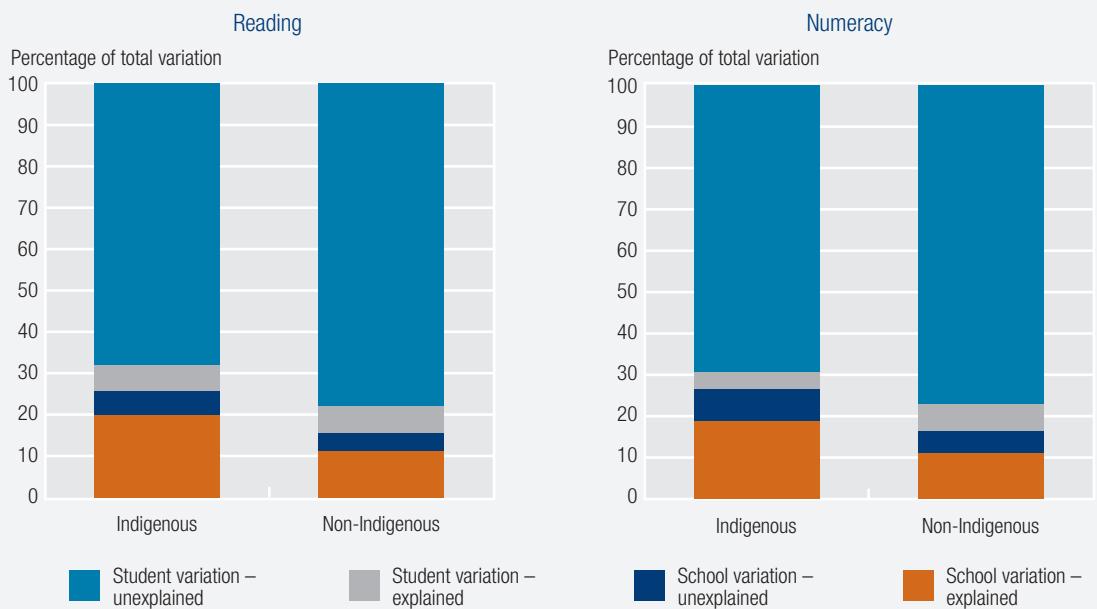
Individualised instruction is key to improving achievement

Findings from the data analysis, which highlight the importance of differences between students, mesh with the broader education literature. The literature emphasises that students have different learning needs that are not readily categorised according to demographic characteristics. The key to improving achievement, for both Indigenous and non-Indigenous students, is individualised instruction.

Importantly, teachers may need to take certain characteristics into account to effectively individualise instruction for Indigenous students. The data

Figure 2: Student-level characteristics explain most of the total variation in achievement^a

Reading and numeracy, by Indigenous status (Year 5, 2013 and 2014 pooled)



^a Explained student or school level variation is attributable to characteristics observed within the ACARA data. Unexplained variation is associated with unobserved characteristics.

Source: Commission estimates based on ACARA data (unpublished).

analysis shows that achievement gaps between Indigenous and non-Indigenous students are partly due to differences in characteristics that are not observed in the ACARA data. Possible explanations from the literature include the effects of: lower rates of individual school attendance at the student level; speaking Aboriginal English; and lower expectations of Indigenous students. The evidence suggests that a culture of high expectations in schools; strong student-teacher, and community, relationships; and recognition and support for Indigenous culture are particularly important to Indigenous students' achievement. These need to be underpinned by strong school leadership.

Policy must be informed by context and evidence

Approaches to closing the gap must seek to improve the achievement of Indigenous students in metropolitan and provincial areas, as well as in remote and very remote areas, and across all states and territories. Policy development should also take into account the observation that many Indigenous students

