Australian Mining

TRADING NATION

New frontiers South and East Asia

ASEAN

A guide for Australian trade negotiators and mining and METS businesses to leverage trade and investment opportunities in emerging markets across Asia

04

TRADE AGENDA

Minerals Council of Australia

Minerals Council of Australia

TRADING NATION

ABOUT NEW FRONTIERS

New frontiers: ASEAN is a research study by Mike Adams, Nicolas Brown and Ron Wickes, the partners of Trading Nation Consulting, for the Minerals Council of Australia.

The New Frontiers study has produced a series of reports identifying opportunities and setting out an agenda for Australian trade negotiators and mining and METS businesses to expand trade and investment links with emerging Asian economies.

The Trading Nation Consulting partners are former senior officials of the Department of Foreign Affairs and Trade and the authors of *Trading Nation: Advancing Australia's interests in world markets*, UNSW Press, 2013.

The ASEAN 2017 commemorative coin was released in March 2017 by the Bangko Sentral ng Pilipinas (BS). The 1-piso legal tender coin aimed to generate interest in the Phillipines' ASEAN Chairmanship and promote public awareness of ASEAN.

February 2020

TRADING NATION

ASEAN

NEW FRONTIERS: SOUTH AND EAST ASIA

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Australia has long enjoyed the benefits of international trade and investment.

Trade is equal to 43 per cent of Australia's economic output and one in five Australian jobs is trade related.

Against the backdrop of a slowing global economy and rising protectionism, it is critical that Australian companies continue to identify new markets and opportunities to help support further economic growth and prosperity in Australia and our broader region.

As outlined in the Government's Foreign Policy White Paper, ASEAN is increasingly important economically and strategically to Australia. Last year marked 45 years since Australia became ASEAN's first dialogue partner and January 2020 marked ten years since the ASEAN-Australia-New Zealand Free Trade Area came into force.

ASEAN sits in one of the fastest growing regions of the world.

Taken together, ASEAN nations are equivalent to Australia's second largest trading partner with total two-way trade worth more than $120 billion in 2018. Australia's resources exports to ASEAN alone were worth more than $18 billion in 2018, including coal ($3.5 billion), gold ($2.7 billion) and $9 billion in petroleum and LNG exports. There has been strong growth recently in Australia's mining exports, with coal and gold exports to ASEAN having grown more than 50 per cent in the past 12 months alone.

ASEAN has a combined GDP of US$2.8 trillion – which is larger than India – and its collective economy has grown by almost 50 per cent over the past decade. ASEAN is forecast to overtake the EU and Japan to become the 4th largest economy in the world by 2050, behind China, India, and the United States. ASEAN's middle class is expected to double by 2030 and it is estimated that nearly 70 per cent of ASEAN's population will live in urban areas by 2050.

I am pleased to support this latest report in the MCA's *New Frontiers* series produced by Trading Nation Consulting. The report sets out the economic engagement between Australia and the ASEAN region in mining and mining services. It highlights opportunities for Australian companies in mining exports to the region as well as opportunities for inwards and outwards investment.

The report draws together the insights of Australia's mining and METS companies that operate in South-East Asia as well as the expertise of Austrade's and the Department of Foreign Affairs and Trade's network of diplomatic and trade missions throughout ASEAN countries, including our Ambassador to ASEAN.

Senator the Hon Simon Birmingham
Minister for Trade, Tourism and Investment

ASEAN

The Association of Southeast Asian Nations was established on 8 August 1967 in Bangkok, Thailand.

ASEAN Member States

1. Indonesia
2. Malaysia
3. Philippines
4. Singapore
5. Thailand
6. Brunei Darussalam
7. Vietnam
8. Laos
9. Myanmar
10. Cambodia

KEY C Capital L Language P Population (2018) $ GDP per capita, US$ (2019)

INDONESIA	
C	Jakarta
L	Indonesian
P	270.6 million
$	US$4123.3.30

MALAYSIA	
C	Kuala Lumpur
L	Mal., Eng., Chin., Tamil
P	32 million
$	US$11,385.10

PHILIPPINES	
C	Manila
L	Filipino, Eng., Spanish
P	108 million
$	US$3280.40

SINGAPORE	
C	Singapore
L	Eng., Mal., Man., Tamil
P	5.8 million
$	US$65,627

THAILAND	
C	Bangkok
L	Thai
P	69.6 million
$	US$7607.70

BRUNEI	
C	Bandar Seri Begawan
L	Malay, English
P	429,000
$	US$30,290.10

VIETNAM	
C	Hanoi
L	Vietnamese
P	96.5 million
$	US$2725.80

LAOS	
C	Vientiane
L	Hindi/English
P	7.2 million
$	US$2931.80

MYANMAR	
C	Nay Pyi Taw
L	Myanmar
P	54 million
$	US$1238.50

CAMBODIA	
C	Phnom Penh
L	Khmer
P	16.5 million
$	US$1635.40

ASEAN and the world

ASEAN is a major market for minerals and basic metals with imports highly concentrated.

Total ASEAN imports of minerals and basic metals were more than US$94 billion in 2018. Gold made up nearly 40 per cent. Coal, unwrought copper, semi-finished products of iron and non-alloy steel and unwrought aluminium were also substantial.

ASEAN's total imports are much smaller than China's, are well below India's, but appreciably greater than Japan's, which for many years was Australia's biggest market for minerals.

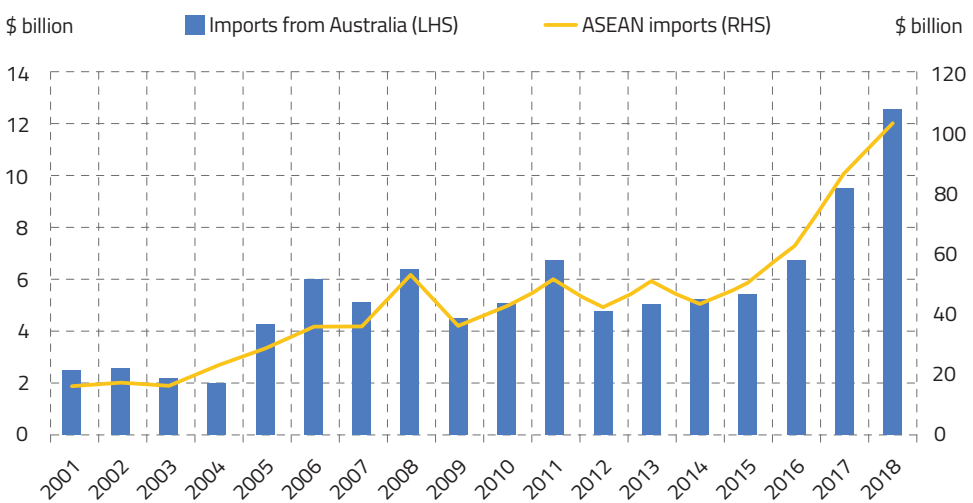
ASEAN imports of minerals and basic metals are growing rapidly. Over the last five years, its top 10 mining and basic metal manufactures imports have almost doubled (Chart 1).

Import growth has been faster in aggregate than for China, India and Japan, and was faster than for the rest of the world minus ASEAN. Growth in coal imports has been especially fast (Chart 2).

Chart 1

ASEAN imports of ten key minerals and metals

Source: International Trade Centre (ITC) Trade Map Database

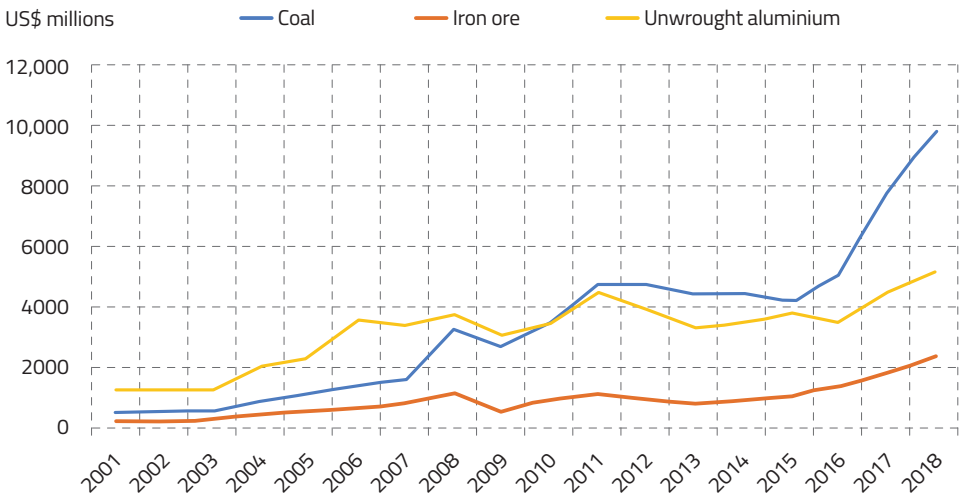


Note: The ten key commodities are: gold, unwrought or in semi-manufactured or powder form; coal, briquettes, ovoids, similar solid fuels manufactured from coal; refined copper and copper alloys, unwrought; semi-finished products of iron or non-alloy steel; unwrought aluminium; diamonds, whether or not worked, but not mounted or set; ferrous waste and scrap, remelting ingots of iron or steel; iron ore and concentrates; unwrought zinc; and ferro-alloys. Laos and Myanmar are not included for 2001-2009. Data for 2017 and 2018 are estimated for some smaller ASEAN economies.

Chart 2

ASEAN imports from the world, selected commodities

Source: ITC Trade Map Database



Note: For Vietnam, mirror data (that is data estimated from partner country records) are used for all three commodities in 2018. The ASEAN totals do not include data for Myanmar and Laos prior to 2010. For iron ore, this is also the case for Cambodia and Laos for 2017 and 2018. For coal and unwrought aluminium, estimates for Cambodia and Laos are mirror data for those two years.

Industry advice is that demand for services is stronger than for equipment.

ASEAN is a price-sensitive market for mining equipment. ASEAN's mining equipment market is very competitive and, like India's, trades mainly on price giving Chinese companies a significant advantage.

It is difficult to quantify the size of the import market because so much imported equipment has dual or multiple uses when classified using the Harmonized System (HS) for statistics on international trade. This analysis suggests that total mining equipment imports, or products closely related to them, are substantial.

ASEAN is a major market for mining services. Industry advice is that demand for services and associated technology is stronger than for equipment. ASEAN mining companies, by and large, are not leading edge and mostly require good basic services. Demand for high-end technologies and associated services are limited to some specific mining projects across the region.

Total FDI inflows into mining and quarrying are relatively small and have declined in recent years.

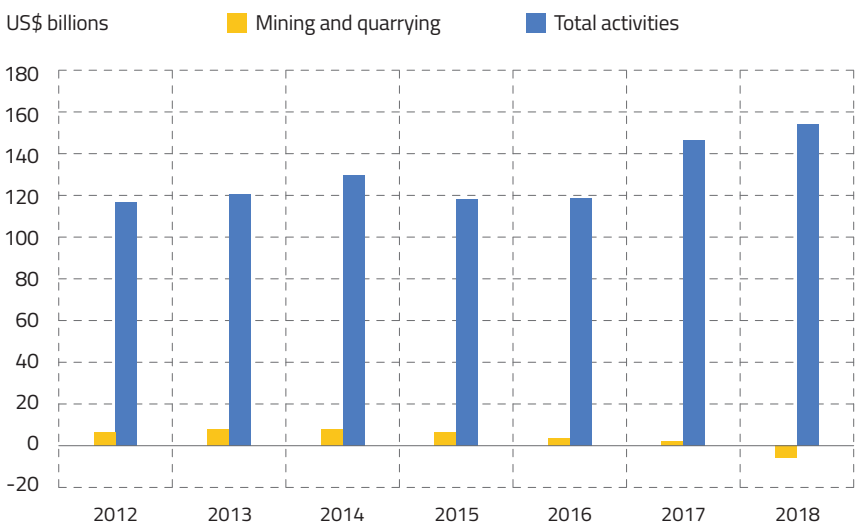
ASEAN is not on the whole an attractive destination for foreign direct investment (FDI) in non-oil and gas mining and quarrying. Total FDI inflows into mining and quarrying are small relative to total inward FDI and have declined in recent years, with net disinvestment in 2018 (Chart 3).

The drying up of international investment is linked to the unpredictable policy environment. Uncertainty over tax obligations and poor coordination across government are examples in some ASEAN countries. It is also linked to the growing prominence of environmental activism; legacy issues associated with predatory mining practices; and resources nationalism. The latter may be on the rise in some countries. It is certainly not abating.

Chart 3

Inflow of FDI into ASEAN, total and mining and quarrying

Source: ASEAN Secretariat, ASEAN FDI Database



Note: 2018 data are preliminary.

ASEAN and Australia

ASEAN is a big and highly concentrated market for Australian minerals and basic metal manufactures.

Australian exports of minerals and basic metal manufactures were valued at around $12.9 billion in 2018. Coal – more than half of it thermal coal – stands out as the biggest mining export at $3.44 billion. Gold – predominantly bullion – is not far behind at $2.73 billion. Together, these two commodities make up about half of Australia's mining exports to ASEAN. Unwrought copper ($1.36 billion), unwrought aluminium ($926 million) and iron ore and concentrates ($797 million) are the other big exports.

Australia's mining exports to ASEAN have grown at vastly different rates in recent years. Over the period 2013-2018, exports of thermal and metallurgical coal and iron ore grew especially fast in response to the rapid pace of ASEAN's economic growth and industrialisation and burgeoning energy demand. Exports of unwrought zinc ($500 million) and manganese ores and concentrates ($208 million) also grew rapidly, albeit from a very low base in the latter case.

At the other extreme, some Australian exports to ASEAN have declined. For example, after expanding very rapidly between 2006 and 2013, unwrought nickel (not alloyed) exports have fallen away very sharply (Chart 4). This is probably a response to substantial falls in the value of ASEAN's total imports of this commodity as a result of increased nickel production in Indonesia (the world's biggest producer) and some ASEAN economies importing more stainless steel given the cost advantage associated with China's innovation in stainless steel manufacturing.

Over 100 METS companies are active in the Indonesian market.

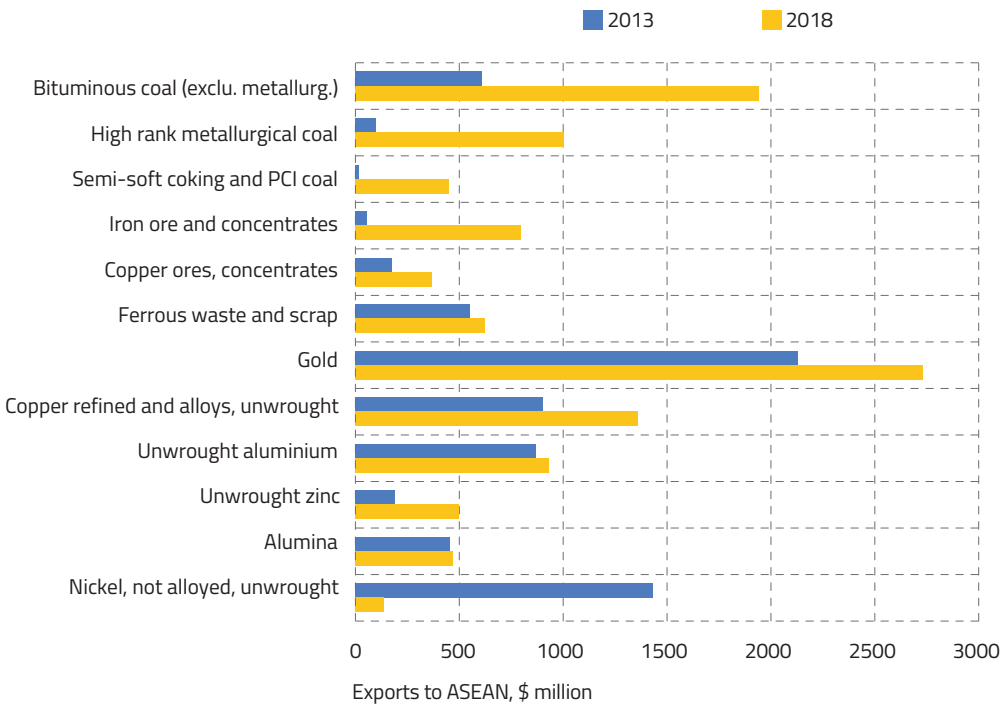
Australian METS companies operate across Southeast Asia but are focused on a small group of ASEAN members. Over 100 Australian METS companies are active in the Indonesian market. The unsettling impact of buy-outs of foreign invested companies has not affected Australian METS companies particularly because mining activity has continued irrespective of changes in the ownership of some mining companies.

Australian mining and proto-METS companies have operated in the Philippines since the nineteenth century, with numbers rising and falling with mining cycles. Resources nationalism has had an impact on METS: ten years ago there were many more Australian METS companies in the market. The thinning out is a direct response to policies that have created a highly uncertain environment for mining.

Chart 4

Australian exports to ASEAN, selected minerals and metals

Source: ITC Trade Map Database



Note: Data for alumina and unwrought nickel are confidential in Australian statistics. They are estimated here from ASEAN import data as set out in the notes to Table 2.2. Some exports show large year-to-year fluctuations and comparisons should therefore be made with caution.

Countries like Cambodia, Laos and Myanmar are nascent markets with potential.

Some large Australian mining and METS companies have regional headquarters in Singapore. They are attracted by its top quality business environment; its status as a natural hub for doing business in East Asia and associated opportunities for coordinating marketing, corporate decision-making and procurement for third country markets; and its focus on innovation.

Beyond these countries, Australian involvement in METS markets falls off. There is not much engagement on METS with Thailand. Vietnam is a developing METS market which is largely controlled by one state owned enterprise (Vinacomin). And countries like Cambodia, Laos and Myanmar are nascent markets with much

potential. Foreign mining companies are generally welcomed, but they are not currently on the radar of the great majority of Australian METS companies.

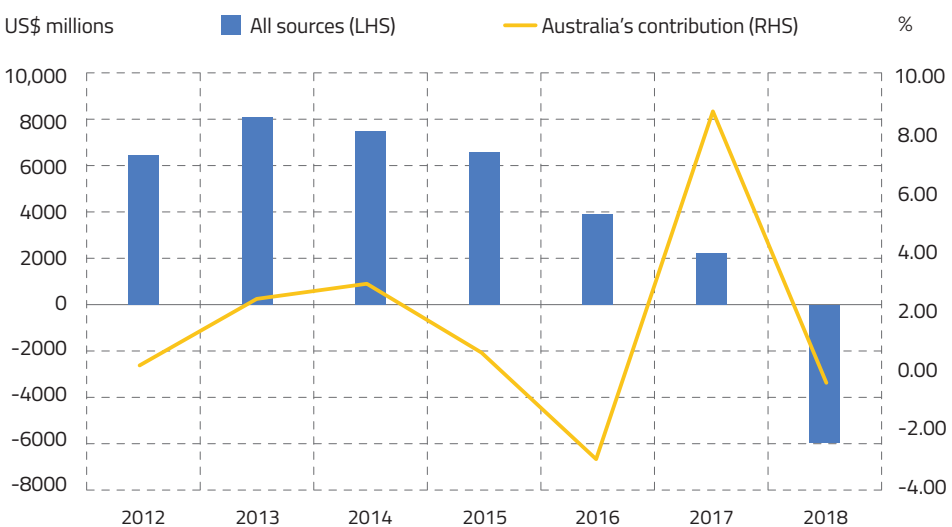
Australia is underweight in FDI in ASEAN mining. This is probably due to the unpredictable policy environment.

Australia is underweight in FDI in ASEAN mining. There are significant data limitations on total flows of FDI into ASEAN's mining and quarrying sector and Australia's contribution to that total. Within these limitations, Australia appears to have contributed under 2 per cent of inflows into the sector over the period 2012-18, well below the shares of the European Union, other ASEAN economies (principally Thailand, Malaysia and Indonesia) as a group, China and Japan (Chart 5). It is not possible to determine how much Australian FDI was directed to the METS sector, but this is probably the best option currently for non-oil and gas investment in mining. For reasons already mentioned, being underweight in ASEAN's mining sector is probably due to the unpredictable policy environment.

Chart 5

Australia's contribution to inward FDI flows to ASEAN's mining sector

Source: ASEAN Secretariat, ASEAN FDI Database



Note: 2018 data is preliminary.

Future demand for resources and basic metals manufactures in ASEAN

ASEAN's demand for energy will continue to rise strongly through the 2020s and beyond.

ASEAN's demand for energy will be driven by economic growth and rising incomes. All ASEAN governments have ambitious plans to increase energy production. Under the International Energy Agency's (IEA's) 'New Policies' Scenario, which takes in current policy frameworks and ambitions together with the continued evolution of known technologies, demand for electricity is projected to increase at a compound average annual rate of 3.9 per cent over the period 2017 to 2040. Generation of electricity from coal-fired plants is projected to increase at 4.3 per cent per year over this period, and gas-fired generation and renewables at 2.3 per cent and 5.9 per cent respectively with solar photovoltaic generation growing fastest.

ASEAN stands out globally for the scale of planned investment in coal-fired generation and the prospect of increasing reliance on coal into the 2020s and beyond. Under the IEA's New Policies Scenario, coal generation capacity is set to more than double in the period to 2040 driven by growing power sector requirements. ASEAN and India are likely to emerge as the growth centres of global coal use. On current IEA projections they could boost coal usage by well over 200 million tonnes coal equivalent (mtce) and 600 mtce respectively over this period. If these increases are achieved, they would more or less balance projected declining demand in North America and Europe (Chart 6).

Solar panels, wind turbines, storage batteries, electric vehicles and smart phones are intensive users of metals.

Considerable uncertainty inevitably attaches to any set of projections over such a long period. The precise role of coal-fired generation in the energy mix is being reassessed across the region as governments consider renewables compared to natural gas and coal over the medium term.

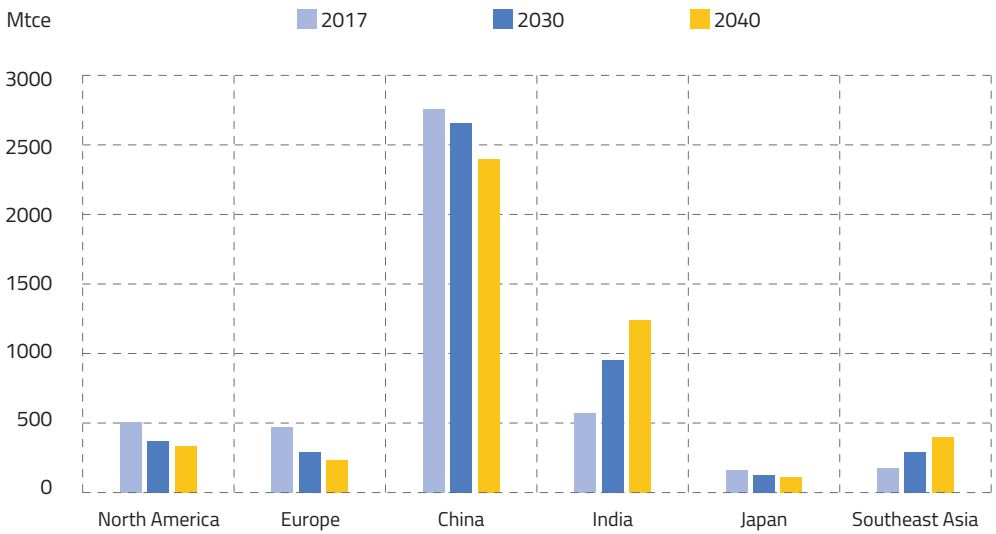
ASEAN's demand for metals should continue to rise rapidly for many years to come. Two key factors will be changing consumer and energy-related technologies, and the impact of continuing fast economic growth.

Technologies like solar panels, wind turbines, storage batteries, electric vehicles and smart phones are intensive users of metals such as copper, cobalt, nickel, rare earths, lithium, and silver.

Chart 6

Projected coal demand, selected regions and economies

Source: IEA, *World Energy Outlook 2018*, OECD/IEA, Paris, 2018



Note: Mtce refers to million tonnes of coal equivalent. 2017 data are estimates. Southeast Asia is defined as ASEAN.
Projections are those under the IEA's New Policies Scenario (see text). Under this scenario, the IEA sees total world demand as essentially flat, rising slightly from 5,357 mtce in 2017 to 5,405 mtce in 2030 and 5,441 mtce in 2040.

Rising incomes and urbanisation will remain the preponderant influence on demand for metals.

Rising incomes, industrialisation, shifts in the composition of output and urbanisation will remain the preponderant influence on demand for metals:

- Rising incomes should increase demand for gold
- Demand for metals like steel increases dramatically as economies reach per capita incomes of US$5000-10,000. Some ASEAN countries are just above this while others are not too far below it
- Demand for metals like copper and nickel may not peak until per capita incomes are well in excess of US$20,000 per year. This is a common enough level in ASEAN's major cities, where per capita income are typically three or four times higher than for national economies.

Future production of resources and basic metals manufactures in ASEAN

Production of minerals and energy is likely to lag behind demand.

The degree to which regional production of minerals and energy responds to growing regional demand will depend on investment in these sectors. Some of the forces influencing investment will continue to pull in different directions.

Unpredictable regulatory changes, growing resources nationalism and anti-mining sentiment will retard growth, particularly in international investment in non-hydrocarbon mining. In combination, this should reduce growth in production of mining commodities by delaying projects and reducing access to investment and advanced technology. Partially offsetting this, domestic investment in mining continues to rise in countries like Myanmar and Indonesia, as does international investment in METS across the region.

Squeezing more output from current projects will not cover the growing shortfall between domestic production and demand for minerals and energy. Large-scale new investment, including by international mining companies, will become essential if minerals production is to grow at anywhere near its potential.

There is a ready market for METS firms that can provide the skills and technology to analyse vast volumes of data and improve mine performance.

METS is a good news story. Leading METS companies are becoming more inter-disciplinary 'knowledge hubs' as technologies and services are developed to address new challenges that may straddle several sectors. This applies especially to technologies embracing artificial intelligence, automation and sustainable mine management.

Over time, state-run enterprises that dominate much of ASEAN's mining and downstream industries will want to access more of this knowledge to explore for deeply buried minerals deposits, improve the internal environment of mines, strengthen environmental and community outcomes, and increase supply chain efficiencies. This has a long way to go, but there is a ready market for METS firms that can provide the skills and technology to analyse vast volumes of data quickly and contribute generally to improving mine performance.

Rising imports of minerals and energy

Policies that constrain domestic supply will drive increased ASEAN imports of minerals and energy.

Based on recent experience (see Charts 1 and 2), a strong upward trend in ASEAN's mineral and energy imports seems inescapable over the next several years and maybe longer. Its strength and longevity will be determined by the durability of policies that effectively hobble minerals production in some key ASEAN economies. For example, despite their limitations, policies that promote national ownership of mines are very popular, and policies requiring international mining companies to process metals are hugely popular. Both appeal strongly to national pride and, as such, are highly political. Whether alternative narratives emerge framed around resources security, implications for trade performance and achieving development objectives will depend on the interests and skills of political leaders.

Energy imports should rise rapidly. Expected supply constraints within ASEAN suggest that LNG requirements will be met increasingly from outside the region. Import demand for thermal coal should continue to grow, though projections are being wound back somewhat as non-hydro renewables rise in importance in the region's energy mix. Future import demand in some countries – Thailand for example – is uncertain because coal-fired generation has become so controversial. But across the region, imports should rise significantly even as governments take action to reduce emissions intensity and improve urban air quality.

Imports of metal ores and basic manufactures should rise rapidly.

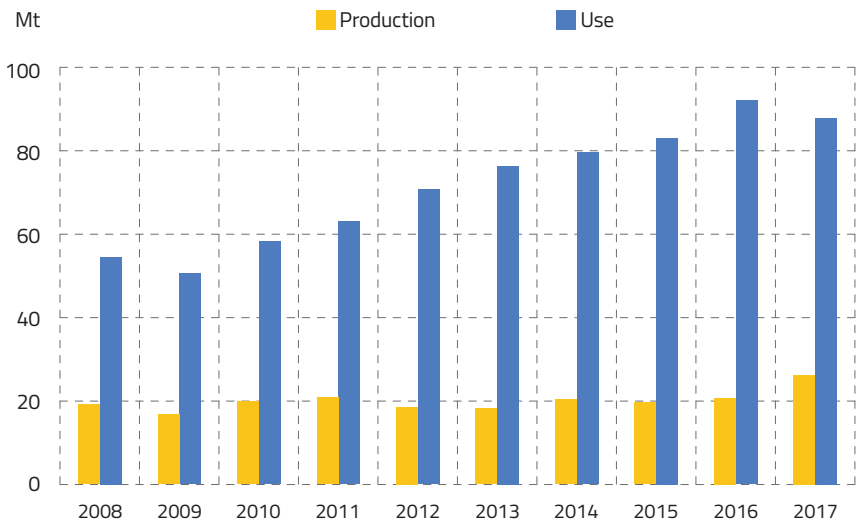
Across ASEAN, identified reserves of many key metals required in modern industrial societies are abundant. Examples are bauxite in Vietnam, Indonesia and Malaysia; cobalt in the Philippines; and nickel in Indonesia and the Philippines. However, metals such as manganese ores, cadmium, chromium, indium, lithium, molybdenum, and platinum have not yet been discovered in commercially viable quantities. Changing consumer and energy-related technologies can be expected to drive import demand.

Demand for commodities like steel will be driven by urbanisation and hard to predict factors such as the traction of China's 'Belt and Road' initiative over time. But rapidly expanding metals production will continue to be challenging in many countries: it depends on the availability of cheap and reliable energy and substantial investment in metals processing at the same time as substantial investment in hard and soft infrastructure more broadly. There is a wide gap, for example, between production and use of steel in ASEAN (Chart 7). Steel imports should rise for many years to come.

Chart 7

ASEAN production and use of steel

Source: World Steel Association, *Steel Statistical Yearbook 2018*



Note: Mt is million tonnes. Use refers to apparent steel use in crude steel equivalents. The ASEAN totals do not include Brunei, Cambodia and Laos. Data for Myanmar are estimated by the World Steel Association.

Opportunities for Australia

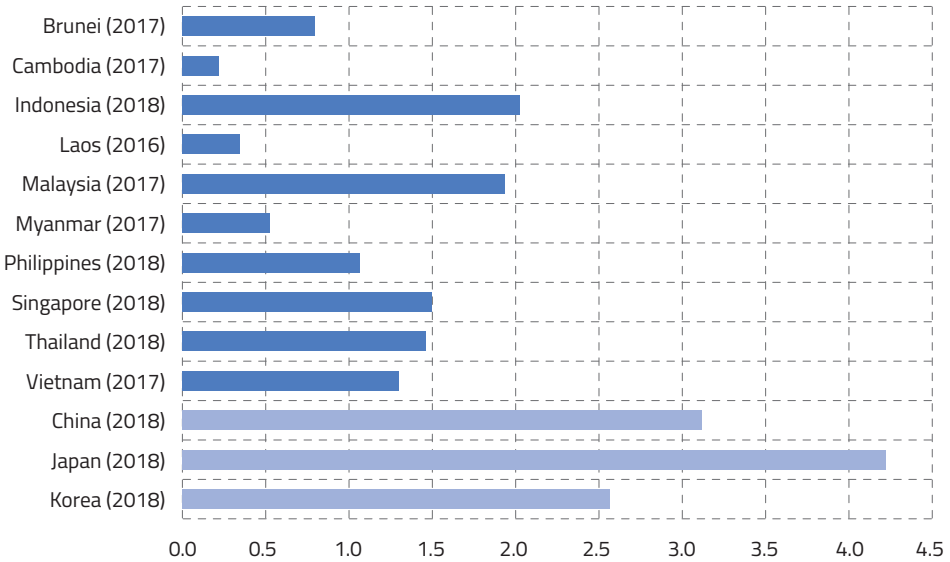
ASEAN in aggregate is Australia's third largest trading partner.

Australia trades relatively intensively with several of the larger ASEAN economies (meaning that the share of exports going to them is above what would be expected given their share of world imports). Export intensities are high for Indonesia, Malaysia, Thailand and Vietnam (Chart 8). But they are well below export intensities for China, Japan and Korea, in part because of the absence of steel industries in ASEAN on the scale of those in Northeast Asia. They should, however, rise over time. The foundations for this are already firmly in place: ASEAN in aggregate is Australia's second largest trading partner. Further rapid urbanisation and the emergence of a consumer-driven economy should create additional opportunities for trade and investment.

Chart 8

Australia's export intensity with ASEAN and selected Northeast Asian economies

Source: TNC calculations from ITC Trade Map and DFAT data



Note: The trade intensities are calculated as the share of Australian merchandise exports directed to the country in question divided by that country's share of world imports (with world imports adjusted to remove Australian imports). Data for Singapore should be interpreted with particular caution, since the import data used to calculate the ratio include items subsequently re-exported with little or no change. Australian exports to Singapore may also include some goods re-exported to other economies. In the Chart, a reading greater than one indicates a relatively intensive export trade.

Australia is well placed to expand mining and mining services to ASEAN.

Exporting is the most straightforward option for Australian miners wanting to do business in ASEAN. Opportunities exist across thermal and metallurgical coal, LNG, iron ore and other metals. With the virtual elimination of tariffs in Australia-ASEAN minerals trade, non-tariff barriers will become a much bigger impediment to trade as some governments in the region use them to manage, or at least influence, trade flows.

Investing in non-oil and gas mining assets is the riskiest option for Australian miners operating in ASEAN. This fact will not change until more predictable policy and regulatory frameworks are implemented there. METS is a lower risk investment option for Australian companies. Trade and investment opportunities in METS are growing and are likely to continue growing. Australian firms have strong brand recognition and collectively offer the full suite of technical, environmental, managerial and skilling services.

Priorities for engaging ASEAN

Australia has a vital interest in keeping international trade open and growing.

Keeping international trade open and growing requires working with ASEAN and others who depend on international trade for their prosperity. Cooperation is needed at many levels. An obvious starting point is supporting the open, rules-based global trading system which is under strong pressure.

At the regional level, completing and implementing the Regional Comprehensive Economic Partnership and agreements like the Indonesia-Australia Comprehensive Economic Partnership are important priorities.

Australia has a vital interest in supporting an efficient and competitive resources sector. This requires Australian governments to lead by example in providing a predictable and competitive domestic policy and regulatory framework, including in key areas like competition, energy, taxation, infrastructure, industrial relations, education and skills.

Australian governments must lead by example in providing a predictable and competitive domestic policy and regulatory framework.

Beyond these foundation blocks, key policy priorities are:

- Ensuring adequate funding for the science, information technology, engineering and vocational training that supports modern mining
- Making a stronger resources sector a sustained trade policy priority
- Providing funding to showcase internationally Australia's strengths across the mining and minerals supply chains
- Using public diplomacy domestically to correct misperceptions that modern sustainable mining is 'old economy'.

Australia has a vital interest in government-to-government cooperation across the region to promote sustainable, safe and efficient mining. This spans policy and regulatory formulation and implementation; improved training for mine managers, engineers and project coordinators across a wide range of mining-related disciplines; and effective responses to the impact of climate change.

Introduction

> … ASEAN – a collaboration between vividly diverse countries in their geographies, levels of development, populations, growth prospects, and systems of economic, political and social organisation – is one of the hubs of Asia's economic dynamism and a key market for Australia's resources and METS products and services. Minerals and energy make up well over half of Australia's top 10 merchandise exports to ASEAN, and ASEAN member states are among Australia's principal export markets for minerals. Austmine industry surveys identify Indonesia as the top or second top export market for Australian METS companies and Southeast Asia more broadly as a key market along with North and South America.[1]

The **Association of Southeast Asian Nations (ASEAN)**, one of the creations of the Cold War to contain the spread of communism, has surprised many observers by its longevity and success as an organisation promoting inter-government cooperation on strategic and foreign policy issues. Its more recent successes in promoting regional economic and social development have consolidated its stature and widened its remit.

Its members – Brunei Darussalam, Cambodia, Laos, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam – are now moving to complete the formation of the ASEAN Economic Community, formally established in 2015. This will lead to further integration at a policy level. ASEAN's work on this is ongoing: as recently as April 2019, Economic Ministers signed a new ASEAN Trade in Services Agreement and a significant amendment to the ASEAN Comprehensive Investment Agreement.

In the half century or so since it was created in 1967, ASEAN's economic performance has been remarkable:

- Eight of the world's 18 fastest growing economies are members of ASEAN[2]
- The combined ASEAN economy has grown in real terms at a little over 5 per cent per year since 1980
- In purchasing power parity terms, ASEAN in aggregate is roughly one-third the size of China's economy, four-fifths of India's, bigger than Japan's, and nearly seven times Australia's
- Many ASEAN economies are now closely integrated into regional and global supply chains. As a group it accounts for about 7 per cent or so of world trade in both goods and services. This falls well below China's share of world merchandise exports but it has a substantially larger share of world services exports, and is considerably ahead of India's export shares for both world merchandise and services trade.

- ASEAN's impressive growth and development has made it a major market for a broad range of goods and services, including mining-related. Its import market for an aggregate of 10 key minerals and metals identified in chapter 1 is smaller than China's, slightly smaller than India's and considerably larger than Japan's, but it has a singularly important feature: it is growing faster than these other big markets and the rest of the world.

The fairly recent transformation of many of the economies to Australia's near north has had a dramatic impact on Australia's trade. ASEAN's 650 million population has emerged as a major market for Australia on a scale that would have been unimaginable 30 years ago.

The relationship is broad, deep and diverse. About a tenth of Australia's total merchandise exports now go to ASEAN. Trade in services is substantial, based around education, personal travel and professional, technical and other business services. And mining products, especially thermal coal, gold bullion, other metals, and mining equipment, technology and services (METS) are one of the key pillars of the trading relationship.

There is a high probability that this will continue to strengthen over time. ASEAN is rich in many minerals, but its development has typically been delayed by difficult investment climates, sometimes characterised by resource nationalism or environmental activism.

Meanwhile, the region is growing strongly. The five biggest members of ASEAN are projected to grow at 4-5 per cent annually through the 2020s and less developed members could plausibly grow much faster to the extent that they can access 'catch up' growth opportunities.

The net result should be continuing rapid increases in regional demand for minerals and energy; increasing opportunities for METS – arguably the best prospect for international mining-related investment in the region; rapid growth in import demand for many mining commodities; and, as a consequence, potentially big opportunities for Australia in mining and METS.

This study builds on earlier volumes in the New Frontiers series. It explores the significance and implications of ASEAN's strong economic development for Australia's mining and METS industry, and is organised into three parts. In part 1, chapters 1 and 2 look respectively at ASEAN's role in the global market and at Australia's trade and investment links with ASEAN, focusing on the mining and METS sectors. Chapter 3 provides an overview of drivers of growth in demand for mining and METS products and services. In part 2, chapters 4 to 13 examine specific ASEAN members, looking at Australia's trade and investment relationship, opportunities for the mining and METS sectors, barriers to trade and investment, and policy issues. In part 3, chapter 14 returns to ASEAN-wide themes and sets out policy recommendations.

CHAPTER 1

ASEAN in the global market

KEY POINTS

- The ASEAN region's strong growth was initially due to labour-intensive manufacturing but has become based increasingly on stronger services and advanced manufacturing. Trade-based growth has been especially important and has linked ASEAN's trade closely to global supply chains.
- ASEAN's merchandise exports and imports each totalled around US$1.5 trillion in 2018. Electronic goods and petroleum lead both exports and imports of merchandise. Minerals and basic metal manufactures exports were US$88 billion in 2018 and imports were US$94 billion.
- Services exports and imports were each around US$350 billion in 2017. Tourism-related travel was the main services export and transport the leading import. Professional, technical and other services were prominent exports and imports.
- Reflecting its role as a global financial, business hub and trade entrêpot, Singapore accounts for around 30 per cent all ASEAN trade and nearly half of services trade. Intra-ASEAN trade accounted for around 23 per cent of merchandise trade in 2018.
- The market for minerals and basic metal manufactures in ASEAN has been growing rapidly. Growth in ASEAN's top 10 mining and basic metal manufactures imports from 2013 to 2018 in aggregate was faster than for China, India and Japan. From 2006 to 2018 these imports grew at over 9 per cent annually in US dollar terms.
- ASEAN is a big market for gold, coal, copper, semi-finished products of iron and steel, aluminium and many other minerals and metals. The US dollar value of coal imports more than doubled between 2013 and 2018.
- Differing specialisations mean that there are also quite different patterns of demand for minerals, basic metal manufactures and METS in the different ASEAN economies.
- The ASEAN market for mining equipment and services has significant potential for growth and export opportunities.
- ASEAN, especially Singapore, is a significant destination for, and source of, FDI. Total inward stock was US$2.4 trillion in 2018 – around 7.4 per cent of the world total – and the outward stock was around US$1.4 trillion. Singapore accounted for 60 per cent of the inward stock and nearly three-quarters of the outward stock.
- The investment climate, particularly in mining, has been difficult in some ASEAN economies. There is scope for FDI to act more strongly as a driver of growth in mining to the extent that reforms across the region address sovereign risk.

ASEAN economies have grown rapidly over several decades. Since 1980, aggregate ASEAN GDP has grown at more than 5 per cent annually, notwithstanding sharp downturns for some economies during the East Asian Economic Crisis of 1997-1998 and the Global Financial Crisis of 2008-2009. Solid growth has continued over the past five years and with it has come increasing demand for minerals, basic metal manufactures and METS.

The region is already a big market for gold, coal (both thermal and metallurgical), copper, semi-finished products of iron and steel, aluminium and many other minerals and metals. Demand for some of these commodities has been growing strongly. Over the past five years, for example, the US dollar value of ASEAN's coal imports has more than doubled, while imports of unwrought aluminium have risen by more than 50 per cent after a slight decline in the preceding five years. ASEAN's iron ore imports have shown substantial growth, more than doubling from a previous peak reached in 2008. The market for mining equipment, technology and services is large, though measuring its size is not practicable in the absence of specialised survey data.

Drivers of economic growth

A number of forces have contributed to ASEAN's relatively rapid economic expansion. As might be expected, the traditional drivers – investment in physical and human capital, growth in the labour force and increased productivity – have formed the foundation. Their operation has been strengthened by urbanisation and openness to trade and investment:

- Since 1980 gross investment has run at almost a third of GDP for Indonesia, Singapore and Malaysia and at 20 per cent or better for Thailand, the Philippines and Vietnam. This has been supported by high rates of domestic saving: in Singapore in particular, gross national saving has averaged almost 45 per cent of GDP.[3] A growth accounting exercise undertaken by the Asian Productivity Organization (APO) estimates that capital contributed around 77 per cent to the average annual growth in ASEAN's output over 1970-2016.[4]
- The contribution of labour to economic growth has also been significant. The APO estimates that, measured in hours worked, labour was responsible for around 18 per cent of the annual growth rate of ASEAN's output over 1970-2016. The quality of the labour force has also increased (though in the APO's work this effect is counted under productivity). For example, education and literacy levels have improved: in Indonesia the youth literacy rate is now close to 100 per cent.
- Innovation and productivity growth have also played a role, albeit one that varies by country and period. The APO estimates that total factor productivity growth (essentially changes in the efficiency with which labour and capital are used) contributed just 5 per cent of the average annual growth in ASEAN output over 1970-2016. But this contribution has been quite significant in recent years, around 15 per cent between 2010 and 2016.[5]
- Urbanisation supports growth through access to economies of scale, increased connectivity and improved productivity. ASEAN's Sustainable Urbanisation Strategy notes that half of ASEAN's population is already urban, and another 70 million are expected to live in cities by 2025. According to the strategy, growth is fastest in regions with between half and five million people, sometimes because smaller cities have formed around economic clusters and areas

benefiting from trade and logistics, and sometimes because they serve as satellite-regions to mega-cities like Jakarta, Manila and Bangkok.[6] Urbanisation has important implications for infrastructure demand and hence for key materials like steel, copper and aluminium that underpin it.

- Trade-based growth arising from greater specialisation in the world economy has been even more important. ASEAN's trade is closely linked to global supply chains. Singapore's contribution is especially prominent, reflecting its role as a global financial and business hub and trade entrepôt. It accounts for around 30 per cent of all ASEAN trade and nearly half of services trade.
- Since 1980, the volume of exports of goods and services for the five major developing economies in ASEAN has grown at an estimated rate of nearly 6.5 per cent per annum.[7] Singapore's exports have grown even more strongly at around 8.5 per cent per annum, although in this instance, measurement is complicated by the significance of re-exports.
- Export growth has been accompanied by increasing imports, tied in large part to the region's integration with global supply chains. In volume terms, IMF staff estimate that imports of goods and services since 1980 have increased slightly faster than exports for the five major developing ASEAN economies. Rapid import growth has supported ASEAN's emergence as a significant market for goods and services. At the same time, it has provided consumers and businesses with more choice.

Part of the initial growth in several ASEAN economies has come from expanding labour-intensive activities – such as clothing manufactures or simple assembly of electronic equipment – in which more developed regional economies had become less competitive as wages increased.[8]
But growth has also been shaped by the characteristics of each ASEAN economy. Singapore's high-income status reflects, to a considerable degree, its emergence as an entrepôt port and Brunei's its oil resources. Thailand's upper middle-income position owes much to its development as a hub for quite advanced manufactures such as motor vehicle production. The Philippines has benefited significantly from remittances from its overseas workers. Differing specialisations mean that there are also quite different patterns of demand for minerals, basic metal manufactures and METS in the different ASEAN economies.

ASEAN in world trade

The result of expanding exports was that by 2018, ASEAN's merchandise exports were of the order of US$1480 billion, or about 7.5 per cent of estimated world exports. This overstates ASEAN's contribution somewhat as a significant proportion of Singapore's exports are re-exports (that is, exports that are imported and re-exported with little or no change). Exports are concentrated by country, with Singapore, Vietnam, Thailand, Malaysia and Indonesia contributing the bulk of them. The Philippines, Cambodia, Myanmar, Brunei and Laos make a much more modest contribution, though this is likely to increase appreciably as their economies develop.

The leading ASEAN export is electronic integrated circuits or their parts, followed by telephone sets and parts, and various petroleum oils and preparations (other than crude). Exports from ASEAN are not highly concentrated by product: the top 10 exports make up a little over one third of the total.[9] Relatively few of the leading exports are

minerals and basic metal manufactures as defined here. Within the top 50 exports, coal (9th place), gold (12th) and copper ores and concentrates (50th) were the only products that fell under this heading in 2018. Total minerals and basic metal manufactures exports were US$88 billion in 2018.

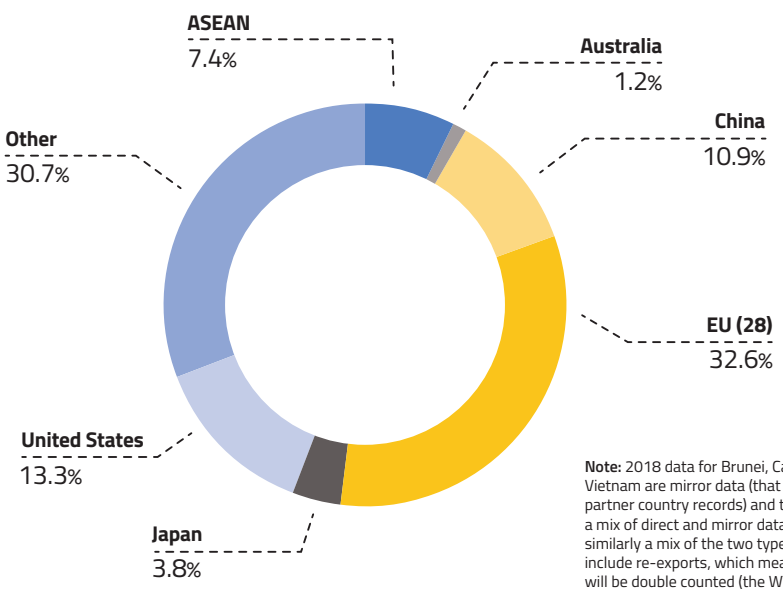
ASEAN's exports of services were of the order of US$356 billion in 2017, estimated to be around 7 per cent of world services exports. Almost half of the ASEAN total were exported by Singapore. Travel services were ASEAN's biggest services export. Separate data on the type of travel service exported is fragmentary, with Singapore in particular not reporting a breakdown of its data to the International Trade Centre (ITC). But personal travel services were clearly the main component. There were nearly 36 million tourist arrivals in Thailand in 2017 and 17.4 million for Singapore.

'Professional, technical and other business services' – a category that encompasses research and development services, professional and management consulting services, and various technical, trade-related and other services (such as engineering, scientific, waste treatment and legal services) – was the second biggest category of services exports. Transport services were another leading item, with Singapore the main exporter.

Chart 1.1

ASEAN's share of world merchandise imports, 2018

Source: International Trade Centre (ITC) Trade Map Database



Note: 2018 data for Brunei, Cambodia, Laos, Myanmar and Vietnam are mirror data (that is, they are estimated from partner country records) and the aggregate for ASEAN is thus a mix of direct and mirror data. The total for world trade is similarly a mix of the two types of data. Singapore's imports include re-exports, which means that some imports by ASEAN will be double counted (the WTO estimates retained imports for Singapore at US$167 billion in 2018, compared to total imports including products re-exported of US$371 billion).

ASEAN's exports are of less interest to this study than its imports, which provide some indication of the potential demand for Australian exports of goods and services. As Chart 1.1 shows, ASEAN's merchandise imports, valued at around US$1.5 trillion in 2018, made up around 7.5 per cent of global imports of goods. There is once again an element of double counting since re-exports from Singapore can be counted first as an import by Singapore and second as an import by another ASEAN country. Imports of goods retained in Singapore were under half of its total imports. Even so, ASEAN imports were very substantial. Counting only retained imports for Singapore, ASEAN imports were still more than five times those of Australia.

The five biggest items in ASEAN's merchandise imports in 2018 were electronic integrated circuits and parts, various petroleum oils, crude oil, telephone sets and gold. There is some similarity with the list of ASEAN exports. For electronic equipment, this reflects linkages to regional and global value chains that see products imported and exported after small transformations representing contributions to the broader division of labour in manufacturing the end product.

The five biggest items in ASEAN's merchandise imports in 2018 were electronic integrated circuits and parts, various petroleum oils, crude oil, telephone sets and gold.

