

SECURING
AUSTRALIA'S
FUTURE

Australia's Comparative Advantage

1

PROJECT

EXTRACT

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**AUSTRALIAN
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SECURING AUSTRALIA'S FUTURE

Funded by the Australian Research Council and conducted by the four Learned Academies through the Australian Council of Learned Academies for the Australian Chief Scientist and the Commonwealth Science Council. *Securing Australia's Future* delivers evidence-based research and interdisciplinary findings to support policy development in areas of importance to Australia's future.

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Australia's Comparative Advantage

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Australian Academy of the Humanities

Australian Academy of Science

Academy of the Social Sciences in Australia

Australian Academy of Technological
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Australian Academy of Science

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The Academy of the Social Sciences in Australia (ASSA) promotes excellence in the social sciences in Australia and in their contribution to public policy. It coordinates the promotion of research, teaching and advice in the social sciences, promote national and international scholarly cooperation across disciplines and sectors, comment on national needs and priorities in the social sciences and provide advice to government on issues of national importance.

Established in 1971, replacing its parent body the Social Science Research Council of Australia, itself founded in 1942, the academy is an independent, interdisciplinary body of elected Fellows. The Fellows are elected by their peers for their distinguished achievements and exceptional contributions made to the social sciences across 18 disciplines.

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www.assa.edu.au



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www.atse.org.au

By providing a forum that brings together great minds, broad perspectives and knowledge, ACOLA is the nexus for true interdisciplinary cooperation to develop integrated problem solving and cutting edge thinking on key issues for the benefit of Australia.

ACOLA receives Australian Government funding from the Australian Research Council and the Department of Education.

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Project aims

Government has identified the 'opportunities and challenges of an economy in transition' as a key issue for Australia as it faces a rapidly changing global environment. In seeking to 'Secure Australia's Future', this multidisciplinary research project aimed to identify Australia's distinctive strengths and comparative advantages; establish which contexts and policy settings encourage creativity and innovation, adaptability and resilience; and explore the natural, geographical, economic, social, cultural, and scientific attributes and capabilities needed to thrive as a nation.



In commissioning this project in October 2012, the aims of the Office of the Chief Scientist were to address issues including, but not limited to: the characteristics of Australia's environment, biodiversity, location, cultural composition and other distinctive contexts that define the niches in which we can prosper in the global environment; what makes us unique and/or attractive as partners in R&D, industry and innovation; and the advantages we can build on that will assist us in positioning ourselves to enhance productivity, innovation, fairness and equity.



Executive summary

Introduction

Australia is both a lucky and successful nation, but neither luck nor past successes alone can guarantee the future we desire. There is always more to be done. Establishing proper policy foundations now, combined with public support and effective leadership will better place Australia on a trajectory for national strength, post the mining investment boom.

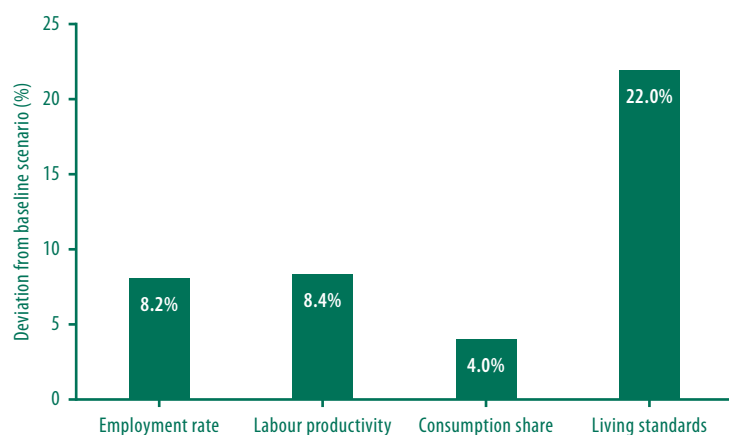
While reform is challenging, the benefits of systematic reform and investment in our future to build Australia's comparative advantage will mean higher living standards, increased equity and greater sustainability.

For instance, economic modelling for this project indicates that a new reform package across institutional change and future investment could add more than 20% to living standards by 2030 over and above trends that would be based on current policy settings only.



The modelling finds that without reform, living standards are likely to rise modestly, taking real annual consumption per head from \$36,000 today to \$45,000 in 2030. However, with a major reform package across investments and structural reforms, annual consumption per head is projected instead to rise to \$55,000, implying a reform dividend to living standards of \$10,000 per head. This reform dividend rises further by 2050, to over \$15,000 per head.

Potential gain in living standards from institutional reform and future investment for 2030



Source: Independent Economics 2015. Living standards is consumption per capita and is a compounded product of the sources of gain specified.

Comparative advantage

The Australian Comparative Advantage (ACA) project has adopted a distinctively broad notion of comparative advantage. The pursuit of comparative advantage is seen here as how to best develop, enhance and use the nation's capabilities.

