

# A PROSPEROUS FUTURE

Key industries for  
Australia/US collaboration



## AmCham introduction

The pace and scale of change in our world is immense. We are living through the most consequential geopolitical realignment in our lifetime, a once in a century pandemic, changing climate and the testing of institutions that have underwritten the world order since the end of World War Two. Global economic uncertainty, vast technological change and exponentially expanding space exploration demand that the best minds be applied to ensuring prosperity and security for future generations.

The world is being shaped in ways we are yet to fully understand and the future less by what we know than what we do not.

When making sense of the world, history is the guiding discipline.

Recognising the need to “strengthen the fabric of peace in the Asia-Pacific,” Australia, New Zealand and the United States signed the ANZUS alliance in September 1951. The Alliance has been the bedrock of security and prosperity for Australia since. Today, its four pillars are Political, Trade and Economic, Diplomatic and Defence and Intelligence. In the month we paused to mark the 70th anniversary of ANZUS, the American, Australian and British governments announced an agreement to share advanced, critical technologies led by that of nuclear propulsion for submarines.

Only a decade after ANZUS was signed, AmCham was founded in Australia to “facilitate interaction, open up channels of communication, change thinking and explore possibilities”.

AmCham today is an essential element of the Australia-US alliance. Its members, building on the Australia-US Free Trade Agreement, have worked across the Pacific to make the United States Australia’s most important economic partner. The United States is the largest source of direct foreign investment into Australia, its capital markets underwriting swathes of economic activity, growth and employment. Australia’s two-way trade and investment with the United States and income generated from it, accounts for 7 per cent of Australian GDP.

Recognising the challenges and responsibilities we have before us, AmCham is proud to partner with KPMG in examining and producing *A Prosperous Future: Key Industries for Australia/US Collaboration*.

The AmCham board in consultation with its Governors and members, has nominated six areas of research and economic activity we believe to be the foundation for our shared future.

**Artificial Intelligence** will increasingly be applied at scale to enable robotic systems to enhance our ability to overcome what today seem insurmountable problems. AI will help us simplify a complex world.

**Biotechnology** especially is a field in which closer Australia-US collaboration will deliver major advances in areas as diverse as human health, environment and sustainable agriculture. It already delivers solutions to the prevention and treatment of disease thought impossible less than a decade ago.

**The Digital Economy** now underpins every facet of our lives from medical records to financial transactions, biotechnology, engineering, essential social services, infrastructure, aviation and defence, we are critically dependent on the digital economy.

**Energy and Clean Technology** is a sector upon which our planet, health, standard of living and economic development will increasingly rely.

**Quantum Science** is at the very frontier of advancing our understanding of the world and the technology we need to preserve and improve it. At speed, Quantum offers the real potential for rapidly advancing renewable energy stability, essential social infrastructure, transport and addressing a myriad of challenges.

**Space** has always inspired, led largely by the United States. Its exploration, the technologies needed to do so and development as an integral element of defence, demands an even closer Australia-US relationship built on trust, science and technology across governments and industry.

Remaining true to its origins, AmCham is proud to work with KPMG Australia in facilitating interaction among our members and partners to “change thinking and explore possibilities”. In doing so, we celebrate excellence in these fields of endeavour, confident that together we are contributing to a better, more prosperous world and stronger ANZUS Alliance.



**Dr Brendan Nelson AO**  
Chairman  
AmCham Australia



**April Palmerlee**  
Chief Executive Officer  
AmCham Australia

## KPMG Australia (KPMG) introduction

Australia's comprehensive relationship with the United States is vitally important for our nation's economic wellbeing and security. It has been shaped by shared history, democratic systems, values, cultural ties and common interests.

But what will that relationship look like into the future? Where will our economic and commercial connections and opportunities lie in a rapidly changing world?

Both countries are emerging from the inter-related health and economic disruptions caused by COVID-19 and looking towards the future – a future characterised by a range of increasingly complex geo-strategic, geo-political and geo-economic issues, including rapid technological, climate and societal challenges. These pressures are accelerating and testing our nations' resilience while also creating new opportunities. The United States and Australia are committed to working together to face into this uncertain future.

Currently, Australia and the United States share many complementarities. From a business perspective, we are very close partners despite often overlapping and competing sectoral interests. With the Australia US Free Trade Agreement (AUSFTA) operating for the past sixteen years, our bilateral trade balance has grown strongly to exceed A\$80 billion in 2019–20, making this Australia's second largest bilateral corridor. Australian exports were valued at A\$27 billion in 2019–20 and 96% of Australian goods and services exports to the United States are now duty free, providing a solid platform for future export growth. Meanwhile, imports from the United States were A\$53 billion.<sup>1</sup>

The United States is also the largest country source of foreign direct investment to Australia, with just over A\$1 trillion historically invested by US companies across many sectors, companies and assets.

Facing into a dynamic and volatile future, the United States and Australia need to ensure we build on the existing connections and focus carefully on identifying the key opportunities of the future.

Australia is recognised as a leader in research and development in many key sectors including quantum computing, renewable energy, biotechnology, ag-tech and medical research. Yet, despite punching well above our weight in the early stages of research and development within universities and institutes, historically Australia has seen many of its best and brightest talent move offshore with this research to further develop, commercialise and achieve scale through foreign venture capital investment and superior start up infrastructure. The United States has been, and will continue to be, the destination of choice as well as most important source of venture and investment capital for Australian intellectual property and entrepreneurial activity.

As the US Government and business sector ambitiously rebuilds its post COVID-19 economy with a US\$1.2 trillion infrastructure program and a wide range of reforms to re-position for a cleaner, fairer, modernised and competitive future, there are bound to be many opportunities for Australian companies and entrepreneurs to participate.

As a national partner of AmCham in Australia, KPMG is delighted to partner with and co-sponsor this report series over the next eighteen months. These reports identify and profile six industry sectors which

we believe will shape the future economic relationship between Australia and the United States for the next fifty years: artificial intelligence (AI), biotechnology, the digital economy, energy and clean technology, quantum science and space.

We thank AmCham's Board of Directors, Council of Governors, the 2021 AmCham Alliance Award finalists, and members who have contributed to the business leader roundtables which has led to agreement on these six key sectors. We also thank the incredibly talented and inspiring cohort of undergraduate university students from University of Sydney, University of NSW (UNSW) and University of Technology Sydney (UTS) for sharing their thoughts and opinions in a separate roundtable at KPMG Sydney offices on 10 November 2021. Given these future industries belong to this generation to develop and deliver, it was vital to engage them through a robust and enlightening session!