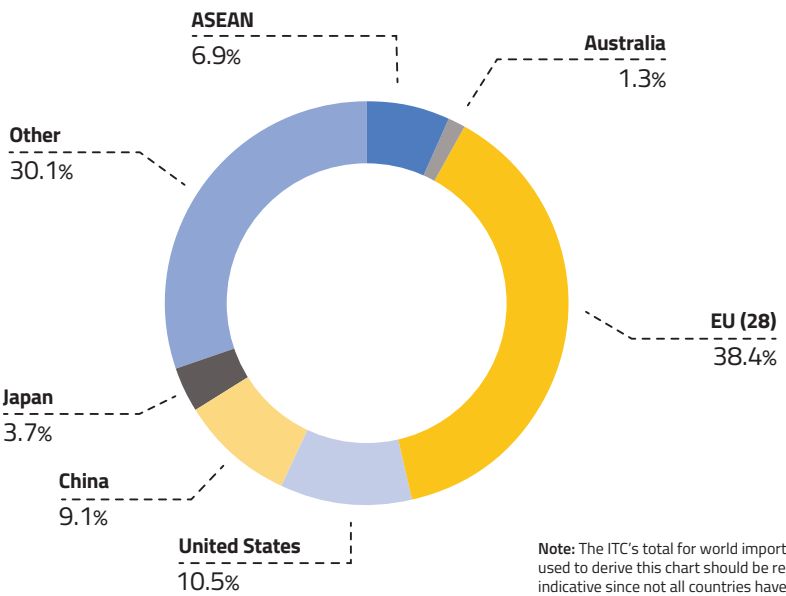
It can also result from more traditional intra-industry trade (for example, gold can be exported in one form and imported in another by the same country) or from exports and imports by different ASEAN economies. Gold apart, coal, unwrought copper, semi-finished products of iron or non-alloy steel, and unwrought aluminium were the only minerals and basic metal manufactures among the top fifty imports by ASEAN.

ASEAN's share of world services imports in 2017 is shown in Chart 1.2. ASEAN is a significant market, with imports of all services at around US$354 billion, over five times Australia's own imports.

Chart 1.2

ASEAN's share of world services imports, 2017

Source: ITC Trade Map Database



Note: The ITC's total for world imports of services used to derive this chart should be regarded as indicative since not all countries have reported.

Singapore accounted for about half of ASEAN's services imports in 2017. Transport services were the biggest import item. The broad category of 'professional, technical and other business services' – a group of interest to METS firms – was also prominent, with imports by ASEAN economies (excluding Vietnam and some of the smaller ASEANs) valued at around US$83 billion. The bulk was imported by Singapore, with Thailand a distant second. Although reporting by ASEAN economies is incomplete, it would appear about half of 'professional, technical and other business services' was for technical, trade-related and other services, with smaller amounts for professional and management consulting services and research and development.

ASEAN as a market for minerals and basic metal manufactures

ASEAN is a sizeable importer of minerals and basic metal manufactures, with total imports exceeding US$94 billion in 2018. As Table 1.1 indicates, nearly 40 per cent of this total was gold. Coal, unwrought copper, semi-finished products of iron and non-alloy steel, and unwrought aluminium were other substantial imports (in excess of US$5 billion).

While large, imports of a number of commodities were much smaller than China's. Most notably, China imported iron ore to the value of US$75 billion in 2018, while ASEAN's imports were under US$2.4 billion (Tables 1.1 and 1.2). Further, ASEAN's imports of minerals and basic metal manufactures were

Table 1.1

ASEAN: Imports from the world of minerals and basic metal manufactures, 2018

Source: ITC Trade Map Database

	Imports (US$m)
Total minerals and basic metal manufactures, of which:	**94,390**
... gold unwrought or in semi-manufactured or powder form	36,060
... coal; briquettes, ovoids, similar solid fuels manufactured from coal	9707
... refined copper and copper alloys, unwrought	6827
... semi-finished products of iron or non-alloy steel	5747
... unwrought aluminium	5029
... diamonds, whether or not worked, but not mounted or set	4196
... ferrous waste and scrap, remelting ingots of iron or steel	3646
... iron ore and concentrates	2312
... unwrought zinc	1818
... ferro-alloys	1767

Note: 2018 data for ASEAN is a mix of direct and mirror data. Minerals and basic metal manufactures are defined as in the first volume of the New Frontiers series. See M Adams, N Brown and R Wickes, *New Frontiers, South and East Asia*, Trade Agenda 01, MCA, Canberra, 2017, Technical Annex.

below India's, but appreciably greater than Japan's, which for many years was Australia's biggest market for minerals.

Tables 1.3 and 1.4 compare the growth of ASEAN's top 10 imports of minerals and basic metal manufactures with corresponding growth rates for the rest of the world, China, India and Japan. Two points emerge:

- Imports of the 10 mineral/basic metal commodities by ASEAN have grown quite rapidly, at over 9 per cent annually over both 2006-2013 and 2013-2018. In sharp contrast, imports of these items by the rest of the world contracted over 2013-2018. The growth rate for ASEAN's imports of the top 10 commodities over 2013-2018 as an aggregate was greater than those for China, India and Japan.
- Over the past five years (2013-2018), ASEAN's imports of all but one of the 10 products (unwrought copper) have grown faster than imports of the same commodities by the rest of the world. Imports that have grown particularly quickly include iron ore, ferro-alloys, coal, unwrought zinc and gold. Imports to ASEAN often grew faster than those into China, India and Japan (with a number of these contracting in US dollar terms).

ASEAN has been a rapidly expanding import market for minerals and basic metal manufactures over the past five years, with growth of the top 10 mining/basic metal manufactures imports for ASEAN faster in aggregate than for the big minerals markets of China, India and Japan, as well as for the rest of the world (that is, non-ASEAN markets).

Table 1.2

China, India and Japan: Imports of minerals and basic metal manufactures, 2018

Source: ITC Trade Map Database

	Imports (US$m)
China **Total minerals and basic metal manufactures, of which:**	**292,558**
... iron ore and concentrates	75,011
... gold, unwrought or in semi-manufactured or powder form	45,806
... copper ores and concentrates	32,728
... refined copper and copper alloys, unwrought	25,638
... coal, briquettes, ovoids, similar solid fuels manufactured from coal	19,586
... copper waste and scrap	9371
... diamonds, whether or not worked, but not mounted or set	8860
... ferro-alloys	6088
... unrefined copper; copper anodes for electrolytic refining	5868
... manganese ores and concentrates	5827
India **Total minerals and basic metal manufactures, of which:**	**113,206**
... gold, unwrought of in semi-manufactured or powder form	31,784
... diamonds, whether or not worked, but not mounted or set	26,707
... coal, briquettes, ovoids, similar solid fuels manufactured from coal	24,612
... silver, unwrought or in semi-manufactured or powder form	3843
... ferrous waste and scrap; remelting ingots of iron or steel	3408
... copper ores and concentrates	2693
... aluminium waste and scrap	2473
... aluminium oxide (excluding artificial corundum)	1409
... ferro-alloys	1087
... precious, semi-precious stones, not strung, mountd or set; upgraded precious stones	1083
... iron ore and concentrates	1033
Japan **Total minerals and basic metal manufactures, of which:**	**77,431**
... coal, briquettes, ovoids, similar solid fuels manufactured from coal	25,355
... copper ores and concentrates	9849
... iron ore and concentrates	9310
... unwrought aluminium	6330
... platinum, etc., unwrought or in semi-manufactured or powder form	4148
... waste and scrap or precious metal	3190
... ferro-alloys	3127
... nickel mattes, nickel oxide sinters, other intermediate products of nickel metallurgy	1667
... copper waste and scrap	1331
... silver, unwrought or in semi-manufactured or powder form	1133

Note: As for Table 1.1. In the case of India, Table 1.2 shows the top 11 imports of minerals and basic metal manufactures rather than the top ten. This was done so that iron ore and concentrates could be included.

Table 1.3

Growth in imports of minerals and basic metal manufactures, 2013-2018
Compound annual rates, per cent

Source: ITC Trade Map Database

	ASEAN 2006-13	ASEAN 2013-18	RoW 2006-13	RoW 2013-18
Gold, unwrought or in semi-manufactured or powder form	13.8	11.9	37.0	-8.4
Coal; briquettes, ovoids, similar solid fuels manufactured from coal	18.5	17.2	11.1	2.8
Refined copper and copper alloys, unwrought	7.9	-1.7	4.7	-1.1
Semi-finished products of iron or non-alloy steel	3.5	5.1	-0.2	1.6
Unwrought aluminium	-0.9	9.1	-1.8	6.4
Diamonds, whether or not worked, but not mounted or set	7.3	4.4	8.0	-2.2
Ferrous waste and scrap; remelting ingots of iron or steel	10.0	1.1	4.1	-1.8
Iron ore and concentrates	3.8	26.7	19.3	-7.0
Unwrought zinc	-2.1	16.5	-4.6	10.0
Ferro-alloys	6.4	26.3	2.1	5.5
Total of the above 10 products	**9.1**	**9.5**	**13.7**	**-3.4**
All goods	**9.3**	**3.3**	**6.2**	**0.6**

Note: Growth rates are for data in US dollars. RoW is 'the rest of the world' (that is, the world excluding ASEAN). Prior to 2010, Laos and Myanmar did not report data and are not included in ASEAN totals. For 2018, data for these two countries, as well as Brunei, Cambodia and Vietnam are mirror data, estimated though partner country reporting. With regard to the individual commodities, there are no changes in Harmonized System (HS) codes that would affect the results at the level of disaggregation reported. Compound annual growth rates for individual commodities should be viewed with caution as they can be affected by unusually high or low end-values.

Table 1.3 also shows that over the past five years, ASEAN's total merchandise imports have grown at only a modest rate. But import growth for ASEAN was still above the extremely slow rate for the rest of the world. ASEAN's imports also expanded more rapidly than those of China, India and Japan (Table 1.4).

Charts 1.3 and 1.4 show how the top 10 imports were allocated among ASEAN economies in 2018. For some, imports were quite concentrated. For example, Singapore and Thailand accounted for almost 70 per cent of ASEAN's gold imports and nearly 90 per cent of the market for diamonds. Indonesia took around 60 per cent of ASEAN's imports of ferro-alloys.

Imports for some other products were more widely dispersed. With coal, for example, Malaysia was the biggest ASEAN market, but there were also significant imports by the Philippines, Thailand and Vietnam. For semi-finished products of iron or non-alloy steel, Indonesia, the Philippines and Thailand each had a big share of the total ASEAN market. Singapore's share of the total ASEAN market was less than 5 per cent for all but gold, diamonds and ferro-alloys. As a rule, imports by Brunei and the least developed ASEAN members, which are not shown in the charts, were very small.

Table 1.4

Growth in imports of minerals and basic metal manufactures, 2013-2018

Compound annual rates, per cent

Source: ITC Trade Map Database

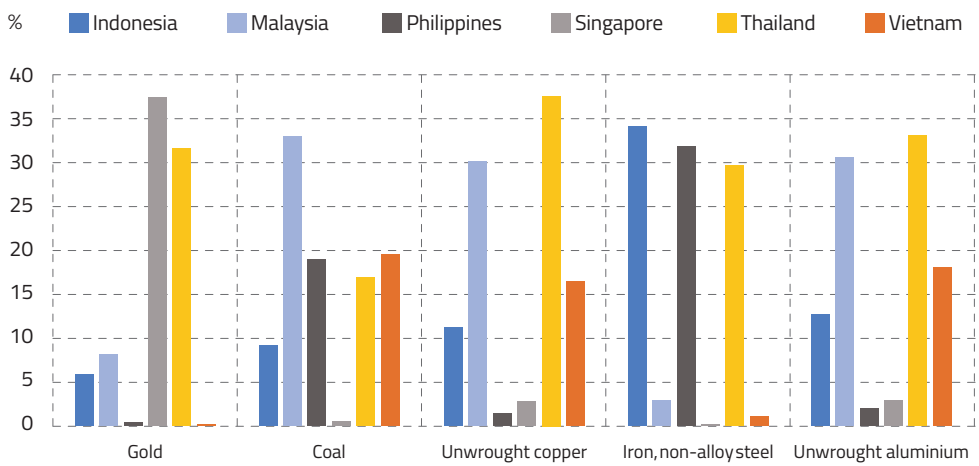
	China	India	Japan
Gold, unwrought or in semi-manufactured or powder form	n.a.	-3.4	-25.4
Coal; briquettes, ovoids, similar solid fuels manufactured from coal	-5.5	10.5	1.4
Refined copper and copper alloys, unwrought	1.4	11.9	-12.0
Semi-finished products of iron or non-alloy steel	1.7	17.4	17.2
Unwrought aluminium	-14.9	0.2	3.9
Diamonds, whether or not worked, but not mounted or set	4.7	3.4	-0.6
Ferrous waste and scrap; remelting ingots of iron or steel	-21.5	1.7	-2.5
Iron ore and concentrates	-6.7	44.9	-11.7
Unwrought zinc	9.7	30.1	15.0
Ferro-alloys	12.8	12.2	2.8
Total of the above 10 products	**1.5**	**2.4**	**-2.4**
All goods	**1.8**	**1.7**	**-2.1**

Note: Growth rates are for data in US dollars. Compound annual growth rates for individual commodities should be viewed with caution as they can be affected by unusually high or low end-values.

Chart 1.3

Country share of total ASEAN imports of principal commodities, 2018

Source: ITC Trade Map Database

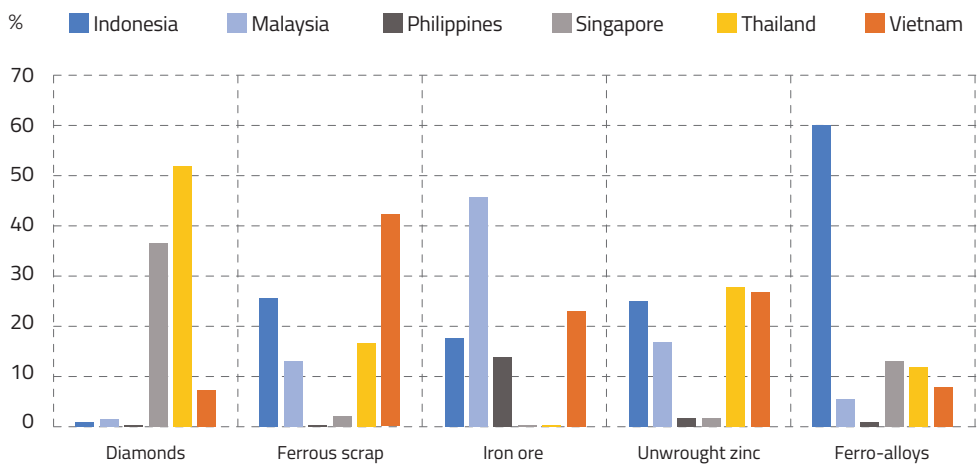


Note: Data for ASEAN used to derive the above are a mixture of direct and mirror data, while data for Vietnam are mirror data. More complete descriptions of the commodities can be found in Table 1.1.

Chart 1.4

Country share of total ASEAN imports of principal commodities, 2018 (continued)

Source: ITC Trade Map Database



Note: As for Chart 1.3.

Intra-ASEAN trade

The ASEAN countries have placed considerable emphasis on promoting ASEAN integration over the past 25 years. This objective has been supported by ASEAN agreements on goods, services and investment and most recently by launching the ASEAN Economic Community (AEC) in 2015. But increased economic integration, at least as far as goods are concerned, is not evident in trade statistics for the past decade.

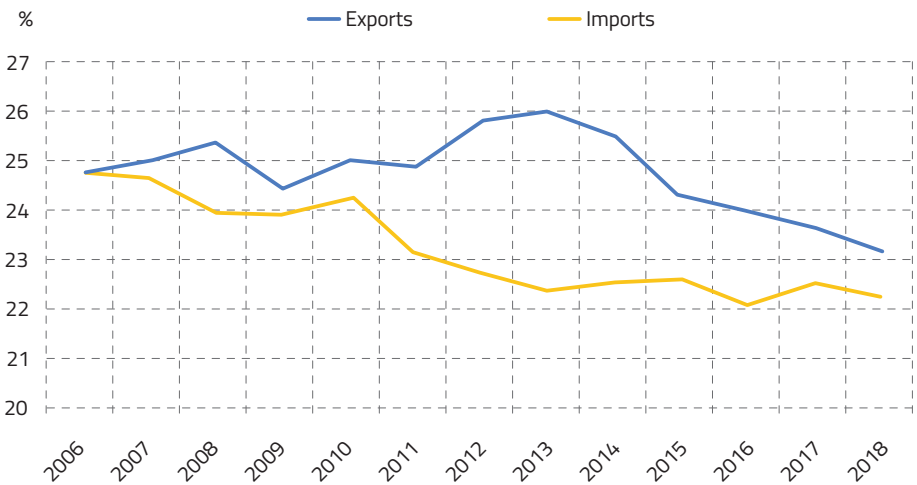
Although the data is incomplete (mirror data is used for some countries for 2017 and 2018), ASEAN's exports to other ASEAN countries as a share of its exports to the world appear to have fallen by almost three percentage points between 2013 and 2018. ASEAN's imports from other ASEAN economies as a share of their imports from all countries declined by around 2.5 percentage points between 2006 and 2018 (though the 2018 share was still above the estimated level for 2001). These results are shown in Chart 1.5. They warrant closer examination, though this is beyond the scope of this report.[10] It is, of course, possible that further development of the AEC will affect intra-ASEAN trade flows and lead to further integration over the next decade, although the preliminary data for 2016-2018 does not suggest an impact on merchandise trade thus far.

Chart 1.5

ASEAN merchandise exports and imports

As a share of total ASEAN merchandise exports and imports

Source: ITC Trade Map Database



Note: Exports measure intra-ASEAN exports as a share of ASEAN's exports to the world, while imports are intra-ASEAN imports as a share of ASEAN's imports from the world. Intra-ASEAN trade is a mixture of direct and mirror data for 2006-09 (with Laos and Myanmar estimated with mirror data for these years) and 2017-18 (Cambodia and Laos have only mirror data for 2017 and those two countries plus Brunei, Myanmar and Vietnam for 2018). ASEAN's imports from, and exports to, the world for 2006-09 do not include reports from all ASEAN economies (Laos and Myanmar are missing), while 2017-18 data are a mixture of direct and mirror data.

The main supplying countries in intra-ASEAN trade are Singapore, Malaysia and Thailand, which between them provided over 70 per cent of intra-ASEAN's imports in 2018.

Singapore's role is perhaps less dominant than might be expected. Although it was the largest supplier in 2018, it was only marginally ahead of Malaysia. Singapore was much more clearly the principal player in imports from other ASEAN economies, being well ahead of the second-ranked Malaysia for 2018 and in each of the three preceding years.

For minerals and basic metal manufactures, the role of intra-ASEAN trade varies greatly.

Tables 1.5 and 1.6 look at the 10 ASEAN commodities examined previously. As the tables show, intra-ASEAN imports as a share of total ASEAN imports varied in 2018 from about 1 per cent (diamonds) to 59 per cent (coal). The value of intra-ASEAN trade also varied significantly: of the 10 commodities, gold and coal were by far the biggest.

Singapore's role as a supplier and importer was again smaller than might have been expected for a number of these commodities. Its most significant role was in gold, where it supplied more than 60 per cent of intra-ASEAN imports in 2018.

Table 1.5

ASEAN merchandise imports from other ASEAN economies , 2018

Source: ITC Trade Map Database

	Intra-ASEAN trade US$m	**ASEAN imports share** %	**Suppliers and importers in intra-ASEAN trade**
Gold	9938	28	Singapore, Thailand and Indonesia were the biggest suppliers in ASEAN in 2018 (Singapore's total was more than 60 per cent of ASEAN supply to other ASEANs). The main importers in intra-ASEAN trade were Cambodia, Singapore, Thailand and Indonesia.
Coal	5761	59	Indonesia was the main supplier. The largest importers in intra-ASEAN trade were Malaysia, the Philippines and Thailand.
Refined copper and copper alloys, unwrought	1987	29	Indonesia and the Philippines were the main suppliers within ASEAN, although Laos and Myanmar were also significant. Thailand and Malaysia were the principal importers.
Semi-finished iron, non-alloy steel	458	8	The biggest supplier was Vietnam, though Thailand and Malaysia were also significant. The largest importers were the Philippines, Thailand and Indonesia.
Unwrought aluminium	1056	21	The dominant supplier was Malaysia, though Singapore and Indonesia were also important. Vietnam, Thailand and Malaysia were the main importers.
Diamonds, whether or not worked	48	1	Intra-ASEAN trade was very small in 2018. Thailand and Singapore were the main suppliers and Thailand the principal importer.
Ferrous waste and scrap	441	12	Singapore was the main supplier in 2018 (though several other ASEANs were significant). Indonesia and Thailand were the main importers.
Iron ore and concentrates	112	5	This trade was almost entirely between Malaysia (as supplier) and Vietnam (as importer).
Unwrought zinc	39	2	Intra-ASEAN trade was very small. Malaysia and Singapore were the main suppliers and Malaysia and Vietnam the main importers.
Ferro-alloys	121	7	Malaysia was the dominant supplier and Indonesia, Vietnam and Thailand the main importers.

Note: More complete descriptions of the commodities are given in Table 1.1. Intra-ASEAN trade here refers to ASEAN imports from other ASEAN economies. The share given is the share of all ASEAN imports of the same commodity. 2018 data for Brunei, Cambodia, Laos, Myanmar and Vietnam are mirror data, estimated by the ITC from partner country records.

Mining equipment and services

It is difficult to quantify the size of the ASEAN market for mining equipment. Much imported equipment can have dual or multiple uses when classified under the Harmonized System (HS) used to prepare statistics on international trade. In most cases, the statistical codes are simply not fine enough to distinguish mining equipment from more general equipment used in construction or manufacturing. Accordingly, the report has applied an approach used in previous publications, essentially drawing up a list of items that could include mining equipment. This is a rough proxy, but does provide an indication of the scale of the trade in mining equipment.

Table 1.6 presents some results for ASEAN imports from the world (including ASEAN itself). It indicates that the total for items that could include mining equipment is quite large, at around US$52 billion in 2018, or around 3.5 per cent of ASEAN merchandise imports. It is likely that only a small part of this represents equipment used in mining. Even so, it suggests that there is a big market for firms specialising in some of the products on the list, whether for use in the mining industry or for other purposes.

Australia does not have a comparative advantage in a number of the products listed in Table 1.6, and China is a dominant supplier country. But as the following chapter indicates, Australia does supply some manufactures in these categories. The size of the ASEAN market means that even a small market share can translate into a significant export opportunity. For example, Australian firms have expertise in producing certain pumps and parts of pumps. ASEAN's imports of these products from Australia were approximately US$90 million in 2018. This was a worthwhile export performance, but it represented only about 3 per cent of an ASEAN market of around US$3 billion.

ASEAN's mining services imports are more difficult to quantify than mining equipment imports. As noted earlier in this chapter, ASEAN's imports of 'professional, technical and other business services' totalled in excess of US$83 billion in 2017. Only a small fraction of this amount is likely to be relevant to the mining sector. On the other hand, some services (notably those delivered in ASEAN through a local incorporated enterprise) are not included in the data. They are likely to be substantially greater than cross-border trade and are highly relevant to the METS sector. An example is foreign firms undertaking contract mining with local partners.

ASEAN and foreign direct investment

Foreign direct investment (FDI) has brought to ASEAN economies a unique package of capital, management, technical skills and innovation that has been important for economic development. But the investment climate, particularly in mining, has been difficult in some ASEAN economies, a theme explored further in specific country chapters. There is scope for FDI to act more strongly as a driver of growth in mining to the extent that reforms across the region address sovereign risk.

ASEAN is a significant destination for FDI, with the inward stock at US$2.4 trillion in 2018 – around 7.4 per cent of the world total. More than 60 per cent of this has gone to Singapore. FDI inflows fluctuate considerably from year to year, but have been trending upward in US dollar terms since 1990. The 2018 inflow, at around US$155 billion, was a record. If ASEAN is counted as one group, it would represent the biggest source of its own inward FDI in 2017 and 2018, with Singapore the biggest ASEAN investor. Intra-ASEAN investment has been underpinned by the development of a number of ASEAN

Table 1.6

ASEAN imports that could include mining equipment, 2018

Source: ITC Trade Map Database

Product description	Imports US$m
Basic chemical manufacturing/explosives, of which:	223
... safety fuses, detonators etc	(109)
Rubber manufactures and headgear, of which:	2186
... new pneumatic tyres of rubber of a kind used for buses and lorries	(1142)
... new pneumatic tyres of rubber of a kind used for on construction, mining or industrial handling vehicles and machines	(485)
Railway manufacturing, of which:	1719
... containers designed for carriage by one or more modes of transport	(347)
... railway or tramway track construction material	(327)
... self-propelled railway or tramway coaches, vans and trucks	(278)
... parts of railway or tramway locomotives or rolling stock	(224)
Professional, scientific, electronic equipment, of which:	8672
... instruments for physical and chemical analysis	(2886)
... automatic regulating and controlling instruments and apparatus	(2704)
... instruments for measuring the flow/level/pressure of liquids and gases	(1445)
Electrical equipment, of which:	9568
... electric motors and generators	(4042)
... electric generating sets and rotary converters	(2798)
Iron and steel articles, of which:	2689
... line pipe of a kind used for oil and gas pipelines within HS 730419	(649)
... casing and tubing, seamless, of iron or steel, of a kind used in drilling for oil and gas	(593)
... casing and rubing, seamless, of a kind used in drilling for oil and gas, of stainless steel	(470)
Machinery and mechanical appliances, of which:	24,882
... self-propelled bulldozers, angledozers, graders, mechanical shovels, etc.	(4260)
... parts of machinery of heading HS 8426, 8429, 8430, other	(2122)
... ships' derricks; cranes; work trucks fitted with a crane, etc.	(1741)
... parts for boring or sinking machinery of sub-heading HS 843041 or 843049	(1531)
... machinery for sorting, screening etc. earth, ores or minerals; machinery for agglomerating mineral fuels, plastering materials; machines for forming foundry moulds	(1405)
... centrifugal pumps, power driven	(1181)
... machinery and apparatus for filtering and purifying gases, other	(1154)
... fork-lift trucks, other works trucks fitted with lifting or handling equipment	(1063)
Vehicles of a kind that might be used in mining, of which:	1836
... dumpers for off-highway use	(1180)
Total for products that could include mining equipment	**51,775**

Note: Products that could include mining equipment are as defined in the first volume of this series of publications, with some adjustments. The first is to exclude motor vehicles for the transport of goods (HS 8704) and to replace it with the narrower category of HS 870410 (dumpers for off-highway use). Also excluded are automatic data processing equipment and parts (HS 8471 and 847330) which have very broad use. There are also two adjustments because of changes in codes between HS 2012 and HS 2017. The more important is to include a new item (HS 401180), which covers new pneumatic tyres of rubber of a kind used on construction, mining or industrial handling vehicles and machines. This brought together several codes in the previous HS 2012 nomenclature. There were still some small imports recorded under the previous codes. These have been included in the totals.

multinational enterprises: the ASEAN Secretariat and UNCTAD have documented 100 enterprises that have subsidiaries in other ASEAN economies.[11]

Total FDI inflows into ASEAN since 2012 are given in Chart 1.6, along with the amount going to mining and quarrying. The amount directed to the mining and quarrying sector is small relative to total inward FDI and has declined in recent years, with net disinvestment in 2018. Table 1.7 looks more closely at sources of mining FDI flowing into ASEAN from 2012. It shows that in 2017 an important factor in the decline in mining FDI was large-scale disinvestment by the United States and, to a lesser extent, Korea.

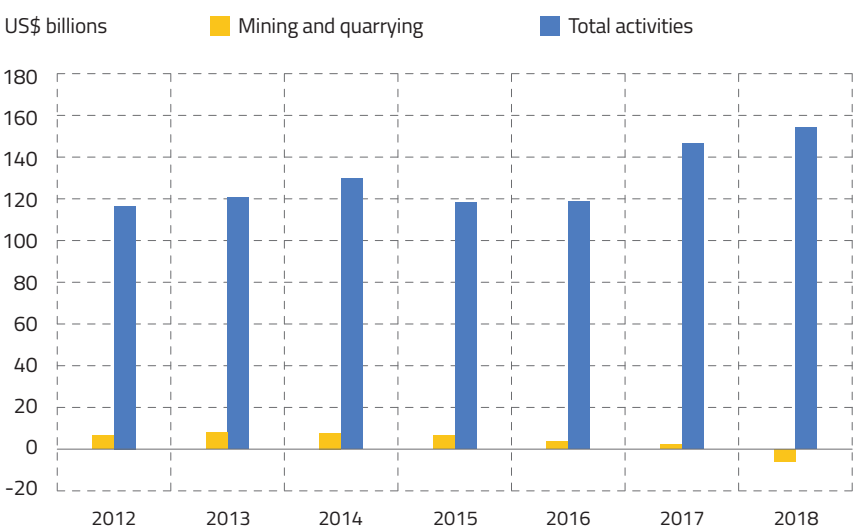
A large part of US disinvestment was due to Chevron's sale (for around US$3 billion) of its geothermal assets in Indonesia and the Philippines.[12] This was evidently part of a wider sale of assets by that company in response to low oil prices rather than a response to sovereign risk.

However in 2018 disinvestment was more widespread, suggesting that the investment climate was an important factor. In that year, Rio Tinto sold its interest in the giant Grasberg mine in Indonesia. Notwithstanding the strength of its mining sector, Australia's contribution to the inflow of FDI into the mining and quarrying sector across the whole period was at best modest.

Chart 1.6

Inflow of FDI into ASEAN, total and mining and quarrying

Source: ASEAN Secretariat, ASEAN FDI Database



Note: 2018 data are preliminary.

Table 1.7

Inflow of FDI to the mining and quarrying sector in ASEAN

Source: ASEAN Secretariat, ASEAN FDI Database

Source country	2012 US$m	2013 US$m	2014 US$m	2015 US$m	2016 US$m	2017 US$m	2018 US$m
Total ASEAN	551	331	1290	1191	1217	666	-836
Australia	14	194	217	34	-116	195	-26
Bermuda	469	4	640	67	-141	-82	-55
Cayman Islands	167	-7	387	360	145	78	43
China	285	553	1122	275	111	680	6
Total EU (28)	742	1575	1627	1820	844	3304	-3433
Hong Kong	66	-1	-57	-22	-39	536	-29
Japan	198	-292	638	514	615	635	371
Korea, Republic of	34	25	59	6	43	-524	-37
New Zealand	103	133	153	51	-1	48	-139
Switzerland	285	2	-47	19	24	26	35
United States	676	907	-834	561	-903	-3136	-864
Unspecified country	1981	3043	2071	337	1077	15	-878
Virgin Islands, British	-63	-68	253	641	-76	-9	-274
Total all countries	6462	8104	7492	6542	3921	2253	-5937

Note: 2018 data are preliminary.

ASEAN's outward stock of FDI, at around US$1.4 trillion in 2018, is a good deal less than its inward stock – reflecting the fact that 8 of its 10 member economies are low or middle-income economies. The outward stock of FDI represented about 4.5 per cent of the world total in 2018. Singapore is again the main source, accounting for almost three-quarters of the ASEAN total for that year. No breakdown is available on ASEAN's outward FDI by sector.

Australia's contribution to the inflow of FDI into the mining and quarrying sector [from 2012 to 2018] was at best modest.

CHAPTER 2

Australia's trade and investment links with ASEAN

KEY POINTS

- Australia's merchandise exports to the 10 ASEAN economies were $38.2 billion in 2018 and have grown more quickly than they have to China in the past five years.
- Exports of minerals and basic metal manufactures to ASEAN were around $12.9 billion in 2018. Coal and gold together accounted for about half these exports.
- Coal exports have grown especially strongly in the past decade.
- Malaysia was the biggest market for minerals and basic metal manufactures, followed by Thailand, Vietnam, Indonesia and Singapore.
- Services exports to ASEAN were $13.7 billion in 2018. Education services made up about around two-fifths of this total.
- The Australian METS sector has a very good reputation as a supplier of goods and services to mining firms and is an important contributor to Australia's commercial relations with ASEAN.
- Merchandise imports from ASEAN were $52.3 billion in 2018. The principal imports were petroleum, vehicles, telecommunications and computing equipment. Thailand, Malaysia and Singapore were the biggest points of origin. Merchandise imports from ASEAN have grown moderately, at 3 per cent annually over the last five years. Services imports, principally tourism-related, were $16.8 billion.
- Imports of minerals and basic metal manufactures from ASEAN are modest – $384 million in 2018 – with gold and cement the most prominent. Available statistics indicate significant imports of mining equipment and services used in mining.
- Australia's outward FDI in ASEAN was $39.7 billion in 2018. Inward FDI in Australia from ASEAN was $47.7 billion. Outward FDI has more than doubled from 2010 to 2018 and inward FDI has almost doubled.
- About 60 per cent of Australia's stock of outward FDI in ASEAN was in Singapore at the end of 2018. There was also substantial outward FDI in Malaysia, Indonesia, Vietnam, Thailand and the Philippines.
- Australia is underweight on FDI in mining in ASEAN. Australia contributed about 1.8 per cent of FDI inflows into the mining sector over 2012-18.
- Australia's inward FDI stock from ASEAN is predominantly from Singapore (59 per cent in 2018) and Malaysia (29 per cent). Foreign Investment Review Board (FIRB) data suggests Thailand, Singapore, Indonesia and Malaysia are significant investors in mineral exploration and development.

ASEAN countries are characterised by diversity in cultures, values, political institutions, living standards, and economic structure. Any examination of their trade and investment flows is as much an exercise in identifying differences as it is similarities. Yet the ASEAN economies share common trends, and their integration has been supported by the region's member governments, including through the ASEAN Free Trade Area, agreements on issues such as services and investment, and subsequently through the ASEAN Economic Community. This chapter looks broadly at Australia's trade and investment with ASEAN as a group. While it points to differences among individual ASEAN members as part of the analysis, more detailed discussion of individual countries is left to Part 2 of the report.

This chapter focuses on Australia's exports of minerals, basic metal manufactures and METS. Exports of minerals and basic metal manufactures to ASEAN were around $12.9 billion in 2018, after estimating commodities that are confidential in Australian Bureau of Statistics (ABS) data. Including crude oil, refined petroleum and liquified natural gas (LNG) takes this figure to around $21 billion.[13] METS exports cannot be quantified precisely, but it is clear that they are also substantial.

ASEAN as a market for Australia

Australia's recorded merchandise exports to the 10 ASEAN economies were $38.2 billion in 2018, or around 11 per cent of merchandise exports to all countries. Exports of goods to ASEAN are a third of those to China ($118.4 billion in 2018). But they are now about two-thirds of merchandise exports to Japan and are more than double those to the European Union. Apart from mineral resources and basic metal manufactures, prominent Australian merchandise exports to ASEAN include crude oil (the top export in 2018), LNG, wheat, live beef cattle, various petroleum oils and preparations from bituminous minerals, and frozen beef.

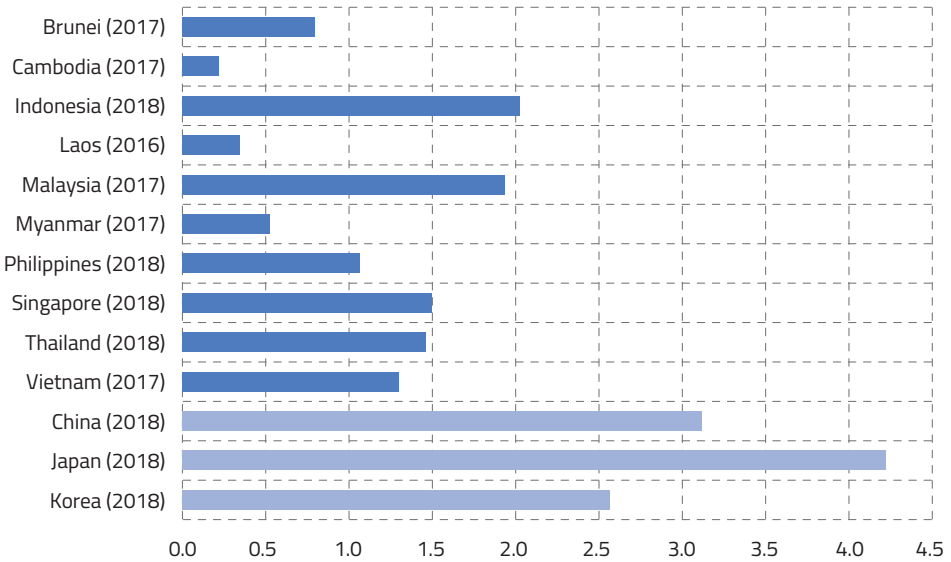
Australia's exports to ASEAN have been growing rapidly. Over 2013-18, their Australian dollar value grew at a compound annual rate of around 8.9 per cent – well in excess of growth in prices in Australia and appreciably faster than growth in exports to all other destinations (5.3 per cent per annum). This performance is in sharp contrast to exports to Japan (where Australia's merchandise exports are only 12 per cent above the value reached in 2011) and the European Union (where exports are much below 2008 levels). Growth in exports to ASEAN has also been faster than to China in the past five years. The share of Australian merchandise exports directed to ASEAN has therefore increased.

Australia trades relatively intensively with several of the larger ASEAN economies (meaning that the share of exports that goes to them is above what would be expected given their share of world imports).[14] Chart 2.1 shows export intensities for each ASEAN economy. The intensity is well above one for Indonesia, Malaysia, Singapore, Thailand and Vietnam, which indicates a strong export relationship. The chart also shows trade intensities for key Northeast Asian economies. The absence of steel industries in ASEAN on the scale of those in China, Japan and Korea is a key part of the explanation for higher export intensities for the Northeast Asian economies (though exports of iron ore and metallurgical coal to ASEAN have been growing quickly). Australia's trade intensities with the ASEAN economies are also well below that with New Zealand, where cultural similarities, supported by government policies including the Australia-New Zealand Closer Economic Relations Trade Agreement (ANZCERTA),

Chart 2.1

Australia's export intensity with ASEAN and selected Northeast Asian economies

Source: TNC calculations from ITC Trade Map and DFAT data



Note: The trade intensities are calculated as the share of Australian merchandise exports directed to the country in question divided by that country's share of world imports (with world imports adjusted to remove Australian imports). Data for Singapore should be interpreted with particular caution, since the import data used to calculate the ratio include items subsequently re-exported with little or no change. Australian exports to Singapore may also include some goods re-exported to other economies. In the Chart, a reading greater than one indicates a relatively intensive export trade.

have underpinned a very strong trading relationship. Clearly, there is a good deal of scope to develop trade further with ASEAN.

Australia's services exports to ASEAN were $13.7 billion in 2018 when measured on a balance of payments basis. Education services made up about around two fifths of this total: there were about 105,000 students from ASEAN countries studying in Australia in 2017, a total exceeded only by those from China.

Personal travel services (essentially earnings from the sale of goods and services to tourists) made up another fifth, with over 1.4 million short-term visits by ASEAN residents in 2018.[15] 'Professional, technical and other business services', a broad category that covers research and development services, a variety of professional and management consulting services (including legal services and accounting services) and technical and trade-related services (such as engineering, surveying and scientific services), was another big item.

An important limitation of these data is that they do not cover services delivered by Australian firms located abroad. Services delivery by commercial presence of this kind is the main way of delivering services, but Australian data is quite limited.

The market for minerals and basic metal manufactures

ASEAN is a big market for Australian minerals and basic metal manufactures (also referred to as mining exports in this report). The estimated value for this trade in 2018 was $12.9 billion.

Table 2.1 breaks down Australia's 2018 mining exports to ASEAN by country of destination. It indicates that Malaysia was the biggest market for mining goods in that year, but Thailand and Vietnam, and to a lesser extent Indonesia and Singapore, were also substantial destinations. Exports of mining goods to Malaysia are bigger than set out in the ABS data because of large exports of several items classified as confidential or partly confidential by the Bureau, or which are not reported. These include alumina, manganese ores and concentrates, zirconium ores and concentrates, and rare earth metals. Confidentiality also affects the calculation of exports to Indonesia, though not to the same extent.

Table 2.2 gives a breakdown by commodity and shows a highly concentrated export trade. Coal – more than half of it thermal coal – stands out as the biggest mining export. Gold – almost all as bullion – was not far behind. Together, these two commodities made up about half of Australia's mining exports to ASEAN in 2018. Other big trade items included unwrought copper, unwrought aluminium, and iron ore and concentrates.

Table 2.1

Australia's mining exports to ASEAN by country, 2018

Source: ITC Trade Map Database and DFAT

	Non-confidential ($m)	**Estimated confidential** ($m)	**Estimated total** ($m)
Brunei	<1	n.a.	n.a.
Cambodia	<1	n.a.	n.a.
Indonesia	1569	355	1925
Laos	<1	n.a.	n.a.
Malaysia	2725	770	3490
Myanmar	3	n.a.	n.a.
Philippines	757	40	800
Singapore	1336	50	1390
Thailand	2828	20	2850
Vietnam	2476	n.a.	n.a.
Total	**11,694**	**Around 1235**	**Around 12,930**

Note: Amounts confidential in ABS statistics are estimates from import data for five ASEAN economies for which 2018 data was available. The method used is detailed in the note to Table 2.2. n.a. means not available.

Table 2.2

Australian exports of minerals and basic metal manufactures to ASEAN, 2018

Source: ITC Trade Map Database and DFAT

Product description	**Exports** ($m)
Coal; briquettes, ovoids, similar solid fuels manufactured from coal	3441
Iron ore and concentrates	797.4
Non-ferrous metal ores, of which:	829.3
... copper ores and concentrates	(368.9)
... precious metal ores and concentrates	(288.2)
... tine ores and concentrates	(141.8)
Non-metallic and other minerals, of which:	151.4
... diamonds, whether or not worked, but not mounted or set	(70.8)
... vermiculite, perlite and other mineral substances not elsewhere specified	(51.4)
Basic iron and steel manufacturing, of which:	624.6
... ferrous waste and scrap; remelting scrap ingots of iron or steel	(621.7)
Basic non-ferrous metal manufacturing, of which:	5850.2
... gold, unwrought, or in semi-manufactured or powder form	(2725.3)
... refined copper and copper alloys, unwrought	(1360.1)
... unwrought aluminium	(926.5)
... unwrought zinc	(499.5)
... unwrought lead	(209.8)
... aluminium waste and scrap	(73.1)
Total for minerals and basic metal manufactures	**11,694**
Confidential/unreported items estimated from selected ASEAN import data, of which:	Around 1235
... aluminium oxide (excluding artificial corundum)	(471)
... manganese ores and concentrates	(208)
... salt and related products	(149)
... nickel, not alloyed, unwrought	(139)
... zirconium ores and concentrates	(117)
Total including estimated confidential Items	**Around 12,930**

Note: Five ASEAN countries are used to obtain 2018 estimates of data that are confidential in ABS statistics. They are Indonesia, Malaysia, the Philippines, Singapore and Thailand. These were the only ASEAN countries for which 2018 data were available at the time of writing. The most significant omission, Vietnam, had only small imports of 2018 confidential items from Australia in 2017 (around $34 million). The estimates take 95 per cent of ASEAN imports in order to allow for freight and insurance and use the result as an estimate of Australian exports. Items partially confidential at the six-digit HS level are handled by deducting the value of Australian exports to the five ASEAN countries under those items. Aluminium oxide (excluding artificial corundum) was confidential for only some ASEAN countries in 2018, but exports to those for which it was not confidential were negligible. As a result of ongoing revisions, the ITC statistics used above may not match the most recent ABS data.

Mining exports driving structural change in Australia-ASEAN trade

Australia's mining exports have grown at significantly different rates over the past decade. Table 2.3 explores this by giving the value of Australian exports to ASEAN for key commodities for 2006, 2013 and 2018 and their annual growth rates over 2013-2018. Growth rates for these commodities fall into four main categories.

Very Rapidly Growing: These commodities include the three categories of coal covering both thermal and metallurgical coal. Together, they added about $2.7 billion to Australia's trade with ASEAN between 2013 and 2018 to bring total exports of coal to ASEAN to $3.4 billion. Iron ore also belongs to the rapidly growing category, adding another $750 million to bring exports to almost $800 million. Underlying the growth in these commodities has been ASEAN's relatively rapid economic growth and industrialisation and burgeoning energy demand. The expansion of ASEAN's steel industry has been one key factor, with crude steel production in both Indonesia and Vietnam more than doubling between 2013 and 2018. In both cases, Australia has been competitive enough to secure a substantial proportion of import demand for iron ore and metallurgical coal. Australia's exports of unwrought zinc and manganese ores and concentrates to ASEAN also grew rapidly over 2013-2018, albeit from a very low base in the latter case.

Moderate to Rapid Growth: These commodities, which grew at rates of 5 to 20 per cent annually, include gold, copper ores and concentrates and unwrought copper. These figures should be considered in light of big fluctuations from one year to the next for some commodities. For example, unwrought copper exports are shown as expanding quite rapidly over 2013-18, but the 2018 value of the trade was below the 2012 level. Gold exports also show a good deal of variability. While the value of ASEAN's imports of gold has increased substantially over the past five years in US dollar terms, Australia's share of those imports has fluctuated significantly, falling between 2009 and 2012 and then partly recovering through to 2018.

Marking Time: There are a number of commodities which grew only slowly between 2013 and 2018, among them unwrought aluminium and alumina. A decline in competitiveness and Australia's capacity to supply may help to explain some of these results. In the case of unwrought aluminium, ASEAN imports from all countries are estimated to have doubled between 2013 and 2018 in Australian dollar terms. Australia's share of the import market fell from around 25 per cent to an estimated 14 per cent.

Sharp Decline: After expanding very rapidly between 2006 and 2013, unwrought nickel (not alloyed) exports to ASEAN fell away very sharply. This reflects a substantial fall in the value of imports of this commodity into ASEAN, perhaps partly as a result of increased nickel production in Indonesia (the world's biggest producer) and partly because some ASEAN economies have tended to import increasing quantities of stainless steel directly (production of stainless steel is the main end-use of nickel).[16] The Office of the Chief Economist in the Australian Department of Industry, Innovation and Science is expecting to see a significant increase in Australia's refined nickel output over the next five years as the Kwinana nickel refinery is upgraded and as new mines in Western Australia come on stream (BHP has announced plans to open three new mines): it is likely that this will result in a larger role for Australia in nickel trade globally, which may include ASEAN.[17]

Table 2.3

Australian mining exports to ASEAN, selected commodities 2006-18

Source: ITC Trade Map Database and DFAT

Product description	2006	2013	2018	2013-18
		$ million		Ann. growth %
Bituminous coal excl. metallurgical (e.g. steaming coal)	364	610	1957	26.3
High rank metallurgical coal (hard coking)	2	110	1026	56.3
Metallurgical coal: semi-soft coking and PCI coal	5	19	456	88.8
Iron ore and concentrates	0.3	50.6	797.4	73.6
Copper ores and concentrates	148.3	174.8	368.9	16.1
Precious metal ores and concentrates	0.0	258.9	288.2	2.2
Tin ores and concentrates	7.7	130.1	141.8	1.7
Ferrous metal waste and scrap	332.3	551.7	621.7	2.4
Gold, unwrought, not more than semi-manufact.	1727.7	2122.0	2725.3	5.1
Copper refined and copper alloys, unwrought	1358.1	909.6	1360.1	8.4
Unwrought aluminium	1405.9	864.6	926.5	1.4
Unwrought zinc	146.5	189.4	499.5	21.4
Unwrought lead	110.8	201.2	209.8	0.8
Confidential items: estimated for 5 ASEANs				
Aluminium oxide (excluding artificial corundum)	221	455	471	0.7
Manganese ores and concentrates	0.0	1.2	208	180.4
Salt and related products	94	111	149	6.1
Nickel, not alloyed, unwrought	12	1,426	139	-37.2
Zirconium ores and concentrates	17	64	117	12.8

Note: Exports of products that are confidential in ABS statistics are estimated from partner import data as described in the notes to Table 2.2. However, the 2006 and 2013 data for manganese ores and concentrates are actual data rather than estimates, as confidentiality did not affect trade statistics with ASEAN for this commodity for those years. Changes in the Harmonized System (HS) and Australian Harmonized Export Commodity Classification (AHECC) codes do not affect the data for the years/level of aggregation given. Growth rates give compound annual growth in per cent. Caution should be exercised in interpreting these growth rates: as the text indicates, there can be very substantial fluctuations in export values from one year to the next, sometimes as a result of price and exchange rate changes. This can strongly affect the results. As a result of ongoing revisions, the ITC statistics used above may not match the most recent ABS data.

METS exports to ASEAN

The Australian METS sector has a very good reputation as a supplier of goods and services to mining firms and has played an important role in Australia's commercial relations with ASEAN. Leading products and services range from equipment maintenance and repair, to software solutions, electrical equipment, lighting and environmental management services. The firms involved range greatly in size and revenue, from small and medium enterprises (SMEs) to big contract miners such as Thiess.

Austmine surveys and Australian International Business Surveys provide a broad overview of the operations of these firms and highlight that Southeast Asia is a focus of METS activity. A 2015 Austmine survey notes that of the METS firms exporting equipment, products or services or technology, 67 per cent exported to Southeast Asia, the highest proportion of all regions identified in the survey. A substantial proportion of exporting METS firms sold goods or services to Indonesia, Malaysia, Thailand, the Philippines, Singapore and Vietnam, with this share ranging from 21 per cent for Vietnam to 49 per cent for Indonesia. Over 40 per cent of those METS firms that had overseas offices or operations offshore were involved in Southeast Asia, with Indonesia, Singapore, Malaysia and Thailand among the top twenty locations.[18]

Estimating the value of METS exports of goods is difficult. Many goods, at least as they are captured in official statistics, have dual or multiple uses and it is usually not possible to identify the end use. However, the first volume of this series of reports did present an illustrative list of products that could include mining equipment, and this provides one way to gauge trading ties with ASEAN countries in this area. Table 2.4 presents a selection of the results for 2018 using a slightly modified list (see the notes to Table 1.6). Particularly significant exports include certain pumps and parts of pumps, various types of technical equipment used in surveying and in physical and chemical analysis, and machinery for sorting and grinding mineral ores. There were much smaller exports to ASEAN in 2018 of products such as coal or rock cutters and tunnelling machinery, or safety fuses and detonators. Total 2018 exports to ASEAN of all the goods on the illustrative list amounted to around $645 million, but it is possible that only a small proportion of this was from the METS sector.