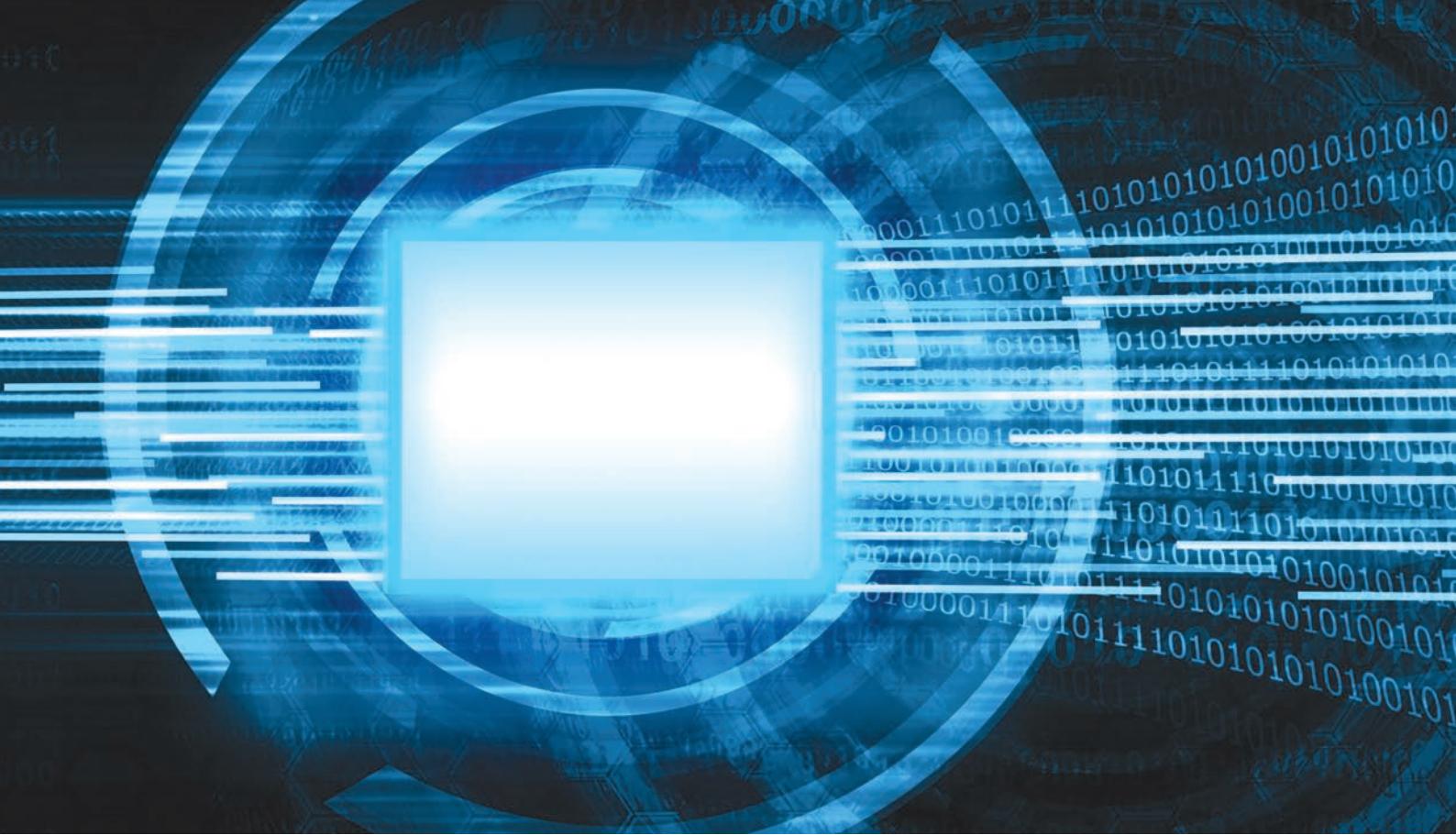
attend schools with few other Indigenous students. Arguably, quality teaching will be especially critical to these students in the absence of some forms of support better suited to students in schools with larger Indigenous enrolments (such as Indigenous education workers).

A better evidence base and understanding of how to raise the literacy and numeracy achievement of Indigenous students is needed to improve policy outcomes. Improving access to data for research purposes is one method that could help build the evidence base, and this is a subject of the Commission's current inquiry into the national education evidence base.

The data analysis also suggests that Indigenous students at some schools perform considerably better than expected, given the available data on their characteristics and those of their schools. High-achieving schools such as these should be systematically and publically evaluated to shed light, in a cost effective way, on what works best to lift the achievement of Indigenous students. The Commission found that such systematic and public evaluations are currently few and far between.

Indigenous Primary School Achievement

> Commission Research Paper > Released June 2016



Digital disruption – how should governments respond?

Digital technologies can have significant impacts on markets and competition, workers, households, and society. Many of these effects should be productivity enhancing; but some may result in economic dislocation. A Commission Research Paper examines how governments should respond.

With rapid advances in computing power, connectivity, mobility, and data storage capacity over the last few decades, digital technologies offer opportunities for higher productivity and improvements in living standards. But they may also result in dislocation of labour and capital, and contribute to higher inequality. Government can influence the adoption of new technologies and how these technologies affect workers, firms, society and the way governments themselves operate. A Productivity Commission Research Paper, ‘Digital Disruption: What Do Governments Need To Do?’, examines the role governments can play in enabling, regulating, and addressing risks posed by the new digital technologies.

What is digital disruption?

The Commission defines disruptive technologies as those technologies that drive substantial change across the economy for many firms, households or workers, with impacts that impose significant costs of adjustment as they make capital obsolete and leave some workers significantly underutilized for some time.

New technologies offer opportunities for the creation of innovative businesses, a greater range or improved quality of products, and new ways for governments to address policy problems. But sometimes firms do not or cannot adapt because of short-sightedness, economic considerations (such



as locked-in production methods) or unduly burdensome regulation. This means existing markets get disrupted. Consumers win, while existing firms have to adjust their business models, or change business, to survive. For example:

- Netflix and other digital streaming services have rendered the video store obsolete by offering in-home entertainment delivery, along with better selections and guides on what consumers might like.
- Uber competes with taxi services, through lower prices, ease of booking and payment, and the ability to track arrival times.

New technologies have altered existing modes of production and consumption throughout history, bringing improvements in productivity, better living standards, and higher wages for workers as they share in the productivity gains. Although ICT improvements boosted productivity growth in Australia in the 1990s, further advances in digital technologies have yet to yield measurable productivity gains.

A range of digital and technological developments are likely to be ‘disruptive’

Digital intermediaries: platforms, such as Uber, Airbnb, Freelancer, Airtasker, eBay and Seek offer functionalities with low transaction costs and reduced information asymmetries. Some platforms (for example, Airbnb) facilitate greater utilisation of household and other assets.

Advanced manufacturing: the combination of new materials and digitally advanced design and production methods – including computer-aided design, 3D printing, advanced robotics and the application of the ‘internet of things’. This has blurred the traditional distinction between the manufacturing and services sectors, increasing the demand for workers with relevant STEM skills, and reducing the demand for unskilled labour.

Transport technologies: sensor technologies that allow for autonomous, semi-autonomous and remotely operated vehicles and aircraft have the potential to change the delivery of transport services and the use of transport infrastructure.

Energy technologies: advances in information and communication technology combined with distributed energy generation (notably solar and wind) and improved storage technologies have implications for centralised energy transmission and distribution networks, and associated regulatory frameworks.