Finally, our sincere thanks to April Palmerlee and Dr Adam Duker from AmCham and our KPMG colleagues: Dr Brendan Rynne and Dr Merriden Varrall for their enormous contributions towards this Introductory Report and the genesis of this important research series.



**Alison Kitchen**  
Chair  
KPMG Australia



**Doug Ferguson**  
NSW Chairman  
and Head of Asia  
& International Markets  
KPMG Australia

# Leadership perspectives

## on Australia – US industry collaboration

“Having spent the last 25 years working with US technology firms both in Australia and the US, I have learnt many important lessons about the resilience of the American business culture and how the willingness to take risks and draw strength and wisdom from setbacks is a core part of American ideology. This risk taking is core to innovation; without failure there can be no success. Adopting this mindset will continue to help Australia as we look to the future and how we rebuild the Australian economy for the next 30 years of growth. Technology needs to be a core sector that we focus on as well as a key enabler of other industries to be competitive on the global stage.”

**Robyn Denholm**  
Chair, Tech Council of Australia  
Board Chair, Tesla  
Operating Partner, Blackbird

“Congratulations to AmCham and KPMG on these excellent reports on critical and emerging technologies that will shape our collective future. This is the new frontier in Australian-American cooperation. Setting rules and standards in these areas that are consistent with our values and interests is vital in a world of rapidly changing strategic circumstances. Australia punches above its weight in many areas of science and technology while the United States is still at the forefront of innovation and entrepreneurship. We are bringing these strengths to bear bilaterally and in groupings like the Quad and AUKUS to shape a peaceful and prosperous future for ourselves and the Indo-Pacific.”

**Hon. Arthur Sinodinos AO**  
Australian Ambassador to the United States of America

“For all its history the United States has been at the forefront of global innovation and the commercialisation of great ideas. Thanks to new technologies, free trade and our extremely close commercial partnerships, Australia can join the US on its journey. From quantum computing to artificial intelligence and in disciplines like health and space, Australian innovation can compete with, and partner with, the very best in the world.”

**Hon. Joe Hockey**  
Australian Ambassador to the United States of America (2016–2020)  
Federal Treasurer of Australia (2013–2015)  
Founding Partner and President, Bondi Partners

“Never have economic security and national security been more closely linked than today. This is particularly true of the six industries identified in this report, which will be critical to our wellbeing, health, security, and prosperity for generations to come. In these – as in so much else – the United States and Australia are natural partners. We share values and interests, are clear-eyed about the challenges, and trust in the power of our private sectors to deliver world-leading innovation.”

**Michael Goldman**  
Chargé d’Affaires, a.i., US Embassy Canberra

“No partnership is more indispensable for Australia today than that with the United States of America. These vital reports provide a clairvoyant preview of what the next fifty years of The Australian-American relationship will look like. As both countries confront the threats and exploit the opportunities of our age, our economic partnership and shared prosperity are more vital than ever. As English-speaking liberal democracies that respect universal human rights and the freedom of their citizens, the alliance between our two nations is built on an unshakeable foundation that will grow to new heights in the decades to come – in no small part through continued cooperation in these six key industries.”

**Hon. John Berry**  
US Ambassador to the Commonwealth of Australia (2013–2016)  
President, American Australian Association

“Future industries spanning cyber, emerging technology, AI, and beyond share a defining characteristic: effective public private partnerships are paramount to success. Further, diverse voices must participate to develop technologies that serve everyone. The United States and Australia, trusted and like-minded partners, are perfectly positioned to work with the private sector to develop these next generation technologies, navigating complexity, and ensuring these innovations contribute ethically to economic and national security. Only by working together can we build these future industries to benefit everyone.”

**Kathleen Lively**  
US Consul General in Melbourne

# Introduction

The desire to live better tomorrow than today is rapidly driving demand for solutions from artificial intelligence, biotechnology, the digital economy, energy and clean technologies, quantum science and space.

During most of the nineteenth century Australia and the United States achieved a similar standard of living, but the two economies drifted apart as the commonalities in their industrial structures disconnected. Australia remained predominately mining and agricultural, while the United States became more industrialised.

Since the end of the Great Depression, the standard of living between the two economies tracked each other, though it should be noted that the rate of growth in real GDP per capita has been marginally stronger in the United States than Australia for much of the last 80 years.

This divergence can be partially explained by various factors, such as distance to foreign markets, access to capital, natural comparative advantages, and government policies.

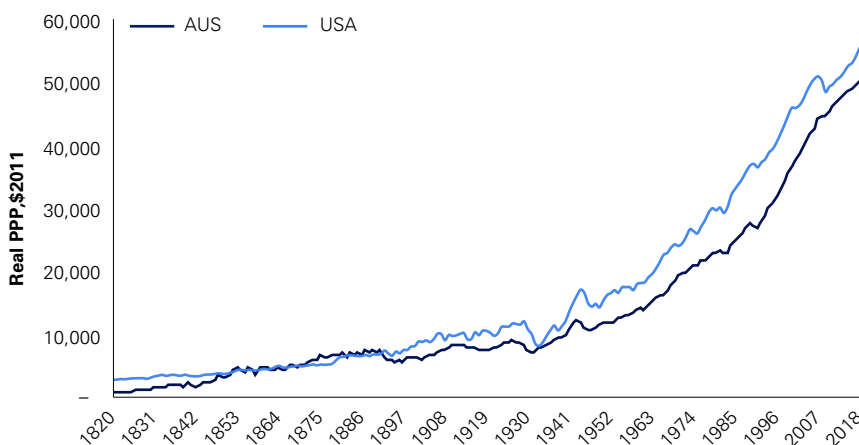
As the world evolves with new technologies, processes, and trade patterns influencing the shape of industrial structures, emerging industries and sectors will continue to appear and displace old ones.

Identifying which emerging industries will succeed and which ones will fail is incredibly difficult. Nonetheless, considering how nascent opportunities today could develop into the growth engines of the future is a valuable exercise for businesses and governments to undertake.

These six industry sectors are likely to be the powerhouses of the world economy for the next century as we look to improve how we live, work and play. As such, they will become fundamentally important in global trade, investment and broader economic development.