Measuring METS services exports to ASEAN presents still greater difficulties. Table 2.5 gives a list of services exports that might be relevant to the METS sector. As it indicates, the 'professional, technical and other business services' item, which may include a variety of METS services, is a particularly large one, with exports to ASEAN under this category around $1.9 billion in 2018. No breakdown of these services is available. Commercial presence is the main way of delivering services but is not captured by this data.

Table 2.4

Australian exports to ASEAN that could include mining equipment, 2018

Source: ITC Trade Map Database

Product description	Exports $m
Basic chemical manufacturing/explosives, of which:	3.1
... safety fuses, detonators etc	(2.8)
Rubber manufactures and headgear, of which:	12.4
... conveyor, transmission belts	(6.5)
... new pneumatic tyres of rubber of a kind used for on construction, mining or industrial handling vehicles and machines	(3.8)
Railway manufacturing, of which:	35.1
... track construction material of iron or steel	(17.7)
... electricial signalling, safety equipment etc	(8.8)
Professional, scientific, electronic equipment, of which:	110.2
... instruments for physical and chemical analysis	(46.5)
... surveying instruments and appliances	(37.8)
Electrical equipment, of which:	22.4
... electric motors and generators	(9.7)
Iron and steel articles	7.1
Machinery and mechanical appliances, of which:	403.1
... various pumps and parts of pumps	(126.4)
... machinery for sorting, screening etc. earth, ores or minerals; machinery for agglomerating mineral fuels, plastering materials; machines for forming foundry moulds	(92.6)
... ships' derricks; cranes, including work trucks fitted with a crane	(21.5)
Vehicles of a kind that might be used in mining, of which:	30.0
... special purpose vehicles	(14.8)
... dumpers for off-highway use	(6.1)
Total for possible METS products	**623.4**
Confidential items estimated from selected ASEAN import data, of which:	Around 20
... sodium cyanide	(13)
... self-propelled front-end shovel loaders	(5)
Total including estimated confidential items	**Around 645**

Note: Products that could include mining equipment are as defined in the notes to Table 1.6. Exports of products that are confidential or partly confidential in ABS statistics are estimated from partner import data as outlined in the notes to Table 2.2. The two confidential items listed are the only ones for 2018 that affect the products on the potential METS list.

Table 2.5

Selected Australian services exports to ASEAN

Source: ABS, *International Trade: Supplementary Information, Calendar Year, 2018*, Catalogue 5368.0.55.004

	2013	2017	2018	2013-18
		$ million		Ann. growth %
Maintenance and repair services, n.i.e.	26	20	13	-12.9
Construction services	11	8	4	-18.3
Financial services	147	248	271	13.0
Intellectual property charges, n.i.e.	104	120	115	2.0
Telecom, computer and information services	180	386	551	25.1
Professional, technical and other business services	1717	2473	1947	2.5

Note: Growth rates are compound annual rates. n.i.e. means not included elsewhere.

Australia's imports from ASEAN

ASEAN is an important source of imports for Australia, with Thailand, Malaysia and Singapore the biggest points of origin. Merchandise imports were valued at $52.3 billion in 2018, appreciably larger than Australia's merchandise exports to ASEAN. The principal imports from ASEAN in that year were crude and refined petroleum, vehicles (including commercial vehicles), telecommunications equipment and computers and related equipment. Merchandise imports from ASEAN have grown relatively slowly over the past five years, at a compound annual rate of just 3.0 per cent annually.

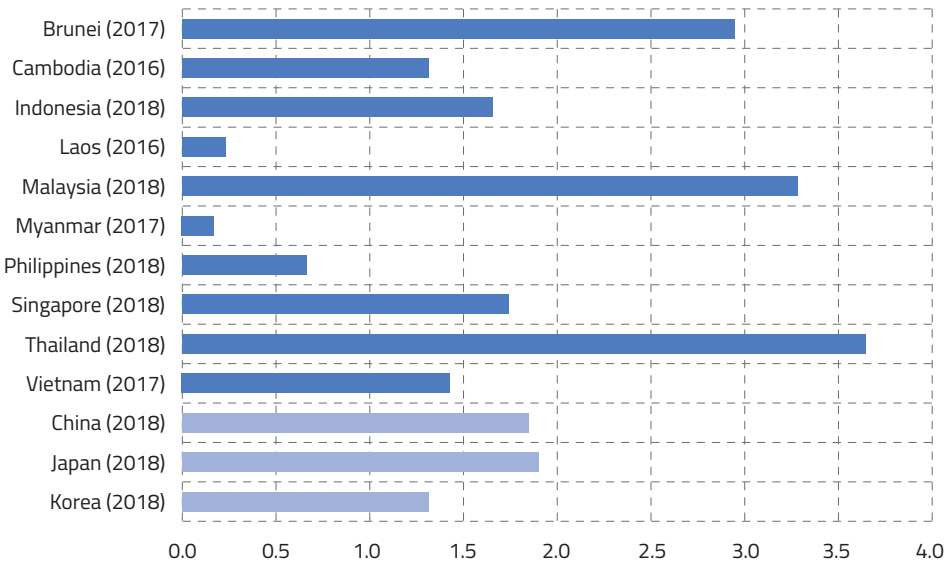
Australia's import relationship with the ASEAN countries is relatively intensive, meaning that the share in Australian imports of ASEAN countries typically exceeds the level that might be expected given the share of those countries in world exports. Australia's import intensities for each ASEAN economy and selected Northeast Asian economies are shown in Chart 2.2. The chart shows very high import intensities for Thailand, Brunei and Malaysia and less spectacular, but still high, intensities for Singapore and Indonesia. The Philippines is the only big ASEAN economy where the import intensity is below one.

Despite relatively intensive import trade, there is an asymmetry in relation to the goods export trade with ASEAN. Australia is a less important export market for ASEAN than ASEAN is for Australia. In 2018, ASEAN is estimated to have directed only 2.7 per cent of its merchandise exports to Australia. Australia nonetheless was still a significant market – ranking seventh for Thailand, ninth for Brunei (for 2017) and tenth for Malaysia and Singapore. The high ranking for Thailand principally reflects its role as a big supplier of vehicles and other manufactures to Australia: for Brunei, it occurs almost entirely because of its role as an exporter of crude oil.

Chart 2.2

Australia's import intensity with ASEAN and selected Northeast Asian economies

Source: TNC calculations from ITC Trade Map data



Note: The import intensities are calculated as the share of Australian imports from the country in question divided by that country's share of world exports (with world exports adjusted to remove Australian exports). They do not take into account the impact of some data classified as confidential by the ABS. In the Chart, a reading greater than one indicates a relatively intensive import trade.

Not surprisingly, Australia's imports of minerals and basic metal manufactures from ASEAN are relatively modest, at approximately $384 million in 2018 (Table 2.6). Several products accounted for the bulk, namely gold, cement, ferro-alloys and quicklime or other forms of lime. There was no single supplier.

More than half of the gold imported from ASEAN came from the Philippines, with the balance mainly from Malaysia and Indonesia. The biggest source of cement was Indonesia, with Malaysia, Thailand and Vietnam other significant suppliers. Ferro-alloys came almost entirely from Malaysia and quicklime and other forms of lime from Thailand and Malaysia.

Imports of mining equipment from ASEAN are difficult to quantify. It is clear, however, that the Australian mining industry does rely heavily on imported equipment. Table 2.7, drawn from the Australian input-output tables released by the ABS, shows extensive use of various manufactures and equipment used as intermediate goods in production of several mining sectors as well as oil and gas extraction. Total imports of goods and services by these sectors were valued at $9.5 billion in 2016-17. The data cover imports from all sources, not just ASEAN, and no further breakdown by country is available.

Table 2.6

Australian imports of minerals and basic metal manufactures from ASEAN, 2018

Source: ITC Trade Map Database

Product description	**Imports** ($m)
Coal and coke, of which:	1.7
... coal; briquettes, ovoids, similar solid fuels manufactured from coal	(1.6)
Iron ore and concentrates	0.0
Non-ferrous metal ores	0.6
Non-metallic and other minerals, of which:	164.5
... cement, including cement clinkers	(121.3)
... quicklime, slaked lime and hydraulic lime	(18.5)
Basic iron and steel manufacturing, of which:	33.6
... ferro alloys	(33.3)
Basic non-ferrous metal manufacturing, of which:	183.5
... gold, unwrought, or in semi-manufactured or powder form	(147.7)
... unwrought aluminium	(12.2)
... zinc dust, powders and flakes	(5.3)
Total for minerals and basic metal manufactures	**383.8**

Note: There are no confidentiality issues affecting imports of the above products for 2018.

In the absence of hard data, Table 2.8 returns to the illustrative list used earlier in the chapter. It shows imports from ASEAN of items that could include mining equipment valued at around $980 million in 2018. As before, these goods can have dual or multiple uses and the amount of this total directed to the mining sector is not known. There are some large items on the list (for example, new tyres of a kind used for buses and lorries) that are likely to be mainly used outside the mining sector. But the line is drawn where use outside the mining industry is likely to be very extensive: thus Table 2.8 does not cover equipment such as computers, utility vehicles or four-wheel drives.

Australia's imports of services from ASEAN were valued at $16.8 billion in 2018 when measured on a balance of payments basis. Tourism accounted for well over half, and transport services another fifth. But there were also significant imports of business services, including the broad category of 'professional, technical and other business services'. Table 2.9 shows various business services imports from ASEAN in 2018. It is not clear how much would have gone to the mining sector. However, Australia's input-output tables (see Table 2.7) show large imports (from all sources, not just ASEAN) of a number of services used in mining and oil and gas extraction.

Table 2.7

Use by Australia's mining and oil and gas sectors of imports from all sources, 2016-17

Source: TNC calculations from ABS, *Australian National Accounts: Input-Output Tables*, 2016-17, Catalogue 5209.0.55.001, Table 3

Supplying product group	**Use** $m
Oil and gas extraction	28
Non-metallic mineral mining	50
Exploration and mining support services	34
Textile product manufacturing	32
Clothing manufacturing	170
Footwear manufacturing	76
Petroleum and coal product manufacturing	2828
Basic chemical manufacturing	509
Cleaning compounds and toiletry preparation manufacturing	69
Polymer product manufacturing	180
Natural rubber product manufacturing	88
Iron and steel manufacturing	236
Basic non-ferrous metal manufacturing	40
Forged iron and steel product manufacturing	29
Structural metal product manufacturing	246
Other fabricated metal product manufacturing	214
Motor vehicles and parts; other transport equipment manufacturing	39
Professional, scientific, computer and electronic equipment manufacturing	254
Electrical equipment manufacturing	152
Specialised and other machinery and equipment manufacturing	2355
Accommodation	638
Food and beverage services	41
Air and space transport	26
Finance	119
Auxiliary finance and insurance services	92
Rental and hiring services (except real estate)	162
Professional, scientific and technical services	491
Total competing imports	**9476**

Note: The table covers imports from all sources (not just ASEAN) for intermediate use in six industry groups, namely coal mining, oil and gas extraction, iron ore mining, non-ferrous metal ore mining, non-metallic mineral mining and exploration and mining support services. Only the more significant product groups are shown. Imports are valued at basic prices (that is at producer prices, not prices paid by the using industry). The above table does not cover imports used for capital investment purposes, which are part of final demand.

Table 2.8

Australian imports from ASEAN that could include mining equipment, 2018

Source: ITC Trade Map Database

Product description	Imports $m
Basic chemical manufacturing/explosives, of which:	13.4
... prepared explosives	(13.3)
Rubber manufactures and headgear, of which:	221.4
... new pneumatic tyres of rubber of a kind used for buses and lorries	(176.1)
... conveyor belts	(18.8)
Railway manufacturing, of which:	20.2
... containers designed for carriage by one or more modes of transport	(13.3)
Professional, scientific, electronic equipment, of which:	99.3
... instruments for physical and chemical analysis	(55.4)
... instruments for measuring the flow/level/pressure of liquids and gases	(16.9)
... automatic regulating and controlling instruments and apparatus	(13.1)
Electrical equipment, of which:	46.4
... electric motors and generators	(31.5)
Iron and steel articles, of which:	60.9
... line pipe of a kind used for oil and gas pipelines within HS 730419	(38.2)
Machinery and mechanical appliances, of which:	379.3
... machinery for sorting, screening etc. earth, ores or minerals; machinery for agglomerating mineral fuels, plastering materials; machines for forming foundry moulds	(93.2)
... self-propelled bulldozers, angledozers, graders, mechanical shovels etc	(63.0)
... ships' derricks; cranes, including work trucks fitted with a crane	(40.5)
Vehicles of a kind that might be used in mining, of which:	53.1
... dumpers for off-highway use	(49.4)
Total for possible METS products	**893.9**
Confidential items estimated from selected ASEAN import data, of which:	Around 90
... line pipe of a kind used for oil and gas pipelines within HS 730619	(76)
Total including estimated confidential items	**Around 980**

Note: Products that could include mining equipment are defined as in the notes to Table 1.6. As with Table 2.2, five ASEAN countries are used to obtain 2018 estimates of data that are confidential. In this case, exports by the five ASEANs are used without the 0.95 adjustment factor, since Australian imports are measured f.o.b. (free on board). Imports that are partly confidential are handled as described in the notes to Table 2.2.

Table 2.9

Selected Australian services imports from ASEAN

Source: ABS, *International Trade: Supplementary Information, Calendar Year, 2018*, Catalogue 5368.0.55.004

	2013	2017	2018	2013-18
		$ million		Ann. growth %
Maintenance and repair services, n.i.e.	523	59	21	-47.4
Construction services	0	0	0	n.a.
Financial services	123	263	318	20.9
Intellectual property charges, n.i.e.	81	107	145	12.4
Telecom, computer and information services	236	370	441	13.1
Professional, technical and other business services	1325	1780	1936	7.9

Note: Growth rates are compound annual rates.

The FDI relationship

Part of ASEAN's aim in promoting its own economic integration has been to make its economies more attractive to foreign investors in the context of strong competition for investment from other developing and emerging economies, including from other parts of East Asia. It has been at least partly successful with the stock of inward foreign direct investment (FDI) more than doubling from around US$1144 billion at the end of 2010 to US$2381 billion by the end of 2018. This was well above the rate of growth for the global stock of inward FDI over this period. But it was still below the increase in cumulative FDI into China.

Australia has contributed to the growth of FDI into ASEAN. The stock of Australian outward FDI in ASEAN rose from $16.8 billion at the end of 2010 to $39.7 billion by the close of 2018, somewhat less than the overall growth in ASEAN's inward FDI after adjusting for exchange rates, but still a very substantial increase. Singapore was the host to about 60 per cent of Australia's December 2018 level of overseas FDI in ASEAN, with substantial amounts also in Malaysia, Indonesia, Vietnam, Thailand and the Philippines.[19]

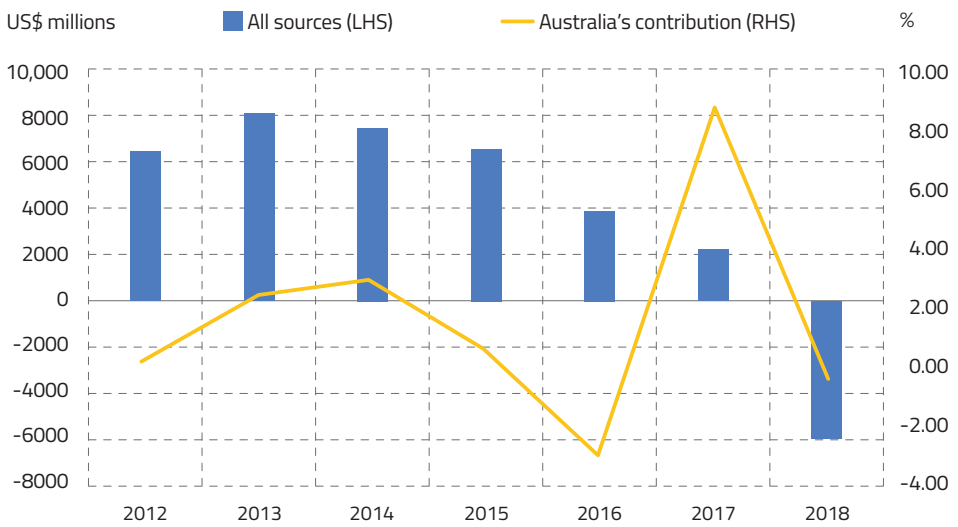
Australian FDI is important to countries in the region: Australia was in the top fifteen sources of the flow of FDI into ASEAN in each of the four years ending in 2018.[20]

Information on the allocation of Australian investment to ASEAN by sector is scarce, but the ASEAN Secretariat has assembled some data of this kind for inflows of FDI for the period 2012 to 2018. The data has limitations because around a quarter of inflows into the mining and quarrying sector over this period are not classified by source country. With that qualification, Chart 2.3 shows both total FDI inflows into the mining and quarrying sector and Australia's contribution to that total. As the Chart shows, both series are highly volatile. For the period 2012-18, Australia contributed about 1.8 per cent of inflows into this sector, well below the share provided by the European

Chart 2.3

Australia's contribution to inward FDI flows to ASEAN's mining sector

Source: ASEAN Secretariat, ASEAN FDI Database



Note: 2018 data is preliminary.

Union, other ASEAN economies (principally Thailand, Malaysia, and Indonesia), China and Japan. The more recent data *do not* make it necessary to revise the conclusion in the first volume of the New Frontiers series that Australia is underweight on FDI in mining in ASEAN.[21] It is not possible to determine how much of Australian FDI to ASEAN is directed to the METS sector given the broad industry classification used by the ASEAN Secretariat.

ASEAN's direct investment in Australia has also grown, with the level rising from $25.8 billion at the end of 2010 to $47.7 billion at the close of 2018 – about five per cent of total FDI in Australia. This was slightly above the share that would have been expected on the basis of ASEAN's share of the world outward stock of FDI.

ASEAN's direct investment in Australia has risen from $25.8 billion at the end of 2010 to $47.7 billion at the close of 2018.

Growth in the stock of ASEAN FDI in Australia has increased since 2010 at about the same rate as that for FDI from all sources. At the end of 2018, just under 60 per cent of the stock of ASEAN FDI in Australia was from Singapore, reflecting its role as a regional financial centre, and almost another 30 per cent came from Malaysia. Thailand was another significant source of direct investment.

The ABS does not publish a breakdown by industry sector of inward FDI from specific countries. However, some data are available on Foreign Investment Review Board (FIRB) approvals of foreign investment. This is less than optimal as the investments captured by the data, representing approvals, are not necessarily realised in practice and any withdrawals from an investment position are not recorded. The investment captured by the data has also changed over time reflecting, among other things, changes in foreign investment policy.[22]

However, the FIRB data do suggest significant investment by some ASEAN economies in Australia's mining sector. Total approvals for mineral (including oil and gas) exploration and development attributable to an ASEAN country in FIRB annual reports were of the order of $9 billion in the years from 2010-11 to 2017-18 (Table 2.10). The data suggests that Thailand, Singapore, Indonesia and Malaysia were particularly significant investors in mineral exploration and development, though comparison is difficult because not all countries are identified for each year. It is not possible to determine how much inward investment went to the METS sector.[23]

Table 2.10

FIRB approvals for ASEAN for mineral exploration and development

Source: *Foreign Investment Review Board Annual Report 2017-18* and previous issues

Product description	Indonesia $m	Malaysia $m	Singapore $m	Thailand $m	Total $m
2010-11	n.a.	461	688	2566	3715
2011-12	n.a.	362	112	688	1162
2012-13	n.a.	147	189	n.a.	336
2013-14	n.a.	68	292	43	403
2014-15	n.a.	113	10 or less	612	725
2015-16	n.a.	102	173	n.a.	275
2016-17	n.a.	16.4	113.6	8.3	138.3
2017-18	1847.4	30.1	319.1	n.a.	2196.6
Total for country/group	**1847.4**	**1299.5**	**1886.7**	**3917.3**	**8950.9**

Note: The right-hand column gives totals for the data given in the table, not totals for all ASEAN economies. For reasons described in the text, data from one year may not be fully comparable with those for another. There was a particularly important change of practice for 2017-18 that is discussed in the endnotes.

CHAPTER 3

Mining and METS in ASEAN: Three shaping forces and one opportunity

Assured access to energy and to the metals and industrial minerals that are basic to electricity generation and transmission, transport infrastructure, construction and consumer appliances are two of the preconditions for achieving sustainable development in a modern economy. This fact places mining, and the technologies, services, science and engineering that underpin it, among the key enablers of development.

Demand for mined products in ASEAN is being driven by rapid urbanisation and development and by the innovation of new technologies and consumer goods that are increasing demand for a broader range of minerals. On the supply side, it is being shaped by divergent forces: some support growing production like investments to improve social, economic and environmental outcomes from mining; others, such as poor business environments and resources nationalism, work to retard growth.

While acknowledging the significant differences in member economies, this chapter draws on the following country-level analysis to highlight three forces that are expected to shape the ASEAN market for mining commodities and METS over the next 10-15 years:

- Strong continuing growth in most ASEAN economies will ensure demand for minerals and energy grows rapidly. In the case of energy, coal is set to become the primary fuel for electricity generation notwithstanding that several governments are re-assessing the precise roles of coal-fired generation, gas and renewables.[24] It is clear, however, that there is a noticeable move to increase coal's share in the power generation mix in large parts of Southeast Asia as they diversify away from gas and demand grows beyond hydro capacity.

In the case of metals, demand will be driven by changing consumer- and energy-related technologies that will both increase and broaden demand for a range of metals, and by the impacts of rapid urbanisation, related infrastructure investment and rapidly rising disposable incomes.

- The output of ASEAN mines and domestic metals production is more problematic. Investment in METS and a growing interest among some ASEAN members in legal and regulatory frameworks that support mining should lead to increases in output. METS is the best prospect for mining-related investment in the region. Many other factors will weigh heavily on investment in the sector: mining promotion is not a priority for most members, moratoria on new mining investment are in place among some members and anti-mining sentiment is widespread. Growing resources nationalism is one aspect of this sentiment and will continue to discourage foreign direct investment (FDI) in mining.

  How these various influences will affect mine output and metals production is far from clear. The one point that is clear is that domestic and international mining companies will be subject to increasing social and environmental scrutiny both from governments and community groups.

Overall transparency and effectiveness in working with local communities to improve economic, social and environmental outcomes will matter at least as much as traditional benchmarks of effectiveness like output, productivity and workforce health and safety. If these factors combine to contribute to sustainable mining industries, they could well bolster regional supply responses to growing demand for minerals and energy over the medium to long term.

- Given tensions between supply and demand, the most readily available option for meeting rising demand for metals and energy – especially thermal coal and liquefied natural gas (LNG) – will be through trade. Import demand for many mining commodities should rise quickly. Part will involve intra-ASEAN trade, but the greater proportion will need to be sourced from the international market given limited ASEAN capacity to supply the demand for some minerals. While trade in mining products will increase significantly, comparisons with, say, China in the 2000s would be misplaced. ASEAN countries are watchful of pressures on their current accounts, bureaucratic processes will hinder imports of finished products and key inputs, and import substitution policies are in place. To the extent practical, governments in the region will attempt to retard import growth.

These shaping forces should create a big opportunity for Australia given our excellent reputation in mining and METS, excellence in a broad cluster of mining-related industries that provide a strong competitive edge in international markets, and strong Australia-ASEAN relations across the board.

Demand for energy is increasing strongly and the energy mix is changing

Demand for energy in ASEAN has grown steeply over the past 15 years or so[25] driven by rapid urbanisation, the expanding industrial base, related infrastructure development, and rising expectations linked to rising incomes and purchasing power.[26] These elements are reducible to a single driver: ASEAN's extremely impressive growth and development record.

Of 18 very fast growing developing countries over the past 50 years, eight are members of ASEAN: Indonesia, Malaysia, Singapore, and Thailand achieved, or exceeded, average annual per capita GDP growth of 3.5 per cent over the half century since 1965, and Cambodia, Laos, Myanmar, and Vietnam achieved growth by this measure of at least 5 per cent over the 20 years between 1996 and 2016.[27]

ASEAN's demand for energy will continue to rise strongly through the 2020s and beyond based on expectations of strong continuing economic growth and rising incomes. The ASEAN economy is forecast to grow at a weighted average of around 5 per cent per year through the 2020s[28] and to possibly triple in size between 2015 and 2040.[29]

The region faces undoubted challenges. Managing the rise of China is one. Avoiding the 'middle income trap' is another. And maintaining momentum if the world continues to shift towards greater protectionism is yet another. Any sustained slowing of world trade would impact negatively on ASEAN and retard growth in demand for energy. On balance there is a far greater chance that ASEAN will continue to perform well, though perhaps below its stellar performance of recent years.

Under the International Energy Agency's (IEA's) New Policies Scenario, demand

for electricity is projected to increase at a compound average annual rate of 3.9 per cent from 2017 to 2040. Generation from coal-fired plants will increase by 4.3 per cent per year over this period, gas-fired generation by 2.3 per cent and renewables by 5.9 per cent with solar photovoltaic generation growing fastest (Table 3.1).[30]

All ASEAN governments have ambitious plans to increase energy supplies in response to strong demand. Acting on them will involve making many complex policy decisions on issues such as funding huge investments in generation and power network capacity and how to adjust the energy mix to meet a range of policy objectives. The latter is of particular importance. Coal-fired power generation has increased in importance in many parts of the region over recent years, including in gas-producing economies like Thailand, Malaysia and the Philippines. Coal has overtaken gas as the leading fuel for electricity generation in Malaysia because natural gas output has grown more slowly than demand for electricity and natural gas can be sold more profitably elsewhere. In the Philippines, coal-fired power accounts for over one-third of installed electricity generation capacity and nearly half of all electricity generated. In Vietnam, hydro and coal-fired generation account for roughly equal shares of production: together, they generate around 70 per cent of Vietnam's power supply.

Coal-fired capacity is expanding rapidly. Indonesia and Vietnam are leading the way, and Malaysia is pushing ahead with supercritical and ultra-supercritical coal-fired power plants.[31] Supercritical plants are being constructed in the Philippines and more are planned, including two ultra-supercritical units. Laos and Myanmar are planning to increase coal-fired power generation. Thailand is a prominent exception, and is now planning a bigger role for natural gas in the energy mix.[32]

Southeast Asia stands out with its increasing reliance on coal in recent years. The scale of planned investment in coal-fired generation suggests increasing reliance into the coming decades. Under the IEA's New Policy Scenario, coal demand is set to more than double in the period to 2040 driven by growing power sector requirements. Moreover, ASEAN together with India emerge as the growth centres of global coal use, boosting coal usage by well over 200 million tonnes coal equivalent (mtce) and 600 mtce, respectively, over this period, more or less balancing declining demand in China,[33] Japan, North America and Europe (Chart 3.1).

Table 3.1

Electricity generation in ASEAN under the IEA's Central (New Policy) Scenario, TWh

Source: International Energy Agency (IEA) data

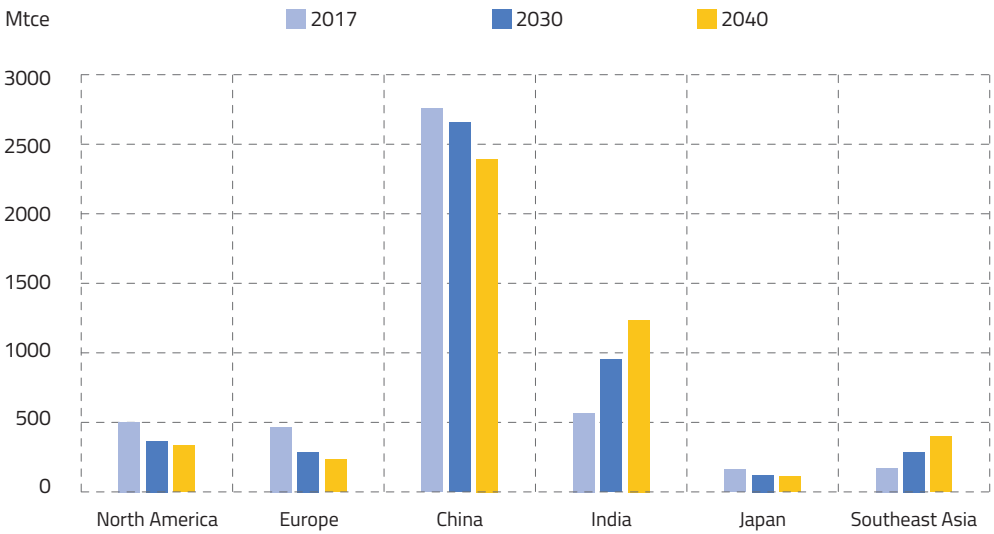
	2000	2017e	2030	2040	Share of 2017e	Share of 2040
Total generation	**370**	**961**	**1640**	**2310**	**100**	**100**
Coal	79	355	655	933	37	40
Gas	154	397	531	674	41	29
Renewables	65	181	433	679	19	29

Note: TWh refers to terawatt hour(s).

Chart 3.1

Projected coal demand, selected regions and economies

Source: IEA, *World Energy Outlook 2018*, OECD/IEA, Paris, 2018



Note: Mtce refers to million tonnes of coal equivalent. 2017 data are estimates. Southeast Asia is defined as ASEAN. Projections are those under the IEA's New Policies Scenario (see text). Under this scenario, the IEA sees total world demand as essentially flat, rising slightly from 5,357 mtce in 2017 to 5,405 mtce in 2030 and 5,441 mtce in 2040.

Considerable uncertainty obviously attaches to any set of projections over such a long period, and downside risk is acknowledged by the IEA citing increasing public opposition to coal-fired plants in countries like Thailand and the Philippines.[34] It may go beyond this. For example:

- In Vietnam, the current revised Power Development Plan VII envisages coal-fired generation taking a growing share of the energy mix out to 2030.[35] The government, however, is reviewing future investment in coal-fired plants. Issues being considered include: the imperative to generate cheap and plentiful power to sustain rapid industrialisation; Vietnam's international climate change commitments (including in recent free trade agreements); and opposition to coal from sections of the community. A key factor will be the evolving role of renewable energy (particularly wind and solar) in the energy mix: the increasing emphasis on renewable energy featured in the revision to Power Development Plan VII.
- In Myanmar, the government continues to refer to coal-fired power contributing one-third of power supply by 2030. Despite this, several contracts to build coal plants have been cancelled in recent years. There is strong opposition from farmers concerned about resumption of their land, and from environmental groups.[36]

The precise role of coal-fired generation in the energy mix is being reassessed across the region as governments consider wind and solar against natural gas and coal over the medium-term.[37] ASEAN is grappling

with how and when to respond to climate change and what technologies are best able to meet rapidly increasing energy needs cost effectively while meeting expectations on air quality in towns and cities. A large number of the ASEAN's cities have challenges with air quality and pollution.[38]

Several things stand out about growth in coal-fired generation in the region:

- Coal is competitive on price, availability, quality and reliability for baseload power and will lead planned additional capacity across most of the region into the 2020s followed by natural gas, hydropower and other renewables
- Coal-fired capacity will certainly grow notwithstanding changes in attitudes towards the environment across the region in recent years
- The coal fleet globally as well as in Southeast Asia will become more efficient with supercritical and ultra-supercritical coal plants becoming the technologies of choice
- Coal will replace natural gas as the primary source for electricity generation, reflecting limited prospects for discovery of new gas fields to replace maturing and declining resources[39]
- The share of renewables will continue to rise. Based on IEA's new policy scenario, they may account for nearly 40 per cent of installed capacity by the end of the 2030s, but coal will still have the largest share of the energy mix.[40]
- Reducing carbon intensity in line with international commitments and the imperative of raising urban air quality should continue to increase regional interest in renewable technologies alongside emissions control technologies such as high efficiency, low emissions (HELE) systems.[41]

Demand for metals will continue to increase substantially

Over the next 10-15 years demand for metals in ASEAN should increase substantially. Two key factors will be changing consumer and energy-related technologies, and the impact of continuing fast economic growth.

On the first point, technologies like solar panels, wind turbines, storage batteries, electric vehicles (EVs), and smart phones are intensive users of a wide range of metals such as copper, cobalt, nickel, rare earths, lithium, and silver. Smartphones contain more than 62 metals.[62] Lithium is dominant in battery technology. Nearly all EVs use rare earths like neodymium and dysprosium, and they are expected to be the main end-user of cobalt in the next few years. Possible alternatives to EVs such as hydrogen fuel cell vehicles use commodities including platinum. Silver is used in the great bulk of photovoltaic (PV) panels. And anything that relies on electricity requires copper or other highly conductive metals.[43]

Global demand for these technologies will drive regional demand for a broad range of metals. For example:

- Malaysia is the world's third-largest producer of PV cells and aims to be the second largest by 2020.[44] Thailand and Vietnam are increasing PV output for global and regional markets. And the industry has the potential to develop quickly across Southeast Asia drawing on existing expertise in battery technologies[45] and the region's close links to China, the world's largest and lowest cost producer of PV cells.
- Production of smartphones is continuing to rise through increasing adoption as the primary access point for digital services and content[46]

- The EV industry is gathering pace in parts of ASEAN driven by a combination of tax incentives for consumers and investors, demand from younger demographics, concerns about the effects of poor air quality on personal health, and tie-ups between local auto companies and Japanese and Chinese companies.[47]

On the second, and currently more important point, the sheer pace and breadth of ASEAN's growth will drive demand for metals. The relationship between rising per capita incomes and per capita consumption of metals varies for individual commodities but, in general, demand rises – in some cases very strongly – as incomes increase and demand for different metals peaks at different levels of per capita income (Box 3.1).

In the case of gold, which makes up nearly 40 per cent of ASEAN's imports of minerals and basic metal manufactures, research on India by the World Gold Council suggests that rising incomes have a decisive impact on long-term demand growth, even at relatively low incomes. The Council estimated that a 1 per cent increase in per capita income leads to a 1 per cent increase in demand for gold jewellery and that there is a slightly stronger relationship for investment assets like gold bars and coins.[48]

These relationships probably hold for most ASEAN countries. Gold is important culturally, seen widely as a store of wealth and, especially among farmers and women, it is an insurance policy against adversity.

In the case of many base metals like steel, demand increases dramatically as economies reach per capita incomes of US$5000-10,000: this is commonly linked to rapid urbanisation and the take-off of heavy industrial development.[49]

Smartphones contain more than 62 metals. Lithium is dominant in battery technology. Nearly all EVs use rare earths like neodymium and dysprosium… Global demand for these technologies will drive demand for metals.

Income and other drivers of demand for minerals and metals: econometric evidence

Rising incomes, industrialisation, shifts in the composition of output and urbanisation have been critically important influences on the demand for minerals, metals and energy. There is substantial econometric literature that seeks to quantify these relationships. Three recently published studies are by Stuermer, Fernandez and Baffes et. al.

The studies use broadly similar methodologies but vary in many other respects. Stuermer uses a panel data set of 12 industrialised and three emerging economies going back as far as 1840 and explores the impact of changes in per capita real value added in manufacturing. The other two studies focus on the impact of changes in per capita income and look at periods starting in 1975 and 1965. The Baffes study allows income elasticity of demand (which means the responsiveness of demand to changes in income) to alter as per capita income rises. Typically it is appreciably higher for emerging market and developing economies such as most of the ASEAN economies. Selected findings on specific commodities (which unless otherwise indicated are significant statistically) are as follows.

Aluminium: Stuermer's preferred method shows a 1 per cent increase in per capita manufacturing output leading to about a 1.5 per cent increase in per capita demand for aluminium in the long run. The other two studies suggest a long-run income elasticity of around 0.6 or (sometimes much) higher in the Fernandez study, and 0.8 (at the median level of income) in the Baffes study. The differences may partly reflect the use of per capita manufacturing output by Stuermer as opposed to per capita income for the other studies.

Steel: The Fernandez study is the only one to consider steel, and finds demand is relatively income responsive compared to some other metals, with an income elasticity of 0.5-0.7 in three of six methods and higher in others.

Copper: For economies ranging from India to the United States, Stuermer finds copper has an elasticity with respect to per capita manufacturing output of around one, while Baffes finds an income elasticity of around 0.7 at the median level of per capita income. Fernandez's results are inconclusive.

Coal: Baffes' study is the only one to look at coal. It finds an income elasticity of 0.6 at the median level of income of the countries studied, with higher elasticities at lower levels of income. There is no distinction between thermal and metallurgical coal.

Lead: The results suggest a relatively low income elasticity of demand for lead, reflecting limited uses and reduced relative importance as industrialisation proceeds. Stuermer finds an elasticity with respect to per capita manufacturing output of around 0.4. None of Fernandez's results are significantly different from zero.

Source: M Stuermer, 'Industrialisation and the Demand for Mineral Commodities', *Journal of International Money and Finance*, Vol 76, September 2017, pp. 167-27; V Fernandez, 'Mineral commodity consumption and intensity of use re-assessed', *International Review of Financial Analysis*, Vol 59, 2018, pp. 1-18; J Baffes, A Kabundi, P Nagle and F Ohnsorge, 'The role of major emerging markets in global commodity demand', World Bank Policy Research Working Paper, No. WPS8495, June 2018.

Chart 3.2 shows the rise in steel demand in ASEAN over the last decade and compares it with the fairly sluggish trend in steel production. Thailand is within the US$5,000-10,000 band, Malaysia is just above it, and countries like Indonesia and the Philippines are not too far below it and should move comfortably into it through the 2020s. Countries like Cambodia, Laos, Myanmar and Vietnam are currently well below it but, given their likely continued strong growth, should move into this band over the next few years.[50] All this suggests continuing strong demand for steel across ASEAN.

Strong demand for metals like copper and nickel, where peak demand may not be reached until per capita incomes are well in excess of US$20,000 per year,[51] also seems likely. Per capita incomes in ASEAN's major cities are typically three or four times higher than for national economies.[52] ASEAN's consuming class is growing strongly. And households with annual incomes in excess of US$10,000 per year are forecast to quadruple from 38 million in 2015 to over 160 million by 2030. By this time ASEAN could have over 330 million middle class consumers.[53]

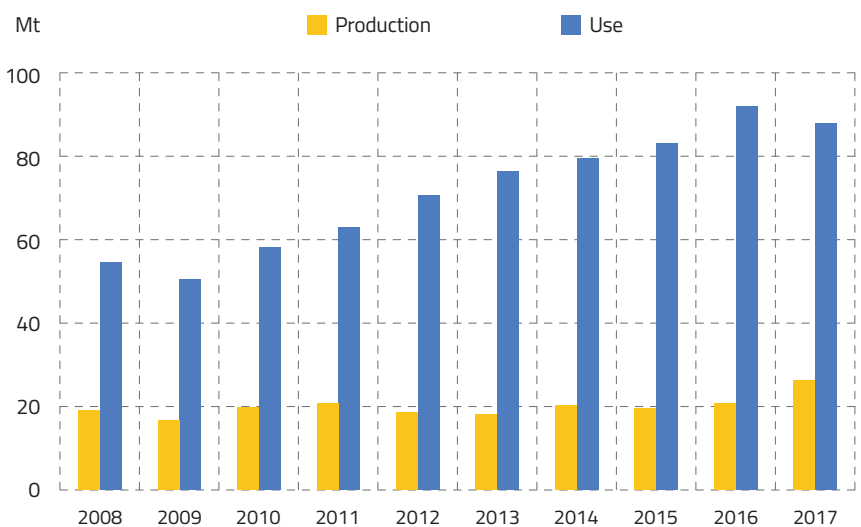
The country chapters provide some indicators of metal consumption. For example:

- The Indonesia Iron and Steel Institute forecasts Indonesia's steel consumption to rise by almost 70 per cent between 2016 and 2025[54]

Chart 3.2

ASEAN production and use of steel

Source: World Steel Association, *Steel Statistical Yearbook 2018*



Note: Mt is million tonnes. Use refers to apparent steel use in crude steel equivalents. The ASEAN totals do not include Brunei, Cambodia and Laos. Data for Myanmar are estimated by the World Steel Association.

- Thailand's metal consumption is expected to rise substantially on a range of indicators relevant to minerals and metal consumption: car ownership, for instance, is about one third – and average use of power per person around a quarter – of the levels in Australia. Major projects like those in the Eastern Economic Corridor will also involve very substantial infrastructure spending
- Filipino steel use per capita has more than doubled since 2010 from less than 50 kilograms to more than 100 kg in 2017. Per capita use, however, is still below Vietnam's and well below Malaysia's. The Government's roadmap for iron and steel envisions per capita steel consumption rising from around 100 kg in 2017 to 130 kg by 2030.

Whether these and similar forecasts are achieved is an open question. Much depends on demand factors such as pace of urbanisation and hard to predict factors such as the traction of China's 'Belt and Road' initiative over time (Box 3.2).

There also will be plenty of challenges in expanding metals production rapidly and/or in importing finished products. The availability of cheap and reliable energy is an obvious one given the energy intensity of metals processing. Many countries, including Indonesia and the Philippines, have abundant resources that they want to transform into processed metals for domestic use or export. But this requires substantial investment both in metals processing and energy generation at the same time as substantial investment is required in hard and soft infrastructure more broadly. The basic point remains however: ASEAN's demand for metals should continue to rise rapidly for many years to come.

Production of minerals and energy is likely to lag behind demand

Based on the mixed picture of mineral and energy production trends across ASEAN in recent years, rapidly rising demand is unlikely to be matched by rapidly rising and commensurate supply from domestic production. Production of some minerals appears to have stagnated in some countries, including Indonesia, Thailand and the Philippines. In Cambodia, Laos, Myanmar and Vietnam, there has been strong overall growth, though with areas of flatness or even decline. Vietnam, for example, is the second largest coal producer in Southeast Asia after Indonesia, but production has been generally flat over the past decade – largely explained by low productivity, lack of local expertise in deep underground mining and lack of capital in the state sector. In Malaysia, production profiles of minerals and metals are mostly flat or declining and metals production relies heavily on imported ores. Significantly, Malaysia's onshore minerals development has a low public and policy profile. The *Eleventh Malaysia Plan* (2016-20) hardly referred to mining other than for oil and gas.

The degree to which regional supply of minerals and energy responds in coming years to growing regional demand will depend on investment in these sectors. Some of the forces influencing investment will continue to pull in different directions. Unpredictable regulatory changes, growing resources nationalism and anti-mining sentiment will retard growth, particularly in international investment in non-hydrocarbon mining: in combination this should reduce growth in production of mining commodities by delaying projects and reducing access to investment and advanced technology.

BOX 3.2

Engaging with China's Belt and Road initiative

Developing economies in Asia have massive infrastructure investment needs. Investment is increasing but remains inadequate. The region as a whole, while growing quickly, is still constrained by the reliability and coverage of its transport, energy and communication networks.

The gap between what is required and what is currently being funded by governments and the private sector is wide and growing, and is set to widen further as projected strong economic growth necessitates bigger investments in infrastructure. The Asian Development Bank has estimated that in developing Asia (excluding China), the infrastructure investment gap is around 4.3 per cent of projected GDP per year over the period 2016-2020, with the biggest gap in transport followed by power generation. In Southeast Asia over the same period, the Bank also estimates the gap at US$92 billion or 3.2 per cent of projected GDP per year.

There is no simple solution to narrowing the infrastructure gap. Among other things it requires governments working together to create a more supportive policy and regulatory environment for intra-regional investment, having the skills to prepare pipelines of infrastructure investments that meet commercial standards, and reducing perceived risks from infrastructure investment.

China's Belt and Road initiative (BRI) is one part of this much bigger approach to narrowing the infrastructure gap. It involves mobilising investment to construct two huge transport corridors: an overland 'belt' that links China to Central and South Asia and onward to Europe, and a maritime 'road' that links it to Southeast Asia, the Persian Gulf, East and North Africa, and Europe. The broad concept is that infrastructure and policy gaps in Belt and Road corridor economies hinder trade and foreign investment; new infrastructure will help to narrow these gaps; and, by increasing connectivity and integration, will contribute to the long-term development of corridor economies and to countries and regions beyond through 'spillover' benefits.

BRI is controversial. It comes with risks common to large infrastructure projects generally. Its scale and the opportunities it presents are significant. But those opportunities are increasingly considered alongside concerns over sovereignty and claims it is a vehicle for the projection of influence at a regional and global level. Implications associated with elevated debt for some host countries also are a concern.

Source: ADB, *Meeting Asia's Infrastructure Needs*, Asian Development Bank, Manila, 2017; A Chatzky & J McBride, 'China's Massive Belt and Road Initiative', Backgrounder, Council on Foreign Relations, 21 May 2019; J Laurenceson & E Collinson, 'Australia and the belt and road initiative', Australia-China Relations Institute, University of Technology Sydney, 25 April 2019; S Ra & Z Li, *Closing the financing gap in Asian Infrastructure*, ADB South Asia Working Paper Series, No 57, Asian Development Bank, June 2018; and World Bank, *Belt and Road Economics: opportunities and risks of transport corridors*, Advanced edn., International Bank for Reconstruction and Development/The World Bank, Washington D.C., 2019.

Partially offsetting this, domestic investment in mining continues to rise in countries like Myanmar and Indonesia, as does international investment in METS across the region.[55] ASEAN governments and business acknowledge the unevenness of advanced technical expertise in mining, and governments provide relatively favourable treatment to foreign METS companies. This expertise raises productivity in existing mines, but squeezing more output from current projects will not cover the growing supply shortfall for minerals and energy. Large-scale new investment, including by international mining companies, will become essential if minerals production is to grow to anywhere near its potential.

Forces retarding growth in international mining investment in ASEAN

Setting aside Singapore, Malaysia and maybe Thailand, many ASEAN economies are difficult markets in which to do business. Challenges range across corruption, lack of transparency in regulatory frameworks, unpredictable taxation decisions, unpredictable legal processes, uneven protection of intellectual property, lengthy approval processes, and lack of skills in areas like information technology, accounting and administration.[56] Doing business in mining can be even more challenging for international companies, especially if it involves investment. Additional challenges include the dominance of state owned enterprises (SOEs) and favoured local companies; weak guarantees on mineral leases; contracts that become starting points for negotiation; and heavily bureaucratic and unpredictable land use and approvals processes.

The unpredictability of the mining environment comes out clearly in the Fraser Institute's global rankings of two highly mineralised countries – Indonesia and the Philippines. Both countries are rated by a wide cross-section of mining executives as among the most attractive for mining in the world for their mineral potential, subject to best practice policies being in place. But with current policies, mining attractiveness sinks to the bottom quartile of jurisdictions and, in the case of the Philippines, to the very bottom of that quartile. Ratings for both are especially poor for uncertainty associated with government administration and interpretation and enforcement of existing regulations; regulatory duplication and inconsistency; problems with the legal system; barriers to trade; disputed land claims; the low quality of geological databases; and security.[57]

More broadly, the country chapters point to the drying up of international investment in extractive mining outside of oil and gas. They also point to some of the uncertainties that have led to this situation such as:

- Unpredictable changes in taxation obligations
- Requirements in a growing number of countries to include mineral processing as part of securing mining licences, an obligation that can be onerous for international miners. This ignores issues like current and forecast world prices for particular processed minerals; may make companies liable for infrastructure spending to support minerals processing if little exists; and may come with penalties (like withholding export licences) if milestones for mineral processing are not met
- Poor coordination between central and provincial level authorities in issuing mining licences
- Restrictive regimes for FDI and for services sectors that are relevant to mining and METS firms.

Moratoriums on new mining investment in several countries add to the uncertainty. Laos and the Philippines have suspended issuing new mining licences. Malaysia had a moratorium on bauxite mining for over three years to 2019. And Myanmar is not fast tracking exploration activities by foreign mining and METS companies.

These actions may be justified, for example to sort out corruption in previous licensing arrangements or respond to environmental pressures, but they generate uncertainty when end points and required remedial action are not clear.

Uncertainty in extractive mining seems set to continue, dampening possible future investment decisions. This assessment is based on the following factors.

First, environmental concerns are becoming more prominent across the region. To some extent, these concerns are attributable to the impact of often unregulated small-scale or artisan mining on the environment, but large sustainable mining companies often bear the brunt of popular criticism. Coal and coal-fired generation feature prominently in this criticism, but environmental concerns are surfacing in many ways such as in relation to water, air quality and forest resources.

In the near term, the growing prominence of environmental concerns will have a dampening effect on investment insofar as it bolsters anti-mining interests. Over time, more focus on higher environmental standards should encourage investment in sustainable mining and could benefit international mining companies. But environmental credentials will only confer a competitive advantage to the extent that:

- They are required by host countries. Environmental lobbies have grown in influence across the region but still have limited influence in countries like Indonesia
- They are not offset by other credentials offered by competitors. For example, Chinese companies are keen to do mining and other projects in Southeast Asia and have considerable expertise, though not necessarily in environmental and health and safety issues, but come with incentives such as soft loans and ready-made workforces.

Second, mining has a bad reputation in many regional countries. In some countries, this reputation is associated with legacy issues like extraction of resources without much regard for the rights of local populations. In others, it highlights health and safety concerns on and around mine sites, lack of remediation work on abandoned mines, and disasters involving mine wastes and tailings dams. In still others it is associated with clashes between the interests of wealthy and politically connected elites and local communities.

International mining companies, like other companies, are being judged increasingly by their effectiveness in fulfilling corporate social responsibilities alongside meeting traditional metrics like returns on investment.[58] They also are being judged by industry bodies: the April 2019 announcement by the London Metal Exchange to allow only trade in metals from 2022 that are compliant with OECD guidelines on responsible supply chains is a sign of the changing times.[59] Taken together, these public and industry pressures should inject a more cautious approach to mining in socially or politically difficult environments.

Third, barriers to investment in mining assets are significant and may be getting worse in some countries.

This is extremely difficult to quantify but a general sense comes through from the following examples:

- Indonesia maintains a highly restrictive regime for the mining and quarrying, legal, engineering and accounting and auditing

sectors. On the OECD's FDI Regulatory Restrictiveness Index for mining and quarrying, Indonesia moved from twelfth most restrictive regime in 1997 out of 45 countries for which data were available to the third (after Saudi Arabia and the Philippines) among 67 economies in 2017.