Digitally-enabled business models

Digital platforms support leaner business models by reducing the transaction costs of outsourcing parts of the production chain. For example, a firm can outsource market research, design, or component manufacturing, assembly, distribution, and marketing. This has always been the case, but digital platforms reduce the transaction costs of finding reliable suppliers of these services. This trend may see a lower share of economy-wide physical capital and employment in very large firms.

Digital technologies create new sources of market power

Digital technologies display characteristics that have been described as ‘weird and wonderful economics’. In contrast to previous waves of technological innovation:

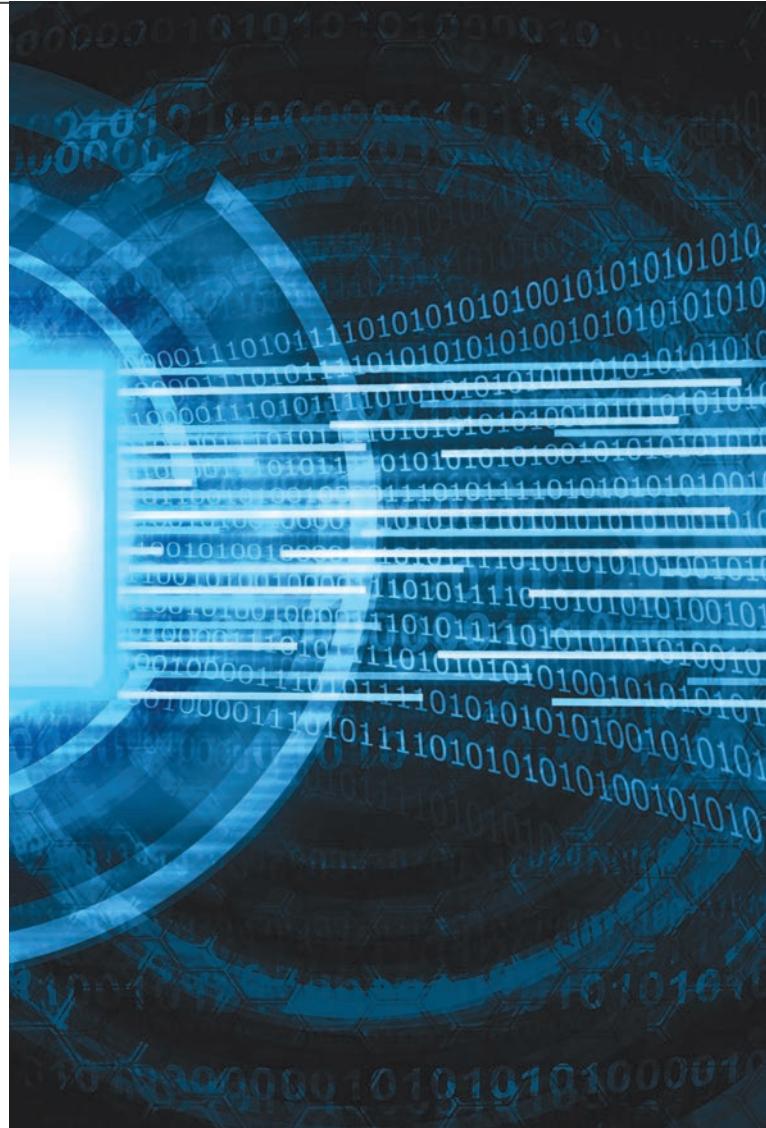
- Digital products can be replicated at little, if any, cost, offering huge economies of scale.
- Digital platforms, such as Google, have network features in that they become more valuable to users (searchers, in the case of Google) as the platform becomes more widely used. This is because the information provided by users feeds back into the platform, providing a better product.
- The data generated by digital transactions and by sensor technologies can become a major resource. For example, Facebook use their data to target advertising to users more likely to purchase the advertised product.

While these characteristics should boost productivity growth, they can also create new sources of market power. Control over networks and data can reduce competition by providing new ways for firms to restrict market entry and extract rent from customers. Government should monitor the use of this market power to ensure that it does not become entrenched. New regulatory tools may be needed – for example, aspects of third party access regimes may be a relevant approach. Setting standards to ensure technologies are interoperable would enhance opportunities for new firms and reduce the market power that comes with proprietary standards (that is, specifications for hardware or software controlled by one company, that can only be used under licence).

Regulation should facilitate innovation

The Commission paper argues that regulators should opt to allow new products and business models unless the risks posed are apparent and cannot be managed by current regulation. Outcomes should be regulated, rather than inputs or technologies, as this provides greater scope for firms to innovate. For example, regulations governing short-term rental platforms, such as Airbnb, should focus on managing any impacts on neighbours, rather than prescribing where such a service can and cannot be provided.

Governments need to ensure that redress is available as an effective deterrent to poor behavior by market participants. Generic regulation, such as consumer protection, may offer better protection from



defective products than mandating detailed technical specifications.

The two-way flow of information in the digital market place, as well as the speed of feedback, imposes discipline on both sellers and buyers to behave honestly. More information for consumers is particularly important in markets where purchases are less frequent, such as consumer durables or product repair services. In some product and service markets, government should shift the regulatory focus from product compliance to ensuring that the product information on comparison platforms is reliable.

Assisting labour force adjustment

Digital technologies such as robotics, automation, and machine learning, will replace a number of functions currently undertaken by workers. There are some alarming estimates that 9 to 40 per cent of existing jobs may become obsolete. However, there remains considerable uncertainty about the impact of automation on employment.

Improving government service delivery

Governments have been relatively slow to adopt digital technologies. There is considerable scope for governments to use the new technologies to improve processes:

- digital technologies can make regulation less burdensome and more efficient, and improve compliance monitoring
- automation and integration of human service delivery could reduce costs, allow better targeting of services, and facilitate greater consumer choice
- use of remote monitoring, such as through embedded sensors, could improve provision of government services, including better planning, management and funding of public infrastructure.