The project correspondingly maintains that comparative advantage need not be perceived as simply static or sectoral, but can be interpreted as foundational and dynamic—across the nation's politics, law, markets and culture.

Advantage can thus transcend physical endowment and create a base or further foundation that comprises cross-industry advantages, from which individual industries can then rise to establish their comparative advantage in domestic and international markets.

This report focuses on building comparative advantage by getting the basics right, and is a foundational rather than 'niches' approach. The emphasis is on securing the future through sound foundations. How this plays out and is enhanced in sectoral development can then be further analysed for the specific industries. Key sectors are analysed in this report, but for a comprehensive project such as this the emphasis has been upon basic settings and conditions that can have wide benefit across sectors.

The historical legacy and the natural endowments of the country are part of this and an important part, but comparative advantage can also be created for the future. This must encapsulate both strengths that could be enhanced, and weaknesses that should be mitigated, and is the dynamic element in the interpretation of comparative advantage adopted here.

Valuing evidence

As an ACOLA project, this report is principally based upon well-documented evidence. As well as drawing on a general body of knowledge, and international comparisons, a series of studies were commissioned for this project that form the core of its deliberations and findings. In particular several major surveys and a modelling exercise gave original insight and these are available on the ACOLA website.

Other ACOLA reports, especially those in the *Securing Australia's Future* (SAF) series, were also drawn on for this particular ACA report. These are also available on the ACOLA website.

Wherever possible the report uses more than one of these sources too. Indeed 'triangulation' is a distinctive feature of the analysis. Multiple sources of analysis and types of evidence were firmly incorporated in the project's philosophy, drawing on approaches from across sciences and humanities. The project is an inter-disciplinary one.

The project takes the view that evidence-based policy helps reduce the differences between contending views and puts future action on a surer footing. It does not resolve all issues. Interpretations of evidence can differ and values will often compete in assessing the significance of findings. To enter the marketplace of ideas armed with systematic knowledge will provide a surer foundation for informed decisions.

National strengths and weaknesses

Australia does not come to this task without existing strengths. International benchmarking reports and domestic surveys show that Australia's culture and society is fundamentally strong. In recent decades Australia has experienced one of the longer periods of sustained employment and income growth of any advanced country. Its basic institutions have been stable and issues of social equity and environmental sustainability have been of growing importance in national political discourse.

Australia has an abundance of natural resources, a high quality of living and some of the best cities in the world. Australia is strong in basic research and human development. Its education and skills are well regarded. Its systems of government, law and culture have provided a strong foundation over decades for growth, development and a fair society.

This report confirms Australia has many strengths, but emerging social, political, economic, and technical trends are undermining these. In relation to its strengths and weaknesses:

- Traditional sectors like mining and agriculture provide much promise and will remain areas of strengths. However, to realise this, Australia must move up the value chain, beyond the existing low value-added paradigm (for example, an extract and export model in mining), and new comparative advantage should be built in advanced manufacturing and advanced service sectors.
- Australia has a well-skilled and effective workforce which can be best further leveraged by linking into global production networks. A strong technical skills base is undermined by less well-regarded management skills and by policy uncertainty in vocational education and training (VET) settings. A balanced and multi-dimensional skills capability is essential if Australia is to realise the opportunities presented by the Asian Century.
- Australia has a strong and respected research capability, but it needs to improve its performance in the application of this research in industry settings.
- Quality of Australian government leadership, both as perceived within Australia and from overseas, and regardless of political affiliation of the leadership, is presently rated poorly. Furthermore, government regulations are now considered to be high, which stifles innovation and growth.
- A strong federal structure and rule of law has delivered lasting prosperity and quality of life, but current federal arrangements are characterised by perverse incentives and acute imbalance in resources and responsibilities between the Commonwealth and state and territory governments.
- Institutions in the areas of law, markets and culture are also significant for underpinning advance and have been strong in contributing to this. But important opportunities to strengthen these further do exist, including in areas such as intellectual property, the creative economy and in competition policy.
- An inclusive and cohesive society has allowed people to develop their productive potential, but global terrorism and the spread of violent ideologies is testing our distinctive cultural diversity, while the rise of internet and social media have increased the spread of violent and regressive ideologies. These need to be countered through more effective social and cultural integration.
- While rightly celebrated for its egalitarian culture, Australia is facing concern over worsening outcomes in terms of inequality and participation. Our national identity and the Australian way will demand this is addressed, and increased educational attainment and labour-force participation by women and Indigenous communities are amongst key priorities for achieving this.
- Australia's environmental performance in response to economic growth has been mixed, with some indicators improving

and others deteriorating. Environmental sustainability is an essential prerequisite for lasting prosperity and wellbeing. Global benchmarking shows that Australia has done especially well in terms of its water management, which can provide important lessons for other areas.