- The Philippines' foreign investment regime was rated as the most restrictive overall of all countries covered in the 2017 OECD FDI Regulatory Restrictiveness Index and the most restrictive for investments in the primary industries (including mining), business services and transport sectors
- Thailand maintains significant restrictions on foreign direct investment, especially in areas where 'Thai nationals are not yet ready to compete with foreigners'. This includes sectors of interest to mining and METS like engineering, construction and legal services. Participation by foreigners in these industries requires a foreign business licence issued by the Director General of the Foreign Business Committee.[60]
- Malaysia imposes fluctuating export taxes on some mining products
- Vietnam requires downstream processing in companies' mining applications and is increasing export taxes and royalties
- Myanmar is placing more restrictions on exports of gemstones and other mining products.

Bringing in mining expertise is also problematic. Some governments impose a 'manning table' – a ratio of foreign to local workers. This can usually be managed but there are times, such as in major mine construction projects, when highly specialised expertise is required that can only be sourced internationally. If local officials stick rigidly to these ratios, projects can be delayed significantly. Negotiating arrangements to get required international expertise should be easy, but often is not and may rate as the single most challenging non-tariff barrier in some Southeast Asian countries.

Investment barriers are more often than not the by-product of different government agencies operating with limited awareness of each other's activities. New regulations can be introduced without taking into account existing ones. And there is often limited understanding of the impact of measures beyond their immediate area of application. In this environment, non-tariff measures can easily become non-tariff barriers (NTBs).

The nub of the problem on foreign mining investment is that ,while governments support and in many cases actively seek foreign investment, they do not have workable policies that are applied consistently across agencies to attract and support that investment. Some encourage foreign investment in mining with tax offsets. Others discourage it by developing policies and regulations on requirements for minerals processing, ratios of local to foreign workers, taxation-related complexities and unpredictability amongst other policy issues. The end result is that companies do not have the policy certainty needed to make large, long-term investments.

Fourth, resources nationalism may be on the rise: it certainly is not abating. This trend is coming through globally – it is not just a Southeast Asia phenomenon – but it seems to have taken hold more strongly in Southeast Asia than in many other parts of the world. Over the last five years or so, regulatory hurdles for mining have been getting higher.

The Indonesian Government, for example, is systematically empowering its state-owned enterprises to build a domestically owned and value-added resources sector by moving to divest foreign owned mining

> The nub of the problem on foreign mining investment is that, while governments support and in many cases actively seek foreign investment, they do not have workable policies that are applied consistently across agencies.

assets and either banning or heavily taxing exports of unrefined mining products. As part of this transformation, old 'contract of work' arrangements between the government and mining companies originating in the Suharto period have been 'renegotiated' often through coercion. As they stood, these agreements could not be altered without the agreement of the parties involved. To force compliance with Indonesia's new policies and priorities, companies were faced with rising taxes and royalties and/or threatened with the withdrawal of mining operating permits.

Resources nationalism, particularly where it manifests as coercive divestment of foreign assets, can have short-term and often illusory upsides for home jurisdictions: it appeals to national pride; it may result in greater dividend flows to government entities and politically well-connected local companies; and, optimistically, it could lead to denser links between domestic mining, METS, engineering and other companies. In the medium to longer term, resources nationalism leads to slowing growth in mining output, where:

- Disinvestment halts or slows exploration activity for new resources
- Governments cannot fill gaps in mining investment because of other investment priorities in areas like health and education
- Governments become more reliant on stagnant or declining revenues earned by state enterprises in mining and oil and gas to fund investment in other priority sectors
- International flows of advanced technology and skilled workers into mining and energy are reduced or slowed.[61]

And fifth, regional trade tensions and protectionism are increasing. Slowing growth in world trade, weakened global institutions and increasing uncertainty around key issues

like the state of the liberal world trading order, the configuration of supply chains and the future of open markets are some of the risks arising from geopolitical and other rivalries. This collateral damage obviously affects ASEAN and is being watched closely by governments in the region.

In a recent speech, Singapore's Prime Minister Lee Hsien Long summed up the challenge:

> If both sides [the United States and China] treat their trade dispute purely on its own merits, I have no doubt their trade negotiators, who are highly competent, will be able to resolve it. But if either side uses trade rules to keep the other down, or one side comes to the conclusion that the other is trying to do this, then the dispute will not be resolved, and the consequences will be far graver than a loss of GDP. The broader bilateral relationship will be contaminated.[62]

The implications of sovereign risk means that foreign investment in sectors such as mining will seek more stable and commercially viable investments in other jurisdictions.

Forces encouraging international mining investment in ASEAN

International investment in METS is generally a good news story. Many international METS companies operate in Southeast Asia, including many Australian companies:

- 100-150 Australian METS companies are active in the Indonesian market. The unsettling impact of buyouts of foreign-invested companies has not affected Australian METS companies particularly because mining activity has continued irrespective of such changes in ownership
- Australian mining and proto-METS companies have operated in the Philippines since the nineteenth century, with numbers rising and falling with mining cycles. Resources nationalism has had an impact on METS: 10 years ago there were many more Australian METS companies in the market. The thinning out is a direct response to policies that have created a highly uncertain environment for mining
- Some large Australian mining and METS companies have regional headquarters in Singapore, attracted by its focus on innovation, opportunities for coordinating corporate decision-making across the region, and opportunities for procurement for third country markets, warehousing products for re-export, and even limited manufacturing of some mining equipment
- Beyond these countries, Australian involvement in METS markets falls off. There is not much engagement on METS with Thailand. Vietnam is a developing METS market controlled by one big bureaucratic state owned enterprise (Vinacomin). And countries like Cambodia, Laos and Myanmar can be regarded as nascent markets with much potential – foreign mining companies are generally welcomed – but they are not currently on the radar of the great majority of Australian METS companies.

ASEAN's mining equipment market is very competitive and, like India's, trades mainly on price, giving Chinese companies a significant advantage where local mining companies want equipment that performs reasonably well and is priced accordingly. Based on industry advice, demand for services and associated technology is stronger than for physical equipment.

ASEAN mining companies, by and large, are not leading edge and require good basic services. Even in Indonesia with its large mining interests, the national conversation on innovative mining has not begun in earnest: other challenges crowd out the policy space.

Australian companies are well able to respond to demand for good basic services, as well as to expected growth in demand for high-end technologies and services. At present the latter is limited to some specific mining projects across the region, but demand should grow as mines go deeper and as the regulatory environment becomes more stringent.

At a global level, leading METS companies are becoming more inter-disciplinary 'knowledge hubs' as technologies and services are developed to address new challenges. Over time, state-run enterprises that dominate much of ASEAN's mining and downstream industries will want to access more of this knowledge to improve the internal environment of mines (mine planning software, mining operations, reporting and planning systems, maintenance planning, safety outcomes and workplace performance) as well as improve their understanding of, and capacity to influence, the external environment (environmental and community outcomes, supply chain efficiencies and broadening risks).[63]

This has a long way to go, but there is a ready market for METS firms that can provide the skills and technology to analyse vast volumes of data quickly and contribute generally to improving mine performance. Investment and trading opportunities identified in the country chapters include:

- Providing specialist inputs and services in Indonesia from full contract mining to mine communication systems and explosives
- Creating modern databases in Laos, along with resource and reserves mapping showing coal classifications, calorific value, deposit depth, and sulphur content
- Undertaking aerial exploration, storing, analysis and dissemination of exploration data in Myanmar
- Developing mining software (i.e. resource estimation, modelling, mine design and planning, maintenance and optimisation), contract mining services, industry education and training, and mine safety training and equipment in the Philippines
- Clarifying potential mineral resources in Vietnam by geologically mapping onshore and offshore regions, using advanced technologies to improve minerals processing, building capacity in management and planning aspects of mining and minerals processing, and strengthening training in sustainable mining and mine safety.

Investing in exploration for new resources should be a major medium-to-long term opportunity for mining and METS companies. In the countries of the Greater Mekong sub-region, much of the land area has not been explored systematically using modern technologies. It is probably much the same in the archipelagic states.

Beyond scientific exploration, several factors might contribute incrementally to shifting national sentiment and policy positions on international investment in mining assets. One is a better appreciation of the contribution of a strong and growing minerals sector to long-term development, income and jobs. Another is growing interest in policy and regulatory frameworks that support sustainable mining.[64] Yet others are growing demand for METS and the prospect of ASEAN economies accessing more of their resources (thereby decreasing dependence on imported minerals and energy).

Rising imports of minerals and energy

The pace of overall import growth in minerals and energy will be highly sensitive to ASEAN's rate of economic growth, investment in infrastructure, adjustments in energy policies in response to environmental and energy security concerns, fluctuations in domestic mine output, and import substitution policies of various types. But based on recent experience (Chart 3.3 provides an impression), the upward trend in imports seems inescapable for the next several years and possibly longer, to the extent that minerals production continues to be hobbled in key countries by policies that constrain new investment while demand continues to outstrip supply.

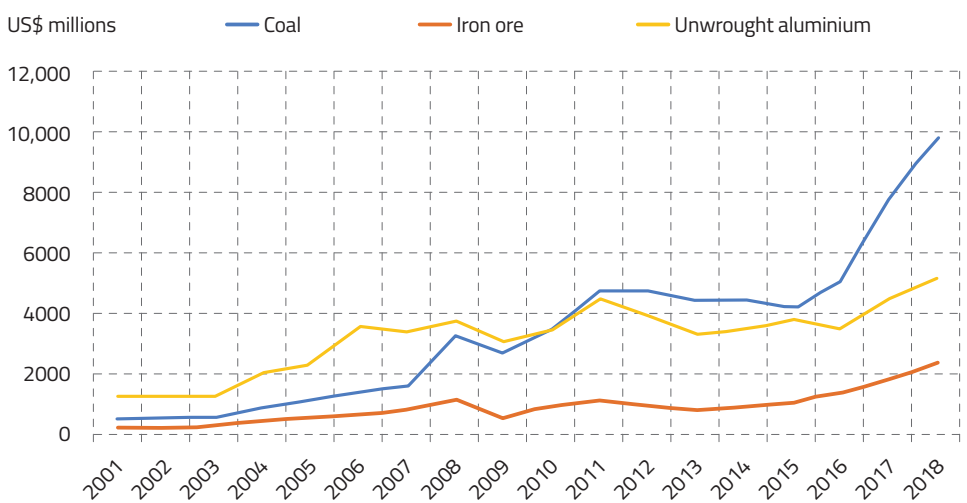
The country chapters suggest significant import growth in LNG, thermal coal, metallurgical coal, and a range of metals in many ASEAN countries. Growth in LNG imports is a response to the failure of regional gas production to keep pace with rising demand. Indonesia, Malaysia and Singapore are both importers and exporters of LNG, and several other ASEAN members are building or considering building LNG terminals. For example:

- Vietnam is planning to start importing LNG in 2021, with imports expected to rise to around 5 Mt by 2025 and 15 Mt by 2035. To facilitate this, 3 to 4 terminals will be built in the south of the country by 2025 and 5 or 6 more between 2026 and 2035.

Chart 3.3

ASEAN imports from the world, selected commodities

Source: ITC Trade Map Database



Note: For Vietnam, mirror data (that is data estimated from partner country records) are used for all three commodities in 2018. The ASEAN totals do not include data for Myanmar and Laos prior to 2010. For iron ore, this is also the case for Cambodia and Laos for 2017 and 2018. For coal and unwrought aluminium, estimates for Cambodia and Laos are mirror data for those two years.

- On the Philippines' main island of Luzon, natural gas provides about 30 per cent of baseload power. As it stands, output from the only large domestic source of natural gas will decline from the mid-2020s. Preliminary agreements between Philippines' SOEs and Chinese and Japanese companies to build two terminals south of Manila were signed in late 2018 and early 2019.[65]
- Myanmar is evaluating three LNG terminals. All are associated with gas-fired power generation.

Owing to expected supply constraints within ASEAN, there is a strong expectation that LNG requirements will have to be met increasingly from outside the region. This provides Australia with an opportunity.

Import demand for thermal coal will continue to grow, though projections are being wound back somewhat as non-hydro renewables rise in importance in the region's energy mix. Future import demand in some countries – Thailand for example – is uncertain because coal-fired generation has become politically sensitive. But across the region, imports should rise significantly. For example:

- Coal is now a critical part of Vietnam's energy mix. After taking into account possible reforms that increase competition in the industry and enhance productivity, demand for coal should continue to outstrip domestic supply based on coal-fired power stations currently being built and the many more that have been commissioned
- Coal has become the primary fuel in Malaysia for generating electricity. Slowing natural gas output and policies to suppress energy prices is expected to drive import demand in the foreseeable future
- Around 75 per cent of coal used for electricity generation in the Philippines is imported. Given growing demand for power, a predominantly 'technology neutral' approach to determining the energy mix and a 'best endeavours' approach to international climate change commitments, coal imports should remain a prominent contributor to electricity generation over the medium-to-long term.

Alongside rising import demand for thermal coal from several regional countries, Indonesian thermal coal exports have fallen somewhat over recent years and could fall further as the government uses export taxes and other measures to divert more output into domestic markets in response to rapidly rising domestic energy requirements. At the same time, Indonesia has been scaling back some of its plans to install new coal-fired generation and needs export revenue from coal to narrow its sizeable current account deficit. The outcome is unclear, but a sustained rise in domestic demand for coal and consequent reduction in Indonesia's exports could create more space for Australian coal in the ASEAN market in two ways: first, in filling a potential gap left by Indonesian production, and second by enabling the supply of coal qualities that maximise the energy and emissions efficiency of new technology generation assets.

The import growth story is similar for metallurgical coal and metal ores:

- **Vietnam** is likely to be one of the brightest immediate prospects for imports of iron ore, metallurgical coal, high quality steel, and a range of metals like copper and aluminium ingots.[66] Similar to several other countries in the region, it has increased production of iron ore and metallurgical coal. Domestic reserves are, however, limited. Imports will rise even as the Government seeks to boost domestic inputs.

- **Indonesia** needs more steel for its significant infrastructure projects but its steel industry faces challenges. Krakatau Steel, an SOE, is the country's largest steel maker but attempts to improve its performance have produced mixed results. This suggests that Indonesia will be forced to import large and increasing volumes of steel irrespective of its concerns about the current account deficit.
- **Thailand** is likely to continue to import increasing volumes of unwrought aluminium. Import demand for gold and copper products should also be boosted by growth in electric vehicle, electronics and renewable energy technology production.
- **Across ASEAN**, identified reserves of key metals required in modern industrial societies are abundant: examples include bauxite in Vietnam, Indonesia and Malaysia; cobalt in the Philippines; and nickel in Indonesia and the Philippines. However, metals such as manganese ores, cadmium, chromium, indium, lithium, molybdenum and platinum have not yet been discovered in significant commercially viable quantities.[67] Changing consumer and energy-related technologies can be expected to drive import demand for these metals.

Looking at the overall picture, part of the growing demand for a widening range of metals and essential inputs like thermal and metallurgical coal will be met by expanding domestic production. Part of this demand will be met through intra-ASEAN trade: trade in mineral fuels, mineral oils and products, bituminous substances and mineral waxes accounts for nearly one-quarter of intra-ASEAN goods trade and was the top intra-ASEAN imported goods category in 2017.[68] And part will come from imports from outside the region and this part is likely to grow quickly given the constraints on regional output.

A big opportunity for Australia

Southeast Asia may not have the same high profile as China and India, but it presents a big opportunity for Australia in mining and METS. Expanding access to its goods, services and investment markets will never be easy. But in continuing to develop the market, Australia brings considerable strengths, including:

- A reputation for excellence and reliability across the mining supply chain founded on the quality of our physical mining infrastructure, science, engineering and mining-related information technology and skills
- An extensive commercial presence across the region. Australia's major mining companies are represented well in ASEAN, many with a presence in several countries.[69] The region is a particular focus for Australian METS companies. Many have a trading relationship, and a large number now have commercial presence.[70]
- A strong commitment to building business relations with the region – a fact revealed in many surveys of business perceptions and intentions on trade and investment.[71]

These strengths are complemented by the overall quality of the Australia-ASEAN relationship. Elevated to a strategic partnership, close working relations extend across a broad range of areas, including improving the operating environment for business and promoting economic growth.[72] One element covers energy and resources, highlighting cooperation on issues like energy security, the application of clean coal technologies and best practice energy regulatory frameworks and standards.[73]

Building on these various strengths, five opportunities can be identified.

Commodity trading

Commodity trading is the most straightforward option for Australian miners wanting to do business in ASEAN. Opportunities exist across thermal and metallurgical coal, LNG, iron ore and other metals. The Singapore trading hub should continue to be a useful instrument for marketing minerals throughout ASEAN and beyond.

Seizing these opportunities, of course, assumes continuing international competitiveness because competition is keener than ever: the mining boom in the first decade of this century led to a new generation of countries joining the ranks of the world's mineral and energy producers.[74]

Seizing them also assumes a continuing capacity to identify and address a widening range of border and behind-the-border barriers to trade. Preferences for Australia under the ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA) have virtually eliminated tariffs on minerals and basic metals manufactures in the more advanced ASEAN economies and will do the same in the less advanced economies by 2021. But non-tariff barriers (NTBs) are a growing problem across ASEAN (and beyond) both for traders and investors. Like a tariff, they provide protection to local industries but, unlike a tariff, they are not necessarily transparent, can evolve in new and inventive ways that are difficult to pin down and, inevitably, are difficult to negotiate. NTBs are covered in AANZFTA, but the agreement mainly just reaffirms that parties should adhere to their WTO obligations and that regulations should be developed and administered in a transparent way.

The Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA) does much the same, but sets out a mechanism to possibly prevent non-tariff measures becoming unnecessary obstacles to trade, though with the caveat that consultations and dispute settlement provisions do not apply to this provision.

With the virtual elimination of tariffs in Australia-ASEAN minerals trade, NTBs will become a much bigger impediment to trade as some governments use them creatively to manage, or at least influence, trade flows.

Australian investment in ASEAN mining

This is the riskiest option for Australian miners operating in ASEAN – a fact that will not change until more predictable policy and regulatory frameworks are implemented. In making this assessment, a distinction needs to be drawn between, on the one hand, extractive mining for coal, many metallic ores and industrial minerals and, on the other, mining for oil and natural gas.

Governments in the region generally welcome foreign companies with the technical expertise to develop hydrocarbon assets, especially offshore blocks, and these companies seem to be doing well. Many other miners struggle, though there seems to be a more ambiguous distinction between those mining for surface minerals and those mining deep complex deposits, where again advanced technical skills may be in demand.

In making this second distinction, it should not disguise the fact many Australian miners struggle with the regulatory environment and some have left for more stable opportunities in other parts of the world. The ban on new exploration/mining in a number of Southeast Asian countries has hit mining companies hard, and sovereign risk is a factor.

Australian investment in Southeast Asian extractive mining will remain subdued until the business environment improves, which is not expected to happen any time soon.

METS

This provides a lower risk opportunity for Australian companies to invest in mining-related activities in ASEAN.

Australian companies are world leaders in METS. The sector in Australia has a highly sophisticated ecosystem of mining technologies that have scale and that are backed by scientific research, start-up companies, and major mining and METS companies.

This clustering of businesses and the scope for cross-industry fertilisation of ideas and technologies are relevant to ASEAN because of the value they can add in terms of technical, economic, social, environmental and governance outcomes.

The key message from the country chapters is that trade and investment opportunities in METS are growing in ASEAN, are likely to continue growing, and Australia is well placed to be a key partner in this growth.

Australian firms have strong brand recognition, collectively offering the full suite of technical, environmental, managerial and skilling benefits. And countries in the region place a high priority on technological transfers and training engineers and building technical and vocational skills more broadly. Large SOEs often have sizeable budgets for training and mine-related software.

Mines will need to go deeper to increase output and reduce environmental impacts, which will place more of a premium on advanced technical skills. And expanding minerals processing capacity – a key priority throughout the region – again will require more advanced skills.

Trade and investment opportunities in METS are growing in ASEAN, are likely to continue growing, and Australia is well placed to be a key partner in this growth.

ASEAN investment in Australian mining

Outward investment from ASEAN countries is increasing: it has been substantial for many years in the case of Singapore, and is now growing for countries like Indonesia, Malaysia, the Philippines, and Thailand. However, to date, very little of it is directed at Australia's mining sector. There are exceptions: for example, the Thai energy company Banpu acquired Centennial Coal Company Ltd in 2010 which operates five coal mines in NSW, and Indonesia's Adaro Energy has taken a stake in the Kestrel coking coal operations in the Bowen Basin which were formerly 80 per cent owned by Rio Tinto.

The different levels of government in Australia and Australian business need to be more active in discussing opportunities in Australian mining with their counterparts. The message that Australia welcomes all types of mining investment from ASEAN will be one of the key ways for the Australia-ASEAN relationship to deliver significant two-way benefits.

Collaboration in third country markets

Australian mining and METS companies work overwhelmingly with local companies in the region to provide solutions to country-specific mining problems. As relationships evolve, this could extend to collaborating on projects in third markets, including for instance by engaging with regional and other international companies in the emerging mining and METS hub in Singapore. This might involve geological surveys or improving mine site safety and productivity or innovating energy efficient technologies. The list is limited only by companies' imaginations and by how demand for different services changes over time.

PART 2

Country studies

CHAPTER 4

Indonesia

KEY POINTS

- Australia's and Indonesia's trade relationship continues to fall short of its potential. Indonesia remains Australia's 14th largest trading partner, with total trade worth $17.6 billion in 2018.
- Australia's exports of minerals and basic metal manufactures to Indonesia are estimated at around $1.9 billion in 2018, making it a significant resources market.
- Coal exports were $747 million in 2018. Metallurgical and thermal coal exports have grown rapidly over the past five years, as Indonesia continues to scale up its electricity and manufacturing sectors.
- Per capita consumption of steel is currently low and should increase as Indonesia continues to industrialise and make substantial investments in infrastructure. This may result in opportunities for iron ore and metallurgical coal, depending on the methods Indonesia uses to produce steel and Australia's competitiveness in the market. There will also be prospects for a range of other minerals and metals.
- Trade in thermal coal with Indonesia could develop further, notwithstanding Indonesia's substantial production and exports, possibly for use in plants that require high-quality coal or for blending with Indonesian coal for sales in third markets.
- Indonesia's domestic thermal coal demand continues to grow strongly, including with around 10 gigawatts (GW) of ultra-critical coal-fired power plants currently under development. This could also result in less volume for Indonesian exports, opening opportunities for Australian thermal coal exports in ASEAN.
- Indonesia has long been a major METS market. Austmine advises that it is now the third-ranking market (after Chile and Peru) in terms of where its members wish to go. Austmine estimates that there are 100–150 METS companies that are active in the Indonesian market.
- The bilateral investment relationship continues to underperform. Australian foreign direct investment by Australia in Indonesia was $2.3 billion at the end of 2018, well down on the peak of $7.5 billion at the end of 2017. Indonesia's current policies seek to secure majority Indonesian ownership and ensure that domestic processing of minerals occurs in Indonesia. This limits its attractiveness as a mining investment destination.
- METS, by contrast, has a bright future given the expertise and skills Australia's world class industry can offer and the fact that opportunities do not necessarily depend on ownership of mining assets.
- The Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA) will bring benefits to the mining/METS industries. There is potential in provisions on non-tariff measures (NTMs): a process has been developed to deal with them. Indonesia's agreement that Australian companies can own up to 67 per cent of mining services companies based in Indonesia (including contract mining) should be a further incentive for growth in this area.

Indonesia's size and proximity inevitably make it an important part of the ASEAN story for Australia. It is also resource-rich and has a large mining sector. Indonesia is the top global exporter of thermal coal and tin, and a major producer of gold, copper, and nickel. For reasons outlined in the second volume in this series, its significance as a destination for Australian and international mining investment has been constrained by its domestic policies, but it is still a key market for Australian METS firms.[75]

With economic growth running at 5 per cent per annum or more and industrialisation proceeding at a rapid pace, Indonesia is also an important and growing export market for some minerals and metals. Over the longer term, it has the potential to become much more significant for the Australian mining and METS sector.

The trading and investment relationship

In 2018, Indonesia was Australia's 12th most important export market, with exports of goods and services valued at $8.5 billion. For goods (valued at around $6.8 billion) prominent exports included crude oil, wheat, coal, live cattle and sugar, while services exports (around $1.7 billion) were dominated by education-related and other travel services. Goods and services imports from Indonesia were valued at around $9.1 billion in 2018. Merchandise exports included crude oil (by far the largest product), various other petroleum oils, cigarettes, shaped wood and television reception apparatus. Services imports were predominantly personal travel services.

Australia's exports of minerals and basic metals manufactures to Indonesia amounted to around $1.9 billion in 2018, and are summarised in Table 4.1. Exports included items listed as confidential (such as alumina and industrial salt) in Australian export statistics, but which are estimated from Indonesian import data. The minerals trade is underwhelming compared to the Northeast Asian economies, but this reflects Indonesia's early stage of industrialisation (particularly the absence of a large steel industry), as well as its substantial domestic resource endowments.

Table 4.2 looks in more detail at the growth of principal mining and basic metal manufactures to Indonesia. The most striking feature is the strong growth, from a very low base, in exports of coal and iron ore. Somewhat surprisingly, coal exports are not confined to metallurgical coal, but include a sizeable value ($237 million in 2018) of thermal coal despite Indonesia's dominance as a world supplier. This may be a consequence of domestic demand for high quality coal, either directly for use in power plants that require this, or for blending with Indonesian thermal coal for on-sale to other markets. Unwrought nickel (not alloyed) and ferrous metal scrap have also grown very strongly.

Indonesia is a major market for the Australian METS sector. Austmine advises that it is now the third ranking market (after Chile and Peru) in terms of where Australian firms want to go. A 2015 Austmine survey found that 49 per cent or about 140 exporting METS firms exported equipment, products, services or technology to Indonesia – more than to any other country.

Austmine's current estimate is that between 100 and 150 firms are active in the market: a smaller number, estimated at between 40 and 65, have a commercial presence or are trading with Indonesia and are in contact with the Australian Embassy or Austrade in Jakarta.

Table 4.1

Australian exports of minerals and basic metal manufactures to Indonesia, 2018

Source: ITC Trade Map Database and DFAT

Product description	**Exports** ($m)
Coal; briquettes, ovoids, similar solid fuels manufactured from coal	747
Iron ore and concentrates	190.2
Non-ferrous metal ores	3.5
Non-metallic and other minerals	8.7
Basic iron and steel manufacturing, of which:	234.7
... ferrous waste and scrap; remelting scrap ingots	(234.5)
Basic non-ferrous metal manufacturing, of which:	384.9
... unwrought aluminium	(156.3)
... unwrought zinc	(128.2)
... refined copper and copper alloys, unwrought	(44.1)
Total ABS data for minerals and basic metal manufactures	**1569**
Confidential items estimated from Indonesian data, of which:	Around 355
... aluminium oxide (excluding artificial corundum)	(140)
... salt and related products	(105)
... nickel, not alloyed, unwrought	(84)
Total including estimated confidential Items	**Around 1925**

Note: Exports of products that are confidential or partly confidential in ABS statistics are estimated from partner import data as outlined in the notes to Table 2.2. As a result of ongoing revisions, ITC statistics may not match the most recent ABS data.

Indonesia is a major market for the Australian METS sector. Austmine advises that it is now the third ranking market (after Chile and Peru) in terms of where Australian firms want to go.

Table 4.2

Growth in selected minerals and metal exports to Indonesia, 2006-2018

Source: ITC Trade Map Database and DFAT

Product description	2006 $m	2013 $m	2018 $m	2013-18 Annual growth %
Non-confidential				
Bituminous coal excl. metallurgical (e.g. steam coal)	0	0	237	n.a.
High rank metallurgical coal (hard coking)	0	47	377	51.7
Metallurgical coal: semi-soft coking and PCI coal	0	18	132	49.0
Iron ore and concentrates	0.2	47.7	190.2	31.8
Ferrous metal waste and scrap	65.4	149.5	234.5	9.4
Copper refined and copper alloys, unwrought	168.5	72.9	44.1	-9.5
Unwrought aluminium	290.6	267.3	156.3	-10.2
Unwrought zinc	62.7	66.9	128.2	13.9
Confidential items: estimated				
Aluminium oxide excl. artificial corundum	221	150	140	-1.4
Salt and related products	58	72	105	7.8
Nickel, not alloyed, unwrought	1	1	84	142.6

Note: Exports of products that are confidential or partly confidential in ABS statistics are estimated from partner import data as outlined in the notes to Table 2.2. Changes in Harmonized System (HS) and Australian Harmonized Export Commodity Classification (AHECC) codes do not affect the data for the years/level of aggregation given. Growth rates give compound annual growth in per cent. Caution should be exercised in interpreting these growth rates: there can be very substantial fluctuations in export values from one year to the next, sometimes as a result of price and exchange rate changes. This can strongly affect the results. As a result of ongoing revisions, ITC statistics may not match the most recent ABS data.

These results are consistent with a 2016 Australian International Business Survey (AIBS) that found that 8 per cent of METS respondents described Indonesia as one of their top two markets, second only to the United States (13 per cent).[76]

The value of METS exports to Indonesia is difficult to estimate. Much equipment used by the mining sector can have dual or multiple uses and the statistical codes used to classify trade are typically not fine enough to determine where the export is being used. However, Table 4.3 follows previous chapters by listing some commodities that could include mining equipment. The biggest item is pumps and pump parts.

Services exports by METS firms are even more difficult to quantify. Table 4.4 shows some business services that could be provided by METS firms. However, this data represents transactions between Australian residents and non-residents and fails to capture services delivered by commercial presence (as when a contract miner or METS

Table 4.3

Australian exports to Indonesia that could include mining equipment, 2018

Source: ITC Trade Map Database

Product description	**Exports** ($m)
Basic chemical manufacturing/explosives	1,0
Rubber manufactures and headgear	7.2
Railway manufacturing	6.4
Professional, scientific, electronic equipment, of which: ... surveying instruments and applicances	13.0 (7.2)
Electrical equipment	4.1
Iron and steel articles	<0.1
Machinery and mechanical appliances, of which: ... various pumps and parts of pumps ... machinery for sorting, screening etc. earth, ores or minerals; machinery for agglomerating mineral fuels, plastering materials; machinery for forming foundry moulds ... parts for boring and sinking machinery ... parts for lifting, handling, loading and unloading machinery	223.4 (91.2) (70.9) (17.9) (17.9)
Vehicles of a kind which might be used in mining	10.6
Total of possible METS products	**265.6**
Confidential items estimated from selected ASEAN import data, of which: ... sodium cyanide	Around 16 (13)
Total including estimated confidential Items	**Around 280**

Note: Possible METS products are as defined as in Table 1.6. Exports of items confidential in ABS statistics are estimated from partner import data. On the procedure used and products covered by confidentiality restrictions, see the notes to Tables 2.2 and 2.4.

firm supplies mining services through a locally incorporated enterprise).

Cumulative foreign direct investment (FDI) by Australia in Indonesia was $2.3 billion at the end of 2018, well down on the peak of $7.5 billion at the end of 2017 and below levels in some neighbouring countries. The 2018 level, for example, was around 4 per cent of the stock of FDI in New Zealand, under one sixth of that in PNG and less than one tenth of the total for Singapore.

Cumulative Australian direct investment in Indonesia in 2018, at about 0.33 per cent of total Australian direct investment abroad, was under half of Indonesia's share of the stock of global inward FDI, also indicating a relatively weak investment relationship.

The proportion of Australian direct investment in Indonesia going to the mining sector is unclear but is likely to be a significant proportion of total investment. Several Australian miners still operate in Indonesia.

Table 4.4

Selected Australian services exports to Indonesia

Source: ABS, *International Trade: Supplementary Information, Calendar Year 2018*, Catalogue 5368.0.55.004

Product description	2013 $m	2017 $m	2018 $m	2013-18 Annual growth %
Maintenance and repair services, n.i.e.	24	6	10	-16
Construction services	2	2	2	0
Financial services	11	12	9	-4
Intellectual property charges, n.i.e.	24	5	4	-30
Telecom, computer and information services	7	30	35	38
Professional technical and other business services	141	118	74	-12

Note: Growth rates are compound annual rates. They are to be interpreted cautiously because the series on which they are based are small and volatile. The abbreviation 'n.i.e.' means not included elsewhere.

For example:

- Nusantara runs the Awak Mas Gold Project in Sulawesi through its 100 per cent owned subsidiary PT Masmindo Dwi Area
- Cokal has coal tenements in Kalimantan and is seeking to build a company specialising in metallurgical coal
- Newcrest has a 75 per cent stake in the Indonesian company PT Nusa Halmahera Minerals, the owner and operator of the Gosowong gold and silver mine (part of its equity is to be divested).

METS firms with a direct presence in Indonesia include:

- RPM Global (geological and mine planning services, as well as geotechnical analysis and resource estimation)
- DSI Underground (through PT DSI Underground has a manufacturing facility for mining products in Surabaya)
- Thiess (a large contract miner providing services to major coal projects, including the Melak mine in East Kalimantan)
- Orica (explosives and blasting services).

Direct investment by Indonesia in Australia has generally been small, reflecting Indonesia's position as a lower middle-income economy. The Australian Bureau of Statistics records the stock of inward FDI as only $1 million at the end of 2018, while total investment is estimated at around $1 billion. One sizeable investment by Indonesian firm Mach Energy occurred when it bought the Mt Pleasant mine in the Hunter from Rio Tinto for US$220 million.

Another big investment in the mining sector occurred in 2018 when Indonesian coal miner PT Adaro Energy, as part of a consortium with private equity firm EMR Capital, acquired Rio Tinto's 80 per cent equity in Queensland's Kestrel coal mine for US$2.25 billion.[77] The remaining 20 per cent is owned by Mitsui Coal Australia. Adaro, with 48 per cent of Rio's share, and EMR (52 per cent) will jointly manage the mine: Adaro is reported to have plans to double its metallurgical coal production, with added investment in infrastructure.[78]

Opportunities for expanding trade and investment

Indonesia's economic growth will have a powerful influence on the expansion of its mineral imports. The government has sought to lift the growth rate, but past targets of over 7 per cent by 2017 and 2018 have proved elusive. In practice, growth has run at about 5 per cent annually in recent years and IMF projections show it maintaining this rate or a little better between 2018 and 2024. This is well short of growth achieved by Japan, China and the four 'Asian Tigers' (Hong Kong, Singapore, South Korea and Taiwan) during their periods of rapid expansion – but if maintained would see Indonesia's economy double in size over the next fourteen years.

Growth is expected to be accompanied by shifts in composition: the 2015-2035 Master Plan of National Industry Development targets the non-oil and gas sector to increase its share of GDP from 21.2 per cent in 2015 to 30 per cent by 2035. Growth will also be accompanied and sustained by massive expenditure on infrastructure: this has been a top priority for President Joko Widodo. Indonesia's population is also expected to increase significantly, from 268 million in 2018 to 299 million by 2030.

Minerals and metals

All of these changes will help drive demand for minerals and metals. Steel, for instance, is used predominantly for infrastructure in Indonesia and demand will increase as Indonesia develops. Currently per capita steel use is very low at 61.8 kilograms (compared to 347.2 kilograms for Malaysia). Total usage has been growing slowly, but the Indonesian Iron and Steel Institute expects usage to be up by almost 70 per cent on 2016 levels by 2025.[79] Indonesia's steel production is well short of usage: just 5.2 million tonnes in 2017, less than one third of apparent steel use.[80] The prospects for future growth in production are somewhat uncertain. Past attempts to improve the performance of Krakatau, the country's largest steel making state-owned enterprise (SOE), have had mixed results. One possibility is that Indonesia may increase reliance on direct imports of steel and steel products. Another is that it will seek to reform its steel making sector in order to protect the current account, but there is no evidence that this is being planned.

The extent to which these trends will create opportunities for Australia's mining industry will depend on Indonesia's domestic production of iron ore, the methods used to produce steel (electric furnaces can use ferrous scrap) and Australia's competitiveness against other international suppliers.

Indonesia's own reserves of iron ore are believed to be extensive but are of low quality, with an iron content for the most part of under 50 per cent. Indonesia exports some iron ore, but imports high grade ore for use in its own industry. Australia held a little over half of the import market in 2018, with Brazil, Canada, India, South Africa and Chile supplying almost all of the balance. The 2018 share was well down on the two-thirds share attained in 2017.

Similarly, Indonesia's coal production is predominantly for use in thermal power plants: metallurgical coal is imported. Australia supplied 82 per cent of the metallurgical coal market in 2018, up from 76 per cent in 2017. Russia and China are Australia's main competitors.

Per capita demand for aluminium is currently low but should rise steeply given its uses in construction, packaging and automobile manufacture. Indonesia has the basis for an aluminium industry given its extensive reserves of bauxite: it was the leading supplier of bauxite to China before the Indonesian Government restricted exports of unprocessed ores in 2014. The state-owned PT Indonesia Asahan Aluminium (PT Inalum) is investing in capacity to process bauxite into alumina to reduce reliance on alumina imports.[81] PT Inalum reportedly wants to double aluminium output to 500,000 tonnes by 2020 and to double it again to one million tonnes by 2025.[82]

Australia faces strong competition in these markets. It held just over half of the Indonesian alumina import market in 2018 down from almost 90 per cent the previous year – India, Switzerland and China were the other main suppliers – and 18 per cent of the unwrought aluminium import market in the same year.

The energy balance and opportunities in third markets

Indonesia's rising per capita income and population and planned industrial growth will lead to substantial increases in demand for electricity over the next decade and beyond. But output of coal, which is one of the key inputs to energy production in Indonesia, is expected to lag increases in demand.

This is expected to occur notwithstanding measures to improve energy efficiency that have already seen Indonesia introduce minimum energy performance standards for some appliances. The principal implication for Australia is that Indonesia's net exports of coal are expected to decrease markedly from 308 mtce in 2017 to 255 mtce in 2025 and then further to 182 mtce by 2040.[83]

As a result, there could well be opportunities for Australia to supply Indonesia and to replace Indonesia as the main supplier of thermal coal in third country markets, particularly in the Asia Pacific. This will depend on three factors:

- Competition from other suppliers. The IEA believes Russia may increase exports to the Asia Pacific substantially and could push Indonesia into third place among the biggest coal exporters to the region by the mid-2030s.[84]
- The response by Indonesian firms to declining exports. The IEA assesses that 'Indonesian exporters have shown that they can mobilise production and exports rapidly when the market and price environments are favourable. This means that there is some upside potential for exports from Indonesia.'[85]
- The Indonesian Government's response will be important. One option for the Government would be to adopt measures that would help to maintain Indonesia's capacity to export coal, potentially though subsidies to the domestic industry. Australian firms and the Australian Government will need to watch developments in this area closely.

Foreign investment

The development of Indonesia's mineral sector would ordinarily be expected to create substantial opportunities for foreign investment.

Indonesia does want foreign investment, including in the resource sector. But it is also committed to policies that require majority ownership of mining firms and developing a domestic metals processing industry from ores mined domestically. This, together with the challenging investment climate more generally, has contributed to the departure of some major international mining firms.

BOX 4.1

Resource nationalism in Indonesia

Resource nationalism, with its deep roots in broader nationalist sentiment, reflects a widely held view that Indonesia has not benefited from exploitation of its mineral resources by international mining companies.

Policies that tap into these sentiments have broad popular appeal and political leaders in Indonesia find it difficult to ignore them. President Joko Widodo, during his first term, pressed hard on majority Indonesian ownership of mineral resources, including securing agreement to majority ownership of the Grasberg mine. President Widodo's second term is unlikely to see major changes in Indonesia's policies in this area and state-owned enterprises may increasingly take over further mining assets.

Other mining firms are wary and mostly unwilling to invest. In the short and medium term, meaningful reform is unlikely (Box 4.1). Chinese enterprises remain active in some areas in Indonesia (for example, nickel), but their investment has also been accused of not sufficiently spreading economic benefits to Indonesia.

There are some areas where Indonesia finds its own capabilities to be limited (offshore oil and gas mining and deep underground mining are examples) and where there may be a partial retreat from current policies in the medium and longer term. Mineral exploration is another area where some movement may be possible: PwC, in its *Mining in Indonesia* report, concludes it has been 'virtually stagnant in Indonesia for a number of years' and the low level threatens the long-term future of the industry.[86] It is also possible that major mining companies will take on a different owner/operator model in Indonesia where the commercial risks and opportunities support such an outcome.

METS

In contrast, prospects for METS are promising. METS firms have not been as affected by resource nationalism; mining usually continues in spite of changes in ownership. And developing Indonesia's mineral industry will require specialist inputs and services in areas ranging from full contract mining over the life of a project to specialist inputs like mine communication systems, environmental management, mine-site remediation and rehabilitation, explosives, and water management solutions (Box 4.2).

Indonesia's policy makers are well aware of the need to draw on international expertise and technology. Australia, with its world-class METS sector, is well placed to continue providing such inputs.

The Australian METS sector is aware of the opportunities: it is invariably listed in the top three prospective markets in Austmine's internal surveys of its membership and, as noted, ranked third in the most recent survey.

BOX 4.2

METS: Water management solutions in Indonesian mining

Water management is critical at every stage in the mining life cycle. METS firms operating in Australia have significant expertise in this and have been involved in providing equipment and services to Indonesia. For example, consultancy firm Earth Systems was involved in work at a coal mining terminal in East Kalimantan to treat acid drainage and facilitate the use of stormwater for suppressing dust and washdown operations. Earth Systems also worked to address stormwater turbidity at a large coal mining site operated by a multinational mining company, also in East Kalimantan.

In the case of equipment, Australia supplies Indonesia with various pumps and parts, with exports that might be relevant to the mining sector valued at over $90 million in 2018 (Australian exports of the same products worldwide were valued at over $350 million). Slurry pumps handle abrasive solids in liquids, while other pumps provide mine de-watering solutions. It is not clear what percentage of Australian sales were directed to the mining sector.

Source: Austrade, *Water in Mining*, Sydney, 2017; Earth Systems, case studies on 'Stormwater Turbidity' and 'Treatment for Water Re-use' at **earthsystems.com.au**; 'The Mining Pump Market', 2013 at **www.pumpindustry.com.au/the-mining-pump-market/**

Challenges

The general business environment

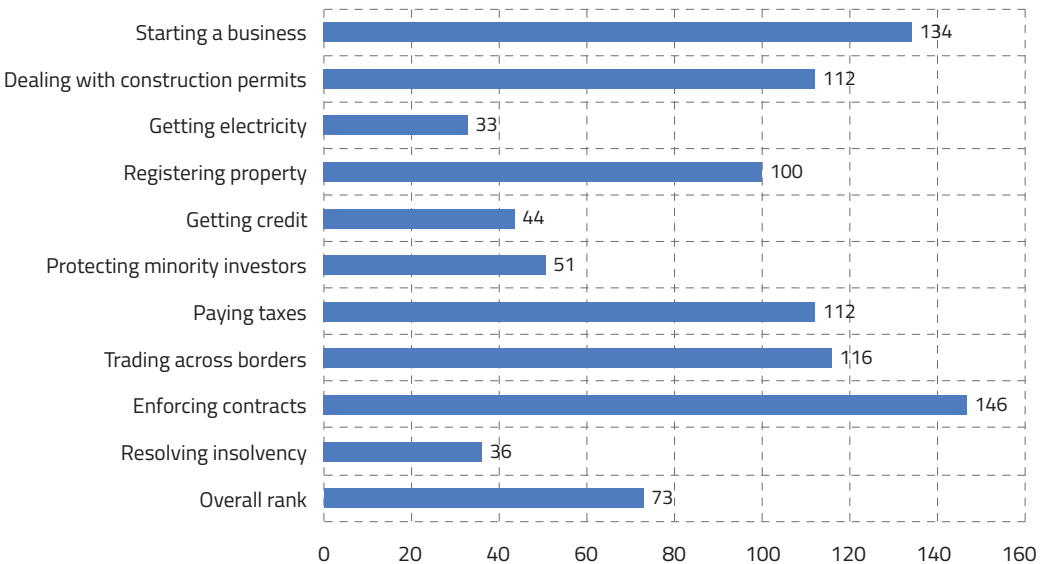
Indonesia remains a difficult place in which to do business. Underlying challenges include education and skill levels in the workforce, problems affecting government institutions, inadequate infrastructure and labour market rigidities. Indonesia's relatively poor business environment is reflected in the World Bank's *Ease of Doing Business 2019* rankings, shown in Chart 4.1: it is ranked 73rd of 190 economies.

Indonesia's ranking does show a marked improvement on the 91st it scored based on 2016 data. Between these two years, its ranking improved in almost all but two of the sub-categories shown in Chart 4.1. The World Bank notes reforms in such areas as starting a business, registering property and obtaining credit. Indonesia ranks only sixth among the ASEAN countries on the World Bank index, above the Philippines, Cambodia, Laos and Myanmar. Its ranking on another widely used index – drawn from the World Economic Forum's Global Competitiveness Report – dropped slightly, from 41st of 138 economies for 2016-17 to 45th of 140 in 2018.

Chart 4.1

Indonesia: Ease of Doing Business rankings, 2019

Source: World Bank, Ease of Doing Business 2019



Note: The rankings are of 190 economies. Rankings are based on data available as at 1 May 2018.

Tariff barriers

Indonesia continues to rely heavily on tariffs as a trade policy instrument. The simple average applied most-favoured-nation (MFN) rate was a little over 8 per cent in 2017, while the corresponding WTO bound rate was more than 37 per cent, indicating very substantial room for the government to increase MFN tariffs should it so wish. However, tariffs on Australian products have mostly been eliminated and bound under the ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA).

According to a 2009 analysis by the Department of Foreign Affairs and Trade, the percentage of tariff lines receiving tariff-free treatment in Indonesia was scheduled to rise from around 21 per cent in 2005 to 85 per cent in 2013 and around 93 per cent by 2025.[87] The Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA) will extend Indonesia's tariff commitments to Australia: according to the National Interest Analysis prepared by the Department of Foreign Affairs and Trade, it will see 99.9 per cent of Australian goods exports to Indonesia

enter either 'duty free or under significantly improved and preferential arrangements'.[88]

For minerals and basic metals manufactures, tariffs as set out in Indonesia's AANZFTA schedule have already gone to zero with two exceptions (table salt and copper cathodes). Under IA-CEPA, both of these tariffs will be abolished immediately. Tariffs on most possible METS products have also gone to zero under AANZFTA, though there are a number of exceptions, including cases where Indonesia's only commitment is to give Australia most-favoured-nation (MFN) treatment.

IA-CEPA will again result in improved access in some cases. With pumps as defined in Table 4.3, for example, there are items on Indonesia's AANZFTA schedule where tariffs are listed as 2 or 3 per cent in 2020. These nuisance tariffs will all be bound at zero under IA-CEPA. Another item under pumps will see a tariff where AANZFTA gave only a commitment to MFN treatment out to 2020 fall slightly to 6.75 per cent, a small improvement on the MFN rate of 7.5 per cent.

As with minerals and basic metal manufactures, WTO bound rates on mining equipment are high, underlining the importance of AANZFTA (and when it enters into force, IA-CEPA) in giving added certainty to Australian exporters.

Non-tariff barriers

Indonesia makes extensive use of non-tariff measures (NTMs) on goods. A review of 2018 reports by the Global Trade Alert shows many cases with the potential to affect Australia's interests.[89] For example:

- Amendments to the investment-related income tax reduction scheme clarify that producers are eligible for a tax reduction where there is 'a local content of raw materials, auxiliary materials or machines of 20 per cent or more'. The same Ministry of Industry regulation also tightens eligibility in some respects, but the scope has been broadened in other ways by a subsequent Ministry of Finance regulation.
- A Ministry of Energy decree requires that coal producers sell 25 per cent or more of their output to power stations at US$70 per tonne or less (well below the prevailing world price)
- The Ministry of Trade requires exporters of various products (including minerals) to be paid through a letter of credit arrangement, apparently with the aim of reducing downward pressure on the value of the rupiah.[90]

Areas in which NTMs are of concern include difficulties with customs procedures, import licencing and difficulties in bringing in key personnel. The last of these is especially significant for services and investment.

A recent study of Indonesian NTMs by Marks concludes that their incidence has increased. NTMs affected 51 per cent of import tariff lines in 2015, up from 42 per cent in 2009. The number of lines in exports subject to NTMs jumped to 10 per cent in 2015, up from 4 per cent in 2009.[91] Marks also provides estimates of the effective rates of protection for 141 different sectors of the Indonesian economy. His estimates for broad sectors are given in Table 4.5. They suggest that 'trade policies transfer resources out of natural-resource-intensive sectors (minerals and forestry) into manufacturing and especially agriculture' and show that there has been an increase in disparities in effective rates of protection from the 2008 rates.[92]

NTMs are addressed in AANZFTA, but the thrust of its treatment is to reaffirm that parties will adhere to their WTO

obligations and that regulations will be made and administered with due regard to transparency. The issue has been discussed in the review of AANZFTA that is currently underway and was reported on by the Committee on Trade in Goods to Ministers in September 2017. Among other things, the Committee recommended that NTMs should be a standing item on its agenda, with the aims of facilitating trade and investment and ensuring the removal of especially burdensome measures.

IA-CEPA also contains provisions on NTMs and is the first negotiated Australian free trade agreement to include a separate chapter on this issue. Apart from measures to promote increased transparency and to reaffirm WTO rights and obligations, it provides for measures of concern to either party to be reviewed by the Committee on Trade in Goods, which can then provide advice (including, if possible, solutions) to the Joint Committee established under the Agreement, which is expected to meet at Ministerial level. This mechanism is not subject to the dispute settlement provisions in Chapter 20 of the agreement.

More detailed procedures for reviewing NTMs are to be developed by the Committee on Trade in Goods after IA-CEPA has entered into force. Negotiations on a Regional Comprehensive Economic Partnership (RCEP) have also addressed NTMs, but no details of how they are likely to be handled were available at the time of writing.

Table 4.5

Indonesia: Effective rates of protection

Source: S Marks, 'Non-tariff Trade Regulations in Indonesia: Nominal and Effective Rates of Protection', *Bulletin of Indonesian Economic Studies*, Vol. 53, No.3, 2017, p.348

	2015: All trade policies in effect	2015: Excl. quantitative restrictions	2008: All trade policies in effect
Agriculture	33.1	9.3	16.5
Forestry and fisheries	-0.7	-0.2	2.3
Mining and quarrying	-24.1	0.4	-13.7
Oil and gas extraction	0.3	0.4	0.2
Manufacturing	12.3	4.6	5.1
Overall	**8.5**	**3.8**	**3.8**

Note: Effective rates of protection are calculated using a method developed by Corden. Marks also provides data for an alternative approach by Humphrey.