The fall in the cost of sharing data and communications reduces the justifications for agency silos. More cooperative approaches to service delivery and more efficient contract management are potential sources of productivity improvement.

The opportunities for government to make a difference from many small changes in response to digital technologies are large. Some changes are being embraced, such as the NSW and ACT governments' supportive response to regulating Uber. Others have yet to be pursued. The opportunities provided by a digital world are considerable – there is much governments can do to realise them.

Disruptive technologies may increase wage inequality, arising from a widening gap in the productivity performance of firms (and the corresponding returns to labour) and from higher wages for those with talents and skills in short supply. Trends towards a concentration of income growth at the top end of the labour market pose some risk to growth in demand, which is needed to drive investment and employment. Government needs to consider how to maintain demand growth where markets deliver growing income inequality.

While government investment in education and training can assist workers to acquire new skills required for the digital economy, simply increasing the share of STEM (science, technology, engineering and mathematics) graduates is unlikely to resolve the low rates of adoption of digital technologies by firms. Communication and problem-solving skills are also needed, and a focus on life-long learning as the pace of change means skills are likely to become redundant more quickly.

The social safety net may also need fine tuning to support labour force adjustment. To the extent that firms move to very lean production models they will hire workers only as needed. Platforms – such as Freelancer, Airtasker and 99designs – will facilitate

on-demand or 'gig' employment. While some people will use these employment platforms to earn extra income, the platforms also offer a new business model for contractors and the self-employed. This model provides considerable flexibility in work hours, but comes at some risk to income security. This may not suit all workers, and some may struggle to attain a full-time employment-equivalent income. Governments will need to pay attention to social safety nets and workplace relations law, should 'gig' work become widespread.

Protecting privacy and enhancing security

The pervasive nature of sensors, internet-linked products and online transactions, and the capacity of firms to collect and analyse data, and of data brokers to combine data for on-selling, raise many questions about the protection of privacy. They also raise questions about what control individuals have over the data collected about them. These, and related issues, are examined in the Commission's current inquiry into Data Availability and Use. The networked nature of infrastructure, and the growing value of data assets also make cybersecurity an ever more important concern for government as well as firms.

Digital Disruption: What Do Governments Need to Do?

> Commission Research Paper > Released June 2016



Regulation of Australia's marine fisheries and aquaculture

A Commission draft report argues that better management of Australia's fisheries is essential to ensure their sustainability and value.

Australia's marine environment is a significant asset. There are around 165 commercial wild catch fisheries, which generate around \$1.5 billion in revenue each year. Recreational fishing is a much-loved pastime for millions of Australians. Coastal Indigenous communities have long been users and custodians of Australia's marine environment. And Australia's marine resources provide non-extractive value, such as for the tourism sector.

Effective regulation helps to ensure that fisheries are sustainable and provide maximum value to the community. There is a range of tools in regulators'

and fishery managers' 'tackle boxes' that can be used to achieve fishery policy goals (see figure 1).

An ongoing challenge is ensuring controls over fishing are effective and proportionate given evolving knowledge about the marine environment, and shifts in the level and nature of fishing activity due to factors such as population growth, changes in market drivers, and improvements in technology making it easier to 'land' catch.

The Australian Government asked the Productivity Commission to conduct an inquiry into ways to increase productivity and cut unnecessary and costly

regulation in Australia's fisheries and aquaculture. The inquiry is considering whether there are opportunities to improve fisheries regulations without compromising fishery policy and environmental objectives, including through regulatory simplification, streamlining and ensuring consistency of arrangements across multiple jurisdictions; alternative, more efficient regulatory models; the practices of the various regulators; and removing unnecessary restrictions on competition. The Commission's draft report was released in August 2016.

The draft report finds that Australia's marine fisheries are performing well relative to the rest of the world in terms of sustainability. But the community is not getting the best value out of them.

- Most commercial fisheries are subject to overly prescriptive controls, which stifle innovation and the adoption of more cost-effective fishing practices.
- Most governments do not regularly monitor recreational and Indigenous customary fishing activity. So decisions on where and how much recreational and customary fishers can fish (as well as the