- Robust policy development must be based on a rigorous evaluation of ideas and evidence, and on multiple perspectives and contributions from academia, and the policy, business and community sectors. However, current mechanisms for such collaboration are weak in Australia and need to be strengthened.

These capacities will play out in a changing pattern of opportunities and threats. Key elements identified for this report are presented below.

Opportunities

- An increasingly diverse Australian population with extensive links throughout the region and beyond could be leveraged to create global businesses linkages, especially now in Asia.
- Some of the world's most liveable cities, if managed well, could better utilise the impressive domestic talent and attract the best from overseas.
- In a world of strategic uncertainty and rapid change, Australia could help to set the narrative and influence the agenda for global standards and regulations, and particularly in its region. If handled well, these would play to Australia's strengths and allow it to compete more effectively on a global stage.
- Value-added enhancements through innovation combined with linkages into global production networks could create new opportunities and employment in mining, agriculture, advanced manufacturing, and other sectors.
- Development of advanced technologies could help to alleviate resource constraints in an increasingly interconnected and populous world that values sustainability and security.
- Climate change and pandemics are two great disrupters. To those managing and attempting to mitigate them, they can also present opportunities. Appropriate investments in science and medical research and supporting policies, for effective commercialisation, will pay off. Australia does have an opportunity to be a global leader in innovation for adaptation to climate change.

Threats

- Australia's skills profile could easily be locked into the low value-added end of the skills spectrum. University and vocational education funding support might fall behind global standards. The immigration framework could focus too much on shorter-term needs than longer-term national benefit.
- A largely resource-dependent economy would fail to diversify, and a potential slowdown in China could expose the Australian economy to prolonged recession.
- Economic deprivation and social alienation within Australia could compromise participation in employment and improvements in productivity, and further increase the attractiveness of violent and terrorist ideologies, particularly in minorities and immigrant communities. This is already evident in many advanced countries, and has tested the liberal democratic foundations of societies there.
- Climate change and rise of ocean water levels could create significant threats for Australia, since all of its major commercial cities are in coastal areas.
- Perceptions of extreme income inequalities within and across some nations could lead to social tensions, undermine public support for globalisation, and unravel global economic institutions. This would not only adversely affect global trade, but also the basis of wider transnational relations.
- Continued national prosperity and wellbeing would be destabilised by an absence of effective political leadership and disciplined

and rigorous contestation of ideas and evidence. This is most likely to happen if linkages and collaboration between academia, policy, community and business sectors remain underdeveloped.

The path to the future

In light of these strengths and weaknesses, opportunities and threats, and looking ahead, Australia will need to strengthen and utilise all its areas of comparative advantage. The key to this is getting the fundamentals right. This means building a solid foundation from which to make the most of an unknown future and a range of possible scenarios reflecting that uncertainty and complexity.

This Australian Council of Learned Academies (ACOLA) report has looked to how comparative advantage can be sustained and developed to help condition the future in light of the global trends, challenges and uncertainties.

To sustain and improve performance, the project has concluded that a new reform process is essential. The project sees these reforms as providing the foundations for a future that should be prosperous, fair and free for Australians.

Such reform would require two key components: ongoing structural reform, and new investment for the future. Structural or institutional reform is well known and well advocated, but can be revitalised in a number of ways. However this report has found that discussion of the need for a further complementary strategy that involves renewed and reinvigorated investment in the nation's future is less well developed and much more piecemeal. It is argued in this report that such investment needs more focus and emphasis, but that equally the pursuit of both institutional and investment approaches together would be the most beneficial path to securing our future; indeed elements of the two categories overlap.

This report has found there has often been a disconnected approach to identifying areas in need of review and reform. Some areas have been studied on numerous occasions and some a little or not at all. A broader approach

to the reform task is needed to help deliver the foundations necessary to improve comparative advantage. Indeed the foundations themselves should be seen as the principal objects of seeking and building comparative advantage.

This report argues it is the full spectrum of structural reform and investment in future capability that will best build Australia's future comparative advantage.

The report therefore concludes that a package embracing both institutional reform and national investment should be given close attention as providing joint foundations for a strong future for the nation. Institutions such as federalism, intellectual property laws and competition policy have been sources of strength in the past but are failing to adapt to a changing strategic environment and could be reformed in order to align to the new century's imperatives to keep serving the national interest. Taxation, spending and regulation reform have also been identified as areas for continual improvement in a range of studies and surveys considered and conducted for this project. Global engagement and soft linkages will also be crucial as will the construction of immigration to ensure it contributes well to the nation's future.

Complementing the institutional reform should be actual investment in the key areas that underpin capability—the capacity to compete and deliver for the nation's future. This includes investment in education, training and skills, and in innovation, since the capacities of the people of the nation are the true core of advantage. This must be complemented by appropriate investment in public infrastructure to ensure the facilities are there for effective private activity to operate, and by ensuring full work participation by the Australian population.