Barriers to services trade

OECD data on the restrictiveness of trade in services indicates that Indonesia continues to impose substantial barriers to trade. Table 4.6 looks at trade for five services sectors relevant to mining and METS. Indonesia was ranked as the second most restrictive (after Iceland) of 45 economies in construction services in 2018 and the third most restrictive for legal services (it is now marginally more restrictive than India). Most of the barriers relate to restrictions on foreign entry. In the case of legal services, it is not possible for foreign lawyers to practise law or establish a commercial presence in Indonesia, although they can advise Indonesian firms on foreign law. The table shows limited changes in restrictiveness scores between 2014 and 2018.[93]

AANZFTA, as it applies to Indonesia, made only limited advances on services access and Indonesia's AANZFTA schedule points to a highly restrictive regime. The agreement has, however, bound access and therefore provided some certainty to business. Access can, of course, be bound at less liberal levels than applied in practice. The foreign equity limit for construction services provided though commercial presence is thus bound at 55 per cent, although the applied level is 67 per cent.[94] The General Review of AANZFTA currently underway is addressing services.

When it comes into force, IA-CEPA will deliver some useful outcomes on services, including in relation to mining and mining services. The provisions of the principal services chapter include general commitments on national treatment (that is no less favourable treatment than to its own service suppliers in like circumstances), MFN treatment (no less favourable treatment than accorded to any non-party in like circumstances), market access (ruling out limits, such as on the number of service providers or the value of services transactions) and local presence (ruling out a requirement to establish a

Table 4.6

Indonesia: OECD Services Trade Restrictiveness Index, 2014 and 2018

Source: OECD, Services Trade Restrictivess Index

	Accountants	Engineers	Legal	Computer	Construction
Total for 2014	0.705	0.310	0.890	0.350	0.425
Total for 2018, of which:	0.708	0.301	0.890	0.334	0.441
A. Restrictions on foreign entry	0.332	0.125	0.493	0.138	0.223
B. Restrictions on people movement	0.286	0.109	0.296	0.099	0.086
C. Other discriminatory measures	0.021	0.027	0.036	0.042	0.070
D. Barriers to competition	0.008	0.000	0.026	0.000	0.024
E. Regulatory transparency	0.062	0.040	0.040	0.056	0.039
Indonesia's 2018 rank (out of 45)	5	9	3	5	2

Note: The restrictiveness index runs from a theoretical zero (completely open) to 1 (completely closed). The figures in items (a) to (e) sum (with small rounding errors) to the total restrictiveness index for Indonesia. The rank runs from the most restrictive country or countries, with, for example, Indonesia the second most restrictive country of the 45 for construction services.

representative office as a condition for supplying a service by a method other than commercial presence).

As is usual, there are many non-conforming measures, but some of these represent more liberal arrangements than for AANZFTA. For example, there are commitments in relation to contract mining, mine site preparation and construction services (Table 4.7) that provide added certainty by binding access even where they do not involve improvements in what is currently applied.[95] Similarly, there are new commitments for Mode 4, covering the movement of natural persons to Indonesia (Table 4.8).

Both Tables 4.7 and 4.8 suggest significant barriers to the movement of personnel into Indonesia: the IA-CEPA schedules concerning site preparation for mining and contract mining require that priority be given to Indonesian workers and sub-contractors. Industry advice is that these sorts of restrictions are applied in practice and affect investment as well as services trade.

As Chapter 3 notes, construction projects can require highly skilled personnel that can only be sourced internationally. The Government imposes, and often sticks rigidly to, 'manning tables' that govern the ratio of expatriates to Indonesians, which can delay projects by several weeks. Restrictions on foreign lawyers are also applied and, as noted, contribute to the view that Indonesia is one of the most highly protected regimes in the world.

Table 4.7

IA-CEPA: Delivery of services via Modes 1,2 and 3 to Indonesia, selected sectors

Source: IA-CEPA, Annexes I and II

Category	Limitations on market access and national treatment
Site preparation work for mining	Commercial presence requires a joint venture and is subject to an economic needs test. Foreign ownership is to be no more than 67 per cent. Priority must be given to hiring Indonesian sub-contractors and workers.
Contract mining services	As above
Engineering-related consulting services for subsurface and surface surveying, or mapmaking services	For commercial presence, there is a joint venture requirement and foreign ownership is to be no more than 67 per cent. For both Modes 1 and 3, geospatial data and information can only be processed offshore if the necessary skills and equipment are not available in Indonesia.
Various types of construction services	Commercial presence requires a joint operation or joint venture and foreign ownership is to be no more than 67 per cent. The most senior management in a representative office shall be Indonesian. Foreign service suppliers can only provide services that require high risk, high technology or high capital (known as 'qualification big'). The Indonesian partners shall also have 'qualification big'.

Note: The descriptions of sectors and conditions and limitations are greatly simplified. For full details, see Indonesia's schedules to IA-CEPA. See endnote 95 for definitions of the modes of supply for the delivery of services.

Table 4.8

IA-CEPA: Movement of natural persons – Provisions from Indonesia's schedule

Source: Indonesia's Schedule of Movement of Natural Persons Commitments, Annex 12-A to IA-CEPA

Category	Conditions and limitations
General provisions	**Intra-corporate transferees** (who may be directors, managers or technical experts) are allowed to enter for up to 2 years (extendable for two additional periods of two years). However, this must be for approved sectors and an economic needs test applies to managers and technical experts. **Business visitors** (for example, persons who wish to participate in business meetings) can stay for 60 days, extendable to a maximum of 120 days. **Independent professionals for legal services** can stay for one year, extendable for one year at a time, subject to an economic needs test and various other conditions. They can only provide advice on foreign and international law and the share of foreign lawyers must not exceed 20 per cent or exceed five lawyers per firm.
Various engineering services	As for the general provisions except that the highest management in a representative office must be an Indonesian.
Site preparation work for mining	As for the general provisions, but some functions (like supply chain management) are reserved for Indonesians.
Contract mining services	As above
Technical testing and analysis services	The general provisions apply only for the positions of director and technical expert.
Various types of construction services	As for general provisions except that the highest management in a representative office must be Indonesian

Note: The descriptions of sectors and conditions and limitations are greatly simplified. For full details, see Indonesia's schedule.

Barriers to investment

Indonesia has a highly restrictive regime for FDI. The OECD FDI Restrictiveness Index which measures barriers on a scale of zero (no barriers) to one (completely closed) shows Indonesia as having the third most closed regime (after the Philippines and Saudi Arabia) among 69 countries for which 2018 data are available. Data for individual sectors indicate that it was among the five most restrictive regimes for mining and quarrying, legal services, engineering and accounting and auditing – all sectors relevant to mining and METS firms. Construction services had a moderate score on the 2018 OECD index, while the metals, machinery and other minerals sector was relatively open.[96]

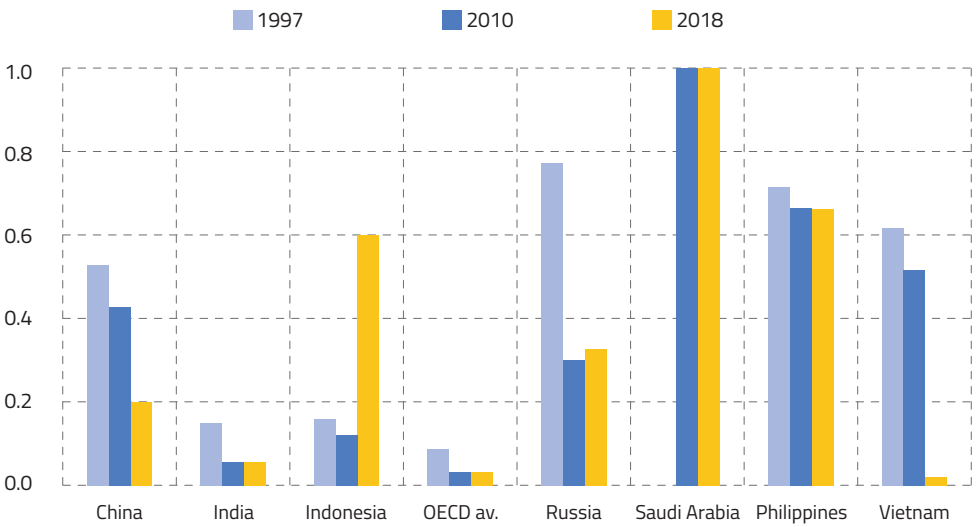
Indonesia's mining FDI regime has become less open over time. Chart 4.2 illustrates this by showing the OECD's FDI Regulatory Restrictiveness Index for mining and quarrying since 1997 for Indonesia, the OECD as a group and for several emerging and developing economies. For this sector, Indonesia moved from ranking the 12th most restrictive regime in 1997 of 45 countries for which data were available, to the third most closed in 2018. Equity restrictions make the most significant contribution to the Indonesian index.

As already indicated, the Indonesian Government has been seeking to achieve two main objectives with its foreign investment policy on mining. The first is to secure majority

Chart 4.2

Mining and quarrying: FDI Regulatory Restrictiveness Index

Source: OECD



Note: The index ranges from 0 (open) to 1 (closed). Mining and quarrying here includes oil and gas extraction.

Indonesian ownership of mining firms over a decade from their establishment. The second is to ensure that domestic processing of raw materials takes place in Indonesia, rather than just the extraction and export of unprocessed raw materials. Pursuing this policy has meant renegotiating older 'contract of work' (CoW) arrangements (special legal agreements between the Indonesian Government and the mining company) or encouraging firms to move to new mining permits that are subject to Indonesia's current policies regarding domestic processing, equity and other requirements.

Indonesian ministries have used a variety of instruments, including export duties, export bans and licencing, to encourage firms to increase the level of domestic resource processing. Regulations in 2012 required firms to submit plans for smelter construction in order to export unprocessed ores and introduced export duties on those that did not achieve a satisfactory level of processing. Regulations in 2014 adjusted processing requirements and export duties: according to one Ministry of Finance regulation, taxes were scheduled to rise from 20 or 25 per cent to prohibitive levels by 2016. Restrictions were further modified several times subsequently.

Under the most recent regulations, introduced in December 2018, firms that have achieved minimal levels of local processing face export taxes that vary with progress on developing a refining capacity.

They range from a 5 per cent export duty where progress is up to 30 per cent of the total, to 2.5 per cent for progress judged to be more than 30 per cent but not larger than 50 per cent, and no export duty where progress is greater than 50 per cent. There are special provisions for nickel ores and bauxite.[97]

The coal sector has been largely insulated from resource nationalism because of its predominantly domestic ownership. But the Indonesian Government has recently been seeking to extract more from this sector. The decision to impose lower prices for coal subject to a domestic market obligation is one illustration, and a 2019 decision to cancel an expiring Coal Contract of Work (CCoW) is another.

It has given rise to uncertainties about the extension of other CCoWs, the holders of which account for about two thirds of Indonesia's coal output. All of these will expire by 2025. Decisions concerning this industry are of keen interest for Australia, both because METS firms have considerable interests in it and because Indonesia is an important competitor for thermal coal.

The Indonesian Government's policies have created issues for foreign investors and the financial press has speculated that they have forced some miners to withdraw from the country. METS firms can also experience difficulties in entering the Indonesian market. Although Indonesia's Negative Investment List (DNI) does not contain equity limits for mining services companies, firms still need to undertake time-consuming and expensive consultations with Indonesia's Investment Coordinating Board (BKPM) before they can be granted any permits. In addition, capital requirements for foreign investment (PMA) firms can be onerous, particularly for small and medium enterprises (SMEs).

As in relation to services, AANZFTA made some progress in promoting improved certainty for Australian investors. IA-CEPA will also do this. The investment chapter of the agreement contains general provisions for national treatment, most-favoured-nation treatment and prohibition of performance requirements.

There are, of course, exemptions to these provisions. In the case of mining and quarrying, the agreement sets out Indonesia's requirement that firms that obtain a new mining business licence move to 51 per cent Indonesian ownership over 10 years. Other Indonesian exemptions provide for a general prohibition on foreign ownership of land, require some company positions to be reserved for Indonesian nationals, set out a blanket exclusion of all existing non-conforming performance requirements, and, subject to some conditions, make it possible to exclude existing measures that have been overlooked in developing its schedule.

But the Agreement provides some limits on the scope for Indonesia to make foreign investment more restrictive and contains rules to protect investors. For example, it requires fair compensation in the event of expropriation and, by including an Investor-State Dispute Settlement mechanism, adjudication where investors believe that rules have been breached. As already noted on services, IA-CEPA also contains important commitments on commercial presence.

Policy challenges

Tariff liberalisation on minerals is, from Australia's perspective, largely complete in Indonesia, though some tariffs remain on metal manufactures and mining equipment. But there are significant non-tariff measures affecting merchandise trade, and quite formidable barriers for many services and for direct investment in mining.

A general difficulty in addressing barriers

with Indonesia is that no single hand steers policy development. Pressures come from many different areas: from nationalists, power holders, government planners, technocratic ministries, Parliament, sub-national governments and public opinion. Policy outcomes are decided as part of a complex bargaining process that is political, unpredictable and can lack transparency; they can vary from one project to another.

As noted, there is a mechanism under IA-CEPA through which to engage Indonesia on non-tariff measures – though whether it will be possible to do so successfully remains to be seen. There is also a willingness to look at these measures in AANZFTA. An initial challenge will be to provide strong input to these processes based on detailed evidence firmly grounded in business input. A priority should be to develop an NTM database: research aimed at demonstrating trade and investment distortions associated with specific measures would be a bonus. NTMs are also being addressed in RCEP.

Trading services is more difficult than trading goods. Indonesia's regime benefits politically influential interests in areas like law and accountancy where barriers are high. However, impediments to mining services may be a good deal easier to address. Many Indonesian policy makers know that the mining sector needs advanced skills that are not available domestically if Indonesia is to achieve anywhere near its potential development.

To this extent, they may be receptive to approaches that seek to reform barriers affecting METS firms. In seeking to address the more difficult barriers, one possibility may be to build on earlier analytical work on services regimes in East Asia by Australia's Productivity Commission, identifying the scope of the barriers in this sector and their potential to undermine the efficiencies created by trade liberalisation for goods. This could be done on a region-wide basis, given that similar barriers (to, say, legal services) exist in many countries.

In relation to investment, there is little prospect of modifying Indonesia's two main goals – securing majority Indonesian ownership of mining firms and shifting away from exporting relatively unprocessed ores to build a metal manufacturing sector in Indonesia. Significantly, IA-CEPA did not provide any concessions to Australia in this area. As noted, these policies have deep roots in the development of resource nationalism in Indonesia.

At most, it may be possible to secure some marginal changes in policy, perhaps encouraging greater flexibility regarding the time period over which these objectives are to be achieved and the degree of processing that may be acceptable in areas where Indonesia will find its own capabilities and expertise to be inadequate.

Exploration is one area where it may be possible to move towards a more liberal regime. Even if the Indonesian Government continues to adhere to its existing policies, there remains scope to develop strong commercial relationships in the mining sector by playing a significant role as a minority partner in mining enterprises and by supplying Indonesian firms with the mining equipment and services they need to make their own operations efficient and viable.

Possibilities for change may be strengthened by new free trade agreements. Indonesia considered joining the original Trans-Pacific Partnership when it was thought that the United States would be a member. Were the United States to reverse its decision and participate, Indonesia may be willing to look again at membership in a grouping that would have very considerable global importance from trade, investment and wider strategic perspectives.

As it is, Indonesia will be looking closely to see how the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) will affect Malaysia and Vietnam in particular. RCEP is another agreement that may help to shape Indonesia's trade policy.

There is, however, an expectation that outcomes will be much less ambitious than CPTPP given the wide differences in development levels among participants.

Australia's experience with bilateral agreements suggests that it is possible to build momentum to address a wider range of barriers over time in what become 'living agreements'. This process appears to be underway in AANZFTA, though it is too soon to assess how effective it will be. It will also be important to develop it in relation to IA-CEPA.

Possibilities for further liberalisation may seem limited in the current international environment, but Indonesia's drive for rapidly rising living standards will depend at least in part on further opening its economy to trade and investment. There is at least a reasonable prospect that this will come to pass as Indonesia develops.

Australia's aid programme is another instrument that can be used to accelerate Indonesia's economic progress. Australia is expected to provide $298 million in official development assistance to Indonesia in 2019-20. A significant part of the programme – nearly 20 per cent in 2017-18 – has been allocated to 'aid for trade', designed to improve the climate for trade and investment, develop infrastructure and promote employment. The aid programme has made a significant contribution in these areas and to broader development goals of Indonesia as it seeks to raise living standards and emerge as one of the great nations of East Asia.

Indonesia's drive for rapidly rising living standards will depend at least in part on further opening its economy to trade and investment.

CHAPTER 5

Malaysia

KEY POINTS

- Two-way trade in resources, including exports of minerals and imports of crude and refined, accounts for over half of Australia's merchandise trade with Malaysia.
- Coal, crude petroleum, copper and LNG were Australia's top four merchandise exports to Malaysia in 2018. Minerals and metals made up 35 per cent of all Australia's exports to Malaysia as feedstock for Malaysia's minerals processing and downstream manufacturing sectors.
- Malaysia, like Indonesia, currently lacks a major steel industry that could form the basis of substantial exports of metallurgical coal and iron ore.
- Demand for energy has increased steeply in Malaysia over recent decades driven by strong growth in manufacturing and services, rapidly growing urban populations and rising expectations linked to spreading affluence. Political pressure to regulate energy prices and keep them down has made imported coal very attractive. Coal replaced gas as the main contributor to the electricity generation mix in 2017.
- A growing environmental movement in Malaysia, and Malaysia's increased investment in high efficiency, low emissions (HELE) coal-fired power plants, presents challenges and opportunities for Australian thermal coal exports.
- Malaysia's non-oil and gas mining sector is subdued and not a national priority, so Australian mining and METS companies investing in Malaysia have to be strategic in their choices. There could be substantial mutual benefits from dialogue with the Malaysian government and mining industry on issues such as mining productivity, and the effects of mining on the environment and surrounding communities.

Malaysia is a diversified open economy on the cusp of joining the ranks of high income countries.

Trade and foreign investment have long been key enablers and drivers of Malaysia's economic growth. The country is tied closely to global supply chains for advanced manufactures, especially electronics. Trade in chemicals, machinery, scientific equipment, and petroleum products are substantial. Trade in services is large and growing. Resources-related trade is dominated by exports of petroleum and liquefied natural gas (LNG).

Inward foreign direct investment (FDI) is targeted principally at services and manufacturing, and outward FDI now exceeds inwards. Approximately one-third each of these outward flows is from financial services and other services sectors, with much of the remainder from the oil and gas sector, in particular Petroliam Nasional Berhad (Petronas), a state owned enterprise.

Australia is well positioned to contribute to, and benefit from, Malaysia's increasing prosperity. Prospects seem good for continuing moderate to strong economic growth, with forecasts of around 4.5 to 5 per cent per year for the period to 2024. Beyond that, average growth of around 4 per cent in the decade to 2030 would seem attainable assuming no marked deterioration in international trade and investment. Malaysia's middle class is growing rapidly in size and affluence.

Australia and Malaysia have a long-standing and substantial partnership anchored by close cooperation on a broad range of issues, similar values and shared strategic perspectives on regional and global affairs.[98] Australia-Malaysia trade and investment relations are complementary and evolving. Malaysia is a key country for Australian businesses as they internationalise.[99] And strong people-to-people links, stretching back to Colombo Plan days, often underpin long-standing and well-developed business relationships.

While two-way trade has a solid foundation in resources, Australia's trade in mining commodities with Malaysia is modest compared to trades with markets in Northeast Asia, although coal, petroleum, copper, and LNG were Australia's top four merchandise exports in 2018. The basic reason for this is that Malaysia, like Indonesia, lacks a major steel industry that could form the basis for substantial exports of metallurgical coal and iron ore. Steel production in fact has been declining in recent years and much of the country's steel requirements for infrastructure and other construction have been met through imports.

From a resources perspective, Australia can contribute to Malaysia's development in three ways. The first is through our contribution to Malaysia's rapidly growing demand for energy. Oil and gas account directly for about 10 per cent of GDP and probably double that on a conservative estimate of the multiplier effects of 3500 or so international and local oil and gas companies that operate there.[100] But oil fields are maturing and natural gas production may have plateaued and could soon trend downwards. Alternatives such as domestic coal production are limited. If Malaysia is to meet its growing energy needs, coal and LNG imports, along with developing its sustainable energy potential, will be vital.

Second, rising demand for metals as an integral part of development, along with foreshadowed increases in hitherto sluggish domestic production, must continue to increase import demand for iron and copper ores and concentrates and metallurgical coal.

It should also lift import demand for iron and steel and other metal products.

And third, the glory days of the 1970s when Malaysia supplied 40 per cent of the world tin market have long gone. Malaysia is still endowed with significant mineral resources – a fact that the then Malaysian Minister responsible for natural resources and the environment needed to remind Malaysians of when introducing the National Minerals Policy in 2009.[101]

But the non-oil and gas sector is better known these days for occasional environment-based disputes, highlighted by protests against Australian company Lynas' rare-earths processing plant in Kuantan, and perhaps for limited exploration, mine development and capacity expansion.[102]

The sector is not a high priority – it hardly featured in Malaysia's Eleventh Five Year Plan (2016-20) beyond generalised statements on sustainability. But there is some federal government interest in lifting the performance of state governments that have the biggest role in mining development, given their responsibilities for land management.

In time, and should this interest strengthen as part of strategies to increase domestic minerals production, Malaysia will need to draw on international METS skills, especially for environmental management and using big data and analytics to raise mining performance.

Australia and Malaysia have a long-standing and substantial partnership anchored by close cooperation on a broad range of issues, similar values and shared strategic perspectives.

The trading and investment relationship

Malaysia is Australia's tenth-largest trading partner. Minerals, basic metals, crude petroleum, natural gas and travel-related services are Australia's major exports; crude and refined petroleum, electrical and electronic goods, especially computers,

are Malaysia's top exports to Australia. Education-related and other travel and transport services account for the bulk of services trade: business services (including business travel) are significant in both directions. A sizeable number of Australian METS companies also have operations and offices in Malaysia. Malaysian companies operating in Australia tend to be in manufacturing, information technology, energy, and business services.

Minerals and metals made up 35 per cent of all Australia's exports to Malaysia in 2018 and are feedstock for Malaysia's energy, minerals processing and downstream manufacturing sectors. Coal, copper and alumina dominate (Table 5.1).[103] Malaysian statistics indicate that Australia has a commanding market share for imports of alumina (around 80 per cent in the five years to 2018) and almost 100 per cent of rare earths, which are processed by Lynas.

Australia has substantial market shares (ranging from around 30 to 80 per cent) in Malaysia's imports of manganese, zirconium and titanium ores and concentrates, and salt. Australian coal accounted for 25 per cent of Malaysia's coal imports in the five years to 2018 behind Indonesia with 59 per cent.

Table 5.1

Australian exports of minerals and basic metal manufactures to Malaysia, 2018

Source: ITC Trade Map Database

Product description	**Exports** ($m)
Coal; briquettes, ovoids, similar solid fuels manufactured from coal	1023.8
Iron ore and concentrates	137.2
Non-ferrous metal ores (not confidential), of which:	249.3
... copper ores and concentrates	(140.9)
... tin ores and concentrates	(101.3)
Non-metallic and other minerals (not confidential)	55.2
Basic iron and steel manufacturing, of which:	44.5
... ferrous waste and scrap, remelting scrap ingots	(43.4)
Basic non-ferrous metal manufacturing, of which:	1214.8
... refined copper and copper alloys, unwrought; copper scrap	(971.4)
Total ABS data for minerals and basic metal manufactures	**2724.7**
Confidential and unreported items estimated from Malaysian data, of which:	760
... aluminium oxide (excluding artificial corundum)	(330)
... manganese ores and concentrates	(194)
... zirconium ores and concentrates	(109)
... rare earth metals	(95)
... titanium ores and concentrates	(19)
Total including estimated confidential Items	**Around 3490**

Note: Minerals and basic metal manufactures are defined in the notes to Table 1.1. Exports of products that are confidential or partly confidential in ABS statistics are estimated from partner import data as outlined in the notes to Table 2.2.

Malaysia has a modestly-sized and domestically focused steel industry and is a net importer of steel products. It is also a significant importer of iron ore, but not from Australia: Brazil supplied 85 per cent of imported iron ore in the five years to 2018. Australia has been a minor and sporadic supplier. Australian statistics show exports of iron ore in only five years since 2001: 2018, however, was a standout. Exports totalled 1.6 million tonnes (13 per cent of iron ore imports), which was well above the previous high of 117,500 tonnes in 2014.

Australia regularly imports gold, ferroalloys and cement from Malaysia – in 2018 they were spread evenly and amounted to around $100 million. There are also modest imports of unwrought aluminium ($11 million in 2018) and powdered zinc ($5 million).

Mining equipment exports cannot be identified easily: they are at best a modest proportion of elaborately transformed manufactures (ETM) exports to Malaysia, which have ranged between $0.5 billion and $1.3 billion since 2009. In 2018, exports valued at $67 million were identified as potential mining equipment. The most prominent were measuring, testing and surveying instruments ($28 million) and cranes, boring and earthmoving machinery and their parts ($18 million).

Malaysia is a prominent supplier of ETMs to Australia. Manufactures that could be mining equipment are a small but significant proportion of these imports: $0.2 billion of $5 billion in 2018, though in practice they are likely to be substantially smaller because most imports have dual or multiple uses and will be used outside mining. Potential METS items included cranes, boring and earthmoving machinery and their parts ($70 million), sorting and screening machinery ($46 million) and iron or steel pipelines for oil or gas ($38 million).[104]

Overall, Australian mining-related trade and investment links with Malaysia are significant but unexceptional compared with other markets in East Asia. Australian companies are active in minerals processing and mining services.[105] Austmine's 2015 METS Survey rated Malaysia as the eighth most important export market for METS firms. Sales to Malaysia were reported by around 80 of its 286 respondents exporting overseas, and 25 reported operations and offices there.[106]

Australia-Malaysia two-way investment stocks have totalled around $30 billion since 2013 after more than doubling in the three years from 2010. In 2018, Malaysian investment in Australia was $22.2 billion, of which $13.9 billion was direct investment. Australian investment in Malaysia was $10.3 billion, of which $6.0 billion was direct investment.

Several Australian mining and mining-related companies operate in Malaysia. BHP has a human resources and financial and accounting shared services centre in Kuala Lumpur and is engaged in deep-water hydrocarbon exploration. BlueScope Steel manufactures steel products for local and export markets. Lynas processes rare earths in Kuantan from its Western Australian Mount Weld mine. Altech Chemicals is building a factory in Johor to process kaolin, also from Western Australia, into high purity alumina. And Orica provides chemicals and explosives, while MacMahon Holdings and Worley Parsons provide a range of mining services.

Opportunities for expanding trade and investment: energy

Demand for energy has increased steeply in Malaysia over recent decades, driven by strong growth in manufacturing and services, rapidly growing urban populations and rising expectations linked to increased affluence. Per capita energy consumption is among the highest in Southeast Asia.

The high priority given to electricity generation is reflected in Malaysia's fourth ranking out of 190 countries on the World Bank's *Ease of Doing Business* index for 'getting electricity'. It is also reflected in electricity generation more or less doubling every few years (Chart 5.1). Natural gas, produced in abundance domestically, accounted for over two-thirds of electricity generation as recently as the mid-2000s. Its share now is below half, led by policies to switch to coal-fired generation in response to slowing growth in natural gas output[107] and better returns from selling LNG on international markets and importing cheaper coal.

Political pressure to regulate energy prices and keep them down has made imported coal very attractive.[108] Coal replaced gas as the main contributor to the electricity generation mix in 2017 (Chart 5.1).

Chart 5.1

Malaysia electricity generation, 1980 to 2017

Source: Malaysia Energy Information Hub, Energy Commission

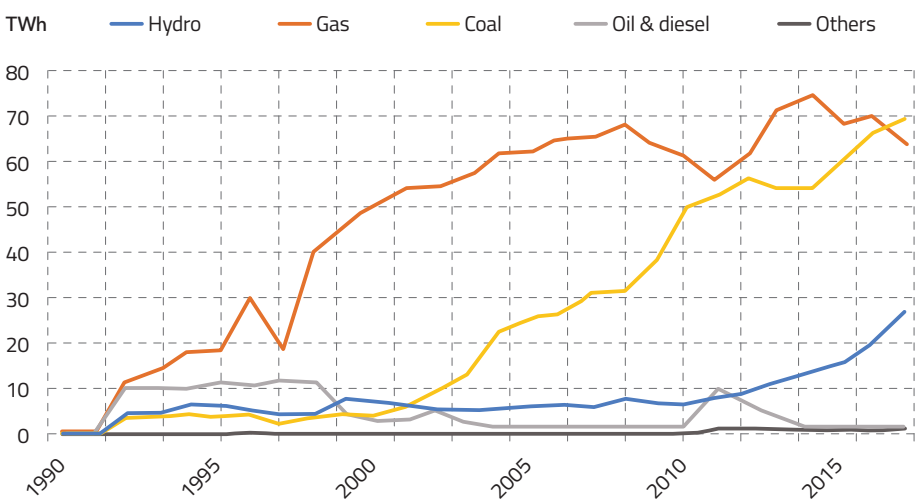
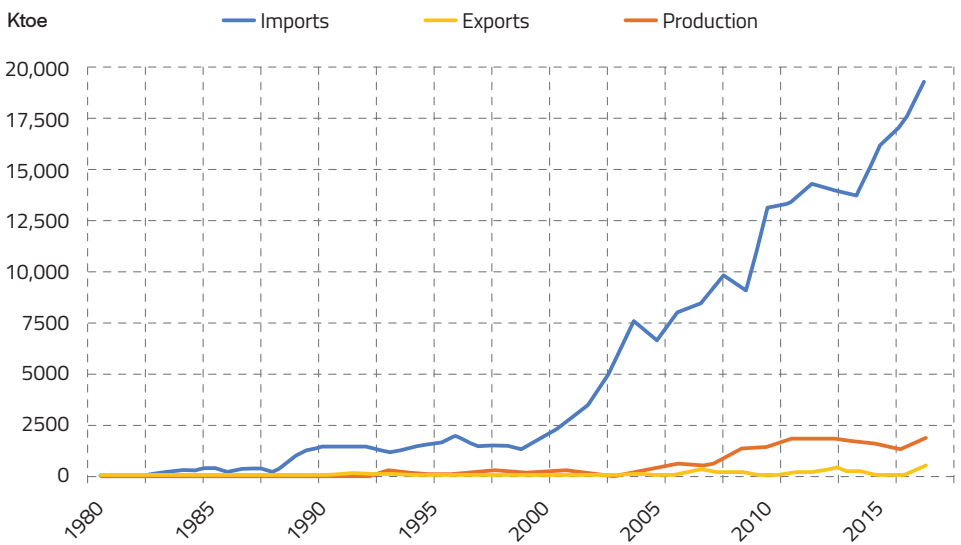


Chart 5.2

Malaysia: Coal imports and exports, 1980 to 2017

Source: Malaysia Energy Information Hub, Energy Commission



The combination of policy-led changes in Malaysia's energy mix, sluggish growth in domestic natural gas output in recent years and declining coal production has had a dramatic impact on energy trade. From about 2000, coal imports have increased strongly (Chart 5.2). The handful of small mines in Sarawak on the island of Borneo increased production through the 2000s – output peaked in 2012, then plateaued – but this was nowhere near sufficient to meet the requirements of rapidly growing coal-fired power plants: coal imports have almost doubled every few years over the last 20 years, mostly sourced from Indonesia and Australia.

Malaysia's coal imports have almost doubled every few years over the last 20 years, mostly sourced from Indonesia and Australia.

Energy requirements to 2030 and beyond

The key question is whether these trends can continue. The factors affecting energy supply and demand are by far the most important mining-related issues for Malaysia and its trading partners. They include expected growth in Malaysian demand for power; changes in the energy mix between coal, natural gas and renewables; import demand for coal and LNG and how it will be shared among suppliers; the scope for privatising energy production and downstream energy industries; and opportunities for expanding bilateral and regional cooperation across the technical, scientific, industrial, and energy policy spectrum.

Outcomes are not certain because they will depend on how Malaysia, like the rest of Southeast Asia, balances energy security, environmental sustainability and energy equity; how it continues to address megatrends in demand for electricity released by urbanisation, rising expectations and new technologies; and how it charts a course towards carbon neutrality in ways that sustain economic growth.[109]

What is not disputed is that demand for electricity will continue to grow driven by a favourable medium-term outlook and an expectation that Malaysia can move steadily up the global economic order over the next decade (Box 5.1). Its electricity consumption per capita (4238 kilowatt hours in 2017) is the third highest in ASEAN, though well behind Brunei (8294 kWh) and Singapore (7913 kWh). There is room for 'catch up' growth.[110] The Energy Commission's *Peninsular Malaysia Electricity Supply Industry Outlook 2017* projects peak demand to grow by an average of almost 2 per cent per annum from 2016 to 2025.[111]

The energy generation mix is expected to remain dominated by coal and gas, with coal's share holding steady at 57 per cent from 2018 to 2025, and gas declining from 35 per cent to 33 per cent as some gas turbine plants are retired and new coal power plants are commissioned. The remaining part of the mix is shared between hydro, other renewables and, from 2024, power from a new interconnection with the Sumatra grid.

Under policies set out in the recently elected Pakatan Harapan Government's White Paper on *Malaysia's Future Energy Landscape* and the yet to be released *Renewable Energy Transition Roadmap to 2035,* Malaysia will intensify the search for energy savings and lift the target for non-hydro renewable energy capacity from around 8 per cent currently to an ambitious 21 per cent by 2025.[112]

Environmental pressures are building in Malaysia: the environmental lobby is well organised and budget pressures are relevant because energy subsidies are eating into the funding for other development objectives. International pressures also are strong: Malaysia, for example, has committed to reduce emission intensity per unit of GDP by 35 per cent from 2005 levels by 2030 and by 45 per cent by 2030 depending on climate finance, technology transfer and capacity building from developed countries.

A range of programs have been and are being developed to deliver energy and emissions savings from more efficient buildings and energy efficiency standards to ambitious targets for renewable energy to improving energy connectivity across Southeast Asia.[117] This will probably retard somewhat the rate of growth in energy consumption in Malaysia, increase investment in renewables, continue the shift in capacity mix from natural gas to coal, and increase investment in high efficiency, low emissions (HELE) coal-fired power stations.

Malaysia's economy: Medium term prospects

The Malaysian Government expects economic growth of between 4.5 to 5.5 per cent per year over the medium term. More conservatively, the International Monetary Fund (IMF) expects growth of 4.7 per cent in 2019 and several forecasts from international organisations are broadly around 4.8 per cent per year for the period to 2024.[113] Beyond that, average growth of around 3.8 per cent or even higher in the decade to 2030 would seem attainable assuming no marked deterioration in international trade and investment.

Macroeconomic fundamentals are generally sound, though risks are on the downside largely reflecting Malaysia's high level of exposure to the world economy. Domestic demand is currently the main driver of economic growth. Unemployment is around 3.5 per cent. Consumer price inflation is expected to be around 2 per cent in 2019. Malaysia has a current account surplus on its balance of payments of about 3 per cent, somewhat lower than earlier in the decade, and expected to decline further to around 2 per cent of GDP. The IMF has assessed fiscal policy as appropriate to address a relatively high level of government debt and the financial sector as 'well positioned to cope with standard shocks'.[114] The government has instituted a series of incremental reforms to make its exchange rate market more flexible and efficient.[115]

Malaysia has an ambitious structural reform agenda as set out in the *Eleventh Malaysia Plan*, including to boost productivity growth and raise female and older workers' labour force participation. The Plan emphasises human capital development, including through education at all levels, and innovation.[116]

In all probability this will not happen smoothly. The Government will take selective action against companies on environmental grounds but will most likely be cautious about taking across the board actions to require clean technologies if they are expensive and have wider economic implications that threaten growth and jobs.

From a trade perspective, if demand for energy continues to grow strongly, albeit more slowly than under business-as-usual scenarios and if Malaysia continues to set no specific target for nuclear energy or develop plans to introduce it, it seems inescapable that Malaysia must rely on growing imports of thermal coal and LNG through the 2020s and beyond.

Malaysia is pushing ahead with HELE coal-fired power stations and, even on the new Government's revised plans for Malaysia's energy sector, coal-fired generation will provide around 40 per cent of Malaysia's electricity requirements for the next few years.[118] Malaysia has a program for commissioning new coal-fired capacity, including three ultra-supercritical 1000 megawatt (MW) plants in the three years to 2020.[119]

Demand for imported coal should therefore continue to rise strongly: there is no prospect that domestic coal output, currently around 3 Mt per annum, will increase enough to make a sizeable dent in import requirements.

Similarly, Malaysia's natural gas production has most likely peaked and could be 20 per cent below 2016 levels by 2040.[120] LNG imports must grow substantially to meet demand from industry and households. They might also grow insofar as plans are realised to make Malaysia (Johor) a principal hub for oil and gas in the Asia-Pacific region with oil refineries, naphtha crackers and petrochemical plants, LNG import terminals, re-gasification plants, and deep water facilities for handling, storing, blending and distributing crude oil, petroleum and LNG products.[121]

Opportunities for expanding trade and investment: metals

Malaysia is well endowed with non-oil and natural gas mineral resources: its tin reserves are ranked as the world's third largest; it has significant reserves of barite, bauxite, bentonite, clays, copper, gold, iron ore, limestone and silica – many of which have been developed. But beyond oil and gas, Malaysia's mining sector is quite small: it generates less than 0.5 per cent of GDP, directly employs only about 11,000, and production trends are mostly downwards.[122]

Tin output has declined with the exhaustion of high-grade deposits. Malaysia's annual bauxite production rose from negligible levels to over 20 Mt in just two years and briefly surpassed Australia as China's major supplier of bauxite in 2015. Production collapsed when a moratorium on bauxite mining was introduced in early 2016 for environmental reasons.[123]

Gold production slumped after the closure of some mines and government action to control unregulated deforestation and road construction.[124] Copper and silver production stopped with the closure in 1999 of the Mamut mine in Sabah. Iron ore output peaked in 2012 and then went into a steep decline. Output of manganese ores peaked around the same time before going into a gentler decline, though production is still significant in global terms.[125]

These trends are also apparent in production of some metals. Production of crude steel, for example, has been declining for some years driven by competition from cheaper and better Chinese product (Table 5.2).

Similarly, refined tin production is now dependent on imported tin concentrate (Table 5.3), as is copper production: Malaysia is Australia's third largest market for copper ores and concentrates. Aluminium production is the main exception: production has increased rapidly over recent years.

Malaysia's minerals policy is set out in the National Mineral Policy (January 2009). The main policy aim is to create a positive business environment for exploration, sustainable development and utilisation of mineral resources using modern technology supported by advanced research capabilities. A key feature has been encouraging state governments to make more land available for exploration and mining development; intensify resource investigation and mapping, including for offshore resources; and harmonise state mineral legislations. As at late 2017, all Malaysian states except Sarawak had promulgated new mineral laws based on the national template.[126]

Judging by the generally sluggish state of the sector, the policy has not been particularly attractive for foreign miners.

Table 5.2

Malaysia: Trends in iron ore and steel

Source: World Steel Association, *Steel Statistical Yearbook 2018*

Year	Iron ore output Mt	Iron ore imports Mt	Apparent steel use per capita kg crude steel use equiv.	Crude steel production Mt
2008	0.98	3.01	364.2	6.42
2009	1.47	2.52	279.9	5.35
2010	3.56	3.20	343.9	5.69
2011	8.08	2.85	334.5	5.94
2012	12.14	3.29	355.6	5.61
2013	12.13	1.71	393.3	4.69
2014	9.62	3.81	387.7	4.32
2015	1.63	14.74	378.5	3.78
2016	1.91	22.97	382.4	2.76
2017	2.59	21.91	347.2	3.22

Note: Apparent steel use is domestic production plus net direct imports.

Table 5.3

Malaysian production and trade in tin

Source: **malaysianminerals.com**

Year	Tin concentrate production kt	Imports tin concentrate kt	Refined tin production kt	Local consumption kt	Exports of tin kt
1990	28.5	21.7	42.7*	3.1	52.7
2000	6.3	19.3	26.2	5.6	20.6
2010	2.7	30.6	38.8	2.9	33.7
2015	4.1	32.0	30.3	1.9	38.3
2016	4.2	30.5	26.8	2.2	27.5

Note: * refers to 1991 production; kt is one thousand tonnes.

One reason might be that:

> Under the states' mineral laws there are no provisions relating to appeals if the state authority has refused an application for an exploration, prospecting or mining licence; a new application is required. For renewal of a mining lease, the applicant may appeal to the state authority if dissatisfied with the authority's decision. In all cases, an appeal to the courts is possible.[127]

Another would be growing environmental concerns. The decision to suspend bauxite mining in 2016 was the result of massive localised environmental damage, an upsurge in illegal mining, community violence linked to the contamination of land and waterways, and the inability of state-level authorities to enforce their own regulations.[128] These effects rippled through Malaysian society and the political system. Similarly, alleged environmental damage attributed to the Lynas Advance Materials Plant (LAMP) in Kuantan, which processes rare earths, has received political and media coverage concerning the disposal of its waste.[129]

Yet another reason, and probably the most important, is that Malaysia rates poorly in terms of its international attractiveness for mining investment. Out of 109 jurisdictions included in the 2016 Fraser Institute Survey of Mining Companies, Malaysia rated in the fourth quartile on investment attractiveness and was at the bottom of that quartile measured by its best practice mineral potential. This is somewhat puzzling given that some of its mining policies and approaches were perceived to be fairly benign and some – like taxation, disputed land claims, infrastructure and community development – were perceived as good.[130] Malaysia was dropped from the 2017 and 2018 Fraser Institute surveys because of insufficient responses from mining executives. The clear inference from this is that there are better options for mining investment, and that trading in minerals and energy is generally a far better option for international mining companies than investment.

Ways to strengthen trade and investment in mining

By and large, Malaysia has a good business environment and is one of the standouts in the region for ease of doing business. This is conveyed in various surveys of government effectiveness, regulatory quality and control of corruption. It is also suggested by substantial reforms including simplified procedures to start a company, strengthening corporate insolvency mechanisms and other measures to streamline the regulatory framework.

From an Australian mining perspective, most of the obvious barriers to trade have been removed. Commercial links were given a boost with the completion of the ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA) and then the Malaysia-Australia Free Trade Agreement (MAFTA). Just about all tariffs, including remaining tariffs on minerals and metals manufactures, have been eliminated and more liberal rules of origin have been introduced.[131] Table 5.4 provides examples of products where tariffs have been removed along with average exports over the four years from 2006 to 2009 (before AANZFTA) and since MAFTA (2013-2018). Exports of these goods remain modest, but these agreements appear to support a continuing, and possibly strengthening, market presence in mining equipment in Malaysia. The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) adds somewhat to this

Table 5.4

Malaysia: WTO tariffs on selected products that may include mining equipment

Source: WTO Consolidated Tariff Schedules data base; Malaysia's HS MAFTA Schedules; UN Comtrade Database

			Average exports US$ million	
Code	Product	WTO tariffs %	2006-2009	2013-18
8426	Ships' derricks, cranes, works trucks fitted with a crane, etc.	0, 5, 10, 20 Average 6.7 (Bound 12.9)	3.3	9.8
8429	Self-propelled bulldozers, graders, levellers, scrapers, mechanical shovels, excavators, etc.	5, 20, 11.7 Average 12.7 (Bound 13.1)	0.9	2.9
8430	Other moving, boring, etc. machinery, pile drivers and pile extractors, for earth, minerals or ores	5, 10, 20 Average 15.0 (Bound 17.2)	2.5	2.4
9015	Surveying, hydrographic, geophysical, etc. instruments and appliances	2.5, 5 Average 3.8 (Bound 10.8)	0.8	3.3

strengthening presence through Malaysia's commitment to bind tariffs on mining equipment at zero where Australian products already have duty free access.

Malaysia's many non-tariff measures (NTMs) present a harder problem for trade negotiators than tariffs given that they are often embedded deeply in regulatory arrangements, can lack transparency and evolve over time.

Most of these measures apply to trade in food, but they apply equally to manufacturing sectors that are considered to be import-sensitive or strategic. Some are relevant to mining and METS, such as export duties on mineral ores, certification and labelling requirements for imported gas pipes and equipment, non-automatic import licensing on alloy steel products, and non-automatic export licensing on some minerals.

Under CPTPP, Malaysia has made some progress on NTMs by agreeing not to introduce new export taxes and committing to eliminate those which currently exist. Over time this should increase certainty for Australian mining and energy companies. Malaysia's agreement not to provide financial support for state-owned enterprises in ways that give them an unfair advantage also could be important over time. This will need to be tested, but is a useful start.

Barriers to services are at least as tricky to deal with as NTMs in trade negotiations. Malaysia's services sector is more liberal than India's or Indonesia's and in some respects might be seen as being on a par with China's in areas that are broadly relevant to mining (Table 5.5). The restrictions are mainly on limits on foreign equity and on people movement (Table 5.6).

Table 5.5

Malaysia: Services trade restrictiveness, selected countries, 2018

Source: OECD Services Trade Restrictiveness Indicators

	Accounting	Engineering	Legal	Road freight transport	Rail freight transport
China	0.754	0.254	0.532	0.273	0.298
India	0.827	0.303	0.886	0.315	1.000
Indonesia	0.708	0.301	0.890	0.467	0.357
Malaysia	0.286	0.299	0.668	0.355	0.325

Note: The scale goes from zero to one with one being the most restrictive.

Table 5.6

Malaysia: Services trade restrictiveness by type of restriction, 2018

Source: OECD Services Trade Restrictiveness Indicators

	Restriction on foreign equity	Restriction on prople movement	Other discriminatory measures	Barriers to competition	Regulatory transparency
Accounting	0.122	0.118	0.021	0.008	0.018
Engineering	0.102	0.124	0.027	0.018	0.027
Legal	0.352	0.215	0.029	0.033	0.040
Road freight transport	0.233	0.036	0.061	0.012	0.012
Rail freight transport	0.111	0.036	0.026	0.117	0.034

Note: The scale goes from zero to one with one being the most restrictive.

Foreign equity restrictions have lessened in the past decade but remain in sectors considered to be of strategic national interest, including energy, water, ports, telecommunications, and sections of the financial sector. Examples of restrictions on people movement are requirements for foreigners to take local examinations to practice accountancy, establish residency, operate independently of Malaysian partners or serve as directors or shareholders of specific types of consulting companies.

MAFTA introduced more generous provisions for Australian mining-related services and other services of interest to METS companies (Tables 5.7 and 5.8). There are no limitations on market access for cross border supplies and consumption abroad (Modes 1 and 2) and earlier restrictions under commercial presence (Mode 3) and movement of labour (Mode 4) have been loosened:

- Australian firms providing services incidental to mining and operating in Malaysia can have shareholdings of up to 51 per cent

Table 5.7

MAFTA: Malaysia's commitment on services provided by Mode 3 (commercial presence)

Source: MAFTA Schedules for Malaysia at **www.dfat.gov.au**

Service	Limitations on market access and national treatment
All services for which commitments are made unless otherwise indicated (that is, horizontal commitments)	Approval required for acquisitions of a foreign single interest of greater than 15 per cent, an aggregate interest of 30 per cent, an interest exceeding 10 million Malaysian Ringgit (around $3.5 million), or any acquisition resulting in ownership or control passing to a foreign interest, including through joint venture or other arrangements. Preferences granted to Bumiputera interests are unbound. Corporations with government interests are to give first consideration to service suppliers in which the government has an interest.
Engineering services, including engineering design services	Up to 30 per cent foreign equity participation. Foreign directorship is not allowed. Engineering services must be authenticated by a registered professional engineer in Malaysia.
Computer Services	No limitations.
Services incidental to mining	Only through a representative office or locally incorporated joint venture corporation with Malaysian individuals or Malaysian controlled corporations or both. Foreign shareholding in the joint venture corporation shall not exceed 51 per cent.
Services incidental to manufacturing	No limitations.
Related scientific and technical consulting services (inc. minerals exploration)	Only through a representative office or locally incorporated joint venture corporation with Malaysian individuals or Malaysian controlled corporations or both. Foreign shareholding in the joint venture corporation shall not exceed 51 per cent.
Construction and related engineering services	None except through a representative office, regional office or locally incorporated joint-venture corporation with Malaysian individuals or Malaysian controlled corporations or both. Aggregated foreign shareholding in the joint venture corporation shall not exceed 49 per cent. Foreign construction companies that are not locally incorporated can carry out construction projects jointly with local contractors, with conditions specified according to financing arrangements and availability of local expertise.

- Company executives, specialist staff and accredited professional experts are allowed to live and work in Malaysia for up to 10 years. The number of Australian specialists that can transfer to Malaysia has been increased. In some instances, spouses and dependents can also work
- Installers and servicers of equipment can stay for up to six months. Business visitors (goods sellers and investors) can enter and stay for up to 90 days.[132]

Direct investment barriers can be tricky to navigate. Restrictions on foreign investment have been substantially liberalised to help Malaysia move 'up the value chain' in manufacturing and services, but the government has retained authority to review and approve investments, and burdensome regulations remain.