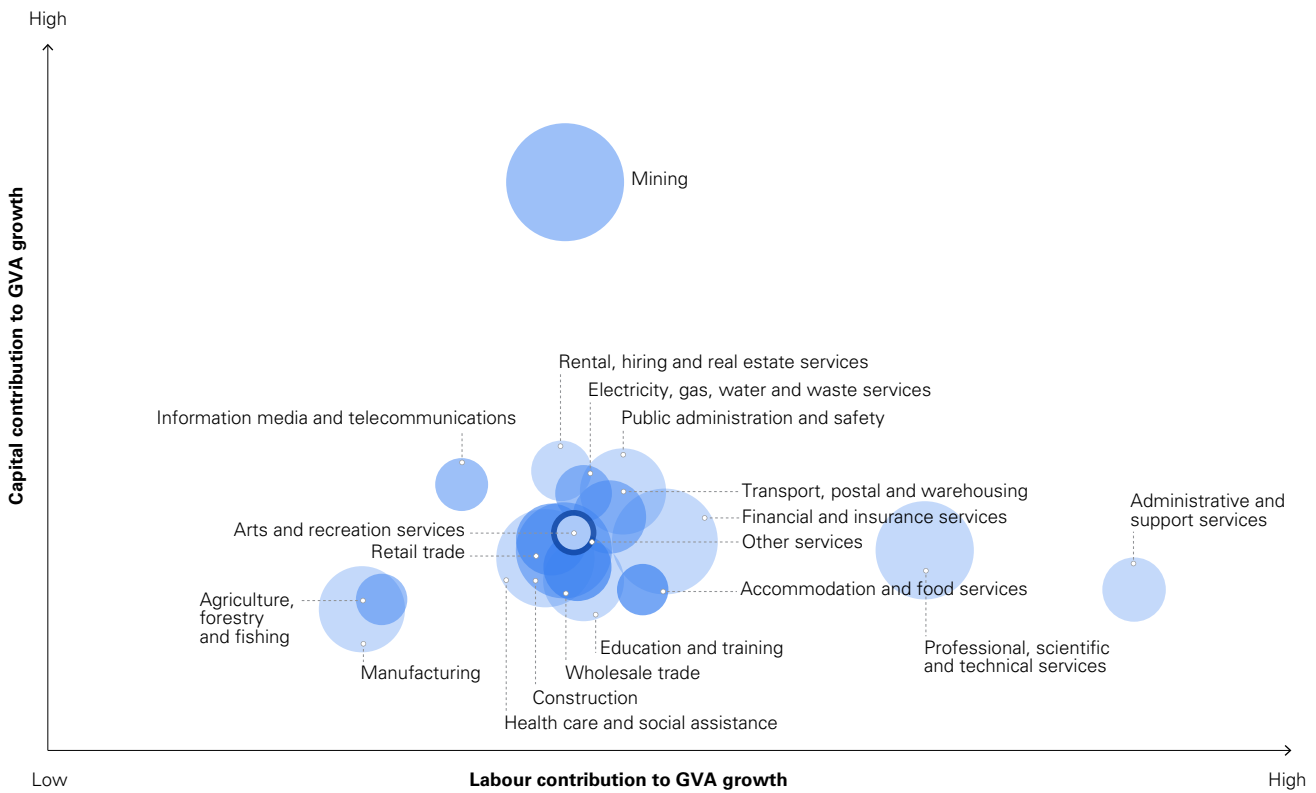
AmCham and KPMG have chosen these six industry sectors to undertake a detailed assessment of their current and future growth potential, explicitly seeking to understand how trade and investment between Australia and the United States in these sectors could enable better outcomes for the two countries as opposed to 'going it alone'.

**Figure 1: Real GDP per Capita, Australia and US**



Source: KPMG, Maddison Project

**Figure 2: Relative Contribution to Industry Gross Value Added by Labour and Capital, Australia, FY2010–FY2020**



Source: ABS, KPMG

With reference to Figure 2, the selection of these six industry sectors was based on several factors, including the fact that they generally ‘sit in the pack’ of Australian industries that utilise a similar combination of labour and capital in producing their economic output. This means that their growth does not become overly dependent on one factor of production over another, rather their success is likely to require a balance of inputs of capital, knowledge and skilled labour.

In identifying the six key industries for this report series, AmCham and KPMG consulted key leaders from across the business, political, academic, and diplomatic sectors.

Through discussions with the AmCham Board of Directors, its Councils of Governors across the country, the Australian Department of Foreign Affairs and Trade, and the US Embassy in Australia, consideration was given to the myriad sectors that offer opportunities for growing the economies and creating jobs.

To ensure there were multiple perspectives, AmCham and KPMG also engaged with preeminent CEOs from some of the largest public and private companies in both countries, as well as the leaders of some of the most innovative and cutting-edge start-ups to further refine the categories.

Consultations also occurred with professors and administrators at Australia’s leading research universities, including most of the ‘Group of Eight’ as well as public research universities and private educational institutions. In addition, consideration was given to input from think tanks, policymakers, and other academic organizations, such as the Australian-American Fulbright Commission.

After these extensive consultations, the following six industries as defined below were selected for in-depth exploration in our report series:

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## Artificial Intelligence

Artificial Intelligence is the integration of various technologies which enables machines to learn and produce information output by either thinking and acting like a human, or by exercising original and independent intelligence that is distinct and dissimilar from human thought and behaviour.

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## Biotechnology

Biotechnology is the application of biological processes for industrial and other purposes, especially the genetic manipulation of microorganisms to produce antibiotics, vaccines, hormones, agricultural resources, and products that advance health, commercial and production capabilities, and public safety.

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## The digital economy

The digital economy is the global network of economic activities, commercial transactions and professional interactions that are enabled by information, computer, and communications technologies. It is characterized by the creation and sale of safe and secure technologies for creating internet and mobile transactions, as well as new consumer and business-facing digital services.

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## Energy and clean technology

Clean energy is energy derived from renewable, low or zero-emissions sources, as well as energy saved through energy efficiency measures. These typically include non-fossil fuel sources of energy such as hydro, wind, solar, natural gas, and nuclear power, as well as advanced and emerging technologies predicated on preserving and storing energy. In addition, a key goal of this sector is to reduce the cost and increasing the accessibility of these sources of power.

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## Quantum science

Quantum science is the search for the minimal amount of physical property involved in fundamental interactions. It includes quantum computing, quantum physics, and quantum mechanics. For these reports, it includes the application and use of phenomena to create new and faster ways of computing and manufacturing, which enables operations to be undertaken at speeds exponentially higher than possible with conventional technologies, while often necessitating less energy consumption.