Defining exactly what reforms produce what benefits is, of course, contested terrain. Resolution requires good evidence of the benefits and costs. Such evidence informs the modelling of reform conducted for the project. Importantly this is transparent and documented, so that alternative assumptions or improved evidence can be tested too, as can further policy changes beyond those examined here.

Implications of economic growth for social equity: Rand Corporation

Addressing inequality

Education

Expanding and improving the quality of education from early childhood to the tertiary level will further economic growth and promote equality. There are very high social returns from early education programs, and tertiary education has a very high pay-off in Australia. Investing in quality, expanding the number of institutions, and raising the minimum school leaving age are all likely to have positive impacts on economic growth and equality.

Fiscal policy

Fiscal policy can even out disparities and make growth benefit all income groups where economic and social forces enlarge inequality. An existing system of progressive transfers and taxes has been a source of advantage for Australia, but it could be further enhanced and increasing targeted social expenditure could reduce inequality that emerges in the future.

In the process of 'walking on two legs' in this way, through structural reform and capability investment, the ACA project has identified a number of key factors of importance as dimensions or drivers of this process. They are summarised as follows:

Natural advantage remains important

Sectors based on Australia's natural endowments such as agriculture and mining, including fisheries, forestry, and oil and gas, will certainly have the ongoing potential to grow and will benefit from major cross-sectoral reform. Australia is the sixth largest country on Earth by total area, and as such numerous advantages have been endowed by nature. These range from mineral resources to climate and fauna/flora. It has a wide variety of landscapes, with tropical rainforests in the north-east, mountain ranges in the south-east, south-west and east, and dry desert in the centre. The Great Barrier Reef, which is the world's largest reef, extends for over 2000 km.

While Australia's population density is amongst the lowest in the world, most of the population lives in the temperate coastal cities. It possesses a diverse range of habitats and is recognised as a mega-diverse country with a significant share of global geological and geographical assets, particularly relative to population.

However sectors that have been traditional sources of strength and prosperity are facing constraints that transcend narrow sectoral boundaries. While Australia cannot be good at

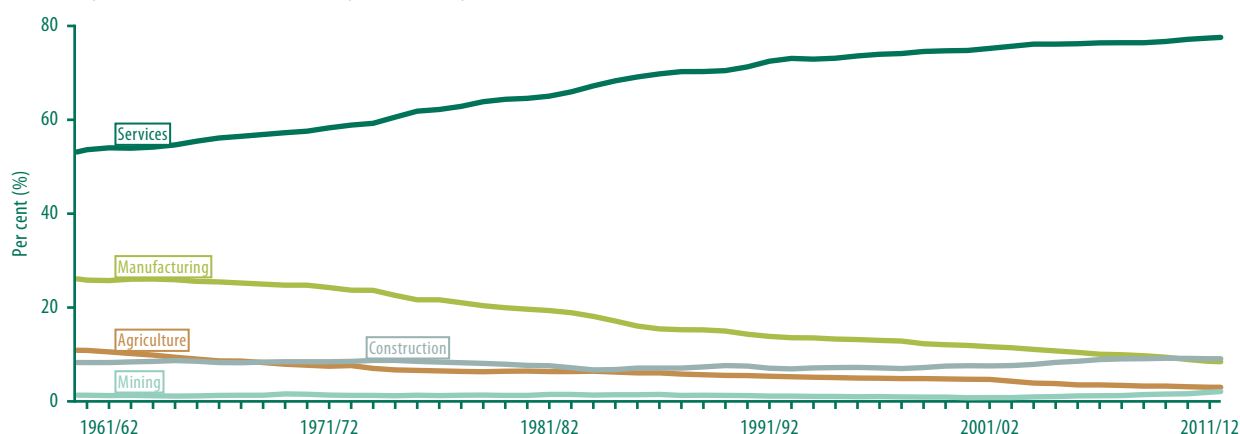
everything, concentrating on the lower value-added components of the value chain especially is not a viable strategy for the future, particularly in an age of global value linkages and product fragmentation which values functions (specific elements of the value chain) rather than sectors (or industries). Enhancing our contribution to the high-value elements of the chain will ensure better flow-on benefits to Australians including for advanced manufacturing.

Created advantage offers new potential

The report also finds that while the services sectors employ most Australians, they are a less well-recognised source of potential which should be better tapped to extend benefits to more Australians. Great gains can emerge from created advantage based on the skills of Australians in these fields. Areas such as health and education and professional services are capable of much future development, as is seen in detail in the studies completed for the project.

The strength of past employment growth in Australia in the services sector is seen further in the figure that follows which demonstrates the potential to tap this distinctive feature of the long-term evolution of the Australian economy. The challenge for such growth will be accommodating automation-driven productivity improvements without reducing employment. The historical record is that this can be done, especially as demand shifts to these services as average incomes grow.