At the same time, the Malaysian Government actively promotes foreign investment particularly through the Malaysian Investment

Table 5.8

MAFTA: Malaysia's commitments on services provided by Mode 4 (movement of natural persons)

Source: MAFTA Schedules for Malaysia at **www.dfat.gov.au**

Service	Limitations on market access and national treatment
All services for which commitments are made (that is, horizontal commitments)	National treatment unbound except: ▪ Intra-corporate transferees can stay up to 10 years. Eligible transferees are senior managers and up to three specialists or experts per organisation (or more, subject to market testing and training considerations) ▪ Specialists, experts and professionals with appropriate credentials can stay up to 10 years ▪ Business visitors can stay up to 90 days ▪ Installers and servicers of machinery and equipment can stay up to six months.
Engineering services, including engineering design services	Unbound except for professionals with appropriate credentials. Engineering services must be authenticated by a registered professional engineer in Malaysia.
Computer Services	As specified in the horizontal commitments.
Services incidental to mining	
Services incidental to manufacturing	
Related scientific and technical consulting services (inc. minerals exploration)	
Construction and related engineering services	

Development Authority (MIDA). Relevant ministries have broad discretionary powers over assessing investment projects and negotiating tax and related incentives for foreign investors. Companies investing in Malaysia, including in the minerals sector, can be given generous tax incentives, including full tax exemptions for up to 15 years for firms investing in priority industries or regions, along with assistance in navigating, and in some cases waiving, complex regulations and policies. Also available are double deduction tax incentives, investment tax allowances and reinvestment allowance schemes. Australia's Lynas rare earths processing plant is an example of a foreign company benefiting from such concessions.[133]

Foreign equity of up to 100 per cent is allowed in extracting and processing minerals. In practice, foreign investments in all sectors typically involve joint venture arrangements with local partners, especially Bumiputera (ethnic Malays and other indigenous ethnicities in Malaysia), who are accorded preferential treatment in aspects of foreign investment and contracts with

the government and government-linked enterprises. Joint ventures are mandatory in upstream oil and gas. Petronas typically requires foreign participation in the form of production-sharing contracts involving partnerships with local firms with foreign equity stakes not exceeding 49 per cent.[134]

Foreign participation in future privatisation of electricity generation also seems possible. Typically, Bumiputeras hold at least 30 per cent of a privatised entity. Foreign participation is limited to 25 per cent of total equity, though up to 49 per cent is permitted on a case-by-case basis.[135]

Policy cooperation

Building on successful cooperation over many years, the following initiatives could be effective in deepening engagement in mining- and energy-related areas:

- Australia, Malaysia and the rest of Southeast Asia are grappling with how digital technologies such as big data, analytics, cloud and blockchain can be used to address energy-sector challenges. It would be good to learn from each other.
- Malaysia, along with some other Southeast Asian countries like the Philippines, is investing in HELE coal-fired power plants. There is a potential synergy between Australia as a supplier of coal suitable for use in such power plants, countries that need the power and countries that have the technology to build the power plants. This point has been made at various points in this study and warrants careful examination.
- For different reasons, Australia and Malaysia have to manage widespread negative community perceptions of HELE technology. This may require different approaches in each country, but there would be value in coordinating approaches, or at least swapping ideas, on issues that might range from keeping the public informed about the availability and effectiveness of low-emission technologies to fully articulated public diplomacy initiatives.
- Malaysia, like Indonesia, Thailand and Vietnam, is starting to transition from state-run electricity monopolies to more open systems with independent power producers. Australia embarked on this transition about 30 years ago. Malaysia is looking closely at Australia's experience, along with that of Singapore's and the United Kingdom's. There would be mutual value in considering what regulations and policies worked, why they worked, what could have been done better, and what should be avoided.
- Compared with many other countries in ASEAN, Malaysia's non-oil and gas mining sector is subdued and not a national priority. This obviously implies that Australian mining companies investing in Malaysia have to be strategic in their choices. But it also begs the question of whether there might be some value in engaging in a dialogue on how METS in particular might play a key role in lifting not only metrics like mining productivity and returns on capital but also issues like managing the effects of mining on the environment and surrounding communities – the issues that increasingly determine whether mining ventures proceed or not.

CHAPTER 6

The Philippines

KEY POINTS

- Australia's trade with the Philippines, including in minerals, is modest. Total exports of minerals and basic metals to the Philippines were $0.8 billion in 2018. They were mainly precious metal ores and concentrates, copper ores and concentrates and coal.
- The Philippines depends heavily on coal-fired power – it contributes nearly half of all electricity generated in the Philippines. From 2016 to 2040, over 43,000 megawatts (MW) of additional capacity, including 25,000 MW for baseload capacity will be needed to meet demand. Coal will be a key part of the response; almost 10,000 MW of new coal capacity is scheduled to be commissioned from 2017 to 2022, one of the largest rollouts of coal-fired power generation in Asia.
- The bulk of the Philippines' coal imports are from Indonesia (85 per cent in 2018). Australia's share has been between around 7 and 9 per cent since 2015. Like many Asian countries, the Philippines is seeking a low carbon future while maintaining its energy security and access to cheap, reliable baseload power. This presents opportunities for Australian coal exports.
- The Philippines is moving to meet fast-growing demand for steel by increasing domestic production rather than just by increasing imports. This could present opportunities for Australian iron ore and metallurgical coal exports.
- The Philippines is highly mineralised but development of the mining industry is hamstrung by resources nationalism, environmental and community concerns, and an unpredictable regulatory environment. A moratorium on permits for new mining projects to address some of these concerns, implemented in July 2012, remains in place.
- Several Australian METS companies are active in the Philippines, but numbers have been thinned out by the unpredictability of the market and uncertain profits. Future prospects for METS companies depend on the success of government reforms to develop modern, sustainable mining.

The Philippines archipelago is one of the world's most intensely mineralised regions. It is richly endowed with gold, copper, nickel, chromite and sub-bituminous coal resources, and is the world's second largest producer of nickel, behind Indonesia. Its resources, however, remain largely untapped and the economy relies heavily on imports for its manufacturing industries.

In 2018, mining and minerals products (excluding oil and gas) accounted for around 4.5 per cent (US$4.7 billion) of exports and 4.2 per cent (US$6 billion) of imports. Exports were mostly copper (US$1.8 billion), gold (US$1.1 billion) and nickel (US0.8 billion). Imports included coal (US$1.8 billion), copper ore (US$0.7 billion) and iron ore (US$0.3 billion). According to the Philippines Mines and Geosciences Bureau, minerals and mineral products accounted for just 0.5 per cent of employment and 0.6 per cent of GDP in 2018.[136]

Mining has been stifled by resources nationalism, and environmental and other community-based sensitivities about onshore exploitation of mineral resources.

The economy is performing well but faces headwinds (Box 6.1). Per capita GDP is still lower than most other emerging market economies, including Indonesia. The Philippines lags behind other large ASEAN economies in rankings of competitiveness and on most business performance measures. Lifting the living standards of its young, growing population – projected to increase from 108 million in 2019 to 125 million by 2030 – requires sustained growth. This in turn requires substantial investments in 'hard' and 'soft' infrastructure and reforms to liberalise markets and generally improve the business climate.

Australia's interests in the Philippines

The Philippines was Australia's 23rd ranked trading partner in 2018 and sixth in ASEAN, well behind other major ASEAN economies. Trade with the Philippines has been growing at rates comparable with the larger ASEANs, though it is volatile in total and in composition and trending upwards more slowly than trade with Vietnam, Cambodia and Myanmar.

In 2018, Australia's total trade with the Philippines was valued at $4.7 billion. Australian exports were $3.1 billion and imports $1.6 billion. Services trade was $1.9 billion in 2018. The principal exports were education-related travel ($0.5 billion), wheat ($0.4 billion), precious metal ores and concentrates ($0.3 billion), copper ores and concentrate ($0.2 billion) and coal ($0.2 billion). Total exports of minerals and basic metals were $0.8 billion in 2018 (Table 6.1). Personal travel excluding education ($0.5 billion) and professional, technical and other business services ($0.2 billion) were the main imports. Services – predominantly travel-related – typically account for a substantial proportion of bilateral trade.

Precious metal and copper ores and concentrates are Australia's leading minerals exports to the Philippines and have averaged nearly $500 million per annum since 2010 (Table 6.1). Australia exports some thermal coal, a little iron ore and modest amounts of basic metals manufactures. The bulk of the Philippines' coal imports are from Indonesia (85 per cent in 2018); Australia's share has been between 7 and 9 per cent since 2015. Brazil has provided almost all iron ore imports since the mid-2000s (3.6 million tonnes and US$0.3 billion in 2018). In the past decade,

BOX 6.1

The Philippines' economy

In the half century to 2010, the Philippines economy grew more slowly than its ASEAN peers. Since then, the Philippines has begun to catch up. GDP growth has averaged over six per cent per year and shown resilience in the face of global headwinds.

Total trade (exports plus imports) is around 70 per cent of GDP. Manufactures are around 60 per cent of exports and 55 per cent of imports. Services – predominantly business-related – account for around 35 per cent of all exports: the Philippines is a major exporter of business process outsourcing. Transport and travel services make up about a quarter of imports. Remittances from Filipinos working overseas contribute importantly to the country's external account: they are around 10 per cent of GDP.

Macroeconomic fundamentals are generally sound, with a solid fiscal framework, a benign inflation environment, and a well-capitalised banking system, though the unemployment rate, at around 5¼ per cent, is high relative to its ASEAN peers. Real GDP growth is projected to be around 6.5 per cent in 2019 and 2020, with public investment a key driver. The Government's *Build Build Build* infrastructure program will contribute substantially to growth. Longer-term goals, set out in *Ambisyon Natin 2040*, include tripling per capita incomes and eradicating poverty by 2040. These will require annual growth continuing to average at least six per cent.

The Philippines' economy is vulnerable to tighter global financial conditions, surges in global financial volatility and lower growth in China.

There are, however, significant downside risks. The economy is vulnerable to tighter global financial conditions, surges in global financial volatility and lower growth in China. On the domestic front, the sustainability of the government's commitment to infrastructure spending relies on success with planned reforms covering personal income, value added and excise taxes, avoiding planning and implementation bottlenecks, and astute budgetary and fiscal policies.

Source: : IMF (International Monetary Fund), *World Economic Outlook,* April 2019; World Bank data base, **data.worldbank.org/**, UNCTADstats

Table 6.1

Australian exports of minerals and basic metal manufactures to Philippines, 2018

Source: ITC Trade Map Database

Product description	**Exports** ($m)
Coal; briquettes, ovoids, similar solid fuels manufactured from coal	167.2
Iron ore and concentrates	12.9
Non-ferrous metal ores, of which	517.2
... precious metal ores and concentrates	(288.2)
... copper ores and concentrates	(228.0)
Non-metallic and other minerals (not confidential)	5.2
Basic iron and steel manufacturing	0.2
Basic non-ferrous metal manufacturing, of which:	53.9
... unwrought lead, lead waste, lead powders and flakes	(38.2)
... unwrought zinc	(13.7)
Total ABS data for minerals and basic metal manufactures	**756.6**
Confidential items estimated from selected ASEAN import data, of which:	Around 40
... salts, including table salts, denatured salt and pure sodium chloride	(20)
... silica and quartzite sands	(19)
... titanium ores and concentrates	(1)
Total including estimated confidential items	**Around 800**

Note: Minerals and basic metal manufactures are defined as in the notes to Table 1.1. Exports of products that are confidential or partly confidential in ABS statistics are estimated from partner import data as outlined in the notes to Table 2.2.

iron ore was only exported from Australia in 2013 (20,000 tonnes) and 2018 (80,000 tonnes). In 2018, exports of basic metals manufactures were valued at $54 million and were predominantly unwrought lead and zinc. Australia also imports some mining commodities from the Philippines – nearly all gold – valued at $81 million in 2017 and $77 million in 2018.[137]

METS trade with the Philippines

Several Australian METS companies are active in the Philippines supplying equipment and services either directly to mining companies or through agents or distributors.[138] Survey data of METS activity in the Philippines are sparse and somewhat dated but at times suggest significant activity. In 2015, for example, Austmine reported that one-third of exporting METS firms exported to the Philippines.[139] More recent industry advice suggests that this level of exporting may have reduced. Australian METS companies have been thinned out by the unpredictability of the market and uncertain profits.

The Australian METS presence in the Philippines has not translated into high sales. Exports of manufactured goods that

Several Australian METS companies are active in the Philippines supplying equipment and services either directly to mining companies or through agents or distributors.

could include mining equipment were around $45 million in 2018. They included pumps and parts of pumps; sorting and screening machinery for mineral ores, cranes and derricks, and parts for these machines; and various types of scientific and technical equipment. Imports from the Philippines of possible mining equipment include pumps and other machinery. There is significant two-way trade in explosives: 18 per cent of Australia's exports of detonators and fuses go to the Philippines, and 25 per cent of Australia's prepared explosive imports were from there in 2018 (Table 6.2).

Available data for services exports that may include mining services are also consistent with modest Australian engagement with the Philippines mining sector. Table 6.3 lists services exports that might be relevant to the METS sector. 'Other business services' includes a range of professional and technical services and is the most likely item to include mining services: trade has fallen from above $60 million in 2015 to less than $30 million in 2018.

Services export data exclude services delivered by Australian affiliated companies in the Philippines (commercial presence), which is generally the principal mode for delivering mining services. The incomes from these services are reflected in outward foreign direct investment (FDI) data but there is little data on investment by country and industry. On the basis of available survey and Austrade information, a significant proportion of the approximately $1 billion of Australian FDI in the Philippines (see below) and of the approximately $90 million of income from these investments is attributable to mining-related services generated by Australian companies with a commercial presence there.

Table 6.2

Australia's trade with the Philippines that could include mining equipment, 2018

Source: ITC Trade Map Database

Product description	Exports ($m)	Imports ($m)
Basic chemical manufacturing/explosives, of which:	2.1	6.5
... prepared explosives (excluding propellant powders)		(6.5)
... safety fuses, detonators etc	(2.1)	
Rubber manufactures and headgear, of which:	1.4	0.0
... conveyor, transmission belts	(1.3)	
Railway manufacturing, of which:	2.4	0.1
... electrical signalling, safety equipment etc	(1.0)	
... track construction material of iron or steel	(0.8)	
... parts of locomotives and rolling stock	(0.5)	
Professional, scientific, electronic equipment, of which:	2.7	1.0
... surveying instruments and applicances	(1.0)	(0.1)
... instruments for measuring and checking	(0.7)	(0.2)
... regulating or controlling instruments and apparatus	(0.6)	(0.3)
... instruments for physical and chemical analysis	(0.3)	(0.3)
Electrical equipment, of which:	1.9	0.8
... industrial laboratory or electric furnaces and ovens	(0.6)	(0.2)
... electric generating sets and rotary converters	(0.5)	(0.1)
... electric motors and generators (excluding generating sets)	(0.4)	(0.4)
Iron and steel articles	0.2	0.0
Machinery and mechanical appliances, of which:	31.4	14.2
... various pumps and parts of pumps	(8.9)	(4.7)
... machinery for filtering or purifying liquids and gases nes.	(0.3)	(4.7)
... machinery for sorting, screening etc. earth, ores or minerals; machinery for agglomerating mineral fuels, plastering materials; machinery for forming foundry moulds	(6.3)	(0.1)
... ships' derricks; cranes, including work trucks fitted with a crane	(5.6)	(0.0)
... parts for cranes, and for sinking, sorting, boring etc machinery	(7.1)	(1.6)
Total for possible METS products	**42.2**	**29.1**
Confidential items estimated from selected Philippines import data:		
... self-propelled front-end shovel loaders	2	
Total including estimated confidential Items	**Around 45**	

Note: Possible METS products are as defined as in Table 1.6. Exports of items confidential in ABS statistics are estimated from partner import data. On the procedure used and products covered by confidentiality restrictions, see the notes to Tables 2.2 and 2.4. n.e.s. means not elsewhere specified.

Table 6.3

Selected Australian services exports to the Philippines

Source: ABS, *International Trade: Supplementary Information, Calendar Year 2018*, Catalogue 5368.0.55.004

Product description	**2015** $m	**2016** $m	**2017** $m	**2018** $m
Maintenance and repair servies, n.i.e.	1	2	8	-
Construction services	2	3	4	-
Financial services	2	5	2	1
Intellectual property charges, n.i.e.	-	-	1	1
Telecom, computer and information services	32	24	20	34
Professional, technical and other business services	62	47	30	29

Note: n.i.e. means not included elsewhere.

The investment relationship

In the past decade, the Philippines has become a significant destination for FDI from Europe, America and other Asian countries, including Japan, Singapore and China. Inward FDI stocks rose from 13 per cent of GDP in 2010 to 25 per cent in 2018.[140] The manufacturing sector accounted for 57 per cent of approved inflows from 2010 to 2017.[141] Filipino companies have also become active investors abroad. Outward investment stocks increased from 3 per cent of GDP in 2010 to 16 per cent in 2018.

The Philippines may have growing global investment relationships, but the Australian-Philippines investment relationship remains undeveloped. Philippines investment in Australia is negligible, and the Philippines remains a low-ranked destination for Australian investment. However, the *ASEAN Investment Report 2018* reports more than 300 Australian companies in the country, including miners, manufacturers, banks and other financial services providers, and telecommunications and information technology companies.

Australian mining-related companies have had a presence stretching back to the nineteenth century. Among Australian mining and METS companies now in the Philippines, BHP has business processing operations, Orica manufactures packaged explosives, and OceanaGold, Red 5 and Medusa Mining mine for gold.

Australia's limited investment presence reflects an unfavourable environment in sectors of interest to Australian investors, especially in resources. ABS statistics show that the stock of Australian FDI in the Philippines was $1.1 billion in 2018 and that net FDI flows from Australia to the Philippines were between $80 and $90 million in 2016, 2017 and 2018. That said, there was a 'mega-deal' in 2017 involving Australian interests in the Philippines – the $1.3 billion purchase of a 31.7 per cent equity stake in the Energy Development Corporation (EDC) by a consortium of Macquarie Bank's Asia infrastructure funds and Singapore's sovereign wealth fund GIC. EDC is the principal supplier of geothermal power in the Philippines and the world's largest geothermal company and also holds hydro, wind and solar power assets.[142]

Mining: a fraught history

The Philippines mining industry is characterised by sporadic development. In the 1980s, it nearly collapsed.

Little headway was made with tapping the Philippines' vast resources until mines were established in the early twentieth century under US administration. Gold mining in particular grew strongly and around 40 mining projects, largely American owned, were operational in the years leading up to the Second World War.

Mining activity, mainly for gold and copper, expanded in the newly independent Philippines after the war and peaked in the 1970s when mineral products contributed over 20 per cent of exports. Many mines closed in the early 1980s when gold and copper prices crashed. Government attempts to revive the industry, including through the Ramos government's policy roadmap and the Mining Act of 1995, produced mixed outcomes.

Under the Act, the state owns all mineral resources and controls and supervises exploration, development, utilisation, processing and conservation. It also allows foreigners to operate; the constitutional validity of this provision was not confirmed by the Philippines Supreme Court until 2004. But the overall aim of the Act – to open the way for the orderly development of the Philippines' mineral potential – has not been achieved.

By the early 2000s, minerals accounted for only 2 per cent of exports. Production and exports have risen since then, but are still very modest given the quality of resource endowments. In 2018, for example, the value of metallic mining output was around US$2.35 billion and almost wholly accounted for by nickel sulphides and ores (US1.06 billion), gold (US$0.86 billion) and copper (US$0.40 billion).

The only other metals mined were silver (US$0.02 billion) and chromite (US$0.01 billion). Gross production from non-metallic mines and quarries (excluding coal) was around US$1.15 billion in 2017.[143]

Resources nationalism, regulatory restrictions and environment concerns hold back growth of the industry. Fears about health and safety on and around mine sites, lack of remediation of abandoned mines and disasters involving mine wastes and tailings dams are common. Several initiatives to close or suspend mining activities are motivated by environmental concerns. An example is the ban since 2017 on open-pit mining for copper, gold, silver and complex ores (though not nickel). This has impacted Australian mining operations: Red 5 has suspended operations at its Siana gold project, and OceanaGold's Dipidio gold-copper mine in North Luzon continues to operate pending resolution of a suspension order.[144]

In support of local communities, the Catholic Church and several non-government groups are strongly opposed to mining. Rampant illegal small-scale mining, lengthy and tedious processes for obtaining mining exploration permits, potentially corrupt and opaque legal processes,[145] provincial mining bans and uncertainty about mapping of 'no-go' areas for mining add to challenges faced by the industry.

A moratorium on permits for new mining projects to address some of these concerns, implemented in July 2012, remains in place and restricts industry development. Removing it has been held up by the President's approval of 'no-go' zone maps[146] and by delays in passing a new mining revenue law. A new fiscal regime for the industry, once in place, is expected to include

mining taxes including royalty and windfall margin-based taxes of up to 10 per cent. These will be in addition to a doubling in the excise on mining operations in January 2018 from 2 to 4 per cent.[147]

These factors collectively handicap investment in the industry. The Fraser Institute's 2018 Mining Survey ranked the Philippines as the fifth least attractive policy regime of 83 jurisdictions for mining investment decisions. It ranked in the bottom half for all criteria in all jurisdictions covered and all respondents highlighted infrastructure, security and land claims disputes.[148]

Energy: a limited relationship but with potential

Coal-fired power contributes nearly half of all electricity generated in the Philippines, rising from negligible levels in the mid-1990s. It includes half of all electricity generated in Luzon, the largest and most heavily populated island, and over 40 per cent in the Visayas group of islands in the central Philippines and in Mindanao. The energy profile also includes natural gas for the grid in Luzon, geothermal power generation capacity, especially in the Visayas group of islands, and hydroelectric power in Luzon and Mindanao (Chart 6.1).

The Philippines energy-related industries face many challenges. The government's *Philippine Energy Plan (PEP) 2017-40*, which is nested within its *AmBisyon Nation 2040* vision, lists energy security and access, a low carbon future and stronger international partnerships among its key strategic directions. The 'nine point energy agenda' aims to raise access to electricity from 90 per cent of Filipinos in 2016 to 100 per cent by 2022. A key challenge is burgeoning growth in demand for electricity: it is expected to grow at an annual average rate of 5.7 per cent from 2016 to 2040. To meet it, over 43,000 megawatts (MW) of additional capacity will need to be installed, including 25,000 MW for baseload capacity.

Coal will be a key part of the response. Almost 10,000 MW of new coal capacity is scheduled to be commissioned from 2017 to 2022 – one of the largest rollouts of coal-fired power generation in Asia. Natural gas will be another key part. The Philippines Government has flagged that it is likely to turn increasingly to liquefied natural gas (LNG) imports if new gas resources do not come on stream when gas production from the current source – the Malampaya field off the west coast of Palawan – begins to decline in the mid-2020s.[149]

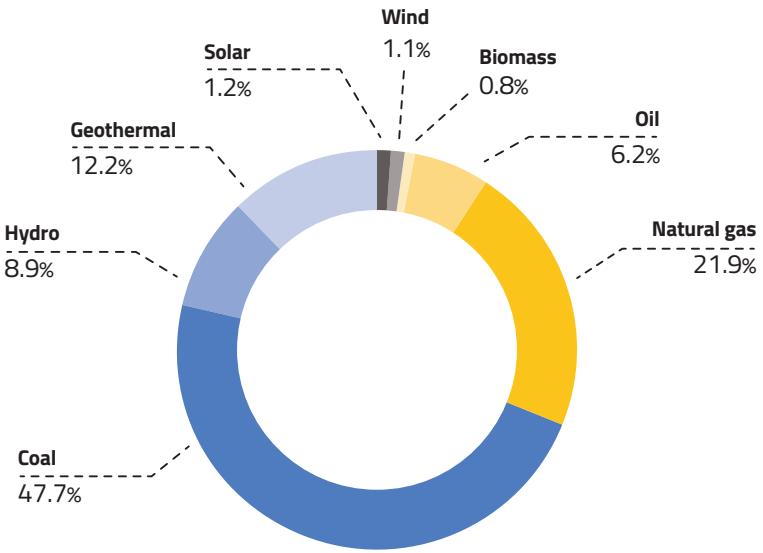
Renewables are dominated by geothermal and hydro, which accounted for around 24 per cent of electricity generated in 2016 and 33 per cent of total capacity. Other renewables – solar, wind and bio-mass – contributed a little over 3 per cent of electricity generated. Further growth in renewables capacity and generation will depend principally on the evolution of policies on pricing, subsidies, the effectiveness of non-price measures and also international assistance. In this latter respect, the Philippines stands to receive substantial assistance from developed countries under the Paris Climate Change Agreement, which it ratified in 2017, and under which it aims to reduce greenhouse gas emissions by 70 per cent relative to business-as-usual in the three decades to 2030.

The imperatives of affordability and energy security underwrite a predominantly technology neutral approach to energy policy, while at the same time encouraging investment consistent with addressing

Chart 6.1

Philippines power mix 2016

Source: Department of Energy, Philippines, *Philippine Energy Plan, Sectoral Plans and Roadmaps 2017-2040*



emissions and making 'best endeavours' to achieve Paris Agreement objectives. But there is a straightforward bottom line: competitively priced fossil fuels are indispensable for securing Philippines' energy needs and will continue to be indispensable well into the future, irrespective of how policies unfold to promote renewables.[150]

Challenges for mining and METS

Measures of competitiveness and business conditions have consistently placed the Philippines on the bottom rung of business indicators of the larger ASEAN economies in the past decade. Rankings have been held back by weak institutions and infrastructure; market inefficiencies, especially for goods; difficulties in starting businesses, enforcing contracts and getting credit; lack of protection for minority investors; and customs inefficiencies:

- The World Economic Forum's *Global Competitiveness Report 2018* ranked the Philippines 56th out of 140 countries and 5th among ASEAN economies[151]
- In the World Bank's *Ease of Doing Business* and *Logistics Performance Index* rankings, the Philippines lagged other major ASEAN economies. The ranking for ease of doing business fell from 99th in 2017 to 113th in 2018 and 124th in 2019, when it ranked 7th in ASEAN ahead of Myanmar, Laos and Cambodia.

Corruption remains a major concern and raises the effective costs of many imports. The United States Trade Representative's *2019 National Trade Estimate Report on Foreign Trade Barriers* reports unnecessary (and costly) delays resulting from irregularities in the valuation process, 100 per cent inspection and testing of some products, and customs officials seeking unrecorded facilitation fees.[152]

On the credit side, a start has been made in developing a legal framework and institutions for competition policy, including competition legislation in 2015 and establishing the Philippine Competition Commission in 2016. The World Trade Organization (WTO) assesses, however, that '… the overall competition environment is still considered weak due to restrictive regulations on trade and investment, barriers to entrepreneurship and state control'.[153]

Tariffs are not a barrier to trade in minerals and METS for Australian exporters to the Philippines. Under the ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA), all tariffs on minerals and potential mining equipment have been removed, providing preferences of around one percentage point relative to the weighted average tariff.

The Philippines imposes extensive non-tariff measures. A 2016 study for the Economic and Research Institute for ASEAN and East Asia (ERIA) found that all merchandise imports into the Philippines were subject to non-tariff measures (NTMs). Mineral products and mining equipment imports are affected by a range of technical barriers, including authorisation, registration, inspection, testing (especially for fuels and mining equipment), and import licencing requirements; regulations affecting payments; government servicing charges; customs valuation processes; measures relating to state trading enterprises; and export related measures.[154]

The government supports ASEAN-wide cooperation to address NTMs that restrict trade and is moving to address at least some of them, including in relation to customs processes. The 2016 Customs Modernisation and Tariff Act aims to modernise and expedite customs rules and procedures and reduce corruption. Single window customs procedures, border agency cooperation and inspection controls are scheduled to be implemented in 2020.[155]

The Philippines has a generally more restrictive regime for services trade than other ASEAN economies covered by the OECD Services Trade Restrictiveness Index.[156] That said, in the past decade there have been substantial reforms, including provision for 100 per cent foreign ownership of banks and other financial institutions and reforms targeting consumer protection. Red tape affecting the tourist sector has been cut and specific commitments on services have been included in regional trade agreements, including AANZFTA, the ASEAN-Korea and ASEAN-China agreements, and the Philippines' bilateral agreement with Japan.[157]

AANZFTA includes liberalising commitments relevant to mining and related services. There is provision for commercial presence for metallurgical engineering, and for up to 100 per cent foreign equity in large-scale mining construction projects, oil and gas exploration and construction of power plants under the build-operate-transfer scheme. Up to 40 per cent foreign equity is allowed for coal exploration and development, and energy distribution services (Table 6.4).

AANZFTA commitments on movement of natural persons (Mode 4) also enable business visitors to stay for up to one year. Corporate transferees, investors in Philippine businesses, contracted service suppliers, technical specialists and investors in

Table 6.4

Philippines: AANZFTA commitments on services provided by Modes 1, 2 & 3

Source: AANZFTA schedules for the Philippines at **www.dfat.gov.au**

Category	Limitations on market access and national treatment
All services for which commitments are made (that is, horizontal commitments)	Commercial presence: where foreign equity is limited to a minority share, executives and managers must be Filipinos and the number of non-Filipino directors shall be proportionate to the aggregate share of foreign capital. Only Filipinos and corporations with at least 60 per cent local ownership may own land and lease public land. Foreign investors may lease only privately-owned land. All measures taken by local governments are unbound. All measures relating to permanent residents are unbound and are limited to obligations under the WTO General Agreement on Trade in Services (GATS).
All professional services	No foreign equity is allowed. Practice of a profession is limited to Filipino citizens, although there is provision for reciprocal rights.[159]
Engineering services	Commercial presence for metallurgical and sanitary engineering (but not mechanical and civil) is allowed.
Construction for large-scale mining projects covered by Financial and Technical Assistance Agreements (FTAA)	Up to 100 per cent foreign equity participation is allowed, provided that the requirements under the FTAA are met. A special contractor's license may be given to foreign contractors on a case-by-case basis.
Oil and gas exploration and development	Up to 100 per cent foreign equity participation is allowed provided there is Presidential approval.
Geothermal exploration and development	Up to 40 per cent foreign equity participation is allowed.
Coal exploration and development	Up to 40 per cent foreign equity participation is allowed.
Services related to energy distribution	Up to 40 per cent foreign equity participation is allowed.
Services related to power generation: construction of power plants under the build-operate-transfer (BOT) scheme	Up to 100 per cent foreign equity participation is allowed under the BOT scheme. A special contractor's license may be given to foreign contractors on a case-by-case basis.
Pipeline transport	Up to 40 per cent foreign equity participation is allowed.

Philippines businesses can stay for one year and apply for extensions.[158]

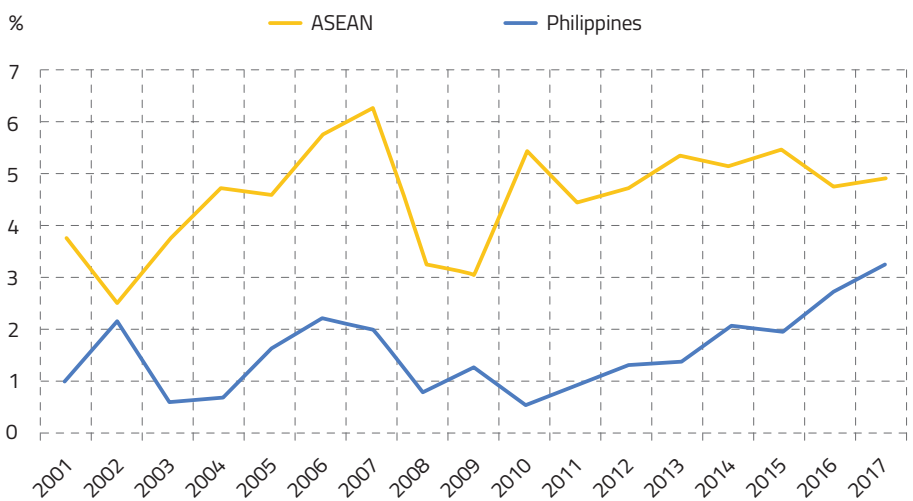
The Philippines' foreign investment regime is one of the world's most restrictive. It was rated as the most restrictive overall of the 68 countries covered in the 2018 *OECD FDI Regulatory Restrictiveness Index*, the most restrictive for investments in business services and transport sectors, and the most restrictive in mining (including for oil and gas) except for Saudi Arabia.[160] The Philippines is rated as less restrictive for manufacturing, but still among the most restrictive in ASEAN. Despite the restrictions, FDI inflows rose appreciably from 2010 with active encouragement of investment in selected sectors, especially manufacturing and information-technology-related sectors. The Philippines continues, however, to lag most of its ASEAN neighbours in attracting FDI (Chart 6.2).

The country's constitution mandates 'a self-reliant and independent national economy effectively controlled by Filipinos', restricts foreign ownership of property, public utilities and resources industries, and bars foreign ownership of mass media. The Foreign Investment Negative List (FINL) sets out the limits on foreign equity by industry, drawing on provisions of the Constitution and specific

Chart 6.2

ASEAN and the Philippines: Net FDI inflows, percentage of GDP

Source: World Bank, World Development Indicators



laws. As a general rule, foreign ownership of up to 100 per cent is allowed for export enterprises and larger businesses not included in the FINL.

In mining, the general rule is that foreign ownership is limited to 40 per cent but there can be no foreign ownership of small-scale mining projects. Foreign ownership of up to 100 per cent of large-scale mining projects is possible and has been achieved through special agreements. These are, in effect, a form of profit sharing arrangement between foreign owned mining companies and the government. OceanaGold, for instance, wholly owns its Philippine assets and has a Financial or Technical Assistance Agreement (FTAA) under which the Philippines Government is entitled to 60 per cent of 'net revenues'.[161]

AANZFTA commitments on foreign investment access do little more than reaffirm practices already in place. As noted in Table 6.4, the Philippines has made some potentially useful commitments on commercial presence for services related to mining, including engineering, construction, exploration and energy distribution, but the overall business environment continues to hold back Australian investors.

Opportunities for expanding trade and investment

The opportunities for Australian mining and METS companies are more promising for trade than for investment. If sustained, continuing 6 per cent-plus economic growth, in line with IMF forecasts and government projections, should open up attractive opportunities for Australian mining exports. In particular, the Philippines' *Build, Build, Build* infrastructure program will underwrite growing demand for imports of minerals, especially thermal coal and possibly metallurgical coal. Imports of metal ores are also likely to increase.

Domestic production of fossil fuels should continue to fall well short of domestic demand. More coal will be mined by the Semirara Mining and Power Corporation – it accounted for over 95 per cent (around 13 Mt) of domestic coal production in 2018 – but the Philippines relies on imports for around three-quarters of its coal requirements. With rapidly growing power requirements and continuing investment in coal-fired plants, imports of thermal coal should rise strongly and Australia's currently modest market share has the potential to rise.

Filipino coal-fired power plants are blending more high-grade coal from Australia with Indonesian coal.[162] Current and planned investment in high efficiency, low emissions (HELE) coal fired plants will increase demand for good-quality thermal coal from Australia.[163]

There are good prospects for exports of metallurgical coal and iron ore. Steel use per capita more than doubled between 2010 and 2017 from around 50 kg to over 100 kg. This is the fastest rate of increase in any major ASEAN economy, and is set to rise much further in coming years as infrastructure development programs are implemented. Building 'smart cities' with modern transport and communications networks will require massive amounts of steel along with other metals and industrial minerals. Prospects for domestic supplies of iron ore are uncertain. The Philippines has significant reserves but none are currently mined.[164]

Over 85 per cent of Filipino steel requirements are imported, predominantly from China, but there are moves to meet fast-growing demand by increasing domestic

production rather than just by increasing imports.[165] Leading Chinese steelmaker HBIS Group, which imports iron ore and metallurgical coal from Australia for its steel production in China, has signed a memorandum of understanding to invest over US$4 billion to build an integrated steel plant in Mindanao capable of annual production of 8 Mt.[166]

The Philippines is likely to continue to buy substantial amounts of other inputs into its metal processing industries, in particular copper ores and concentrates in which Australia has a significant market share. More generally, the Philippines Government, like other governments in the region, wants to process basic metals rather than import them. But this will require substantial and increased investment both in metals processing and in the energy sector and also having access to the right materials, which may not be available domestically.

Prospects for METS and for Australian investment in mining are uncertain: they will depend largely on the government's approach to reforming the mining industry and, in particular, on its commitment to an expanding and sustainable industry, including by welcoming foreign investment and participation. If this happens it would open up attractive opportunities, including in specialist consultancy and engineering services and in niche mining equipment markets in which Australia specialises. Minerals exploration, mining software, environment-related goods and services for mines development and maintenance, mine safety, and education and training services are examples of potential opportunities. [167]

Moves to address mining industry operating standards also may present opportunities for Australian mining and METS companies. President Duterte is reported to be 'interested in learning responsible mining from Australia'.[168] Austrade's office in the Philippines has engaged the Philippines Government on mining and environment practices and policies, and introduced Australian METS companies with expertise in mine rehabilitation to local industry associations.

There is also scope for more cooperation in the context of the Extractive Industries Transparency Initiative (EITI): the Philippines was the first country to be assessed as having made satisfactory progress against the 2016 EITI standard. The EITI has provided local governments and mining communities with access to data about payments collected from mining companies, generated pressures to increase the integrity of tax payments systems and is informing dialogue on the appropriate fiscal regime for mining.

In assessing opportunities for METS, three cautionary points need to be borne in mind. The first is that the number of Australian METS companies in this market has fallen in recent years because of policy uncertainty. Second, winning business will require great patience. The policies that have guided mining in the Philippines over recent decades and the community attitudes that have informed them are not likely to change anytime soon. And third, Australian mining equipment manufacturers will continue to face strong competition, especially in heavy machinery. China, Japan, the United States and several European countries have a strong market presence. China, in particular, has leading market shares in many specialised machinery categories such as pumps, lifting and earthmoving machinery, and machinery for sorting, screening, mixing and grinding.[169]

Policy challenges

The Philippines is making progress with economic reforms, but not enough to raise its attractiveness relative to several other ASEAN economies as a place to do business. This is especially the case for mining. Government statements continue to highlight the sensitivities associated with mining-related activities which are unlikely to abate.

For the most part, Australian mining and METS companies are hoping that the Government will adopt international standards and build a policy and regulatory framework that encourages modern, sustainable mining.

Reforms to enable mining to become a significant part of a reformed and modernised Philippines economy will need to encompass modern infrastructure to support sustainable mining activities and address environmental and social policy concerns effectively. Resources nationalism sentiments will also need to be addressed.

The Philippines has made a modest start. The Government has an information and communications policy to promote mining sector investment, which includes educating the public about the processes involved in extracting, processing and trading in minerals and it highlights the economic benefits of mining.[170] Critical to any strategy, however, is early resolution of the issues that have held back the mining industry, including the impasse created by the moratorium on new mining and the ban on open-pit mining.

Critical to any strategy is early resolution of the issues that have held back the mining industry, including the impasse created by the moratorium on new mining and the ban on open-pit mining.

CHAPTER 7

Thailand

KEY POINTS

- Exports of minerals and basic metal manufactures to Thailand were more than $2.8 billion in 2018, with gold, unwrought aluminium, coal (almost entirely thermal) and unwrought copper accounting for around 90 per cent of these. Thailand's steel production relies on ferrous scrap and semi-finished steel: it imports significant quantities of these products. Imports and production of iron ore are negligible.
- Australia's crude petroleum exports (not included under mineral exports here) were worth $2 billion in 2018.
- Future trading opportunities will be strongly influenced by Thailand's growth, expected by the IMF to be around 3.5 per cent per annum out to 2024 – well short of the rate Thailand must achieve to be among high-income countries by 2037.
- The projected share of coal out to 2037 has been downgraded in the 2019 Power Development Plan, but still remains a significant part of the energy mix.
- There are solid opportunities for gold, aluminium and copper exports.
- There is scope for Australian firms to increase their presence in mining and quarrying in Thailand, but the investment climate is not good in this sector, notwithstanding Thai efforts to promote inward investment more broadly.
- Thai investment in the Australian mining sector has been substantial. In 2010, Thai energy company Banpu acquired the Centennial Coal Company Ltd which operates five coal mines in NSW. There are likely to be other mining firms with an interest in discussing opportunities for investment.
- For Australian METS firms, Thailand offers little interest at present. But there are opportunities to work with large enterprises like the Electricity Generating Authority of Thailand.

Thailand's economic development over the past 60 years has been very successful. It grew rapidly at over 7.5 per cent per annum between 1960 and 1996. GDP declined by over 10 per cent in two years during the East Asian economic crisis of 1997-98, but Thailand's GDP passed its 1996 level again by 2001. Thailand's economy has grown relatively slowly over the past five years, at an average of 3.1 per cent per annum.

But it is a substantial economy, around one third the size of Australia's at market exchange rates and about the same size in purchasing power parity terms. Per capita income is also quite high: the World Bank declared Thailand an upper middle-income country in 2011.

Thailand and Australia have worked together closely on trade issues. Thailand was one of Australia's first modern free trade agreement partners, with the Thailand-Australia Free Trade Agreement (TAFTA) coming into force in 2005. Both are members of the Asia-Pacific Economic Cooperation (APEC) forum and the ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA) and are negotiating partners in the Regional Comprehensive Economic Partnership (RCEP). Reflecting shared interests as exporters of rural commodities, both are members of the Cairns Group. A challenge for both countries will be to deepen and extend these types of cooperation to minerals and METS.

Australia's interests in the market

Thailand is an important trading partner for Australia. Exports of goods and services totalled $7.8 billion in 2018, making Thailand Australia's 13th biggest market. Goods exports were $6.6 billion. Minerals and basic metal manufactures figured prominently: according to International Trade Centre (ITC) data, they made up six of the top ten merchandise exports in 2018. Gold was by far the largest minerals export to Thailand in 2018 ($1.5 billion) followed by unwrought aluminium ($420 million) and coal ($356 million).

Other important goods exports in 2018 included crude oil (the biggest export, worth around $2 billion in 2018), wheat, cotton and concentrated or sweetened milk and cream. Exports of services are mainly travel services. The majority of these are, in turn, education-related, with almost 28,000 Thai student enrolments in Australian courses in 2018.[171]

Imports of goods and services from Thailand totalled about $17.9 billion in 2018, with Thailand Australia's fifth largest source of imports. Imports of goods were around $14.9 billion, dominated by vehicles for transporting goods and passenger motor vehicles, which together made up over half of the total in 2018, reflecting Thailand's position as a regional hub for automotive manufactures. Other leading goods imports in 2018 were mostly manufactured products ranging from air conditioning and refrigerating equipment to tyres and jewellery. Services imports, predominantly personal travel services, are substantial.

Table 7.1 looks in more detail at exports of minerals and basic metal manufactures to Thailand in 2018. The trade is highly concentrated with the five biggest items – gold, unwrought aluminium, coal (almost entirely thermal), unwrought copper, and unwrought zinc – making up over 90 per cent of the total of around $2.8 billion in 2018.

Table 7.1

Australian exports of minerals and basic metal manufactures to Thailand, 2018

Source: ITC Trade Map Database

Product description	**Exports** ($m)
Coal; briquettes, ovoids, similar solid fuels manufactured from coal	356.0
Iron ore and concentrates	0.0
Non-ferrous metal ores, of which: ... tin ores and concentrates	50.4 (40.5)
Non-metallic and other minerals	16.3
Basic iron and steel manufacturing, of which: ... ferrous waste and scrap, remelting scrap ingots	56.1 (56.1)
Basic non-ferrous metal manufacturing, of which: ... gold, unwrought, or in semi-manufactured or powder form ... unwrought aluminium ... refined copper and copper alloys, unwrought ... unwrought zinc ... unwrought lead	2348.9 (1539.6) (420.5) (191.7) (96.7) (70.5)
Total ABS data for minerals and basic metal manufactures	**2827.7**
Confidential items estimated from Thailand data	Around 20
Total including estimated confidential items	**Around 2850**

Note: Exports of products that are confidential or partly confidential in ABS statistics are estimated from partner import data as outlined in the notes to Table 2.2.

Iron ore is conspicuously absent from the export list. Thailand is a sizeable producer of steel, with output at about 4.3 million tonnes (Mt) in 2018 or about 75 per cent of Australia's output. But as indicated below, Thai steel is typically obtained from scrap and semi-finished products rather than from the reduction of iron ore.

Table 7.2 looks at changes in the value of exports since 2006. The table shows growth in coal (non-metallurgical), as well as in tin ores and concentrates, unwrought zinc and unwrought lead. Exports of gold have trended upward, but with very substantial yearly fluctuations. Unwrought aluminium exports have failed to return to the levels realised over 2006-2008, but have recovered from lows of under $280 million in 2015 and 2016.

For the METS sector, survey data are one way to gauge the level of interest. An Austmine survey undertaken in 2015 concluded that, of METS firms that exported, 22 per cent exported to Thailand. When asked about their most important markets, Thailand came in at 19th. The same survey found that around half of exporting firms had offices or operations overseas and that, of this latter group, 15 per cent had offices/operations in Thailand.

Table 7.2

Growth in selected minerals and metal exports to Thailand, 2006-2018

Source: ITC Trade Map Database

Product description	2006 $m	2013 $m	2018 $m	2013-18 Annual growth %
Bituminous coal excl. metallurgical (e.g. steam coal)	118.7	226.3	356.0	9.5
Tin ores and concentrates	< 0.1	0.4	40.5	151.8
Ferrous metal waste and scrap	84.6	101.8	56.1	-11.2
Gold, unwrought or in semi-man., powder form	562.4	1182.6	1539.6	5.4
Unwrought aluminium	683.4	406.9	420.5	0.7
Copper refined and copper alloys, unwrought	460.4	127.2	191.7	8.5
Unwrought zinc	21.4	35.4	96.7	22.3
Unwrought lead	33.8	51.9	70.5	6.3

Note: Changes in HS and AHECC codes do not affect the data for the years/level of aggregation given. Growth rates give compound annual growth in per cent. Caution should be exercised in interpreting these growth rates: there can be very substantial fluctuations in export values from one year to the next, sometimes as a result of price and exchange rate changes. This can strongly affect the results.

But Thailand did not appear in the top 20 prospective markets where domestically focused firms were planning to commence exports or existing exporters intended to expand their business over the next 1-2 years.[172] Recent advice from Austmine suggests that Australian METS firms have only limited interest in Thailand at this stage.

There are a number of items which could include mining equipment among Australia's exports to Thailand. Table 7.3 shows some examples, including pumps and parts of pumps and machinery for screening rocks, minerals and ores.

Given that many of these have uses outside of mining and that there may be mining equipment not covered, it is not possible to give definitive values of mining equipment exports. However, the data does suggest that exports of mining equipment are likely to be relatively modest in value. It is similarly not possible to give a value for exports of mining services. Professional, technical and other business services, which are the main category relevant to the METS sector, totalled $19 million in 2018 but can equally be supplied to many non-mining sectors and do not cover services delivered by commercial presence.

Cumulative Australian foreign direct investment in Thailand totalled $1.4 billion at the end of 2018. How much is invested in the mining sector is not known. The Chatree gold mine – a significant mine with an annual capacity of about five tonnes of gold and owned and run by ASX-listed Kingsgate Consolidated Ltd – was placed on care and maintenance in early 2017 following a dispute with the Thai Government. Kingsgate rejects claims that it did not adhere to Thai environmental regulations and is pursuing a claim under the provisions of TAFTA (to be

heard in November 2019).[173] Another large project involving an Australian interest – a copper mine in Puthep in which PanAust Ltd had 49 per cent equity - was put up for sale in 2011. PanAust wrote off its investment at the end of 2013.[174]

ABS data shows the stock of Thailand's direct investment in Australia as $5.8 billion in 2018, up from $4.6 billion in 2013. There is no ABS data on the distribution of this investment by sector, but Foreign Investment Review Board (FIRB) information on investment approvals suggests that a significant amount has gone to the mining sector.

Total investment approvals for mineral exploration and development attributed to Thailand totalled $3.9 billion from the 2010-11 financial year (though approved investment is not always realised in practice).[175] One particularly big investment in the mining sector was the acquisition of Centennial Coal Company Ltd in September 2010 by Thai energy company Banpu (see Box 7.3). Centennial operates five coal mines in New South Wales supplying thermal coal to the domestic and international markets (principally Japan, Taiwan and Korea) and is now a wholly owned subsidiary of Banpu.

Table 7.3

Australian exports to Thailand that could include mining equipment, 2018

Source: ITC Trade Map Database

Product description	**Exports** ($m)
Basic chemical manufacturing/explosives	0.0
Rubber manufactures and headgear	0.8
Railway manufacturing, of which: ... railway track construction material of iron or steel	15.2 (12.1)
Professional, scientific, electronic equipment	2.5
Electrical equipment	5.6
Iron and steel articles	1.0
Machinery and mechanical appliances, of which: ... machinery for sorting, screening etc. earth, ores or minerals; machinery for agglomerating mineral fuels, plastering materials; machinery for forming foundry moulds ... various pumps and parts of pumps	23.7 (4.6) (4.5)
Vehicles of a kind which might be used in mining	0.6
Total of possible METS products	**49.4**
Confidential items estimated from Thailand import data	Around 0
Total including estimated confidential Items	**Around 50**

Note: Possible METS products are as defined as in Table 1.6. Exports of items confidential in ABS statistics are estimated from partner import data. On the procedure used and products covered by confidentiality restrictions, see the notes to Tables 2.2 and 2.4.

Opportunities for expansion

Thailand's economy has been expanding at a relatively modest rate in recent years. Partly because of political instability, the share of investment in GDP fell in 2014, 2015 and 2016. Other contributing factors included very slow growth in the working age population (less than 1 per cent growth in the 15 to 64 age group over 2013-2018) and more limited possibilities for 'catch-up' productivity gains at Thailand's upper middle-income level.

The IMF anticipates that Thailand's medium-term growth will continue to be modest at a compound annual rate of 3.5 per cent between 2018 and 2024. Demography will be an important constraint on future growth prospects. The UN Population Division projects that Thailand's working age population will contract by almost three million between 2018 and 2030, with the share of the population 65 or over rising from 11.8 to 19.4 per cent.[176]

This will mean that Thailand will be largely reliant on productivity-enhancing reform, increased levels of investment or greater participation in employment by the working age population if it is to achieve high growth rates. Continued urbanisation will tend to promote growth given that productivity tends to be higher in urban areas. The UN Population Division projects that around 3.8 million will be added to Thailand's urban population between 2018 and 2025 and another 2.3 million between 2025 and 2030. It is conceivable that Thailand could partly address its demographic problem by relying more heavily on migrant labour: workers from Cambodia, Laos and Myanmar already make up a significant share of the workforce.[177]

The Thai Government's National 20 Year Strategy envisages Thailand joining the ranks of high-income countries by 2037 (Box 7.1). This is an ambitious target for the country as a whole (though less so for Bangkok and surrounding areas). Given that high-income countries are themselves continuing to grow, it would require Thailand's GDP to increase at somewhere in the region of 5.5 per cent annually over the 20 years, which would imply a substantial increase in productivity growth.[178]

Other long-term projections are far more pessimistic. PwC modelling on the outlook for a large number of economies suggests that Thailand, like Australia, will slip down the rankings of world economies. In purchasing power parity terms, PwC sees Thailand dropping from 20 in 2016 (one spot below Australia) to 22 in 2030 (one spot above Australia) and 25 in 2050 (three places above Australia). Its compound annual growth rates for 2016-30 and 2016-50 are calculated as 2.9 and 2.6 per cent respectively.[179]

Economic growth and urbanisation should increase demand for metals like copper and aluminium, notwithstanding that Thailand is an upper middle-income country and that its development strategy envisages a shift towards a more knowledge-intensive economy. On a range of indicators relevant to minerals and metal consumption, Thailand is well below developed economies. Car ownership, for example, is about one-third, and average use of power per person around a quarter, of Australian levels.