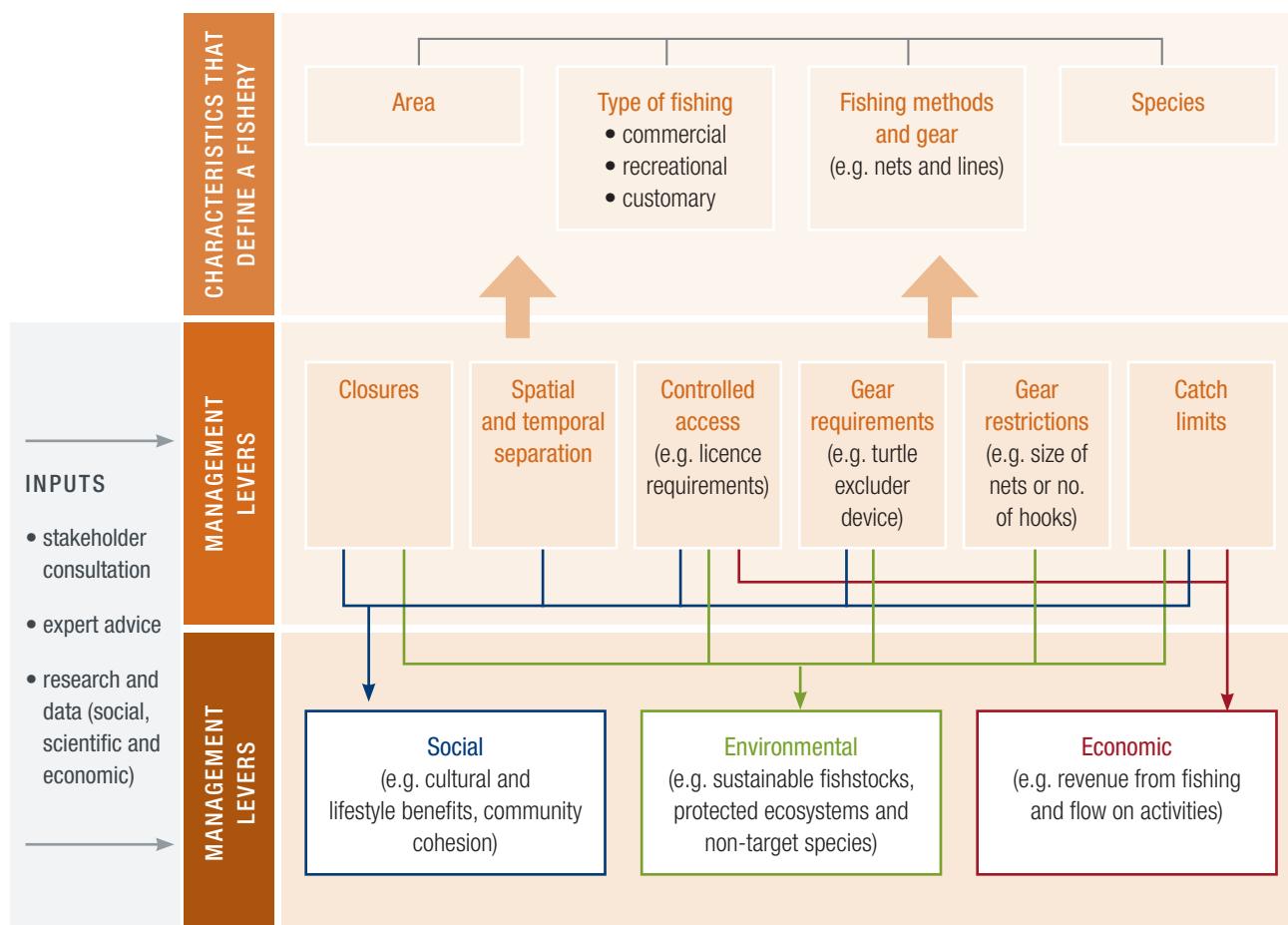
provision of services to these groups) are not being informed by evidence on the collective impact of fishers on stocks or the value of access to different fishing groups.

Determining allocations between fishers

Arrangements for determining access to fisheries when there is competition between the commercial, recreational and/or customary sectors was among the most dominant issues raised by inquiry participants.

The basis for determining who can access fisheries when there is competition is sometimes opaque or of questionable efficiency. Changes to access arrangements should ensure that any reallocation decision in favour of one group at the expense of another increases the overall value gained from the fishery – whether these benefits are economic, social and/or cultural. Governments should give priority to collecting better information on recreational and Indigenous customary fishing to support decision making.

Figure 1: Fisheries Controls



Recreational fishing

The rising sophistication and affordability of scanning technology and vessels has increased recreational fishers' ability to fish further offshore and more intensively. The limited information available indicates that the recreational catch of some species is rivalling or exceeding commercial catch. For example, in Tasmania, the recreational harvest of flathead has been estimated as almost six times the commercial take. And recreational take is putting pressure on some key species, such as southern bluefin tuna.

The impact of recreational fishing is likely to grow with population growth and the utilisation of new, more effective, fishing technologies.

Better counting of the recreational fish take is needed to meet the needs of future generations of fishers and environmental goals, ensure controls over activity are not overly stringent, and that services for fishers are evidence-based.

The Commission's draft report argues that a well-designed licensing system is a key step for better managing and developing recreational fisheries. Licensing provides:

- a basis for monitoring effort and allocating access to fishery resources
- a means to better target information, services and facilities for recreational fishers



- a sampling frame for periodic surveys of catch, gear used, and the value derived from fishing to help ensure that regulations are well-targeted over time
- a means to impose special access conditions where warranted, for example, in relation to high value, at-risk species.

The emphasis should be on a low-cost licence with high coverage rates to support better management, and not revenue raising per se.

Improving commercial sector prospects

The commercial fishing sector's output, value and employment has been in decline for more than a decade. This trend reflects constraints on activity due to past overfishing, but also outmoded fishery management policies, including the use of input controls as the predominant method of constraining catch. This has suppressed productivity improvement and slowed structural adjustment.

Use of individual transferrable quota systems for the management of commercial fisheries (or market-based input controls where this is not technically feasible) will help improve productivity in and prospects for the sector. In addition, moves to rationalise or streamline cross-jurisdictional fisheries and clarify regulatory standards for protected species will help to reduce costs and risks for the sector.

Aquaculture

The Commission considered the impact of regulations on industry growth since its 2004 study, *Assessing Environmental Regulatory Arrangements for Aquaculture*. Regulations have, for the most part, not changed over the past 10 years, but this has not impeded the sector's growth. Australia's aquaculture production has been second only to Norway in value growth terms.

However, the aquaculture industry faces some challenges in securing significant future growth, including finding access to suitable sites given increasing competition for access to coastal land and waters, environmental concerns and access to infrastructure. The creation of aquaculture development zones in Tasmania and South Australia has been helpful in identifying specific locations and reducing the red tape associated with gaining approvals. They warrant consideration by jurisdictions where there are commercially viable prospects for aquaculture development.