Employment in Australia by industry, share of total*, 1961–62 to 2011–12



*Estimate for 2011/12.

Source: Woyzbun, Beitz & Barnes 2014.

The report concludes that all sectors can build on Australia's history as a stable, urban, equitable and culturally diverse society.

Knowledge and ideas really matter

The report emphasises that all sectors of the Australian economy, society and environment can substantially benefit from a firm foundation of excellence in the nation's intellectual and skill capital complemented by a culture of knowledge transfer. For an advanced industrial economy such as Australia facing structural transition and a range of national and global challenges, the report is clear that in the long-run, knowledge ideas and their application are the real key to creation of sustainable comparative advantage.

While Australia has been considered an innovative nation in many ways, reform is needed to ensure that the national capacity for utilising that innovation is increased. In order to remain a competitive and prosperous nation, the understanding of innovation needs to be broadened from a focus on research and development to one that encompasses both non-scientific innovations as well as the application of appropriate new research.

While Australia has a workforce whose skills are widely and internationally respected, it must be able to operate in an environment of global integration of trade and fragmentation of production. Furthermore there are some

concerns that the Australian education system may not be fully imparting the skills required for a competitive knowledge economy. A multi-dimensional approach is needed where STEM (science, technology, engineering and mathematics) skills are built strongly, but are properly complemented by capability in areas such as humanities and social sciences (HASS) in order to understand the culture and societies in which Australia seeks to operate or engage.

Ideas and the sharing of information is also an area this report finds is underdeveloped. In surveys undertaken for the ACA project, the cooperation between industry and universities has been found to be inadequate. There are also fewer institutions or think tanks to enable the fostering and exchange of ideas outside of government than in other similar nations such as the US, UK or Northern Europe.

Better leadership is important

There is an ongoing need for Australia to have strong leadership and to move to new best practice management in all areas. The project has identified a concern particularly amongst industry and bureaucrats surveyed for the study about the quality of both business managers and political leaders. The performance of electoral representatives was seen as falling, with doubts about whether the current political system can adequately foster the progress sought.

Surveys of CEDA & IPAA members for ACA project

Knowledge & Leadership Issues

Knowledge transfer and technological cooperation between universities and companies.

Only a minority of industry respondents (15%) and public service respondents (24%) believed that cooperation is well developed.

Education system

Only a minority of Industry (29%) and public servants (32%) believed that the education system is imparting the skills needed for a competitive, knowledge economy

Leadership & management

Industry respondents largely rated the quality of management across industries as average and public servants across all agencies surveyed believed the trend for performance of elected representatives was falling even when the current performance was rated as good.

Political system fosters progress

Only a minority in both industry (11%) and the public service (23%) agreed the political system presently fosters progress.

Source: Kumar 2013a; Kumar 2014.

Effective progress would involve the potential of technological advancements like big data and cloud computing to be tapped, and include public, private and community sector management. The emphasis would need to be on learning about best practice and tapping the facilitating role of the Australian business schools, industry associations and leading consultancies to provide a concerted opt-in educative push on the use of such advancements as well as providing for a quantum leap in management skills. The special character of entrepreneurship should be added to this formula.

Strengthening the role of partnership is important

There is an evident need for the development of strengthened and new institutions and incentives for collaboration and partnership between governments, business and community. The benchmarking and national reports compendia compiled for the project show Australia has developed a distinctive and largely successful model of public-private partnership that

represents the Australian way in basic spheres of social and economic provision. This ranges from education, health, and infrastructure, to child-care, retirement, social welfare provision and more. This can be enhanced and strengthened however, as some areas are not yet as strong in this approach as others.

The project finds that new public-private partnerships in knowledge creation and commercialisation and in environmental initiatives could particularly be considered, as the current arrangements do not seem to be working so well. Indeed there is a range of possible specific policy developments from the structure of university and other research funding, through the role of industry associations and to new R&D financing packages for SMEs.

Greater use of Australia's pioneering income contingent loans could complement such partnerships well as a distinctive Australian response to these specific needs and, even more fundamentally, to the wider issue of what is sometimes called the 'fiscal crisis of the state'.

Pay-offs from reform

Modelling for this project has found that addressing reform in a broad way would have valuable and sustained benefits for the Australian economy and its people. This would mean both:

- institutional reforms in political, legal and market institutions ranging from federalism, through intellectual property to trade, taxation, workplace relations and competition policy, and also
- investments in infrastructure, education, research and development, innovation, labour participation and immigration.

The modelling analysis is from well-attested techniques also used by the Parliamentary Budget Office, Productivity Commission and others.

While either of the two paths, institutions or investment, would be valuable, the power of the two together, creating comparative advantage by 'walking on two legs' is especially impressive. There is the potential for increases in living standards of 22% within 15 years, over baseline trend.