Major projects like those in the Eastern Economic Corridor will involve very substantial infrastructure spending (Box 7.1) which should add to demand for minerals and metals. Expanding manufactures exports like automobiles and trucks, if successful, will also add to demand.

BOX 7.1

Thailand 4.0 and the eastern economic corridor

The Thailand 4.0 industry strategy, announced in 2016, aims to accelerate Thailand's development so that, consistent with the National 20 Year Strategy and the 12th National Economic and Social Development Plan (2017-2021), it becomes a high income and more inclusive and sustainable society over two decades. Under Thailand 4.0, Thailand seeks to break out of the middle-income trap that has affected many other emerging economies and move towards a more balanced pattern of development based on knowledge and innovation. The strategy focuses on promoting ten major industry sectors. Five build on industries where Thailand is already a player: agriculture and biotechnology, smart electronics, 'affluent medical and wellness tourism', next-generation automotive, and 'food for the future'. The five new industries are biofuels and biochemicals, digital services, 'medical hub', automation and robotics, and aviation and logistics.

The Eastern Economic Corridor seeks to develop three of Thailand's eastern provinces – Chonburi, Rayong and Chachoengsao – into a major hub and industry centre that is consistent with Thailand 4.0. Priorities for the Corridor include improved infrastructure, industry and innovation hubs, increased tourism, and developing new cities. Specific projects include expanding Thailand's biggest seaport (Laem Chabang) and increasing the capacity of the U-Tapao airport. Rail links with other parts of Thailand will also be improved.

The IMF believes that the Eastern Economic Corridor 'can play an important role in scaling up public infrastructure and boosting growth in the short and medium term'. Both it and the broader Thailand 4.0 initiative are likely to have a considerable impact on the kind and quantity of minerals and mining services that Thailand demands. In the short and medium term, the focus on infrastructure is likely to add to the demand for many key minerals.

Source: 'Thailand: Staff Report for the 2018 Article IV Consultation', IMF, 2 May 2018, p.20; 'Thailand 4.0: in sight but not in reach', Economist Intelligence Unit, 16 November 2017; B Dunseith, 'Thailand's Eastern Economic Corridor – What You Need to Know', ASEAN Briefing, 29 June 2018.

According to the US Geological Survey, Thailand has substantial reserves of barite, significant reserves of fluorspar, some reserves of garnet, and almost 4 per cent of world tin reserves (though it is no longer one of the major world producers). Thailand was responsible in 2018 for around 6 per cent of the world's output of feldspar and gypsum. It produced some rare earths, emerging in recent years as a significant exporter of these minerals (although it is also an importer)[180] and in 2018 produced some 14.9 Mt of lignite.[181] But as indicated below Thailand's production of some key mineral ores and metals is limited. This suggests that imports will play a growing role in meeting demand. Australia's ability to compete with other suppliers will be critical to it gaining a share of Thailand's imports.

Prospects for individual minerals and metals vary considerably.

For **thermal coal**, the scale of future imports is unclear. Press reports indicate that the 2019 Power Development Plan, which looks out to 2037, envisages electricity power requirements increasing from 46,090 megawatts (MW) in 2017 to 77,200 MW in 2037. As recently as April 2018, Thailand's Energy Minister argued that it would be desirable to increase the contribution of coal to the power generation mix.[182] The Electricity Generating Authority of Thailand (EGAT) also strongly advocated developing two new coal-fired power stations in southern Thailand – Krabi and Thepha – with a capacity of around 870 and 2200 MW respectively. However both decisions were politically controversial and plans have been put on hold.[183]

The 2019 Thai Power Development Plan is seeking a lower contribution of coal to the power mix (12 per cent by 2037) than the previous 2015 Power Development Plan (23 per cent by 2036). A much bigger role is now seen for natural gas and a lesser role for hydropower from neighbouring countries: in 2018, Thailand imported US$1.4 billion in electrical energy, virtually all of it from Laos.[184] A further consideration is that Australia faces strong competition in the thermal coal market from Indonesia, a much bigger supplier both to Thailand and globally. In 2018, Indonesia supplied over 70 per cent of Thailand's thermal coal imports. Australia and Russia supplied 17 per cent and 7 per cent respectively.

In the case of **aluminium**, Thailand is not a significant bauxite or alumina producer. Most of the supply used for more elaborately transformed manufactures comes from imports of unwrought aluminium (over $2.2 billion in 2018), though aluminium waste and scrap is also a significant import and some raw material enters as aluminium oxide. Thailand's imports of unwrought aluminium have expanded rapidly in recent years, rising by almost 30 per cent in volume terms between 2013 and 2018 and at a much faster pace in Australian dollars.

Given the variety of uses for aluminium in modern industrial societies (for example, for automobile manufacture, construction, electrical work, packaging, machinery and consumer products), Thailand's imports are expected to continue to grow in the medium and longer term.[185] But Australia faces significant competition. It was, by a narrow margin, the largest supplier of unwrought aluminium to Thailand in 2018, providing almost 20 per cent of total imports: the United Arab Emirates, South Africa, Malaysia and India were among the other big suppliers.

Thailand relies heavily on imports of **copper** to meet demand. Imports of ores and concentrates are very small, but purchases of unwrought copper were around $3.4 billion in 2018. The country has emerged as a substantial exporter of copper wire in

recent years (exports were $963 million in 2018, up from $109 million in 2014). Curiously, it is also a big exporter (and indeed a net exporter) of copper scrap, most of which goes to Northeast Asian markets. It is a smaller, but still appreciable supplier of copper tubes, pipes, bars and rods, which it imports in significant quantities as well. Thailand's domestic and export-driven demand for copper is considered likely to increase significantly in the medium and longer term.

There could be trading opportunities arising from increasing domestic and global copper demand driven by 'electrification' of transport, urbanisation and the increasing importance of renewable energy technologies. Australia is a big exporter of unwrought copper, but it only ranked ninth among sources of Thai imports. Much of the unwrought copper used by Thailand comes from Japan and Laos; Japan in turn relies on imports of copper ores and concentrates from Chile, Indonesia, Australia, Peru and Canada among others.

There could also be opportunities to invest in copper mining. As noted above, PanAust has exited the market, but the Australian-listed mining explorer and gold producing company Matsa Resources has identified up to 20 exploration areas. Intensified activity on such projects may lead to further opportunities for METS firms.

Thailand has in the past been a producer of **gold**, with mine output around 3.3 tonnes in 2015. As noted above, the Chatree mine – then the only significant gold mine in the country – was put into care and maintenance in 2017. Its output was in any event very small compared to Thailand's import demand of over 280 tonnes in 2018. Imports have fluctuated in both volume and value over the past 15 years, influenced by concerns over the Thai and global economies, political instability, real interest rates, and the exchange rate.

Demand is also influenced by Thailand's role as a major exporter of gold to other countries in the region, some of it smuggled to destinations like India and Vietnam. Still, while fluctuating, the trend in Thailand's imports appears to be positive. This is consistent with findings by the World Gold Council on India that show demand for gold increasing as per capita incomes rise.[186] Over the longer term, domestic demand for gold is also likely to be boosted by the increased use of electric vehicles, medical and dental applications (such as those involving nanotechnology) and increased internet connectivity.[187]

Australia could benefit from this trend: it was the second biggest supplier to the Thai market in 2018 with about a 17 per cent share, though this was well below that of Switzerland, which acts as a conduit in international gold trade.[188]

Thailand's **steel** is produced in electric arc furnaces which can use up to 100 per cent scrap metal as inputs.[189] Thai production and imports of iron ore were negligible in 2017 and 2018. Australia supplied ferrous waste and scrap valued at $74 million in 2018 and was second only as a supplier (but a distant one) to the United States. Thailand also imports other types of semi-finished and finished iron and steel to manufacture iron and steel products. Australia supplies flat-rolled iron or non-alloy steel plate within HS 7208. It was the fifth-largest supplier to Thailand in 2018, but even so held only a small (2.6 per cent) share of the $2.5 billion market. Supplying a wider range and a larger value of iron and steel products seems unlikely in the medium term unless the economics of manufacturing steel in Australia undergo significant change.

METS: Opportunities in coal mining

Lignite production at the EGAT's Mae Moh mine dates back more than 30 years and it accounted for more than 97 per cent of Thailand's output in 2018. The operator of the mine has considerable experience in the use of mining equipment and technologies.

Austrade's advice is that winning its business needs to involve more than simply offering technologies already available in the market. Rather, METS firms need to provide advanced but cost-effective technologies, both for recurring problems (for example, water/sludge management services, air quality control, mine and slope stability) and those that are needed to prepare for mining at deeper levels.

Some Australian METS firms have worked closely and successfully with EGAT. One example is Groundprobe, which offers slope stability detection radar equipment and software: this is of critical importance in large open-cut mines.

Source: Austrade

For the METS sector, the survey data noted previously suggest that Thailand is a useful METS market, but not one of the top countries for expansion. This probably remains an accurate assessment. Opportunities for METS are partly linked to the size of the mining and quarrying sector, which in Thailand's case is relatively small, comprising around 2.6 per cent of GDP in 2018 (including oil and gas extraction).

To put this in perspective, it is less than one-third the size of the Thai agricultural sector and under one-tenth that of manufacturing. Moreover, the sector has not been growing rapidly: indeed, it contracted in real terms by around 4.5 per cent between 2013 and 2018 and expanded by only about 3 per cent per annum over the longer period between 2003 and 2018.[190]

Still, there are a number of mining companies in Thailand, which would indicate openings for the services and equipment that the Australian METS sector can provide. The US Geological Survey in its *2015 Minerals Yearbook* lists around 40 major companies in the minerals sector (excluding those involved in oil and gas extraction).[191] METS firms from other countries (especially European) have been active in the market since the late 1990s and there are significant opportunities for Australian firms.

Specific opportunities for METS firms exist in coal mining (Box 7.2) and in Thailand's gypsum, cement and industrial quarries. Thailand is also a significant producer of rare earth minerals and chemicals: this is another area where METS firms could play a useful role.

BOX 7.3

Banpu investment in Australia

Banpu Pcl, a Thai listed mining and energy company, acquired Centennial Coal Company Ltd in an ASX on-market takeover for $2.5 billion in 2010. At the time, it was the largest foreign investment by a Thai company and signalled growing confidence by Thai companies to invest outside of Thailand and Southeast Asia.

Since the acquisition of Centennial Coal, Banpu has retained the Australian management team and developed synergies with its other operations in Thailand, Indonesia, Laos and China. This has presented opportunities in export markets that Centennial either would not have considered or been able to access prior to the takeover.

The Southeast Asian region is developing and growing quickly and having Banpu as a shareholder of Centennial has made it possible for the Australian operations of Centennial to participate in this commodity resource-intensive growth.

Banpu's coal mining operations in Indonesia, China and Australia bring a unique perspective to Centennial's Australian operations with on-the-ground knowledge of the main export competing countries and the developing preferences of users of coal in Southeast Asia and China in particular. The latter is possible because of its electric power station operations in Thailand, Laos and China.

Banpu has been able to bring different sources of bank debt finance to Centennial's Australian operations. In particular, Thai and Singaporean banks have been supportive of Banpu's overseas investments and assisted in the finance requirements for Centennial Coal's Australian operations. This has provided liquidity and competition in the Australian financial market and has added to the pool of foreign funding sources into Australia.

Being a subsidiary of Banpu has also provided Centennial's Australian management with personal development opportunities and exposure to Southeast Asia culture. This has been valuable in widening the perspectives of the Australian management team. Centennial Coal as part of Banpu has increased understanding of the similarities and differences across Southeast Asian countries that would have been difficult to achieve as a purely Australian company. This has resulted in business opportunities being realised that might otherwise have been missed. Overall, the Banpu investment in Centennial Coal has provided many benefits to coal mining and energy operations.

There are prospects for expanding two-way foreign investment. The stock of Thai foreign direct investment (FDI) abroad has been increasing quite rapidly, approximately doubling between 2013 and 2018. Australia is a relatively small destination, with cumulative direct investment at US$2.7 billion in 2018 out of a total of US$134 billion.[192]

Investment abroad by mining firms – which are almost all private firms – can be expected to increase as they grow and look beyond the Thai market to expand their business. As noted earlier, Thai coal miner Banpu is one case where Australia has already received significant investment in the minerals sector. This has been a successful investment that has benefited both economies (Box 7.3). Other major Thai firms may be open to discussing investment in Australia.

Cumulative total direct investment in Thailand has been trending upward, reaching US$235 billion in 2018. Australia was responsible for a little over 1 per cent of this in 2018 according to Bank of Thailand data. However, less than 1 per cent of total Thai inward direct investment is in the mining and quarrying sector, which may reflect the fact that the investment climate remains difficult in many respects.

As discussed below, concessions granted by the Thai Government target mineral exploration, where activity has slowed due to the poor investment climate. In general, mining is not targeted and Thailand does not appear to see a strong need for FDI in this sector.

Challenges

There are challenges associated with doing business with, or in, Thailand, but they should not be overstated. Thailand has a credible claim to being roughly on a par with Malaysia and thus second or third among the ASEANs in terms of its business environment. There are some problem areas such as non-tariff barriers, services access and investment barriers. But these should not preclude companies from exploring opportunities.

The general business environment

On the World Bank's *Ease of Doing Business* ranking of 190 economies, Thailand comes in at 27th, not far below Australia's ranking (18th). Thailand scores particularly well on getting electricity (which covers the time and cost of obtaining supplies and their reliability), but less well on other criteria such as trading across borders, dealing with construction permits and registering property (Chart 7.1).

Trading across borders is particularly relevant to the present study. Thailand's ranking reflects the time taken to achieve documentary and border compliance (around 55 hours for both exports and imports) and the monetary cost involved.[193] On the World Bank's *International Logistics Performance Index*, which looks in some detail at such indicators as the efficiency of customs procedures, trade and transport infrastructure, and the frequency with which shipments are on time, Thailand fares somewhat better, ranking 2nd among the ASEANs and 32nd out of 160 countries overall. [194]

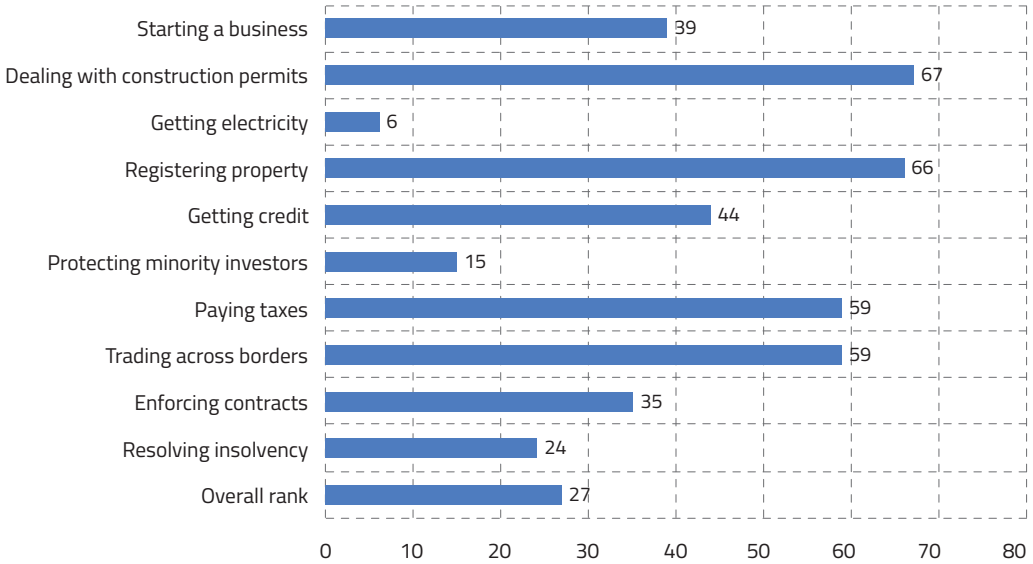
The World Economic Forum's *Global Competitiveness Index* is also relevant in assessing the business environment. The 2018 index puts Thailand in 38th place among 140 countries. Among the ASEAN countries it falls behind Singapore and Malaysia. Thailand ranks well on its financial system, but fares poorly on the efficiency of product markets because of the extent of market dominance, the prevalence of non-tariff barriers, and the complexity of the tariff system.[195]

Corruption is also clearly seen as a major problem. Thailand ranked 99th out of 180 economies on the *Transparency International Corruption Perceptions Index* in 2018, well below Indonesia's ranking.[196]

Chart 7.1

Thailand: Ease of Doing Business rankings, 2019

Source: World Bank, Ease of Doing Business 2019



Note: The rankings are of 190 economies. Rankings are based on data available as at 1 May 2018.

Tariff barriers

TAFTA eliminated all tariffs on Australian mining goods sent to Thailand, mostly on 1 January 2005. In some cases, tariffs phased to zero over a slightly longer period, and in a few cases not until January 2010. For the most part, base rate tariffs on mining goods in Thailand's schedule of commitments were very low (at 1 and in some cases 5 per cent), but occasionally they were much higher at 10 or even 20 per cent.[197]

An important contribution of TAFTA was to help address tariff escalation. With copper, for example, tariffs on copper mattes had a base rate of 1 per cent, while the base rates were usually 10 per cent for manufactures like wire and 20 per cent for products such as cooking or heating apparatus for domestic purposes. By 2010 (and sometimes before that date) tariffs on the more unprocessed and processed forms of copper were all zero, placing them on a level footing.

For mining equipment base rate tariffs were often higher than for minerals and metals. For example, tariffs on large tyres used in construction vehicles had a base rate tariff of at least 30 per cent, as did safety headgear, while the base rate for prepared explosives was 20 per cent. But by the beginning of 2010, and often much earlier, TAFTA eliminated these tariffs on products of Australian origin, and indeed for all tariffs on the illustrative list.

Non-tariff barriers

In a 2016 paper, Intaravitak found Thailand maintained 1,630 non-tariff measures (NTMs), implemented by no less than 26 regulatory agencies and affecting 98.9 per cent of all 8-digit tariff lines. Almost half of these NTMs were sanitary and phytosanitary measures and more than a third were technical barriers to trade. Intaravitak's research indicated all tariff lines for minerals, metals and machinery were affected by at least one NTM and that most mineral products were affected by three or more.[198] Unfortunately, this research does not examine the type of NTMs applying to minerals, metals or machinery or the impact that they have on trade.

The United States Trade Representative reports that 'licences are required for the importation of many raw materials' and that 'Importation of tungsten oxide, tin ores, or metallic tin in quantities exceeding two kilograms requires permission from the Department of Mineral Resources'.[199] But Thailand's trading partners, by and large, did not take issue with measures like these in the 2015 WTO Trade Policy Review, despite interrogating Thailand's representatives closely on many other specific trade barriers.[200]

The Global Trade Alert which monitors changes in trade barriers finds that imports of iron and steel products have been a frequent target, for the most part through anti-dumping measures aimed at China, South Korea and Taiwan. From Australia's perspective, Thailand's safeguard action against a number of flat rolled iron and steel products was particularly significant. Australian exports to Thailand under HS 720839 – one of the products subject to the safeguard action – were worth $81 million in 2017, but fell to $41 million in 2018.[201] While this and other products subject to the action are not themselves mining products as defined in this series, they are certainly of interest to the mining sector.

Barriers to services trade

Thailand maintains a restrictive services regime: there are equity limits and restrictions on the number of foreign directors a firm can have in many areas. In banking, for example, foreign ownership of commercial banks is normally limited to 25 per cent and foreign directors may not constitute more than a quarter of the total (though there is provision to raise these limits on a case-by-case basis).

For domestic shipping, foreign vessels cannot supply domestic transport services, although they can perform some specific services (like laying pipes) for one year if no domestic vessels are available.[202] Reflecting barriers to services trade, Thailand's schedule of commitments under the WTO General Agreement on Trade in Services (GATS) covered less than half of the approximately 160 areas used to classify services for the agreement.[203]

Australia benefits from concessions from Thailand though the GATS, TAFTA and AANZFTA. These commitments cover the four ways of providing services. Table 7.3 presents Thailand's commitments in several areas relevant to mining for the first three modes, while Table 7.4 looks at Mode 4. The tables do not list commitments separately under the GATS: in Table 7.3, AANZFTA commitments largely follow those in the GATS, and in Table 7.4, GATS commitments have been largely overtaken by AANZFTA and TAFTA.

AANZFTA is a more modern agreement with a much wider range of services commitments than TAFTA. This is reflected in the entries in Table 7.3, which show AANZFTA commitments for the seven areas covered, whereas TAFTA covers only one of them. For the seven areas examined in the Table, AANZFTA leaves Mode 1 partially or wholly unbound (meaning that there is no limit on restrictions that the Thai Government can apply should it so choose).

Table 7.4

AANZFTA and TAFTA: Selected services outcomes for Modes 1,2 and 3

Source: TAFTA and AANZFTA schedules

	AANZFTA Commitments/limits	TAFTA Commitments/limits
All services sectors included in the schedule, unless otherwise is provided ('horizontal'commitments and limits)	For services delivered by commerical presence, services must be delivered by a limited liability company registered in Thailand. Foreign equity must not exceed 49 per cent and the number of foreign shareholders must be less than half the total.	Equity participation of up to 60 per cent for services and other sectors in the schedule unless otherwise is specified.
Engineering services	Mode 1 unbound for national treatment. No specific limits for Mode 2. Mode 3 is governed by the horizontal commitments/limits above.	Not listed
Construction services	Mode 1 unbound. No specific limits for Mode 2. Mode 3 is governed by the horizontal commitments/limits above.	Up to 100 per cent equity for firms with a minimum paid-up capital of 1000 million Baht (around A$44 million). Covers only services requiring 'special tools, machinery, technology or construction expertise'.
Services incidental to mining of oil and gas fields	As above	Not listed
Accounting services	As above	Not listed
Legal servics	As above	Not listed
Computing/software services	As above	Not listed
Technical testing, analysis	As above	Not listed

Note: Outcomes are greatly simplified from the original schedules, which should be consulted for full details. The modes of supply are defined in endnote 95.

Mode 2 has no specific limits for the seven sectors (though it is often not possible to have services delivered in that way), while Mode 3 services are covered by the general (or 'horizontal') limitation that allows Thailand to restrict equity participation by foreigners to 49 per cent.

Although TAFTA's commitments are fewer, it does provide more favourable conditions in some areas. Construction services are one example, with TAFTA permitting Australian equity of up to 100 per cent for services delivered by commercial presence, subject to a significant paid-up capital requirement for the Australian firm involved.

On the movement of business persons, TAFTA provides for a maximum of five-year stays for intra-corporate transferees to Thailand (who can include executives, managers and specialists). But this is conditional on the firm bringing three million baht (at the time of writing, around

Table 7.5

AANZFTA and TAFTA: Selected outcomes for movement of natural persons (Mode 4)

Source: TAFTA and AANZFTA schedules

	AANZFTA Commitments/limits	TAFTA Commitments/limits
Coverage of the provisions below	All sectors in the schedule of commitments, unless otherwise is provided for specific sectors or sub-sectors. For example, market access provisions for civil engineers are unbound for many sub-sectors of interest to mining.	All sectors, irrespective of whether there are specific commitments, but with exemption for 39 professions (including lawyers and civil engineers).
Intra-corporate transferees	One year initially and renewal for a further three terms of not more than one year each (that is to a maximum of four years).	One year initially, with annual renewal for a total of not more than 5 years. However, the branch or affiliate must import foreign currencies to the value of at least three million Baht into Thailand for one foreign employee and the number of foreign employees involved must be no more than ten.
Contract service suppliers	Not seperately identified	Work permit for an initial period of one year, with yearly extension for up to three years in total. However, any Thai 'juridicial person' must have a paid-up capital of at least two million Baht per employee and the number of foreign employees involved must be no more than ten.
Business visitors	Initial period of not more than 90 days. This may be extended for up to one year from arrival for persons responsible for establishing a commercial presence.	Initial period of not more than 90 days, which may extend for up to one year from arrival.
Persons participating in business meetings, attending seminars etc	Not seperately identified	For APEC Business Travel Card holders, up to 90 days. For others, up to 15 days.

Note: Entries are greatly simplified from the original schedules, which should be consulted for full details.

$138,000) in foreign currencies into Thailand for one foreign employee and the number of foreign employees not exceeding ten. This compares to a maximum of three years under the GATS and four years for AANZFTA, but without the additional conditions.

TAFTA has provisions for three years for contract service suppliers, again with some restrictive conditions. Unusually, the TAFTA commitments apply to all sectors, irrespective of whether specific commitments have been made, although 39 professions (among them lawyers and civil engineers) where 'aliens' are not permitted to practise, are excluded.[204]

Barriers to investment

There are significant restrictions on FDI in Thailand. The Foreign Business Act, which is the principal piece of legislation governing access, establishes three categories for restricting business investment in some way:

- Where investment by foreigners is prohibited in areas like newspapers and activities of religious or cultural significance (such as trade in Thai antiques)
- Where investment affects national security or might have an adverse impact on local culture or on natural resources and the environment. The latter includes mining, as well as domestic land, water and air transportation. Participation by foreign investors requires a foreign business licence approved at ministerial level and 40 per cent of Thai shareholders and board members
- Where 'Thai nationals are not yet ready to compete with foreigners'. This includes sectors of interest to mining and METS, among them engineering, construction and legal services. Participation by foreigners in these industries requires a foreign business licence issued by the Director General of the Foreign Business Committee.[205]

Roughly speaking, Thai companies are defined as those with majority Thai ownership. This means that foreigners may, in practice, participate in restricted sectors where they own 49 per cent or less of the capital.

Notwithstanding these restrictions, the Thai Board of Investment promotes investment extensively in approved sectors. Industries eligible include mineral prospecting and potash mining, but not other types of mining. Some forms of metal manufacturing are covered. Approved sectors also include industries that might be of interest to the METS sector, like the development of high value-added software, the manufacture of measuring equipment and logistics and supply chain management.[206]

Incentives vary. Mineral exploration is eligible for basic incentives that include exemption of import duties on machinery and certain raw materials and some non-tax incentives. Some other industries can attract a more extensive range of incentives, including exemption from corporate income tax for up to 10 years.

There may be additional incentives on top of this for firms that propose investments in support of the Eastern Economic Corridor, Special Economic Zones, the border provinces of southern Thailand, or areas with very low per capita income. Extra incentives are also available for firms that promote more efficient production. This may mean, for example, an additional period of exemption from corporate income tax.[207]

Both TAFTA and AANZFTA make only limited commitments regarding foreign investment access. TAFTA does bind a 60 per cent equity limit for Australia for investment in mining operations. There is also a requirement that board of directors have at least two-fifths Thai national representation. These outcomes were an advance at the time TAFTA was negotiated. Thailand's schedule in AANZFTA makes some

commitments on commercial presence for a range of services, including engineering, construction, accounting and legal services.

As Thailand modernises, local and foreign non-governmental organizations (NGOs) and community groups have become more vocal, thereby making some types of investment more difficult. The example of Kingsgate has made other foreign investors wary.

This does not only affect Australia. For example, plans by China Ming Ta Potash Corporation for a potash mine in northeast Thailand have encountered strong opposition from local groups worried about the impact of mining on their farming community. Blockades of exploratory drill sites have led the company to initiate lawsuits against the villagers, seeking compensation.[208]

Policy challenges

Tariffs have been effectively addressed in developing mining and METS links with Thailand. The forward agenda for improving access for minerals, metals and mining equipment needs instead to focus on NTBs, which will not only help Australian exports of minerals and mining equipment but will also be critical to the development of an efficient Thai mining sector.

NTBs are one area where there is growing agreement in ASEAN on the need for a review of practices. The Indonesia-Australia Comprehensive Economic Partnership Agreement has broken new ground for Australia's FTAs by including a separate chapter on them, setting out a clear process for dealing with NTBs. This may prove to be a model for other agreements, including TAFTA and AANZFTA, as they are revised over time.

Modern mining operations depend on the efficient supply of a wide range of services and on the ability of firms to invest in Thailand. In these areas, Thailand's regime is quite restrictive. Liberalising this regime is clearly a sensitive issue in Thailand and progress is likely to be slow.

A further difficulty is that the minerals sector is a lower priority for the Thai Government than sectors like manufacturing and tourism. The current five-year plan – the Twelfth National Economic and Social Development Plan – runs to some 260 pages, containing detailed targets in many areas but only one paragraph on mining. There is a good deal more on energy issues, but principally in the context of addressing greenhouse gas emissions, the use of alternative forms of energy, energy efficiency and energy security. There are no references to coal.

Mining firms supplying or operating in Thailand have been affected by protest movements. Concerns about the environment appear to have been the main factor that has led to coal-fired power stations in southern Thailand being put on hold.

There should be scope for the Australian Government to work with the Thai Government and with Australian mining firms to demonstrate options for the use of low emissions coal technologies.

A fundamental issue affecting Thailand's future as a market for minerals and METS is the broader economic outlook. Moving from upper middle-income status may prove difficult, particularly in a context where the population is ageing and global protectionism is growing.

Reforms like Thailand 4.0 and the Eastern Economic Corridor have been devised to move Thailand into the ranks of high-income economies. Thailand's success in this objective will have powerful implications for the future of the bilateral relationship, as well as for minerals and METS.

CHAPTER 8

Vietnam

KEY POINTS

- Vietnam is Australia's fastest growing trading partner in Southeast Asia and is a major market for Australian mining commodities. Growth in import demand for mining and basic metal manufactures has been faster than in most other ASEANs.
- Coal – mainly metallurgical – accounted for almost half of the value of Australian exports of minerals, basic metal manufactures and fuels in 2018.
- Iron ore and concentrates, ferrous waste and scrap, aluminium, zinc and copper make up most of the rest of Australia's mining-related exports. Basic metal manufactures make up about two-thirds of total manufactures exports.
- Australian exports of mining equipment appear to have increased in recent years, though they are modest compared with minerals trade.
- Thermal coal imports should increase significantly well into the 2020s on the basis of power plants already in the pipeline and the likelihood that at least some of those planned will be built. Under its Power Development Plan VII, Vietnam plans to build more than 70 coal-fired power plants with a combined capacity of 49.3 per cent of the country's total electricity output by 2020, 55 per cent by 2025, and 53.2 per cent by 2030.
- The technology of choice is increasingly supercritical and ultra-supercritical coal-fired plants. The high quality of Australian coal makes it suitable for use in high efficiency, low emissions power plants.
- Vietnam is self-sufficient in natural gas at present but domestic production is projected to fall short of demand, even with the planned development of two major offshore gas fields. Its Gas Master Plan shows LNG imports increasing quickly from 2021.
- Metal utilisation is still relatively low and, while production of metals is rising quickly, domestic production of metal ores is not increasing fast enough to meet demand. A steep rise in imports of metal ores is expected.
- Vietnam could become a strong market for METS. The government is prioritising exploration and the development of information systems. It is seeking to reverse declining labour productivity in mining minerals processing, including through mine-related training.
- Vietnam, nevertheless, is a difficult market: non-tariff barriers are challenging; there are restrictions on services, and minimal investment by Australian or international mining companies owing to a number of challenges. Vietnam has one of the highest mining taxes and royalties in the world; there are legally binding requirements for mining companies to process minerals; and the state sector monopolises several industries relevant to mining.

Vietnam's transformation to a lower-middle income country in 2019 is one of the world's great development stories. It has risen spectacularly in country GDP rankings over the past 20 years;[209] and its population living in extreme poverty has fallen from well over one-half to around 3 per cent.[210]

Vietnam has emerged as a major market for Australian mining commodities, manufactures, agricultural products, and education-related travel services. It is Australia's fastest growing trading partner in Southeast Asia and should remain among the fastest growing providing it successfully navigates the 'middle income trap'. If the past is any guide, it will do this by continuing to invest in programs of reform and regional integration that promote more productive enterprises and stronger legal and regulatory institutions, advance equity and social inclusion, and bolster the state's capacity and accountability in managing change.[211]

Among the many sectoral- and economy-wide changes, strong growth and rapid development should have a transformative impact on Vietnam's mining sector. The country is endowed with abundant and diverse mineral resources: there are substantial deposits of coal, bauxite, nickel, zinc, tungsten, manganese, copper, gold, titanium mineral sands, limestone, and phosphate rocks.

Existing mines, however, are predominantly small-scale and scientific exploration to date has been very limited. The sector contributes around 10 per cent of GDP[212] and is dominated by coal mining and state-owned enterprises (SOEs). Labour productivity has turned negative in recent years.[213]

If Vietnam is to attain its development goals, mining should play a key role because of its close linkages to electricity generation and to industries like metallurgy, chemicals, fertilisers, construction materials and infrastructure. This potentially sets the stage for reforming mining and transport-linked SOEs. This in turn should create opportunities, including for Australian mining and METS companies, to assist in developing a more sustainable and productive industry.

Australia-Vietnam trade and investment: mining and METS

Vietnam is among Australia's top 15 two-way trading partnerships. Our trade is based on exchanging commodities like seafood, wheat, coal, various metals, and education and travel related services for manufactures – mostly telecommunications equipment, other electrical products and footwear.

Coal accounted for almost half of the value of Australian exports of minerals, basic metal manufactures and fuels in 2018 (Table 8.1). Metallurgical coal predominates and has done so since the trade started in the late 2000s. In 2018, around $545 million was classified by the Australian Bureau of Statistics as high rank metallurgical coal (hard coking), and another $295 million was semi-soft metallurgical coal.

Thermal coal exports were valued at $292 million in 2018. Iron ore and concentrates, ferrous waste and scrap and simply transformed metal manufactures made up most of the rest of our mining-related exports. Basic metal manufactures such as copper, aluminium, lead, and zinc made up about two-thirds of total manufactures exports.

Table 8.1

Australian exports of minerals and basic metal manufactures to Vietnam, 2018

Source: ITC Trade Map Database

Product description	**Exports** ($m)
Coal: briquettes, ovoids, similar solid fuels manufactured from coal	1131.3
Iron ore and concentrates	357.2
Non-ferrous metal ores	8.5
Non-metallic and other minerals	1.4
Basic iron and steel manufacturing, of which:	282.9
... ferrous waste and scrap, remelting scrap ingots of iron or steel	(282.9)
Basic non-ferrous metal manufacturing, of which:	694.9
... unwrought aluminium	(251.0)
... unwrought zinc	(173.7)
... refined copper and copper alloys, unwrought	(170.2)
... unwrought lead	(80.6)
... gold, unwrought, or in semi-manufactured or powder form	(18.0)
Total ABS data for minerals and basic metal manufactures	**2476.2**

Note: Estimates for confidential items rely on partner country import data and have not been provided for Vietnam as no 2018 data were available at the time of writing. However, Vietnam's 2017 import data show manganese ores and concentrates (with imports from Australia valued at $18 million) as a significant item. There were smaller 2017 imports of zirconium ores and concentrates and salt and related products, both of which were partly confidential in ABS statistics for 2018.

Overall growth in Australia's mining exports to Vietnam has been particularly strong in the past few years, although gold exports have fallen sharply (Table 8.2). This overall growth, of course, is also true for ASEAN as a whole, with growth in the top ten mining/basic metal manufactures imports exceeding aggregate growth in other big minerals markets such as China, India and Japan (Chapter 1). But growth in import demand from Vietnam for mining and basic metal manufactures has been faster than for most other members of ASEAN.

Australian exports of mining equipment also appear to have increased, though they are modest compared with minerals trade – they are well behind Indonesia.[214] Table 8.3 provides an insight into exports to Vietnam that could be relevant to the mining sector: it is not possible to be certain given the multipurpose use of some types of equipment, but the bulk of machinery exports, including self-propelled bulldozers, pumps and various types of sorting and screening machinery for ores and minerals, would be used in mining-related sectors.

Interestingly, Australian METS companies rank ahead of Chinese, North American and European competitors in supplying mining equipment to the Nui Phao Mine – the world's largest tungsten mine and one of the largest fluorspar mines.[215]

Annual Australian foreign direct investment (FDI) flows to Vietnam are small but increasing. Most investment goes into sectors like finance and insurance, oil and gas, and education.

Table 8.2

Growth in selected minerals and metal exports to Vietnam, 2006-2018

Source: ITC Trade Map Database

Product description	2006 $m	2013 $m	2018 $m	2013-18 Annual growth %
Bituminous coal excl. metallurgical (e.g. steam coal)	0.0	0.0	292.2	n.a.
High rank metallurgical coal (hard coking)	2.0	63.2	544.6	53.8
Metallurgical coal: semi-soft coking and PCI coal	0.0	1.3	294.6	>150
Iron ore and concentrates	<0.1	0.0	357.2	n.a.
Ferrous metal waste and scrap	8.1	154.0	282.9	12.9
Gold, unwrought, not more than semi-manufactures	769.7	56.7	18.0	-20.5
Copper refined and copper alloys, unwrought	194.8	62.9	170.2	22.0
Unwrought aluminium	33.0	29.1	251.0	53.9
Unwrought zinc	2.0	36.9	173.7	36.3
Unwrought lead	17.4	102.9	80.6	-4.8
Manganese ores and concentrates	0.0	15.3	n.a.	n.a.

Note: The 2006 and 2013 data for manganese ores and concentrates are not confidential, but the 2018 figure is. Changes in HS and AHECC codes do not affect the data for the years/level of aggregation given. Growth rates give compound annual growth in per cent. Caution should be exercised in interpreting these growth rates: there can be very substantial fluctuations in export values from one year to the next, sometimes as a result of price and exchange rate changes. This can strongly affect the results.

Australian companies are involved in prospecting, exploration, managing and operating mines, managing minerals processing plants, and manufacturing and distributing commercial blasting systems, but to date this has not resulted in much direct investment.

At the end of 2015, only 1.6 per cent of the total FDI stock in Vietnam was in mining and quarrying.[216] Among other factors, this very low figure reflects the difficulty of assessing commercial risks in an environment dominated by powerful SOEs. It also reflects the fact that, with the exception of coal, bauxite and titanium, most deposits discovered to date have been too small to be economically viable for most international companies.

Australian METS companies rank ahead of Chinese, North American and European competitors in supplying mining equipment to the Nui Phao Mine – the world's largest tungsten mine.

Table 8.3

Australian exports to Vietnam that could include mining equipment, 2018

Source: ITC Trade Map Database

Product description	**Exports** ($m)
Basic chemical manufacturing/explosives	0.0
Rubber manufactures and headgear	0.8
Railway manufacturing	0.9
Professional, scientific, electronic equipment, of which: ... instruments for physical and chemical analysis	4.7 (2.6)
Electrical equipment	1.2
Iron and steel articles	1.0
Machinery and mechanical appliances, of which: ... self-propelled bulldozers, angledozers, graders, levellers, scrapers, mechanical shovels, excavators, shovel loaders, tamping machines and road rollers ... various pumps and parts of pumps ... machinery for sorting, screening etc. earth, ores or minerals; machinery for agglomerating mineral fuels, plastering materials; machinery for forming foundry moulds	21.7 (7.7) (4.7) (2.2)
Vehicles of a kind which might be used in mining	0.2
Total of possible METS products	**30.5**

Note: Estimates of confidential products that could include mining equipment are not provided because no 2018 import data for Vietnam were available at the time of writing. Vietnam's imports from Australia of the two confidential items that affect the above list were very small in 2017. Imports of sodium cyanide were around $0.5 million and self-propelled front-end shovel loaders less than 0.1 million.

Factors shaping the growing economic relationship

Rapid growth in Australia-Vietnam trade in minerals and energy is largely explained by Vietnam's status as one of the few countries to have achieved average economic growth of almost 7 per cent a year over the last couple of decades. This achievement is the result, first and foremost, of mobilising domestic savings and turning them into capital investments via SOEs or government-linked investment companies.[217]

Later, as Vietnam continued to reform and open up its economy, FDI inflows started to make a big contribution, particularly by creating one of the biggest manufacturing hubs in Southeast Asia: foreign invested companies account for around 70 per cent of Vietnam's exports.[218] And later still, growing consumption has become important in fuelling economic growth through the cumulative impacts of rural to urban migration, rising incomes and the growing purchasing power of the urban middle class.[219] These shifts are shown in broad terms in Table 8.4.

Sustained economic and social reform is central to this transformation because it helps to explain two essential parts of the growth story. First, Vietnam has continued to attract, for long periods, six to eight times the amount of 'greenfield' investment than might be expected

Table 8.4

Vietnam: Economic transformation, key indicators

Source: World Bank

	GDP per capita constant 2010 US$	**Savings** % of GDP	**Capital investment** % of GDP**	**FDI** % of GDP***	**Trade openess: exports plus imports** % of GDP
1986	383.8		14.4	0.0	23.2
1990	431.9		12.6	2.8	81.3
1995	581.1	20.5*	27.1	5.6	74.7
2000	761.6	39.2	29.6	4.2	111.4
2005	1012.4	33.1	33.8	3.4	130.7
2010	1310.4	30.4	35.7	6.9	152.2
2015	1651.2	24.6	27.7	6.1	178.8
2016	1735.3	24.8	26.6	6.1	184.7
2017	1834.7	24.5	25.8	6.3	200.3

*This refers to 1996. Savings as a percentage of GDP peaked at 42.3 per cent in 2004 and were mostly over 39 per cent from 2000 to 2004
**Capital investment as a percentage of GDP peaked at 39.6 per cent in 2007 and was mostly above 35 per cent between 2003 and 2010.
***FDI as a percentage of GDP peaked at 11.9 per cent in 1994 and was generally above 6 per cent from 1993 to 1998.

given the size of its economy.[220] In recent times it also has become the second most active member of ASEAN after Singapore for cross-border merger and acquisition deals.[221] There is a clear correlation between sustained capacity to attract FDI and continuous reform that improves the business environment, increases openness and reduces risk.[222]

Second, there also is a correlation between the manufacturing hubs created by these inflows, both in Vietnam and other Southeast Asian economies, and an initially 'bottom up' approach to regional economic integration. Efficiently functioning hubs require supply chains that are not impeded by tariffs and other barriers so that components can move back and forth across international borders in assembling finished products for export. This imperative spurred concerted efforts within ASEAN to reduce or remove border barriers.

International economic integration is at the core of the Vietnam Government's development agenda.[232] This is because:

- It offers a route to move beyond the limitations of a small domestic market and under-developed industrial base
- Growing connectivity within and beyond the region increases Vietnam's capacity to attract and absorb FDI into its electronics and textiles, clothing and footwear manufacturing hubs
- It enables international trade agreements to reinforce domestic reform and provides a way to learn from the policy successes and failures of other countries in improving their business environments (Box 8.1).

BOX 8.1

Some milestones in internationalising Vietnam's economy

1986	Doi Moi policies. An approach adopted after the Sixth Communist Party Congress that started the long process of economic renewal by shifting Vietnam away from central planning towards a socialist-oriented market economy
1992	Textile and Garment Trade Agreement with the European Community
1995	ASEAN membership; application for WTO membership; normalisation of political relations with the United States
2001	US-Vietnam Bilateral Trade Agreement. Both governments saw this as a stepping stone for Vietnam's accession to the WTO
2006	Permanent Normal Trade Relations with the United States
2007	Vietnam accedes to the WTO; US-Vietnam Trade and Investment Framework Agreement
2009	ASEAN-Australia-New Zealand FTA entered into force
2015	ASEAN Economic Community; Korea-Vietnam FTA entered into force
2016	Vietnam signed the Trans-Pacific Partnership Agreement but not implemented following US withdrawal
2018	Comprehensive and Progressive Agreement for Trans-Pacific Partnership signed. It entered into force in Vietnam in January 2019
2018	The European Union and Vietnam agreed final texts of the EU-Vietnam FTA and the EU-Vietnam Investment Protection Agreement.

WTO accession was critical to Vietnam's domestic reform program and capacity to attract FDI, both of which soared following accession. Accession required Vietnam to undertake far- reaching administrative reforms, remove some restrictions on investment and trade and improve legal transparency. It also helped strengthen intellectual property rights.[224]

Perhaps as far reaching a development has been a strong trend towards negotiating regional trade agreements, which have emerged as laboratories for trade policy, particularly to lower trade costs and tackle inventive forms of protectionism. Examples include the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), the ASEAN Economic Community

(AEC), the European Union-Vietnam Free Trade Agreement, and the negotiations for the Regional Comprehensive Economic Partnership (RCEP) agreement.

These types of agreements are challenging for all parties and especially for developing countries – a fact acknowledged by extended timeframes for implementation and usually by incorporating strong provisions for widening the scope for institutional development and cooperation across governments to support trade and wider economic engagement.[225]

The challenge for a lower-middle income country like Vietnam is particularly great. It was the only country at this stage of development to become a party to the CPTPP with its ambitious, and often legally enforceable, commitments on tariffs, non-tariff measures, paperless trading, services, investment, competition policy, anti-corruption disciplines, state trading, the environment, and labour. Its commitments in the European Union-Vietnam FTA, which is yet to come into force, are challenging. But its willingness to engage in such negotiations, and therefore to put its economic and social policies up for examination in negotiations that now go well beyond borders, demonstrates its long-term commitment to reform and suggests that it has good prospects for strong economic growth and development.

There is a general consensus that Vietnam can continue to grow at over 6 per cent per year into the early 2020s,[226] and there are solid grounds for expecting strong growth continuing well into the 2020s and 2030s. This is based on obvious drivers like population growth; the pace of urbanisation; rapid growth of the urban middle class; huge investments in hard and soft infrastructure; inflows of FDI into manufacturing, finance and infrastructure; opportunities for greater regional integration through the ASEAN Economic Community and other regional initiatives; and opportunities to move into labour-intensive and higher levels of manufacturing as China moves up the value chain.[227]

Vietnam's Ministry of Planning and Investment is seeking to transform the country into a 'modern, creative, equitable, open, and democratic society with clear blue skies, clean water, and equal access to opportunities for all its citizens.'[228] But this comes with a caveat. Vietnam must continue to adjust its growth model as it also moves up the value chain.

Potential energy and mining-related opportunities in Vietnam

The international business community, including Australian business, is optimistic about trade and investment prospects in Vietnam. There are strong expectations of future profit growth, and Vietnam performs well in business surveys of future company expansion plans in ASEAN.[229]

If Vietnam continues to grow strongly, it will create significant demand for energy, especially coal and LNG, and metals needed for infrastructure and urban development. It also should boost demand for efficient and cleaner thermal technologies that reduce environmental impacts, and for services more generally that support legal, regulatory and policy decision making on effective resource utilisation. In all of these areas there could be sizeable opportunities for trade and, in some cases, government-to-government cooperation.

Vietnam is looking carefully at import substitution possibilities. But the strength of likely demand growth means that it will need to rely on international markets to fuel development even as its energy and mining sectors become more developed.

Energy

Demand for electricity in Vietnam has grown at a compound annual growth rate of 13 per cent since 2000 in response to the requirements of rapidly growing industry and rising social expectations.[230] Meeting this demand has necessitated massive investment in new generating capacity and has turned Vietnam from a small net exporter of energy into a net importer.

Large and medium size hydro power plants now make up the biggest component of installed capacity followed by coal-fired and gas-fired generation. Because of wet and dry seasonal impacts, hydro and coal-fired generation account for roughly equal shares of production: between them they generate around 70 per cent of Vietnam's power supply.

Notwithstanding declared energy saving measures, there is a strong expectation that demand for electricity will continue to grow rapidly, possibly averaging 8 per cent per year during the decade to 2030.[231] Growth will be driven by population increases, urbanisation, the expanding industrial base and growing per capita consumption of electricity as a normal part of development.

Total installed generating capacity will also grow rapidly: under Vietnam's latest power development plan (PDP Rev VII) it will more than double between 2016 and 2030 from 42,762 megawatts to 100,215 MW.[232] But the mix of new capacity between different power sources is expected to change, with a stronger emphasis on renewable energy sources (excluding large and medium scale hydro) and retarded growth in coal-fired power. Just how much retardation is unclear given the Government's intention to review future coal-fired plants. Regardless, there is still an expectation that coal will provide about half of total electricity supply through most of the 2020s.

Table 8.5 demonstrates some of these changes by comparing the 2011 Power Development Plan with the 2016 revision. The changes will have significant implications for trade and investment because, according to the Vietnamese Government, the huge sums involved in building the new capacity will not be mobilised entirely by the state. Substantial investment is expected from the private sector, raising issues of privatisation and corporatisation. There are also implications for trade in thermal coal and natural gas.

Trade in thermal coal: Vietnam is the second largest coal producer in Southeast Asia after Indonesia. Production, mostly for the power sector, has been relatively flat over the past decade, reflecting a shortage of land suitable for open pit mining, but mainly low productivity, lack of local expertise in underground mining and lack of capital on the part of Vinacomin, the SOE responsible for around 95 per cent of output.[233]

Demand for coal, meanwhile, has soared as the Government has moved decisively in recent years to promote coal-fired generation as the least costly way of addressing power shortages and seasonal volatility in supply associated with high dependence on hydropower.

These changes in the supply/demand balance have resulted in Vietnam moving quickly from being a net coal exporter – exports peaked at 31 million tonnes (Mt) in 2007 – to a substantial importer. Thermal coal imports doubled to over 7 Mt in 2015, rose to 15.7 Mt in 2017 and reached 22.7 Mt in 2018. The speed of this change, however, also reflects key characteristics of Vietnam's coal

Table 8.5

Structure of power source, installed capacity

Source: Deutsche Gesellschaft fur Internationale Zusammenarbeit, *Vietnam Power Development Plan for the period 2011-2020: Highlights of Revised PDP*, GIZ Energy Support Programme in Viet Nam, 2016.