Summary of the Commission's key draft recommendations

Institute harvest and allocation strategies

Harvest strategy policies should be developed with regard to the National Guidelines. Allocation policies should seek to promote the best use of fishery resources and provide certainty in relation to the processes involved in determining resource shares.

Regulation should not impede innovation and best practice in commercial fishing

Commercial fisheries should move (as a default position) to transferable quota systems. Commercial fishing regulations should be reviewed regularly to ensure they remain 'fit for purpose' against clearly articulated policy objectives. And government should take into account any impacts of proposed planning and land/marine use developments on the commercial fishing sector.

Reform of shared fisheries a priority

Governments should make the reform of cross-jurisdictional fisheries a collective priority. Immediate priorities for reform include rationalising or streamlining arrangements for the management of southern bluefin tuna, the east coast biological snapper stock and stocks managed in the Commonwealth/New South Wales trawl fisheries.

Accurate and timely information to improve management of the recreational sector

Within the next three years governments should institute licensing systems (with minimal exemptions) for recreational fishing. To support the better targeting and design of fishing controls, governments should undertake regular surveys of actual effort and catch.

Better incorporate Indigenous customary fishing into fisheries management

Customary fishing by Indigenous Australians should be recognised as a sector in its own right in fisheries management regimes. Customary allocations and management controls should be developed in consultation with Indigenous communities. The Indigenous fishing sector should be afforded a priority share of resources in fisheries where catch or effort is limited.

Scope to improve protected species management

Governments should expand the use of explicit mortality limits for fisheries that have a high risk of interaction with threatened, endangered and protected species. Information on interactions with such species should be made publicly available, which will help to inform the adjustment of limits and strengthen accountability for meeting them.

No mandatory country of origin labelling on seafood sold for immediate consumption

Any country of origin labelling for seafood sold for immediate consumption should be based on a voluntary arrangement, as there is no public policy reason for further regulating in this area. The Australian Fish Names standard should also continue to be used on a voluntary basis.

Marine Fisheries and Aquaculture

> Productivity Commission Draft Report > Released August 2016

> The Inquiry Report is due to be provided to the Australian Government in December 2016.



Australia's productivity performance

In 2014-15, Australia's measured productivity increased. But there was considerable variation across industries, with productivity increasing in some and decreasing in others. Although productivity increased, income per person fell, primarily because of the fall in the terms of trade.

The latest issue of the Productivity Commission's Productivity Update was released in April 2016. The Update provides a snapshot of nationwide and industry-specific productivity trends from the most recent ABS productivity statistics.

Productivity measures how efficiently inputs are used to produce outputs in the economy. Higher labour productivity means that more output was produced for each hour worked. In 2014-15, labour productivity increased in the Australian economy as a whole and in the 12-industry 'market sector' (65 per cent of the economy). Productivity statistics focus on the market sector because it is difficult to measure productivity in the 'non-market' sector since much of the output of this sector is not priced by the market. At 1.9 per cent, growth in labour productivity in the market sector was lower than in recent years and below the long-term average of 2.3 per cent since 1973-74.

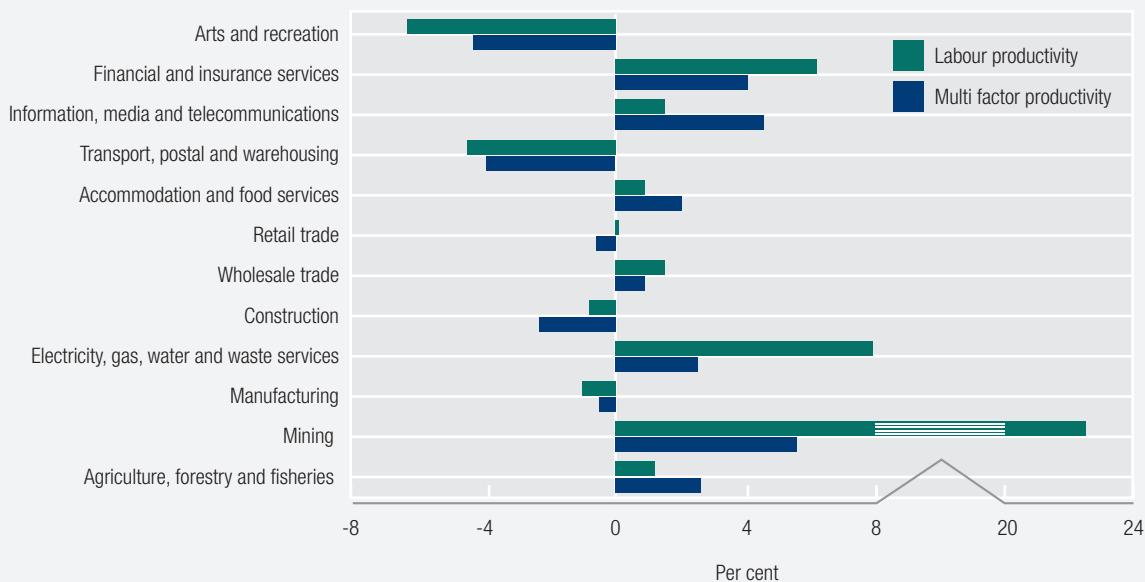
A more comprehensive measure of productivity, multifactor productivity (MFP), measures output relative to total inputs (labour and capital). MFP was higher in 2014-15 than it was in recent years and comparable to the long-term average. Positive MFP growth in the past four years has just offset the decline in MFP experienced since 2007-08.

In 2014-15, MFP growth across industries was mixed. MFP improved in 7 out of the 12 industries in the market sector. Strong MFP growth in the Mining and Utilities industries was particularly notable and had a significant influence on measured MFP growth.