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## Space

The Space industry is composed of the full range of technological, manufacturing and operational activities, as well as the use of natural resources, that create value, foster new discoveries, and provide benefits to human beings while exploring, understanding, managing, and utilising the realms beyond earth's atmosphere.

Market drivers are propelling these sectors forward at rapid rates. But in addition to commercially influenced outcomes and changes to the natural environment, future demand and trade flows within and between countries will be materially impacted by national governments: either as a purchaser of goods and services directly or indirectly through (bilateral or unilateral) policy settings.

Recent bilateral and multilateral announcements with AUKUS, the QUAD and the latest AUSMIN statements provide insights into how trade between Australia and the United States is likely to develop, especially for these future focussed sectors and industries.

For example, the latest Joint Statement on Australia-U.S. Ministerial Consultations (AUSMIN) 2021 made the following important points:<sup>2</sup>

“Our joint ambition is to make low-emissions technologies globally scalable and commercially viable to rapidly accelerate global emissions reductions, enable clean growth, and make achievement of net zero emissions by 2050 possible.”

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“AUKUS will build on the longstanding bilateral ties among our three countries, including through deeper integration of defense and security-related science, technology, industrial bases, and supply chains, as well as deeper cooperation on a range of defense and security capabilities.”

“The operational effectiveness of the Alliance is underpinned by the strength of our cooperation on science, technology, strategic capabilities, and defense industrial base integration.”

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“The United States and Australia recognize the importance of establishing shared capabilities in Space Domain Awareness, Space Command and Control, Satellite Communications, and Positioning, Navigation, and Timing.”

Further, the QUAD Leaders’ Summit Communique released on 24 Sep 2021 also noted:<sup>3</sup>

“We will cooperate to establish responsible and resilient clean-energy supply chains.”

“We are monitoring trends in the critical and emerging technologies of the future, beginning with biotechnology, and identifying related opportunities for cooperation.”

In addition to the private sector looking to drive these innovative sectors forward, these recent statements demonstrate and confirm the public sector also has a vested interest in seeing them succeed.



# Australia / US economic and commercial ties

The economic ties that bind Australia and the United States of America are deep and complex.<sup>4</sup>

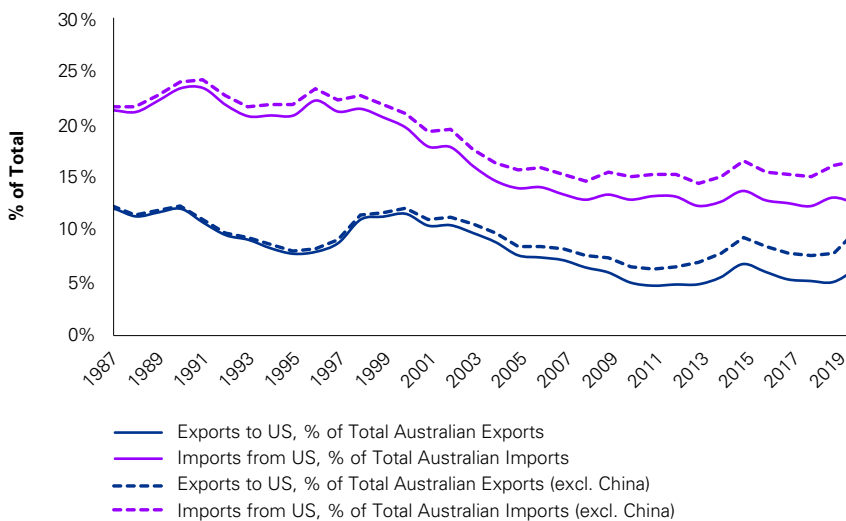
Direct trade and investment between the two countries can be traced back to 1792 when Captain Thomas Patrickson arrived in Port Jackson on the *Philadelphia* with a letter of recommendation to Governor Arthur Phillip by the British Minister to the United States: Phineas Bond. The entrepreneurial mariner not only sold his full cargo of beef, pitch, tar, tobacco, gin, and rum to the colonial administration and army officers, he also sold the *Philadelphia* to Governor Phillip to transport stores between Sydney and Norfolk Island.<sup>5</sup>

Since these early days trade and investment between the two countries has broadened into all facets of our modern economies: from basic agricultural goods to high-value technology services. While the trade relationship has expanded and evolved, the differences in the size, industrial structure and comparative advantages between the two countries has always meant – since 1792 – that Australia has bought more from, than it has sold to, the United States.

Even during the current upheaval of the global COVID-19 pandemic, the trade relationship between the United States and Australia remained strong. In 2020, Australia was the 16th largest goods export market for the United States, while the value of service exports from the United States to Australia was only slightly less than the trade value of merchandise goods.<sup>6</sup>