Under the combined scenarios, manufacturing would get the greatest benefit with agriculture also predicted to grow strongly. Demand for manufactured goods is boosted by the high rate of infrastructure investment required to support a higher rate of economic growth and agriculture benefits from the boost from free trade agreements.

The modelling also postulates double-digit rises in employment and there are gains in

after-tax wages of an average of 21.5% by 2050. The biggest gains are for low-skilled workers with a predicted increase in after-tax wages of 38.1% compared to increases for mid-skilled workers of 20.9% and high-skilled workers of 13.1%. This is a striking outcome for the objective of the pursuit of growth with equity, and arises from the shift in demand matching the growth in supply. The migration and education reforms both increase the supply of high skilled workers relative to low skilled workers, leading to some narrowing of wage differentials.

While the policy and reform process is never without challenges, a survey of public attitudes conducted for this project shows there is an appetite for at least some level of policy change. This includes a desire for more spending on core drivers of comparative advantage such as education at the school and tertiary level, and transport and communications infrastructure. Respondents were also very open to other investment change and to some institutional changes, particularly in labour market flexibility and pro-competition reforms.

While there was less support for taxation structural change, there was very clearly a willingness on the part of those members of the public surveyed to contribute to the wider cost of institutional reform through a higher level of taxation. A clear majority of those surveyed would either be willing to pay a little bit more or pay what was required to get the changes they nominated as important.

Willingness to pay more for institutional reform and capability investment, by demographics (%)

Response	Age group			Education		
	18–34	35–54	55+	Up to Y12	TAFE	University
Be willing to pay whatever was required	24	22	17	17	17	24
Be willing to pay a little more	53	55	61	53	54	59
NOT be willing to pay more	23	23	23	29	29	17

Source: Table 5.5.

Conclusion

When considering what the future may bring, this report has found that thinking that tomorrow will be more of the same as today is not good enough. All possibilities need to be contemplated. In choosing how we face that unknown, and in some cases, unknowable future, a broad approach is necessary to make sure that the foundations with which we will face the new challenges are enhanced for whatever may come.

Australian progress faces challenges of great importance, but these are challenges that this project finds can be met. In the view of this report, building comparative advantage will require a commitment to ongoing institutional reform and to investing in our future capabilities as a nation. The report outlines packages of policies that are illustrative of what is required.

Natural advantage sectors will still contribute mightily, but they can usefully be matched by the equally promising created advantage in the traditional areas of economic advantage and emerging advantage opportunities in advanced manufacturing and service industries.

The report also concludes that institutions and culture must be configured to support this process, including through Australia's rather distinctive deployment of major public-private partnership systems, and that better leadership, management and the encouragement of innovation and entrepreneurship will be a key to

success. In all the above-mentioned illustrations the importance and centrality of knowledge/ ideas would be explicitly recognised in the associated structures and policies.

The project has found evidence that the Australian public is increasingly willing to commit to and support such ways forward. Explanation and leadership is needed for this vision to realise its potential, but the Australian community has the level of sophistication to understand what is needed to inform and support that process.

Building comparative advantage is not simply addressing a list of policies or proposals but ensuring the framework of a broad-based foundational approach to the Australia of the future is understood and at the heart of decision-making and debate. Australia does well at many things but that is no guarantee of future success. If we want the country to be the best it can be, we will have to build that future.

This report affirms that pursuing both institutional changes in political, legal, market and cultural arrangements alongside investment in skills, infrastructure and innovation would see long-lasting benefits to growth and living standards. These initiatives would develop the national capacity to realise comparative advantage and compete well in a changing global environment. They would also enhance our ability to do this equitably and sustainably.



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Key findings

Comparative advantage (Chapter 1)

- A broad definition of comparative advantage allows for a more holistic and inclusive view of what is needed to build and consolidate Australian strengths across the nation's economic, institutional, social and cultural arrangements.

Taking stock, looking ahead (Chapter 2)

- Australia has many notable strengths, particularly in its high quality of living (especially in the large cities), low corruption, strong basic research, and high human development. However, there is insufficient policy attention given to how to maintain and enhance these strengths, or what emerging challenges could undermine these in the next few decades. There also appears to be little attention given to what lessons could be drawn or how their success could be emulated in other areas. Commissioned reports have too often been narrow and piecemeal and the reasons for and lessons from areas that are Australia's strengths appear not to have been the subject of in-depth study. For example, why Australia's culture is rated so highly and what makes its cities good places to live, perhaps, are not adequately examined.