In both industries labour input decreased and capital input increased, resulting in strong labour productivity growth (22 and 8 per cent, respectively). In the Mining industry, this reflects the transition from an investment phase, which involved mainly construction activity, to a production phase, which involves mainly extracting and exporting minerals and energy. The fall in mineral prices has also led to the closure of high cost, marginal mines. Measured MFP growth in Mining was consistently negative in the 2000s. In the Utilities industry, MFP has been falling for more than two decades. These two industries and Agriculture, forestry and fisheries were major contributors to the deterioration in measured MFP in the 2000s.

Higher productivity is essential to higher living standards. In 2014-15, real GDP increased by 2.2 per cent. Growth in real GDP can be attributed to changes in: population (+1.4 per cent); labour productivity (+1.0 per cent); and labour market participation (-0.2 per cent, reflecting a reduction in the number of hours worked per worker). Population growth increases the size of the economy but does not necessarily increase output or income per person. Growth in income per person is determined by changes in labour force participation, labour productivity, the terms of trade and net foreign income. In 2014-15, real gross national income per person fell, due mainly to the fall in the terms of trade. Growth in net foreign income and in labour productivity did not offset the fall in the terms of trade. In the Australian economy, periods of negative income growth have been

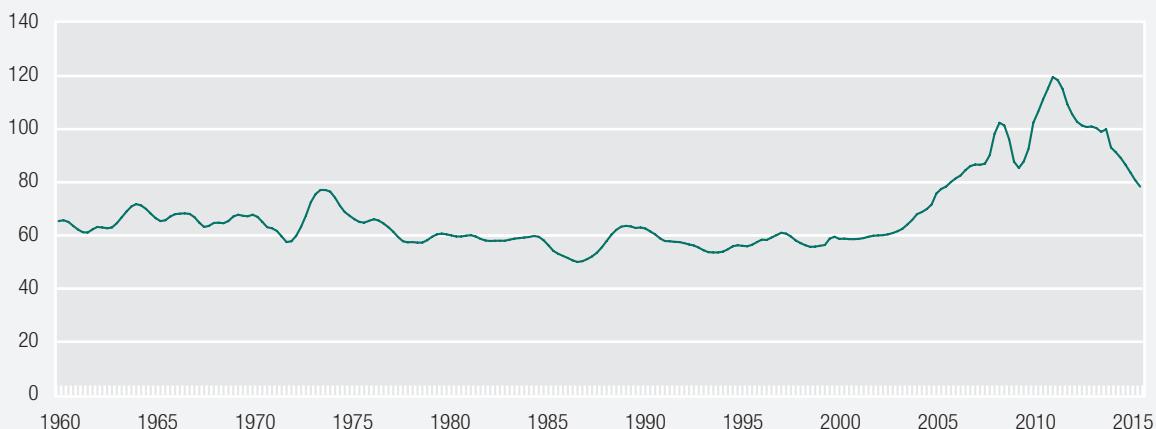
Figure 1: Productivity growth by industry, 2014-15



Data source: Productivity Commission estimates based on ABS (Estimates of Industry Multifactor Productivity, 2014-15, Cat. no. 5260.0.55.002, December 2015).

Figure 2: Terms of trade, 1960 to 2015

100 = March 2014



Data source: ABS National Accounts.

infrequent. Since 2012-13, income per person declined for three consecutive years, which has not happened in the past 50 years. It is worth noting that in 2015 the terms of trade was still about 25 per cent above the average since 1960. If the terms of trade continue to fall, this will put further pressure on Australia's income. In this environment, productivity improvements will be critical to increasing future incomes.

The Productivity Commission is exploring these issues in a recently commenced inquiry into Australia's productivity performance. This Productivity Review will be the first in a regular series, undertaken at five-yearly intervals, to provide an overarching analysis of where Australia stands in terms of its productivity performance, and to develop and prioritise reform options to improve the well being of Australians by supporting greater productivity growth.

PC Productivity Update

> Released April 2016

Commission News

NEW COMMISSIONED PROJECTS

The Australian Government has asked the Productivity Commission to undertake several new projects.

Productivity Review



The Commission is to undertake a 12 month inquiry into Australia's productivity performance and provide recommendations on reform priorities. The Commission is also required to:

- analyse Australia's productivity performance in both the market and non-market sectors, including an assessment of the settings for productive investment in human and physical capital and how they can be improved to lift productivity.
- examine the factors that may have affected productivity growth, including an assessment of the impact of major policy changes, if relevant.

A discussion paper was released on 7 November outlining the scope and context of the inquiry, and a framework for generating new ideas for microeconomic reform in Australia over the coming years.

This inquiry will be the first in a regular series, undertaken at five-yearly intervals, to provide an overarching analysis of where Australia stands in terms of its productivity performance, and to develop and prioritise reform options to improve the well-being of Australians by supporting greater productivity growth.

Human Services



A public inquiry into the increased application of competition, contestability and informed user choice to human services is being undertaken in two stages.

Stage 1: Identifying sectors for reform

A study identifying services within the human services sector that are best suited to the increased application of competition, contestability and informed user choice. A preliminary findings report was released in September 2016, (see pages 3-4) and the study report is expected to be released in November 2016.

Stage 2: Reforms to human services

A public inquiry to recommend ways to apply increased competition, contestability and informed user choice to the human services that were identified in the inquiry's first stage study report. The inquiry report is expected to be handed to the Australian Government in October 2017. An issues paper and draft report will be released during the course of the inquiry – see the Commission's website for details: www.pc.gov.au

Consumer Law Enforcement and Administration

The Australian Government asked the Productivity Commission to undertake a study of the enforcement and administration arrangements underpinning the Australian Consumer Law (ACL). The objective of this study is to examine the effectiveness of the ‘multiple regulator’ model in supporting a single national consumer policy framework and make findings on how this model can be strengthened drawing from the experience of regulators in the period since the ACL commenced in 2011, including the risk-based approach of regulators to enforcement. A draft report is expected to be released in December 2016, and the final study report will be handed to the Australian Government in March 2017.