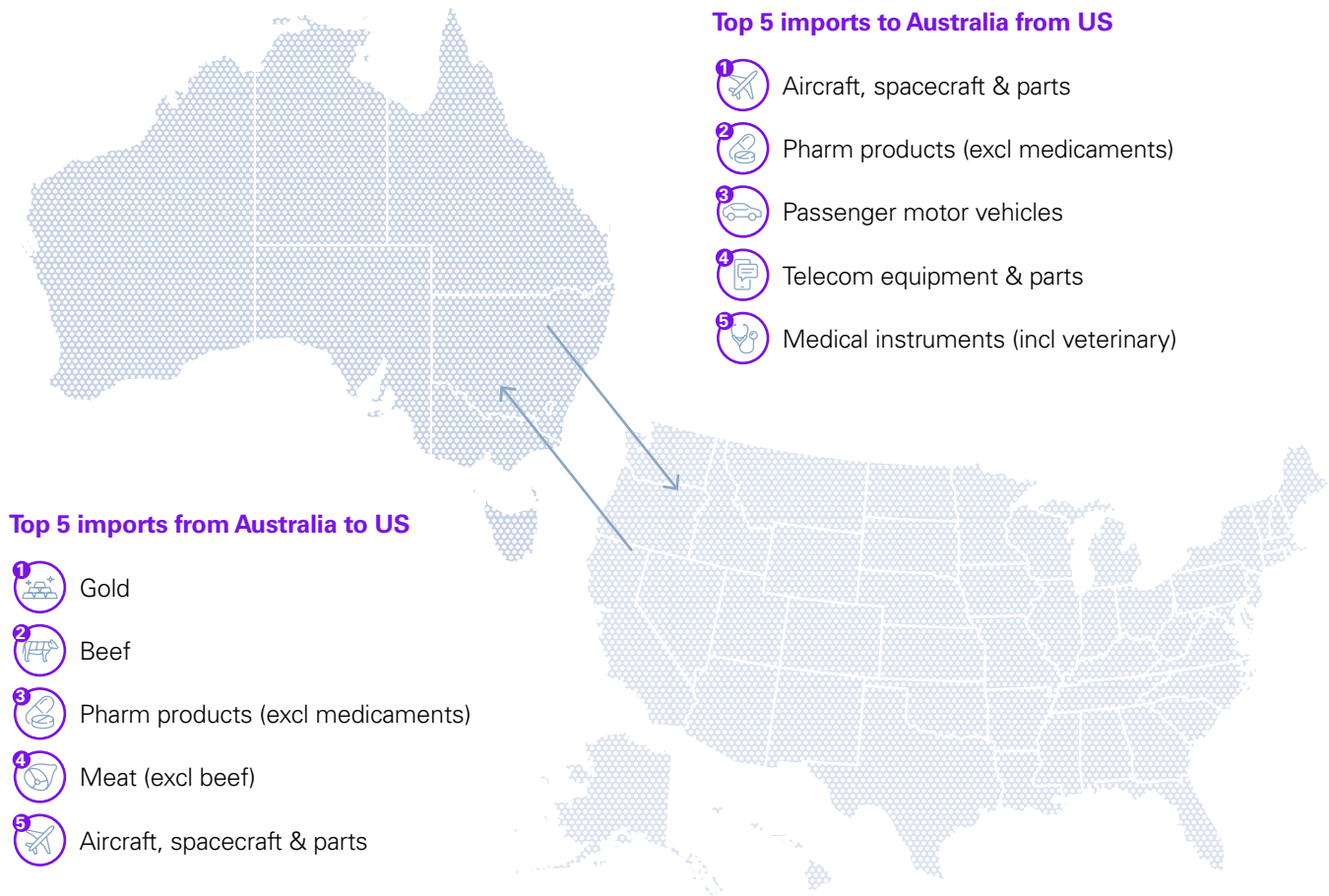
Disaggregated trade data shows that both Australia and the United States trade goods and services with each other in a manner that is reflective of their competitive strengths. Australia's top five most valuable export sectors to the United States in 2020 were: gold, beef meat, pharmaceuticals, meat (excl. beef), and aircraft, spacecraft and parts. The top five exports from United States to Australia were: aircraft; spacecraft and parts; pharmaceuticals; motor vehicles; telecommunications equipment; and medical equipment.

**Figure 3: Relative Importance of US Exports and Imports to Australian Trade**



Source: DFAT, KPMG

**Figure 4: Top 5 US exports to Australia and Top 5 Australian exports to the US, 2020**



Source: DFAT

While there appears to be similarities between what Australia and the United States sell to each other, there is a key difference in the form and use of the goods traded.

The World Input-Output Database reveals that the majority of Australia’s exports to the United States are utilised as intermediate goods, whereas the majority of the US exports to Australia are sold as final goods.<sup>7,8</sup>

While the trading relationship between Australia and the United States has remained strong since Captain Patrickson landed in Sydney, it has evolved to reflect the contemporary needs and tastes of the two countries. As shown in Table 1 below, the mix of goods and services purchased between Australia and the United States has changed in the last fifteen years. For example, car sales from Australia to the United States have now ceased, and Australia is now sourcing petroleum from the United States as oil refineries in Australia have progressively closed.

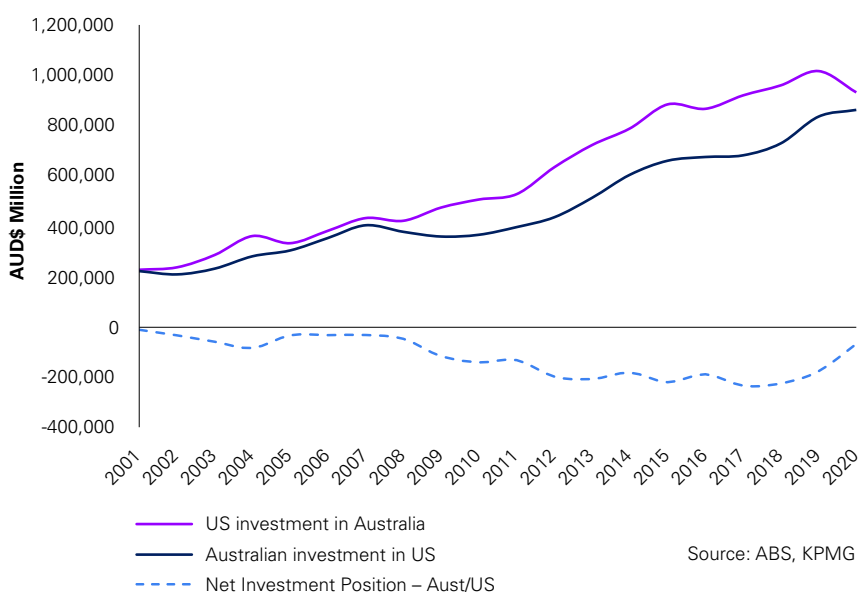
**Table 1: Top 10 US exports to Australia and Top 10 Australian exports to US, 2006 and 2020**

Australian Exports to the United States		Australian Imports from the United States	
2006	2020	2006	2020
1 Confidential items of trade	Gold	Aircraft, spacecraft & parts	Aircraft, spacecraft & parts
2 Beef	Beef	Goods vehicles	Pharm products (excl medicaments)
3 Alcoholic beverages	Pharm products (excl medicaments)	Civil engineering equipment & parts	Passenger motor vehicles
4 Special transactions & commodities	Meat (excl beef)	Measuring & analysing instruments	Telecom equipment & parts
5 Meat (excl beef), f.c.f.	Aircraft, spacecraft & parts	Organo-inorganic compounds	Medical instruments (incl veterinary)
6 Medical instruments (incl veterinary)	Measuring & analysing instruments	Computers	Medicaments (incl veterinary)
7 Aircraft, spacecraft & parts	Confidential items of trade	Medicaments (incl veterinary)	Civil engineering equipment & parts
8 Uncoated flat-rolled iron & steel	Alcoholic beverages	Medical instruments (incl veterinary)	Goods vehicles
9 Passenger motor vehicles	Medical instruments (incl veterinary)	Telecom equipment & parts	Measuring & analysing instruments
10 Aluminium	Gold coin & equal tender coin	Gold	Crude petroleum

Source: DFAT, KPMG

The story of foreign investment between Australia and the United States is also a positive one. The US has been a direct investor in Australia for as long as we’ve had a trading relationship, and its importance as a source of investment funding has been markedly greater than the United Kingdom.<sup>9</sup> Conversely, the US remains the single largest destination market for Australian investment abroad, attracting nearly 30% all of Australia’s accumulated investment overseas.