- Benchmarking shows there are weaknesses in some of the drivers of comparative advantage such as the commercialisation of innovation, education equity, infrastructure development, environmental sustainability and government regulation. Public leadership is perceived as lacking by business and policy sectors, as well as foreign business executives who deal with Australian companies. These are significant areas where much improvement is needed. The awareness of global or other country directions is weaker than might be expected in government/public service.
- The project's survey results show that the government and business sectors naturally attach importance to issues relating to their immediate direct interests, and do not attach importance to other trends and developments, as a result their perspectives diverge. This makes consensus in policy a challenge. Greater partnership and collaboration might be sought so that outcomes are based on mutual understanding if not full convergence.
- Australia will face a challenging and complex global environment with strong global competition in some of Australia's strongest industry sectors. Considerable uncertainty exists, as shown by the project's scenario analysis. The strategic landscape in the 21st century will be characterised by complexity and diffusion of power. Policy should aim

for robustness and flexibility, resilience and nimbleness. Assumptions of certainty will breed rigidity. Power and responsibilities will have to be better divided, and resources and skills will need to be adequately provided such that each level of government can handle its particular problems.

Core policy themes (Chapters 3 and 4)

- Industry policy that relies upon past strengths only will not yield the desired results unless complemented with new ones. This is due to realities of both globalisation and the revolution in information technologies as well as other key enabling technologies.
- Australia's stock of natural resources and global reputation of its skilled work force are national strengths. This can and should continue to be the case. However, the Australian market size is limited, and continuing growth requires that global markets are targeted and opportunities realised intelligently.
- The current prosperity has been in part the result of focusing on some lower value adding elements of the value chain, whether in terms of extracting and exporting minerals and ores, or growing and exporting basic agricultural commodities. This cannot be a viable strategy for the longer-term future. The nation does not yet adequately focus on adding value to these economic activities, even though that is what we should expect from a highly developed nation with a skill-intensive workforce. Most of global production is now based on global value chains and global production fragmentation, where even a single product from a single industry is assembled from parts produced all over the world. This applies to products ranging from commercial aircraft (Boeing) and children's toys (Barbie dolls). Countries specialise, not in industries, but in specific elements of the value chains and Australia needs to access the high value components.
- Both macro and sectoral analyses shows that, in building comparative advantage, Australia needs to have world-class infrastructure, not just in physical terms (roads, ports, utilities, etc.) but also digital infrastructure that supports large data transfers and high speeds. Historical investments in infrastructure made Australia one of the most urban countries, and delivered one of the highest living standards in the world. However, as things currently stand, Australia ranks as a 'middle performer' on infrastructure amongst the cohort of advanced nations. Given a projected 40% increase in population over the next 20 years, a failure to upgrade and invest in new infrastructure could seriously undermine long-term national comparative advantage.
- If Australia is to seriously leverage its national strengths to gain from participation in global networks and fully support domestic realisation of advantage, then it will need to further develop its skills. A nation is defined by its people, and a nation's productive capacity is centrally dependent on the skills capability of those people. Australia has a work force whose skills capability is substantially respected. In order to remain so, it must be able to operate and add value in an environment characterised by high levels of global integration of trade and fragmentation of production. The rise of Asia and the economic power of its middle class create new challenges and opportunities. Among other things, these challenges and opportunities require a multi-dimensional skills capability, where a strong STEM capability is complemented by capability in both management and humanities and social sciences (HASS). Australia also has a strong VET sector that can be even better positioned and utilised.
- Immigration has been a major source of skills enhancement for Australia and, with around 25% of its current population being overseas-born, is also a defining feature of Australian development. Australia is widely viewed as more successful than most countries in how it has operated its migration entry and

settlement arrangements. As such, well-managed immigration should be an ongoing source of comparative advantage for the nation, and should be reviewed in order to ensure continuing optimal performance.

- Amidst a spreading rhetoric of needing greater innovation, inadequate attention appears to be paid to national capacity for utilisation of that innovation. As things currently stand, this capacity is too limited. Clearly for Australia to improve its competitiveness and productivity capability, this must improve. A more effective taxation and legal system that incentivises innovation and risk taking will be part of the solution. So will improved innovation finance arrangements, potentially including new approaches such as revenue contingent loans for R&D. It may also be that Australia could lead in adopting a broader definition of innovation in its policies and behaviours so as to encompass non-scientific innovation too.

Wider positioning for Australia's future (Chapter 4)

- Well-functioning institutions need to be seen as a key part of securing comparative advantage. It is institutions which set the rules of engagement and affect the incentives and understandings facing society and economy. Institutions are of many kinds, though the ones looked at in this report govern how powers and responsibilities are shared between the various levels of government (federalism), how knowledge creation is regulated and rewarded (intellectual property), how businesses compete in a modern capitalist society (competition policy) and how culture facilitates understandings (cultural policy). While each of these have been real sources of strength in the past, they are failing to adapt to a changing strategic environment, and must be realigned to 21st century imperatives if they are to keep serving the national interest. Actions to improve

functioning of policy in each of these areas will contribute substantially to enhancing comparative advantage and national well-being.