Telecommunications Universal Service Obligation

A public inquiry into the future direction of a universal service obligation (USO) in the telecommunications market will consider to what extent, in the evolving Australian telecommunications market, Government policies may be required to support universal access to a minimum level of retail telecommunications services. This will involve a consideration of the nature, scope and objectives of a universal service obligation, whether the retail market for relevant services will deliver appropriate outcomes for consumers without Government intervention and, if not, what options should be considered by Government to deliver universal services and the costs and benefits of these interventions.

A draft report is expected to be released in December 2016, and the inquiry report is expected to be handed to the Australian Government in April 2017.

Details of all current commissioned projects appear on page 26 and are available at www.pc.gov.au

The latest issue of the Productivity Commission’s *Trade and Assistance Review* was released in July 2016. The review contains the Commission’s latest estimates of Australian Government assistance to industry.

For 2014-15, the Australian Government provided an estimated \$7.6 billion in net industry assistance. The incidence of assistance varied widely between sectors, with manufacturing receiving an estimated \$7.0 billion in net assistance (largely through tariff protection), primary production receiving an estimated \$1.3 billion (mostly through budgetary assistance), and mining receiving assistance of \$0.3 billion.

Of the eight categories of measured budgetary industry assistance, the two largest are:

- R&D support, which represented around 40 per cent (\$3.1 billion), the majority of which relates to the R&D Tax Incentive
- Industry specific assistance which represented 18 per cent (\$1.3 billion) of measured assistance, and consisted of a range of grants and concessions, such as for the automotive, film, finance and ethanol industries.

The *Trade and Assistance Review 2014-15* also explores effects on the assistance of recent developments such as the Agricultural Competitiveness White Paper, the Defence Industry Statement and submarine procurement, programs to increase renewable energy and reduce carbon emissions, regional business investment programs and efforts targeted at business innovation.

The Review notes that regional industry investment grant programs continue to be introduced in response to the closure of iconic local employers, and calls for evaluation of these programs to ensure they deliver the best outcomes for the affected workers and regions.

Trade and Assistance Review 2014-15 can be downloaded from the Commission’s website: www.pc.gov.au

Current commissioned projects

10 November 2016

Data Availability and Use – *Public Inquiry*

Issues paper: April 2016 Draft report: November 2016 Inquiry report to Government: March 2017	Contact: Miriam Veisman-Apter 03 9653 2214 Email: data.access@pc.gov.au www.pc.gov.au/inquiries/current/data-access
---	---

Education Evidence Base – *Public Inquiry*

Issues paper: April 2016 Draft report September: 2016 Inquiry report to Government: December 2016	Contact: David Garner 03 9653 2227 Email: education.evidence@pc.gov.au www.pc.gov.au/inquiries/current/education-evidence
---	---

Superannuation – *Commissioned Study and Public Inquiry*

Study: Superannuation Competitiveness and Efficiency Issues paper: March 2016 Draft report: August 2016 Study report to Government: November 2016	Contact: Mary Cavar 03 9653 2187 Email: super@pc.gov.au Study website: www.pc.gov.au/inquiries/current/superannuation-competitiveness-efficiency
Public Inquiry: Alternative Default Fund Models Issues paper: September 2016 Draft report: March 2017 Inquiry report to Government: August 2017	Inquiry website: www.pc.gov.au/inquiries/current/superannuation-alternative-default-models

Marine Fisheries and Aquaculture – *Public Inquiry*

Issues paper: February 2016 Draft report: August 2016 Inquiry report to Government: December 2016	Contact: Mark Bryant 02 6240 3314 Email: fisheries.inquiry@pc.gov.au www.pc.gov.au/inquiries/current/fisheries-aquaculture
---	--

Regulation of Agriculture – *Public Inquiry*

Issues paper: December 2015 Draft report: July 2016 Inquiry report to Government: November 2016	Contact: Rosalie McLachlan 02 6240 3327 Email: agriculture@pc.gov.au www.pc.gov.au/inquiries/current/agriculture#report
---	--

Productivity Review – Public Inquiry

Inquiry report: September 2017

Contact: Damian Mullaly 03 9653 2112
Email: productivity.review@pc.gov.au
www.pc.gov.au/inquiries/current/productivity-review

Human Services – Public Inquiry

Stage 1 Study: Identifying Sectors for reform

Issues paper: June 2016

Preliminary findings report: September 2016

Study report: November 2016

Contact: Stewart Turner 03 9653 2218

Email: humanservices@pc.gov.au

www.pc.gov.au/inquiries/current/human-services

Stage 2 Public Inquiry: Reforms to Human Services

Issues paper: To be advised

Draft report: To be advised

Inquiry report to Government: October 2017

Consumer Law Enforcement and Administration – Commissioned Study

Issues paper: July 2016

Draft report: November 2016

Study report to Government March 2017

Contact: Stewart Plain 02 6240 3219

Email: consumer.law@pc.gov.au

www.pc.gov.au/inquiries/current/consumer-law#report

Telecommunications Universal Service Obligation – Public Inquiry

Issues paper: June 2016

Draft report: Dec 2016

Inquiry report to Government April 2017

Contact: Monika Binder 02 6240 3261

Email: telecommunications@pc.gov.au

www.pc.gov.au/inquiries/current/telecommunications#draft

Log on to the Commission's website www.pc.gov.au for full details of all current projects.



Australian Government
Productivity Commission

www.pc.gov.au