**Figure 5: Total Foreign Investment between Australia and US, 2001–2020**



Source: ABS, KPMG

International trade and investment are, and always will be, dynamic. While trade between Australia and the United States has evolved even in the last fifteen years it will continue to evolve as new ideas, preferences and technologies emerge in the global markets both countries operate in.

For Australia, the opportunity to expand economic ties with the United States is enormous simply because the scale is so large. The United States has a population nearly thirteen times greater than Australia's, and it has an economic base more than fifteen times larger.<sup>10</sup>

To gauge whether there is the potential for Australia to increase its exports to the United States, it is important to understand which other countries have existing relationships and already supply the United States with its goods and services, especially in those future-focused sectors. Put simply, increasing Australia's exports to the United States can occur through either the US substituting existing imported goods and services supplied from other countries, or augmenting existing trade with current and emerging goods and services unique to Australia.

In the upcoming series of reports prepared AmCham and KPMG, the authors will examine the elements in assessing the future export growth potential for Australia in the six focused sectors.

**A case study in the field of scientific research, development and commercial trade between Australia and the United States.**

Before addressing the six key sectors, for the purposes of this Introductory Report, let us briefly consider an example of success in the field of science and technology from the Medicinal Products and Medicaments (3-digit SITC codes 541 and 542) sector.

The US Medicinal Products and Medicaments sector experienced annual import growth of slightly above 10% between the 2015 and 2020, before experiencing a notable decline because of market disruptions associated with COVID-19.

Looking at the year immediately prior to the start of the pandemic (2019), the United States imported and exported approximately US\$135 billion and US\$60 billion respectively of

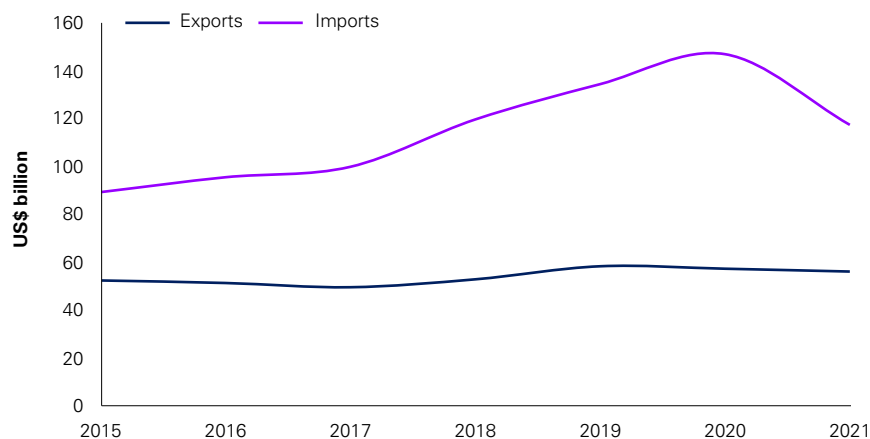
medicinal products and medicaments. Australia experienced relatively balanced trade with the United States in these sectors, exporting US\$1.25 billion and importing US\$1.35 billion of these goods during 2019.<sup>11</sup> Medicinal products and medicaments represented approximately 10% of total exports from Australia to the United States for 2019.

While Australia's trade in the sector was relatively balanced, Australia was the 15th largest export market for US medicinal products and medicaments and the 19th most important supplier of medicinal products and medicaments into the United States in 2019.

Clearly this market segment shows great potential for continued export growth for Australia to the United States. Just maintaining Australia's relative share of this expanding import market is likely to result in annual sales growth of between US\$50 million to US\$100 million. Alternatively, if Australia actively targeted moving from 19th to 15th spot in the ranking of relative importance of imports to the United States for this sector, it would result in a doubling in the value of its exports of medicinal products and medicaments.

As this simple example shows, the rising tide effect is likely to yield solid growth in exports to the United States for Australia in the coming years but taking a more aggressive approach in securing a greater proportion of the existing market will see economic ties strengthen markedly between the two countries.

**Figure 6: US Trade in Medicinal Products and Medicaments, US\$ billion**



Source: US Census

# The Australia-US relationship: geopolitical context

As previously noted, the intersection of private sector market drivers and public sector government interests and priorities are converging for a range of reasons, including geopolitical. This trend will continue to impact and shape the future growth in these six industry sectors.

Based on historically strong business, people-to-people, and defence ties, Australia and the United States have for decades contributed to each other's prosperity. For both countries' continued wellbeing in an increasingly volatile geopolitical environment, it is critical that we understand the realities of the relationship, and where potential exists for cooperation into the future.

The relationship between Australia and the United States is unique. In some ways, the two countries are very different. The United States is a global superpower by any measure, and Australia is a 'rising middle power' with a more regional focus.<sup>12</sup> Both have their own strong and individual national identities, forged by their different history, development, environment, social make-up, and politics.

Yet there is also much that is shared. Our business ties, including both trade and investment, are strong, as are our people-to-people connections. The two countries also share an understanding of how the global order should look and function, and what threats, risks, and opportunities exist. US Presidents and Australian Prime Ministers on both sides of politics have described the bilateral relationship as based on 'shared values' such as liberal democracy, and the necessity of a rules-based international order.<sup>13</sup>

Commentators will often point to the bilateral alliance as symbolic of the strength of the connection between the two countries. The ANZUS (Australia, New Zealand, US) treaty established in 1951 is broadly understood to be about much more than 'just' a defence agreement, and more an indicator of the mutual support and commitment to shared global values and interests.<sup>14</sup>

The broadly shared vision that Australia and the United States have for the future of the international system is operationalised with structures for cooperation which also involve other like-minded countries. In addition to the bilateral alliance and the Five Eyes intelligence alliance comprising Australia, the United States, Canada, New Zealand and the United Kingdom, more recent institutions for cooperation have been created. The Quadrilateral Security Dialogue, or 'Quad', the concept of a 'free and open Indo-Pacific', and the recently announced AUKUS (Australia, UK, US) agreement demonstrate how the two countries' shared vision of the world is being put into practice.<sup>15</sup>

While this shared vision is strong, it is not immutable and should not be taken for granted.<sup>16</sup> Australian and US perspectives on the causes and implications of changing global dynamics are not always the same. These differences are entirely appropriate given our different positions and roles in the world.