- Enhancing national well-being through comparative advantage also requires recognition that socio-cultural and environmental dimensions are part of the framework required. While both must be made resilient to changing circumstances, our collective national response to these circumstances should also avoid causing irreversible damage to the society and environment. Our quality of life and environment are great legacies we have inherited from past generations, and should take care that our collective stewardship of these delivers similar benefits for those who come after us.
- A cohesive and peaceful society—based on the principles of fairness, freedom, and opportunities for advancement—is the very basis of a functioning and productive society. It is self-evident that a society with endemic inequality or the fear of violence or exclusion and disadvantage is unlikely to fully realise its capacity to foster creativity, productivity, or dynamism. Australia has long enjoyed one of the higher standards of living in the world, and this has been based on social cohesion, rule of law, and a culture of 'fair go'. Important challenges to this need careful address, and this will support comparative advantage.
- Empirical analysis done for this report has shown a pattern of deterioration in several key environmental variables such as carcinogenic air pollution and wastes, which is only partially offset by adoption of better technologies, government policies, and transition to service industries. More work needs to be done to address the environmental impacts of growth. Water management is an area of particularly strong and positive performance, and could offer valuable insights and policy lessons that could be emulated across other indicators as well.

Leading the way (Chapter 5)

- Comprehensive microeconomic reforms of the 1980s and 1990s have been credited with delivering lasting income and employment growth for Australia. However, previous reforms were incomplete, and changing circumstances and imperatives create new opportunities for growth through additional reforms. At the same time, opportunities also exist for policies directed at investment in Australia's future.
- Policy advance can embrace measures that improve both institutional capability and measures that advance future investment. The latter has received less comprehensive public attention than did institutional or structural reform. Modelling for the report shows that concentrating on boosting investment will have longer lasting economic benefits than institutional policy changes, but the pay-offs to these can also be high. Combining the two in across-the-board reform is therefore the optimal path.
- The aggregate pay-off for a combined package of widely recognised reforms could be of the order of 22% for living standards by 2030 over and above the baseline trend without such reform. The wage benefit to less advantaged workers is higher than that for average workers under the reform scenario. This projected equity advance is also important to acknowledge.
- All sectors would advance in aggregate under reform relative to the base case. But manufacturing and agriculture would especially benefit.
- Public support for policy change will be harder in some areas ahead of others. Some structural policy reforms in particular may therefore require more work to convince the public of the necessity for change, according to the survey of public attitudes conducted for the project. Leadership is an essential ingredient for success here.
- People are willing to contribute at least a little more in taxes to fund the costs of reform, again according to the project's survey of public attitudes.
- There is a need to clarify the roles and responsibilities in the federal system. Confidence could be built with the transparent evaluation of government spending projects of a substantial size.
- Effective action across all the defined 'bedrock' areas would require effective and forward-looking leadership that articulates a vision based on a rigorous contestation of ideas, achieves public support by communicating the potential benefits of these to the public, and takes adequate account of public feedback and priorities, as seen in past accounts of policy reform successes and failures.
- Leadership skills need to be lifted at the management level. Leadership in ideas could also be built through enhancing Australia's portfolio of think tanks and like entities well beyond present levels. Universities could have impact and engagement strategies as part of responsibilities.
- Australia has a unique blend of public and private in the provision of economic and social spheres and this could be built on as a basis from ongoing national stability and advance. Income contingent loans could be increasingly applied in many more areas as a distinctive Australian way forward that can assist with the task of 'fiscal consolidation'.



*Establishing proper
policy foundations now,
combined with public
support and effective
leadership will better
place Australia on a
trajectory for national
strength, post the mining
investment boom.*



About Securing Australia's Future

In June 2012 the Australian Government announced *Securing Australia's Future*, a \$10 million investment funded by the Australian Research Council in a series of strategic research projects. Projects are delivered to the Commonwealth Science Council by the Australian Council of Learned Academies (ACOLA) via the Office of the Chief Scientist and the Australian Chief Scientist.

Securing Australia's Future is a response to global and national changes and the opportunities and challenges of an economy in transition. Productivity and economic growth will result from: an increased understanding in how to best stimulate and support creativity, innovation and adaptability; an education system that values the pursuit of knowledge across all domains, including science, technology, engineering and mathematics; and an increased willingness to support change through effective risk management.

Six initial research topics were identified:

- i. Australia's comparative advantage
- ii. STEM: Country comparisons
- iii. Smart engagement with Asia: Leveraging language, research and culture
- iv. The role of science, research and technology in lifting Australian productivity
- v. New technologies and their role in our security, cultural, democratic, social and economic systems
- vi. Engineering energy: unconventional gas production

Two further research topics have been identified:

- vii. Australia's agricultural future
- viii. Sustainable urban mobility

The Program Steering Committee responsible for the overall quality of the program, including selection of the Expert Working Groups and the peer review process, is comprised of three Fellows from each of the four Learned Academies:

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(Chair)

Mr Dennis Trewin AO FASSA
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