It is important to recognise these areas of difference do not suggest a rupture in the relationship, but the opposite, to ensure a strong foundation for cooperation. In an increasingly volatile geopolitical climate, a strong US-Australia relationship will be increasingly critical for mutual prosperity, and successful cooperation will depend on acknowledging and respecting each other's perspectives.

The world is changing rapidly, driven by four interconnected megatrends: structural shifts in the international system, social unrest, the digital revolution, and the climate crisis. All these megatrends existed before the COVID-19 pandemic but have been accelerated and exacerbated by the pandemic.<sup>17</sup>

In this challenging and uncertain future, there are several areas where Australia and the United States have complementary capabilities that should be explored. This research report series examines six key sectors for cooperation: Artificial Intelligence (AI), biotechnology, energy and clean technology, the digital economy, quantum science and space. Focusing on these areas for potential cooperation into the future will help ensure Australia-US bilateral ties stay strong and build the foundation for continued mutual wellbeing and prosperity.

# Insights

## from AmCham members and university students from the roundtable events

### Artificial Intelligence

"In the coming years, I have no doubt we will see Artificial Intelligence become ubiquitous in every facet of our lives. As nations leverage this emerging technology to control their populations, their economies, and their geopolitical positioning, it is essential we respect human rights, privacy, and freedom of expression. We are living in the defining decade whereby we can choose to expand technological capabilities in AI for the betterment of our shared commitments, or we can widen inequality and polarise communities. Young people today should identify the natural partnership between Australia and the United States to work together in the development of AI. The career prospects are as bright as the alliance between our two countries."

**Holly Ransom**  
CEO, Emergent

### Biotechnology

"The response to the global pandemic has hammered home the importance of the global biotech sector to the health and well-being of communities and economies around the world. More broadly, it has demonstrated the value of science, of innovation and the capacity of collective partners to quickly respond in a time of crisis. It is vital to maintain investment from American biotech into Australia as it will enhance our research and development capabilities, strengthen our workforce and foster strategic partnerships that have proven so critical in delivering medical innovation."

**Anne Harris**  
Managing Director  
Pfizer Australia and New Zealand



### Artificial Intelligence

"I'm particularly excited about applications of AI that enable machines to make more natural decisions with complex, real-world inputs. As Australia relies more heavily on data, there will be an increasing demand across all industries for a technical workforce who can readily employ robust AI solutions at scale. After graduating, I look forward to working on new embedded AI technologies which give robotic systems enhanced abilities to see and operate in challenging environments, such as underwater and space. Key to Australia's future AI industry is leveraging strong international relationships that share our values, particularly with the US where academia and industry have developed collaborative and problem-driven partnerships. In saying this, given the US has a well-established and resourced capacity, Australia must continue to ensure that we provide greater opportunities for researchers and professionals to retain talent and foster a strong and sovereign AI capability."

**Jack Naylor**  
Bachelor of Engineering  
(Mechanical), Honours  
Bachelor of Science (Advanced)  
majoring in Space Engineering  
and Physics  
University of Sydney,  
Class of 2022

## Biotechnology

“The intersection of biology and technology attracts me due to its potential to advance areas of health, the environment, and sustainable agriculture. After graduating, my goal is to utilize my knowledge of biotechnology to improve the quality of life of medical patients. Currently, biotech is quite a niche field in Australia, with the main career avenues being medical device manufacturing and distribution, as well as regulatory affairs. I am convinced that a stronger American-Australian relationship will prove beneficial for the biotechnology industry. I believe that it could open new avenues of employment with greater career variability, increased economic prosperity, and advance community wellbeing. Opportunities always contain risks, and the one concern I have is that the relationship may catalyse rapid changes within the Australian biotechnology industry that we are not yet equipped to handle. This could possibly threaten the long-term sustainability of our companies and their products, but if we meet this challenge this could accelerate the career opportunities and medical improvements for young Australians such as myself.”

### Nikitha Rao

**Bachelor of Engineering, Honours**

**Diploma in Professional Engineering Practice (Biomedical major)**

**University of Technology Sydney, Class of 2024**



## The Digital Economy

“As a young Australian and as a university student, a large part of my life is planning and preparing for my future career. Right now, my main goal is to follow through with my passion of Biomedical Engineering, specifically tissue engineering and regenerative medicine. But biotechnology, like so many other technical and engineering fields, is dependent on advances in global commerce made possible by the Digital Economy. Biotech firms and Australian consumers require safe, fast, secure, and seamless transactions. We need to know that medical records shared digitally do not fall into the wrong hands. So as the digital economy and other fields continue to grow here in Australia, it is more important than ever to ensure that we partner with firms and countries that share our values of privacy, protection of minority opinions, human rights, democracy, and the rule of law. I hope to be a part of a nation that’s part of an open and clear-sighted economic relationship with the United States, without Australia becoming a client state to any global power.”

### Inshaa Amrutha

**Biomedical Engineering**

**University of Technology Sydney, Class of 2023**

## The Digital Economy

“Welcome to the digital age, and with all the efficiencies and productivity that has come with it, more and more, we trust that it will just ‘work.’ We live in the digital age, in which things that used to be accurate and tangible are now machine-generated or only exist as bits and bytes. For example, consider your bank account and the total absence of actual money or legal tender underlies it; you trust that the assets exist because you can ‘see’ them when you log in to your account on the financial institution’s website. This reliance on digital systems is why the tempo of concern due to cyberattacks is rising rapidly. The time to collectively work together is needed more than ever to prevent these attacks from taking place to vastly reduce the number of successful attacks and restore the digital trust we all require for our global economy.”

### Sean Duca

**Vice President**

**Regional Chief Security Officer**

**Asia Pacific & Japan, Palo Alto**

**Networks**



### Energy and Clean Technology

“There has never been a better time nor a greater opportunity for Australian mining companies to pivot towards clean energy. Australia is one of the highest residential rooftop solar penetration countries in the world making it the ‘best place’ to learn from trials and scale in this technology. There is also a real opportunity for a number of Mining companies in Australia to be the New Energy companies of tomorrow as they take an active role in energy transition. With the USA as our key investment partner and the synergies in particular areas of east coast, California, Arizona – there is interoperability of functionality and business models for our two countries.”

**Preeti Bajaj**  
**Country Head**  
**The Adecco Group Australia & New Zealand**  
**Managing Director, Modis Australia**

### Quantum Science

“We live in a remarkable time where we are witnessing the birth of powerful new technologies based on the bizarre, counterintuitive laws of quantum physics. Although we are still grappling with our understanding of this new physics, we have glimpsed its implications; from energy and the environment to healthcare, security, and computing – in the 21st century quantum technologies will transform our world. Australia leads the world in this technology, enable by two decades of support by the US and Australian Governments. In recent times major US industry players have also invested deeply in Australia, for instance, Microsoft’s significant partnership with the University of Sydney that has both attracted highly skilled people to Australia and established a talent pipeline desperately needed to accelerate the coming of the quantum era.”

**David Reilly**  
**Director and Principal Researcher**  
**Microsoft Station Q**  
**Professor of Physics**  
**University of Sydney**

### Quantum Science

“Quantum straddles several exciting new frontiers in science, engineering and programming. I am attracted to its ability to disrupt industries and bring about societal innovation. I believe Quantum technology will lead to new careers in developing advanced models for smart city infrastructure. This may include renewable energy grid stabilisation and improvements in city transportation. It is an area I am particularly interested in, as I aim to follow a career in Energy and Infrastructure after graduation. I hope the future American-Australian relationship will lead to further cooperation in Quantum research and result in shared prosperity from industry 4.0 innovations, as well as the need for quantum experts to contribute to the new AUKUS initiative. But I am also concerned that the technology developed by this collaboration may compromise encryption protocols. Overall, I am excited by the future of Quantum technology in Australia and America, and its ability to bring both nations closer together.”

**Connor Boughton**  
**Bachelor of Engineering**  
**(Honours)**  
**Major in Mechatronics**  
**University of Technology Sydney,**  
**Class of 2022**





## Space

“As a rapidly developing field, Space presents a lot of opportunities to explore and ultimately develop cutting-edge technologies. It is also a field constantly inspiring surprising innovations outside of the field of Space. As a Space Major student, I am aware that there are space jobs available in Australia. But as there are no current launch missions originating in Australia, many students with a genuine passion for space seem to think they must relocate to North America to join organizations such as JPL, SpaceX or NASA if they want to pursue career opportunities in the field. I believe that there is great potential for a future American-Australian relationship in the field of space as collaboration and pooled resources would accelerate innovation and birth new ideas. Being aware of the often defence related nature of space innovation, we must be aware of the potential risk of militarisation of jointly created technologies as well as the risk of a future falling out between both countries. This risk is mitigated in my view by more privately-run economic cooperation that is not focused primarily on military applications.”

**Georgia Tovich**

**Bachelor of Engineering (Mechatronics with Space Major)**

**Bachelor of Laws**

**University of Sydney, Class of 2025**

## Space

“For decades, Australian-American collaborations in space technologies have provided significant benefits towards the civil, commercial, and national security interests of both countries. The Australian government’s recent establishment of a domestic space agency, and commitment to building a \$12 billion industry serves to highlight the importance of recognising the individuals and organisations who are driving innovation in this space, and facilitating these invaluable bilateral partnerships.

The Fulbright Program in Australia is proud to support AmCham’s initiative in spotlighting space, and other key Future Industries as areas that are critical in securing Australia’s economic prosperity.

We are also proud to support the many Fulbright Scholars who are working and innovating in these key industries.”

**Dr James Arvanitakis**

**Executive Director**

**Fulbright Australia**



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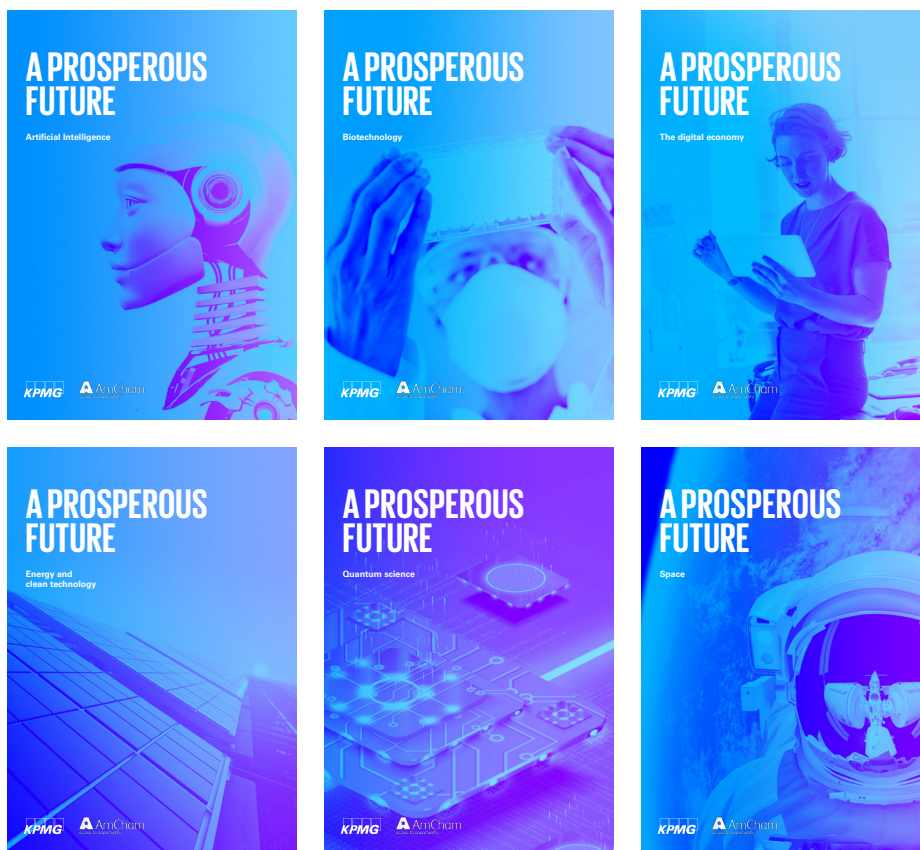
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# Next steps

Our detailed reports will be released by industry sector on a quarterly basis, starting with Energy and Clean Technology from March 2022 onwards. In keeping with our open and collaborative approach and given the complexity and dynamism of each of these industries, we will continue to host collaborative roundtable discussions with AmCham members, KPMG clients and university students both in Australia and the United States. Furthermore, we've created an open platform for the general public to submit thoughts and suggestions. For more information, please contact [FutureProsperity@amcham.com.au](mailto:FutureProsperity@amcham.com.au).

AmCham and KPMG Australia look forward to working together and with you on this important, visionary business report series.



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