	2015 %	2020 %		2025 %		2030 %	
		PDP VII	PDP VII Rev	PDP VII	PDP7 VII Rev	PDP VII	PDP VII Rev
Renewable energy	5.37	5.6	9.9	---	12.5	9.4	21.0
Coal	33.5	48.0	42.7	---	49.3	51.6	42.6
Gas turbine	22.5	16.5	14.9	---	15.6	11.8	14.7
Hydro	37.3	25.5	30.1	---	21.1	15.7	16.9
Import	1.4	3.1	2.4	---	1.5	4.9	1.2
Nuclear	---	1.3	---	---	---	6.6	3.6

Note: --- refers to no information provided.

industry, which mainly produces high ash anthracite that 'often requires a specific boiler configuration for use in coal-fired power plants'. Most production occurs in the north of the country while most of the new coal-fired plants are in the south, and many of these plants are designed for imported coal.[234]

Vietnam will emerge over the 2020s as a major coal importer even if domestic production rises in response to possible reforms that increase competition in the industry and enhance productivity. This is because coal demand will continue to grow from the existing stock of coal-fired power plants and as those currently planned or under construction come on line:

> Under the revised Power Development Plan VII, Vietnam plans to build more than 70 coal-fired power plants with a combined capacity accounting for 49.3 per cent of the country's total electricity output by 2020, 55 per cent by 2025, and 53.2 per cent by 2030 respectively. Thus, coal-fired power generation still plays a very significant role in ensuring the future of the country's national energy security, especially in the wake of the National Assembly approving the deferral of nuclear power plants in the central coastal province of Ninh Thuan.[235]

The Vietnamese Government floated an import figure of 100 Mt by 2030 in its Coal Development Plan and Power Development Plan, both of which were adopted in March 2016. In a 2018 paper, Commodity Insights estimated imports around 85 Mt.[236] However, a lower growth scenario which brings projected imports back to below 70 Mt could be equally plausible.[237]

This unpredictability hinges on government reviews of future investment in coal-fired plants, shaped by Vietnam's international climate change commitments (including in recent free trade agreements); opposition to coal among some middle class groups; and concerns about the timeliness and safety standards of Chinese-built power stations (Chinese enterprises have won the great bulk of recent projects in Vietnam).[238]

A key factor will be the evolving role of renewable energy (particularly wind and solar, but not large-scale hydro) in the energy mix: the increasing emphasis on renewable energy was a standout feature of the revision to Power Development Plan VII (Table 8.6). Yet another factor might be growing pressure on some international banks not to support coal-fired power projects.[239]

Putting estimates of future import demand to one side, what can be said with certainty is that Vietnam will increase its thermal coal imports significantly well into the 2020s on the basis of power plants already in the pipeline, the likelihood that at least some of those being commissioned will be built and that the technology of choice will increasingly be supercritical and ultra-supercritical coal-fired plants.

How much Australia stands to benefit will depend on the competitiveness of Australian coal companies over time. But, on the face of it, Vietnam represents a major opportunity: Australian coal accounts for around one-quarter of the import market; the high quality of Australian coal makes it very suitable for use in high efficiency, low emissions power plants; and there is credible evidence that Indonesia may need to cut back on exports to Southeast Asian markets generally in order to meet fast-growing domestic demand.[240]

Trade in natural gas: Natural gas generated upwards of two-fifths of Vietnam's energy supply into the early and middle 2000s before coal-fired generation took off. By 2015 it generated around one-third of a vastly increased power supply and accounted for over one-fifth of installed capacity.[241]

Table 8.6

Targets for renewable energy, share of electricity production and installed capacity

Source: Deutsche Gesellschaft fur Internationale Zusammenarbeit, *Vietnam Power Development Plan for the period 2011-2020: Highlights of Revised PDP*, GIZ Energy Support Programme in Vietnam, 2016.

Source		2020 %		2025 %		2030 %	
		PDP VII	PDP VII Rev	PDP VII	PDP7 VII Rev	PDP VII	PDP VII Rev
Wind	Total capacity MW	1000	800	_	2000	1200	6000
	Share of electricity production %	0.7	0.8	_	1.0	2.4	2.1
Hydro power	Total capacity MW	17,400	21,600	_	24,600	_	27,800
	Share of electricity production %	_	29.5	_	20.5	_	15.5
Biomass	Share of electricity production %	0.6	1.0	_	1.2	1.1	2.1
Solar	Total capacity MW	_	850	_	4000	_	12,000
	Share of electricity production %	_	0.5	_	1.6	_	3.3

Note: As for Table 8.5.

Vietnam is self-sufficient in natural gas at present, but domestic production is projected to fall well short of demand, even with the planned development of two major offshore gas fields.[242] According to Vietnam's Gas Master Plan, LNG will be imported from 2021 and should ramp up to 5 Mt by 2025 and 15 Mt by 2035. This should create opportunities for Australia's LNG exporters and could also create opportunities in related services. Vietnam is keen to make progress on the legal and regulatory framework for the LNG sector, develop technical standards, develop training programs in regulatory and technical aspects of the LNG supply chain, and attract international investors.

Trade in other minerals

Vietnam's manufacturing ambitions mean that more effective transport, communications, power systems and other infrastructure to support them are critical to the country becoming a high middle income country within a generation. Vietnam must greatly increase imports of metals, metallurgical coal and a raft of services linked to hard infrastructure development and the emergence of a consumer-driven economy.

Metal utilisation is still relatively low and, while production of metals such as refined copper, steel, tin, and zinc is rising quickly, domestic production of metal ores is not increasing fast enough to meet demand. Steel provides a good illustration. Apparent steel use in Vietnam has risen more than eightfold since 2000 (Table 8.7) and per capita consumption is now on par with countries like Thailand and is not too far behind Malaysia, though it still trails countries such as China, Japan and Singapore.

In response to strong demand, investment in expanding blast-furnace steel capacity has risen sharply; crude steel production rose more than five-fold in the decade to 2015, then doubled between 2015 and 2017. At the same time, Vietnam has made some progress in increasing production of iron ore and metallurgical coal but domestic reserves are limited.

Table 8.7

Vietnam: Key steel industry statistics, 2000-2017

Source: World Steel Association

(Mt)	2000	2005	2010	2015	2016	2017
Crude steel production	0.31	0.89	4.31	5.6	7.81	11.47
Iron ore output	0.40*	0.80	1.97	2.69	3.15	3.51
Scrap imports	0.26**	0.18	1.89	2.47	3.29	4.55
Imports finished and semi-finished steel products	2.52	4.65	9.21	16.34	19.50	16.22
Apparent steel use (crude steel equiv.)	2.94	5.57	5.57	20. 51	25.09	24.31
True steel use per capita (kg)***	34.7	67.2	127.1	207.4	256.0	226.5

* 2001; ** 2002; *** This is adjusted for imports and exports of articles containing steel.

Meeting this imbalance has resulted in:

- Modest, though rising, imports of iron ore. Vietnam accounted for about 0.2 per cent of world imports valued at just over US$200 million in 2017
- Rapidly rising imports of ferrous scrap (Table 8.7)
- Imports of around 1 Mt per year of metallurgical coal
- Substantial increases in steel imports – one of Vietnam's top 10 imports.

Vietnam offers promising prospects for Australian exports of iron ore, metallurgical coal and high-quality steel. Some Vietnamese estimates suggest that there could be as much as a seven-fold increase in imports of metallurgical coal over the next few years, though they depend on many assumptions.

Beyond steel, Vietnam is boosting output of copper ores and concentrates and a range of other metal concentrates and metals in response to fast growing infrastructure requirements and changing consumer and energy-related technologies that are both increasing and broadening demand for metals.

Vietnam's largest copper mine has established a second refining plant to produce 40,000 tonnes of copper concentrate per year. A third alumina refinery is being planned by Vinacomin to increase alumina production from 1.3 Mt per year to around 4 Mt per year. And Masan Resources – a large private company – is gearing up to increase production of tungsten, bismuth, copper and fluorite concentrates. These and similar developments are boosting metal supplies but they will not satisfy demand. Vietnam will need to import a range of metals, including copper and aluminium ingots.

METS

The Vietnamese Government's priorities for strengthening the mining sector were outlined in the Prime Minister's *Decision Approving the Mineral Resources Strategy to 2020 with a Vision to 2030*.[243] They include promoting:

- Modern exploration technologies
- Geological mapping of onshore and offshore areas to clarify potential mineral resources
- Minerals processing using advanced technologies to meet domestic demand
- International cooperation on geological survey technologies and minerals mapping, exploration, deep mining, and mineral processing
- High level scientific and engineering training in areas like sustainable mining and safety.

This presents opportunities for Australian METS companies, which are well-regarded in Vietnam and operate across exploration, mine construction, mining and minerals processing. For example:

Mining-related training: Programs are already underway and expansion into areas such as sustainable mining, mine safety, environmental management, and mineral processing should be easy to achieve.[244]

Exploration: Exploration and mapping services present a major opportunity. Like so much of the Greater Mekong Subregion, probably 'less than 10 per cent of [Vietnam's] base-metal and precious-metal resources have been discovered to date because the country has never been systematically explored using modern methods to find deeply buried, large deposits.'[245] Depending on policy developments, the pace of mineral exploration is expected to pick up substantially through the 2020s and 2030s.

Addressing inefficiencies: This is another key medium-to-long term opportunity. Reversing declining labour productivity in Vietnamese mining will require stable, consistent, secure mining legislation and a competitive fiscal regime to attract major investment, modern technology and world best practices. Opportunities exist in deep mining and the use of digital technology and advanced analytics to improve productivity, health and environmental outcomes. An obvious first step is exploration and mapping. Developing proven resources effectively will then need further investment in technology and expertise.

Minerals processing: The Vietnam Government strongly supports initiatives to increase processing capacity for minerals, but they are limited by the absence of cheap power. Over time, this presents two opportunities: providing services that may assist in reforming the energy sector and building related infrastructure and providing services related directly to raising efficiency across a range of metrics for minerals processing.

Information systems: Improvements to information systems for classifying mineral exploration outcomes, resources and ore reserves, and more generally to mining governance could provide opportunities for Australian METS companies. Vietnam is known to be interested in the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ('the JORC Code'). Similarly, Vietnam's mining governance regime could benefit from further strengthening.[246] Delivering this appears to be a major priority for the Vietnamese Government.

Trade in infrastructure-related services

Vietnam spends more on hard infrastructure as a percentage of GDP than any other country in Southeast Asia; it no longer qualifies for low interest loans having become a middle income status country, and trails behind regional peers in public-private partnerships because international financial companies are discouraged by high risks, long payouts, site clearance costs, and lack of transparency.[247]

Regulatory and institutional reforms are needed to make infrastructure more attractive to private investors. This may provide an opening for further Australia-Vietnam cooperation, including through Australian mining and METS companies working with Vietnamese counterparts on major infrastructure projects.

Challenges for Australia in Vietnam

Vietnam is a difficult market characterised by a mixture of abundant business opportunities, opacity and corruption, weak corporate governance, red tape, precarious protection of intellectual property, and uncertain judicial processes.[248] These challenges apply equally to domestic and foreign firms, yet the business environment is improving and promises to improve further. For example:

- Vietnam is party to the WTO's Trade Facilitation Agreement. Its Law on Customs provides a legal framework for the National Single Window for customs documentation and introduces a number of improvements, including increased electronic filing of customs forms, more self-certification by traders and more scope for advanced rulings on things like classification of goods, rules of origin and customs valuation. Vietnam has greatly extended its trade facilitation commitments through international agreements like the CPTPP
- Access to government procurement markets will be facilitated by core provisions

in agreements like CPTPP on national treatment/non-discrimination, prohibitions on using technical specifications that create trade barriers, and improved transparency on tendering processes

- Entry requirements for foreign investors have become less of a hurdle. Vietnam's legal system now considers any company with over 51 per cent local ownership to be domestically invested, making it eligible for more simplified licensing processes
- Vietnam is among a handful of countries to receive a 10-star rating from UNCTAD for business registration procedures
- Corruption is perceived to be less prevalent for foreign invested enterprises
- Vietnam has a negative list approach to foreign businesses, allowing them to operate in all sectors of the economy, except for a small number of identified prohibitions
- The Housing Law and Real Estate Business Law extends land-use rights to foreign investors. Foreign investors can lease land for renewable periods of 50 years, and up to 70 years in less developed areas of the country.
- Vietnam has joined the Paris Convention on Industrial Property and the Berne Convention on Copyright. CPTPP also covers the whole range of intellectual property issues, including cooperation, trademarks, geographical indications, patents, industrial designs, copyright, enforcement, and internet service providers
- Some progress has been made on making SOEs more compliant with market principles. There also has been a crackdown on top-level SOE executives involved in corruption, but progress is predictably slow in the face of substantial entrenched interests.[249] SOE dividends are the second-biggest source of government revenue after taxes, and state enterprises are substantial employers of labour.[250]

Some of this overall progress is reflected in changes to Vietnam's rankings on most elements of the World Bank's *Doing Business* index over 2015-2018 (Chart 8.1).

Tariffs on mining and METS

The bulk of tariffs on mining commodities, related chemical products and equipment and technology have been eliminated through AANZFTA, while Vietnam's applied simple average MFN tariff on minerals and metals was 8.2 per cent in 2017. Remaining AANZFTA tariffs will be all but eliminated by 2020.[251]

The exceptions are tariff lines covering fuses, explosive and propellant powders, which were left unbound but with a base MFN rate of zero; a few lines that were phased to 3 or 5 per cent covering engines and parts of engines that may have application in mining; and three lines of electrical machinery and equipment that will be phased to 5 per cent by 2022. Removing these nuisance tariffs should be attempted in the AANZFTA Review.

Non-tariff barriers

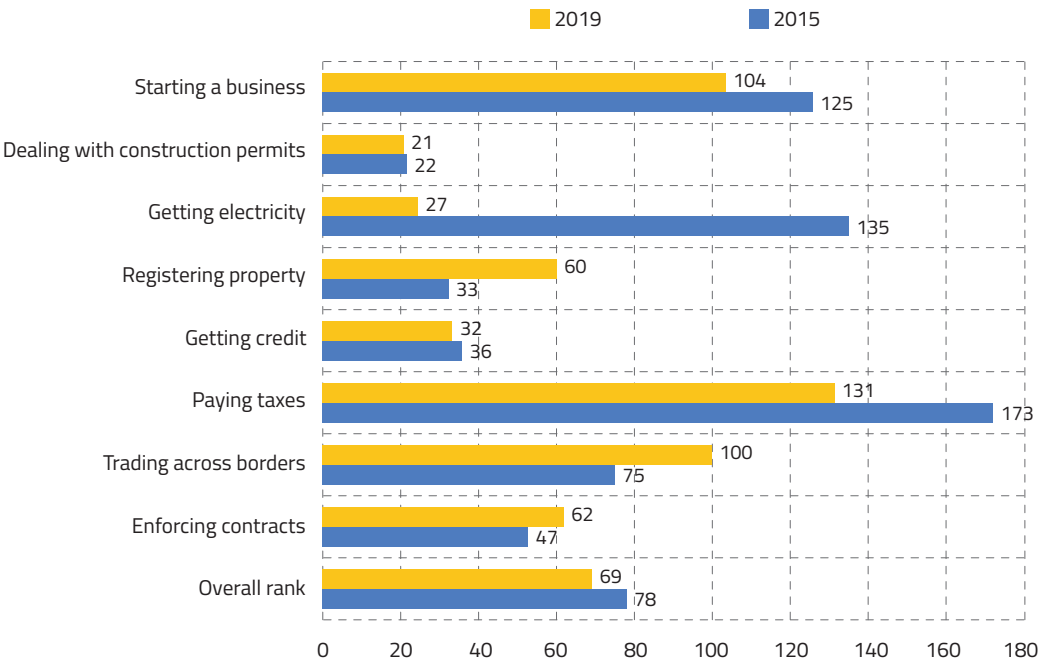
No imported product is free from non-tariff measures and some products – such as machinery, electrical goods, processed metals, and chemicals – are subject to multiple measures.[252] Tariff rate quotas apply to salt, some steel products and radio transmission equipment. Mandatory inspections and quality controls are routine for chemicals, industrial explosives, oil and gas mining equipment, and radio transmission equipment.

And domestic manufacturing is supported by complex tax incentives and subsidies and by government procurement policies that favour

Chart 8.1

Vietnam: Ease of Doing Business rankings, 2015 and 2019

Source: World Bank, *Doing Business 2019: training for reform*, International Bank for Reconstruction and Development/World Bank, Washington D.C., 2019; _ _ _ *Doing Business 2015: Going Beyond Efficiency*, International Bank for Reconstruction and Development/World Bank, Washington D.C., 2014.



Note: The rankings are of 190 economies in 2019 and 189 economies in 2015.

domestically produced goods and services when available.[253] Improving disciplines on import procedures, local content regimes and government procurement, possibly along the lines agreed in CPTPP or in the Vietnam-EU FTA, would be a worthy objective for the AANZFTA Review.

Export taxes apply to a wide range of products, including minerals and metals, and range from 5 to 40 per cent as part of a policy to promote more value-added domestic processing. Coal is taxed at 5 to 15 per cent, crude oil at 10 per cent, gems and precious stones at 5 to 10 per cent, silver and gold at 2 to 5 per cent, and other metals and metal products at 15 to 22 per cent.[254]

Under CPTPP, Vietnam has committed to phase out export taxes. It would be useful in the AANZFTA Review to get further clarification on the phase-out.

Barriers to services

Barriers to trade in services tend to be more onerous than on most goods, though considerable liberalisation occurred as a consequence of Vietnam's WTO accession undertakings. This is apparent from Table 8.8, which provides a snapshot of services trade restrictions in six members of ASEAN around 2011 – four years after Vietnam's accession. Vietnam was far from having the highest level of restrictions, both in terms of the overall service trade restrictions index and indexes for professional and transport services.

Vietnam made limited additional commitments on services in AANZFTA beyond its WTO commitments either generally or in relation to construction, mining and energy related services. Some commitments that are potentially useful for mining include permitting geo-technical and hydro-geological services, environmental and technical surveys; scientific and technical consulting services; and technical testing and analysis services. But some services – such as leasing services for mining and oilfield equipment, and services incidental to mining such as supplying mining equipment, materials, chemicals, and offshore/marine support vessels – are explicitly excluded from the Agreement.

Market access for Australian companies should be helped by outcomes in the CPTPP, including Vietnam's agreement to provide greater transparency on investment screening for mining and lock-in investment and local content regimes for oil, gas and power development. Other helpful provisions include halting new export taxes on minerals and a commitment to eliminate them over time, guaranteed access for Australian METS companies, and greater access to government agency and SOE procurement markets.[255]

The AANZFTA Review and RCEP might plausibly add to these opportunities. Bringing AANZFTA commitments into line with the Vietnam-EU FTA and CPTPP through the AANZFTA Review would be worthwhile, potentially opening up new business services

Table 8.8

Services trade restrictions, selected ASEAN members

Source: World Bank, Services Trade Restrictions Database

Country	Overall STR Index	Professional services	Transportation services
Cambodia	24	60	36
Indonesia	50	76	66
Malaysia	46	73	55
Philippines	54	80	44
Thailand	48	74	47
Vietnam	42	32	39

Note: The STR Index covers financial services, telecommunications, retail distribution, transportation and professional services (accounting and audit and legal). The index is a measure of openness: 0 is completely open; 25 virtually open with minor restrictions; 50 major restrictions; 75 virtually closed with limited opportunities to enter the market and operate; and 100 completely closed.

opportunities; setting disciplines on professional licencing and recognition of qualifications; and ensuring that future benefits conferred by Vietnam to other countries would flow automatically to Australia (and vice versa).

Barriers to investment

The most difficult part of the Australia-Vietnam resources relationship is direct investment. Vietnam may shine on the *Financial Times* Emerging Market Greenfield FDI Index, but most of the inflows go into manufacturing, followed by financial services and electronics. With some exceptions, there is minimal direct investment by international companies in mining.

Mining faces many challenges in Vietnam. Many, such as the costs of deep mining and environmental challenges, cannot be fixed easily. But, in the main, minimal foreign investment in mining is a response to Vietnam's difficult business environment: it is improving but remains highly unpredictable for mining. In an industry where mine development from prospecting to production may take a decade or two and where international capital is highly mobile, there are potentially higher returning and less risky alternatives.

The playing field for foreign mining companies is far from level. The state sector has a virtual monopoly in mining and in several industries relevant to mining such as utilities and construction. Major SOEs act both as commercial entities and policy and regulatory agencies. And problems with land-use rights can add to uncertainty and conflict, particularly in the case of mining and large-scale infrastructure projects. The Vietnam Government is working to establish a comprehensive cadaster of land-use rights, but this is far from clear cut, especially where land ownership is communal.[256]

The playing field for foreign mining companies is far from level. The state sector has a virtual monopoly in mining and in several industries relevant to mining such as utilities and construction.

Confusing policy and administrative issues are the biggest challenges to foreign mining investment, including:

- To obtain a mining licence, prospective investors have to include a mineral processing plan in their application. The mining law does not allow companies just to mine and export ore
- Several central government agencies have responsibility for mining and coordination between them is poor. Central and provincial-level taxation departments, for example, work to extract maximum taxes on a short-term basis without much regard to the longer-term life cycle considerations that are important to mining investment decisions
- Existing mining laws and enforcement are often inconsistent between national and provincial governments, including in basic areas like mining licensing processes
- Taxation and regulatory requirements keep on changing. Examples include changes in domestic mineral processing requirements; outright bans on exports of unprocessed minerals; frequent increases in royalty payments and export taxes; and the haphazard suspension of mining and exploration licences.

Government and business have very different views on these changes. Government takes the view that it is creating a welcoming environment for international mining capital by deepening the links between mining and the rest of the economy and increasing efficiency in the sector by encouraging new technology and protecting the environment. But it also appears to be less interested in attracting foreign investment in mining and much more interested in encouraging foreign investment in those areas of downstream mineral processing requiring advanced technology and skills.

Business meanwhile grapples with the highest mining taxes and royalties in the world and with legally binding requirements for mining companies to process minerals.[257] The message from business to government is blunt: international mining capital is mobile, moves quickly to where it is profitable and mining in Vietnam is not especially profitable. The tax part of this message has been made even blunter by the recent departure of two major internationally owned and operated mines, one of them citing the high royalty and tax regime.[258]

Some policy issues

There is a compelling case for Australia and Vietnam to use their new strategic partnership to push for trade liberalisation.

Investment flows are weak in both directions. Vietnam's traditional SOE financing model is no longer appropriate as a basis for funding massive new infrastructure developments that are central to future growth.[259] Australian expertise in alternative funding arrangements, such as public private partnerships, the regulatory and institutional reforms needed to support them, and the detailed economic and financial analysis required to allocate resources efficiently, would be of value to the next phase of economic reform in Vietnam. It might also help in laying some of the foundations for the next phase in Australia-Vietnam mining relations in which direct investment might potentially play a bigger role.

CHAPTER 9

Brunei Darussalam

KEY POINTS

- Brunei's economy is built around its oil and gas endowment and it has the second highest per capita income in ASEAN after Singapore.
- Like Australia, Brunei is committed to promoting greater economic integration in the Asia Pacific. It is the lead within ASEAN for meetings with Australia and New Zealand and is a signatory to the gold standard for free trade agreements in the region, the Comprehensive and Progressive Agreement for a Trans-Pacific Partnership (CPTPP).
- Australia's exports to Brunei were about $50 million in 2018 and minerals and basic metal manufactures scarcely figured. Imports (almost entirely crude oil) are much more significant ($767 million in 2018). Two-way direct investment is very small.
- There may be opportunities for METS firms to develop niche markets, particularly those relevant to Brunei's oil and gas industries, but Australia's primary interest is to continue to engage with Brunei on regional trade policy issues.
- Brunei's mineral industry (excluding oil and gas extraction) is also small and centred around mining carbonate rocks, sand, gravel, and silica sand. Exploration is held back to protect tropical rainforests. Brunei is part of the Heart of Borneo initiative that seeks to ensure sustainable forest management over an area that includes part of its territory.

Once a powerful sultanate controlling most of Borneo and the Sulu Archipelago, Brunei Darussalam is the smallest of the ASEAN countries. It occupies an area about double the size of the Australian Capital Territory and has a population a little greater than Canberra's.

Brunei is nevertheless a significant economy in the region. It was the third-largest exporter of crude oil and of liquefied natural gas (LNG) in East and Southeast Asia in 2018. Oil and natural gas have been the main source of its very considerable wealth, which gives it the second highest per capita income in ASEAN after Singapore, well above Australia's in purchasing power parity terms. Car ownership is among the highest in the world, essential medical and dental services are made available to citizens free of charge and there is no income tax.

Brunei is significant for Australia from the perspective of trade policy and for Australia's objective of promoting greater economic integration in the Asia Pacific. Although Brunei is not a vocal participant in international trade meetings, it is a player in them. It has been a member of the World Trade Organization (WTO) since its inception and of ASEAN since it gained independence in 1984.

It was one of the founding members of APEC in 1989. It is the lead for ASEAN in meetings with Australia and New Zealand. It was also one of the four members of the Trans-Pacific Strategic Economic Partnership Agreement (or P4) that was the foundation for the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). Along with other ASEAN members it is a participant in negotiations for a Regional Comprehensive Economic Partnership (RCEP).

Australia's interests in the market

Australia's trade with Brunei is very small. Exports of goods were only $50 million in 2018, somewhat above the average for the previous five years. Most merchandise exports consisted of agricultural products. But there were also some manufactures exports. Services exports were a little bigger than merchandise exports at $62 million, with about two-thirds of these consisting of travel-related services, partly reflecting Australia as a destination for students from Brunei (there were about 400 enrolments by Brunei citizens in 2018, principally in higher education).[260] Transport services made up most of the rest.

Australia's merchandise imports from Brunei were much larger than corresponding exports, totalling $767 million in 2018. This was well up on the values in 2016 and 2017, but below the levels reached in some previous years – in 2012 they had exceeded one billion dollars. Merchandise imports have been made up almost entirely of crude petroleum. Imports of services totalled $54 million in 2018 and were mainly transport and travel-related.

Minerals and basic metal manufactures scarcely figure in Australia's exports. Exports of parts of machinery for filtering or purifying liquids or gases, which could have applications in mining, totalled $5.2 million in 2018, up from negligible values in previous years. Other items included various pumps and parts of pumps. The total of all of these products, including minerals and basic metal manufactures, was under $7 million.

The amounts involved in two-way investment are also small. The stock of all of Brunei's investment in Australia at the end of 2018 was $114 million, but direct investment was negligible according to ABS data. Foreign

Investment Review Board annual reports for the past five years do not show any investment in Australia from Brunei, although other sources indicate some activity.

One unconfirmed report suggests that the Brunei Investment Agency, which administers the country's sovereign wealth fund (see below), holds a ten per cent stake in Perth-based financial services firm, Patersons Securities.[261] Cumulative Australian investment in Brunei was $77 million in 2018. There is no published ABS data on the level of Australian direct investment in Brunei for that or immediately preceding years.

BHP has been involved in developing Brunei's offshore oil fields. The Government of Brunei announced in 2002 that it had awarded a deep-water petroleum exploration site to a joint venture of three firms, Total, Amerada Hess and BHP (then BHP Billiton). BHP had a 25 per cent interest in the consortium. The site is around 100 kilometres northwest of the Brunei coast, with water depths ranging from 1000 to 2750 metres. Exploration was halted in 2003 until Malaysia and Brunei clarified their boundaries and the production-sharing arrangement was amended in 2010 to allow two additional firms – Murphy Oil Corporation and Petronas Carigali Overseas – to join the consortium.[262]

Opportunities for expansion

Brunei's economy contracted by almost 2 per cent per annum in real terms between 2012 and 2016. It experienced only slow growth in 2017 and is estimated to have contracted again in 2018. The IMF expects growth to be higher in the medium term, at a compound rate of above 5 per cent per annum between 2018 and 2024. Improved growth is expected largely due to stronger downstream production in key areas (including through the Hengyi refinery and Brunei Fertilizer Industries), as well as a bigger contribution from oil and gas industries. The IMF also sees the financial sector making a contribution to growth in the medium term.

At the same time, the Fund warns of risks to the outlook, including those arising from growing protectionism and uncertainties about the outlook for the oil and gas sector. Dwindling oil and gas reserves are a risk, but only in the very long term (Box 9.1).[263]

The Brunei authorities launched in 2008 the Wawasan 2035 or National Vision 2035 as a guide to longer-term planning. Among other things, it aimed to achieve a per capita income among the world's top ten countries by 2035, including by promoting investment in downstream industries from oil and gas, as well as in other sectors appropriate to Brunei's resource endowments. A Vision 2035 Executive Council was established in 2014, among other things to help realise the Vision's goals.[264]

Irrespective of Brunei's growth over the next decade, the opportunities for Australian mining and metals exports are likely to be limited given the small size of the market and the structure of its imports. Among Brunei's 2017 imports valued at US$25 million or more, only one group of items, Portland and various other types of cement (HS 2523), is classified in this series of publications as in 'mining'. Australia's exports of this group of products are extremely small (US$3 million in 2017) and markets did not include Brunei, which sourced more than two-thirds of its total imports of US$33 million from Japan and Thailand. In areas where Australia has a strong comparative advantage, Brunei's 2017 imports were very small. For example, it imports insignificant quantities of coal and unwrought aluminium imports from all sources were under US$2 million in 2017.

BOX 9.1

How long will Brunei's oil and gas last?

A key issue for Brunei's economic prospects is the adequacy of its petroleum and gas reserves. At the beginning of 2018, proven crude oil reserves amounted to 1.1 billion barrels, around 30 times 2017 estimated production. Natural gas reserves were 260.5 billion cubic metres, over 20 times 2017 production. Reserves as defined here are those that are considered, with a high degree of confidence, to be commercially viable for production from known reservoirs in current economic conditions: actual reserves into the future are likely to be appreciably larger. (The Government expects that another 3.5 billion barrels of oil will have been added to reserves by 2035).

Nevertheless, the country's high dependence on oil and gas has added urgency to the objective of the authorities to diversify from these two products, which continue to make up about 55 to 60 per cent of Brunei's GDP, around 70 per cent of central government revenue and about 90 per cent of merchandise exports.

Source: Data on reserves and production are from the Central Intelligence Agency, *World Factbook*, accessed 14 July 2019, at **www.cia.gov/library/publications/the-world-factbook/geos/bx.html**

There may be opportunities for METS firms to develop niche markets relevant to Brunei's oil and gas industries, and they may also be able to provide equipment and services that can help Brunei with its goal of diversification. But opportunities for METS and for mining investors are not significant. Brunei's minerals industry is small, principally involving mining carbonate rocks, sand, gravel and silica sand.

Exploration is held back to protect tropical rainforests. Brunei, like Indonesia and Malaysia, is part of the Heart of Borneo initiative established by the three governments in 2007 to ensure sustainable forest management over a large area of Borneo, including part of Brunei's territory.

Brunei's sovereign wealth fund, the General Reserve Fund, may make it possible to develop links to mutual advantage. However, little is known about its scale and operations: accounts for the Brunei Investment Agency, which administers the Fund and Brunei's foreign exchange reserves, go only to the Sultan. According to an estimate attributed to the US State Department, the Brunei Investment Agency had US$30 billion in assets under management in 2009. Assets are believed to be mainly in areas like gold, bonds, real estate and hotels.[265]

Challenges

The general business environment

Brunei ranks 55th of 190 economies represented in the World Bank's Ease of Doing Business indicator (Chart 9.1). This makes it fourth among ASEAN countries, after Singapore, Malaysia and Thailand.

Brunei scores particularly well on access to credit (where it shared the first ranking). However, it has a low rank on trading across borders (149 out of 190), with poor results on both the time and cost to export and import.

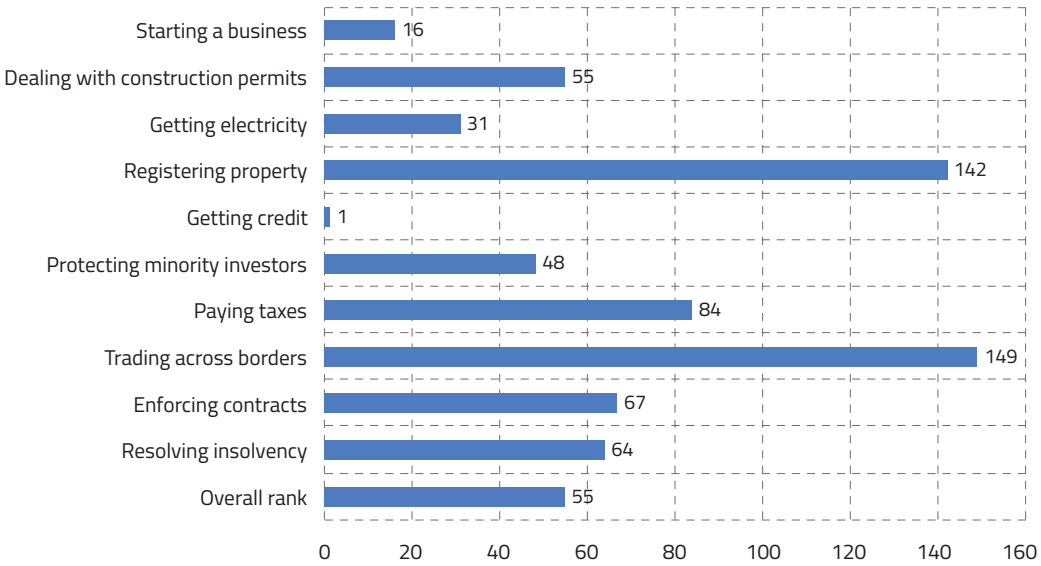
In the case of importing, for example, documentary compliance typically took one hour in France (which shared first ranking with a number of other economies for trading across borders). In Brunei, it took 132 hours.[266]

Results like these would make it difficult for Brunei to participate effectively in modern international supply chains, which depend on both exporting and importing goods and services as part of a broader process of manufacturing final products. Brunei ranks 80th of 160 economies on the World Bank's International Logistics Performance Index, ahead of the least developed ASEANs (though only marginally so in the case of Laos) and well behind all others.[267]

Chart 9.1

Brunei: Ease of Doing Business rankings, 2019

Source: World Bank, Ease of Doing Business 2019



Note: The rankings are of 190 economies. Rankings are based on data available as at 1 May 2018.

The World Economic Forum's Global Competitiveness Index is also useful in looking at the general business environment. Brunei is middle ranked at 62 out of 140 economies for which data are provided. It ranks fifth among ASEAN economies. Brunei's small market works against it on this index, but its low ranking also reflects a lack of depth and stability in the financial system, and low rankings on innovation capability, business dynamism and macroeconomic stability.[268] More positively, corruption is much less a problem than in many other countries. On the Transparency International Corruption Perceptions Index for 2018, Brunei ranked 31st out of 180 countries – a distant second to Singapore among the ASEANs.[269]

Tariffs

Brunei has relatively few significant tariff barriers; in 2018, the simple average of applied most-favoured-nation tariffs was only 0.2 per cent. The trade-weighted average for 2017 was also 0.2 per cent. As is usual, the average WTO-bound tariff was much higher, at over 25 per cent, giving the authorities considerable freedom to increase applied tariffs.

In Australia's case, tariffs on exports to Brunei are mostly bound through AANZFTA. Mining products and basic metal manufactures are all scheduled at zero for 2012 to 2020 and beyond. However, some items of mining equipment have non-zero AANZFTA rates for 2019. Two examples are steel helmets and new or re-treaded lorry tyres, which have scheduled 2019 rates of 10 and 20 per cent respectively. These rates go to zero for 2020 and beyond, as indeed do all METS products.

A residual group of around 110 non-METS items remain unbound in Brunei's AANZFTA schedule for 2020 and beyond. They include alcohol, tobacco products and firearms and ammunition, some reflecting Brunei's strong Islamic values.

Tariffs on Australia's exports to Brunei could also be affected by the CPTPP assuming that Brunei ratifies the agreement (it had not done so at the time of writing). Under Brunei's CPTPP schedule, all mining and basic metal commodities are listed as zero on entry into force of the agreement (this will be 60 days after it gives notice of its ratification). For some items that could include mining equipment, there are longer phase outs. The CPTPP schedule can therefore give a less liberalising commitment than AANZFTA in some cases.[270] Table 9.1 illustrates this for several items which could include mining equipment.

Non-tariff barriers

Like a number of other ASEAN economies, Brunei makes extensive use of non-tariff measures (NTMs). A 2016 study for the Economic and Research Institute for ASEAN and East Asia (ERIA) found that it imposed 516 NTMs affecting over 5600 products (or nearly 57 per cent of all tariff lines). The Ministry of Health was the main issuing institution (mostly alone, but sometimes in collaboration with other agencies). It accounted for more than two- thirds of the total of 516 measures.

NTMs mainly took the form of technical barriers to trade and sanitary and phytosanitary measures. A number of mineral products and metals were affected by NTMs – 112 mineral products were affected by two NTMs and 29 by three or more. There is relatively little information on the impact of these measures and, at the time of the ERIA study, Brunei had

Table 9.1

Brunei's commitments on tariffs for selected METS products

Source: Schedules to the Trans Pacific Partnership Agreement (applied under the CPTPP) and to AANZFTA available at **www.dfat.gov.au**

HS sub-head or code	Abbreviated description	AANZFTA	CPTPP
650610	Safety headgear	0 in 2019 and beyond, except for steel helmets which are 10 per cent in 2019 and 0 in 2020 and beyond	EIF
841350, 841360, 841370, 841381	Pumps of various kinds	0 in 2019 and beyond	Almost all lines EIF, but two not 0 until year 7 of the agreement
9015, 9024, 9026, 9027	Instruments of various kinds (e.g. surveying, oceanographic, for physical and chemical analysis)	Most lines 0 in 2019 and beyond, but some at 5 per cent in 2019 and 0 in 2020 and beyond	The majority of lines EIF, but a number not 0 until year 7 of the agreement

Note: EIF means that a tariff rate is zero on entry into force of the CPTTP for Brunei. More detailed descriptions of the HS sub-headings and codes listed are available in the first volume of this series of publications.

reported only two of 58 regulations creating these NTMs to the WTO.[271]

Brunei has recently replaced some tariff barriers with excise duties, notwithstanding the fact that it does not produce some of the goods subject to excise. USTR reports that in 2017 excise duties replaced import duties in 'categories such as instant coffee, carpets and textile floor coverings, headgear, cosmetics, electrical goods, automotive parts, apparel and clothing, jewellery and clocks'.[272] The excise rates levied on these products can be significant: headgear, for example, attracts an excise of 10 per cent.[273] Under AANZFTA and the CPTPP, there is a requirement for national treatment in relation to these duties. Brunei does not have sales, goods and services or value-added taxes.

Barriers to services trade

There are significant barriers to services trade with Brunei, including in areas relevant to the mining and METS sector. Reflecting these barriers, Brunei made only limited commitments under the General Agreement on Trade in Services (GATS) in parts of four of the 12 sectors used in the WTO for this purpose.

There are also broad exemptions to most-favoured-nation (MFN) treatment in Brunei's GATS Schedule (for example, foreign equity or interest is subject to an MFN exemption of indefinite duration with a view to maximising the benefits to Brunei of foreign involvement). Commitments have been extended somewhat in the various FTAs to which Brunei is a party; for Australia, those under AANZFTA, and potentially CPTPP, are relevant.[274]

Taking some specific areas of interest to the mining and METS sector as examples:

- Engineering services are not subject to any GATS or AANZFTA commitments. The CPTPP states that foreign nationals may not provide engineering services except where they meet residency and professional association membership requirements, or provide services through, or in joint venture with, a local enterprise with Brunei nationals that meet those requirements
- There are no GATS commitments for construction services. AANZFTA includes some commitments, allowing foreign equity of at most 50 per cent for service providers. However, the AANZFTA commitments do not extend to construction services relating to mining. The CPTPP sets out a number of conditions regarding the supply of construction services, including levels of foreign equity allowable for public-private projects of different values (projects with a value of not more than BND250,000 – around US$184,000 at the time of writing – are not open to any foreign equity)
- Legal services are not subject to any GATS commitments and there is a general exemption from MFN treatment given that 'the establishment of foreign law firms… is based on case-by-case approval'. AANZFTA does not contain any commitments. The relevant CPTPP provision makes it clear that foreign nationals 'may not supply legal services in Brunei Darussalam except in relation to international or home country law', nor establish an enterprise to do so except through a partnership with at least one registered Brunei advocate and solicitor. In the case of Brunei's own law, the authorities reserve the right to take any measures affecting supply.

The GATS, AANZFTA and CPTPP include useful commitments by Brunei on the ability of business persons to enter the country. Its original GATS schedule included a commitment to allow intra-corporate transferees (defined as managers, executives and specialists) to enter for a period of three years for services covered in the schedule, extendable to a maximum of five years. AANZFTA extended the same commitment to a wider class of services. CPTPP, when it enters into force for Brunei, will add new categories, allowing business visitors, investors and persons installing and servicing equipment to enter for three months, extendable to one year. In addition, CPTPP includes commitments to allow the spouses and dependents of intra-corporate transferees to work.

Barriers to foreign direct investment (FDI)

Proposals for foreign investment in Brunei are analysed and evaluated by the FDI and Downstream Industry Working and Steering Committees. Government priorities are halal products, technology and creative industries, business services, tourism and downstream oil and gas industries. A variety of incentives are offered to encourage FDI. The Invest in Brunei Darussalam Action and Support Centre (FAST) and the Brunei Economic Development Board work to facilitate investment, in collaboration with other agencies.

The Government markets Brunei as a destination partly on the basis of its strategic location in Southeast Asia along with very low tax rates (an 18.5 per cent rate for companies, with no capital gains tax or personal income tax), intellectual property protection, and

the improvement in Brunei's Ease of Doing Business score.[275] One attraction is that there is normally no upper limit on total foreign ownership of companies incorporated in Brunei. But the Companies Act does require that 'locally incorporated companies…have at least one of the two directors – or if more than two directors, at least two of them…be ordinarily resident in Brunei'.[276] An exemption from national treatment to cover this provision is written into Brunei's CPTPP schedule, but it is possible to obtain exemptions from the requirement in some circumstances.

Foreign investment in Brunei is likely to be of limited interest to firms outside the oil and gas sector. According to the US Geological Survey, Brunei has reserves of coal, silica sand, carbonate rock, and sand and gravel, but they are believed to be small.[277] In the case of coal, Brunei's CPTPP schedules commit Brunei to allowing a foreign investor to hold a majority share in any joint venture, but there are broad exemptions with regard to national treatment, MFN treatment, performance requirements and provisions relating to directors and senior management.

For example, Brunei reserves the right to require that exploration or production be carried out by a joint venture, with costs in the exploration phase being borne by the foreign investor, and with the participating Brunei enterprise able to increase its share under defined circumstances.

Similarly, for silica sand, Brunei reserves the right to take any measure inconsistent with the CPTPP provisions on national treatment and performance requirements. Mining or quarrying of sand and gravel (apart from silica sand) requires approval from the Ministry of Development and output may not be exported.

Policy challenges

Australia has cordial relations with Brunei and our primary interest is to continue to engage with it on regional trade policy issues such as those involving AANZFTA, RCEP and APEC. Even here, Brunei's small size means that it has only limited influence and it may be best thought of as a source of advice on ASEAN attitudes. Attracting the interest of Brunei's sovereign wealth fund is another possible interest whether in relation to investment in Australia or to Australian investment in third countries but, as already suggested, it would not appear to be of great interest to the mining sector.

Some niche areas, like silica sands, could be attractive to firms if they are opened to mining in the future. For METS firms, the absence of a significant extractive resource sector means that there are few opportunities. Their best prospects may lie in seeking links with Brunei's very significant oil and gas sector and associated downstream industries. There are no strong policy priorities for Australia in relation to specific mining and METS interests.

CHAPTER 10

Singapore

KEY POINTS

- Singapore is Australia's fifth-ranked trading partner and leading trading partner in ASEAN. Trade in resources-related products accounted for over 40 per cent of two-way trade in 2018, led by Australia's imports of refined petroleum ($8.2 billion) and exports of LNG and crude petroleum to Singapore. Singapore was Australia's fifth-ranked export market for gold.
- Singapore's investment relationship with Australia very much reflects its role as ASEAN's financial hub. It accounts for around 60 per cent of total inward and outward FDI. Total FDI in Australia from Singapore was $28 billion in 2018. Mining, however, is not prominent in bilateral investment flows.
- Singapore is positioning itself as a key hub for innovation and research, including in technologies such as artificial intelligence, automation and sustainability, which are very relevant to mining.
- Singapore is an important hub for mining and METS companies just as it is for many other industries. It is a trading hub for iron ore, thermal and metallurgical coal and steel. It has well developed markets for gold and precious stones. Top world mining companies have offices in Singapore that focus on global marketing and procurement and on innovation.
- Singapore is a significant and possibly growing market for METS. Many METS firms with offices abroad have offices in Singapore.
- Around 95 per cent of Singapore's electricity is produced using natural gas, including LNG from Australia. There are no plans to expand coal-fired power.

Singapore's impressive growth over more than half a century, high per capita income and living standards, excellent infrastructure, world-leading ratings for competitiveness and ease of doing business, and its status as an economic hub make it an entrepôt for trade and finance and a base for carrying out business in ASEAN.

Australia and Singapore share deep people-to-people, strategic and economic links. The Australia-Singapore Comprehensive Strategic Partnership, announced in 2015, sets out a framework for close cooperation between the two countries, encompassing all aspects of the bilateral relationship, including promoting trade and investment flows, security and intelligence sharing, science and innovation, and education and the arts.

Our free trade agreements with Singapore – the Singapore-Australia Free Trade Agreement (SAFTA), the ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA) and the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP) – are important underpinnings of the economic relationship.

Singapore has no mineral resources to speak of, but it is an important hub for mining and METS companies just as it is for many other industries. The supply chains of many multinational companies go through Singapore.

But Singapore is about very much more than exports and imports. Its integration with global financial markets makes it an attractive source for raising finance and a key venue for important investment decisions. It is positioning itself as a centre for innovation and research, including in artificial intelligence (AI) and automation, sustainability, climate change resilience and the circular economy, all of which are relevant to mining. These factors also make it a hub for advanced manufacturing and professional services providers. Singapore's close proximity to resource-rich and fast growing ASEAN economies, especially Indonesia, adds to its appeal.

Top world mining companies, including BHP, Rio Tinto, South 32, Glencore, Anglo-American and Vale have offices in Singapore that focus on global marketing, procurement and innovation. They are key players in a large cluster of resources companies, their clients and traders, including the trading arms of large Chinese steelmakers, brokers and consultancies. Singapore is also a major hub for the oil and gas industries.

Australia's interests in Singapore

Singapore is Australia's leading trading partner in ASEAN and fifth-ranked of all Australia's trading partners. Total trade was $32 billion in 2018, with Australian exports of $15 billion and imports of $17 billion.

Trade in resources-related products accounted for more than 40 per cent of two-way trade, led by petroleum, with imports of $8.2 billion (all refined petroleum) and exports of $2.2 billion (predominantly crude petroleum).

Natural gas exports were about $1.5 billion in 2018, having risen from zero in 2013 as a consequence of Singapore's move to LNG for its power needs and development of a regional LNG trading hub.[278] Gold typically dominates minerals and basic metal manufactures exports and were $1.2 billion in 2018 (Table 10.1). Services were one-third of trade with exports of $5.1 billion and imports $5.7 billion. Singapore was Australia's second-ranked market for business services exports ($2.4 billion) behind the United States.

Mining exports dominated by gold

In 2018, Singapore was Australia's fifth ranked export market for gold and the fourth for diamonds. It has well-developed gold and precious stones markets. Gold is also refined and stored in Singapore. The markets for precious metals, including gold, were boosted in 2012 by the introduction of a goods and services tax exemption for the import and supply of precious metals.[279] The impact of ANZ Bank's decision in January 2019 to close its precious metals vault in Singapore is still to be seen; it could disrupt Australian gold exports to Singapore, though they are likely to remain substantial.[280] Modest shipments of iron ore and nickel account for the bulk of remaining minerals and mining exports (Table 10.1).[281]

The impact of ANZ Bank's decision in January 2019 to close its precious metals vault in Singapore is still to be seen; it could disrupt Australian gold exports to Singapore, though they are likely to remain substantial.

METS and the Singapore hub

Available trade data provides some insights into Singapore's role as a regional hub for many METS firms – for buying and selling mining equipment, as well as providing marketing, finance, general regional head office management and coordination and other mining-related services. These activities are often on behalf of third country markets.

Austmine's 2015 METS National Survey showed Singapore to be a significant and possibly growing market for METS, ranking as the ninth most important destination for METS exports. The survey reported that 27 per cent of exporters (around 75 firms) exported equipment, services or technology to Singapore. Of METS firms with offices abroad, 22 per cent (33 firms) had offices in Singapore.[282]

There is modest trade in merchandise that could be mining equipment. In 2018, Australian exports of these goods were $185 million and imports nearly $150 million, but only a small part would be destined for the mining industry. Trade was spread mostly among professional, scientific and electronic

Table 10.1

Australian exports of minerals and basic metal manufactures to SIngapore, 2018

Source: ITC Trade Map Database

Product description	Exports ($m)
Coal; briquettes, ovoids, similar solid fuels manufactured from coal	12.6
Iron ore and concentrates	100.0
Non-ferrous metal ores, of which	0.4
... titanium ores and concentrates	(0.4)
Non-metallic and other minerals (not confidential), of which:	64.3
... diamonds (not mounted or set)	(60.0)
Basic iron and steel manufacturing, of which:	6.0
... ferrous waste and scrap	(4.7)
Basic non-ferrous metal manufacturing, of which:	1152.8
... gold, unwrought or semi-manufactured	(1141.6)
... silver, unwrought or in semi-manufactured	(4.8)
... zinc, unwrought	(3.1)
... aluminium, unwrought and waste and scrap	(2.1)
Total ABS data for minerals and basic metal manufactures	**1336.2**
Confidential items estimated from Singapore's import data, of which:	Around 50
... nickel, unwrought	49
Total for minerals and basic metal manufactures	**Around 1390**

Note: Minerals and basic metal manufactures are defined as in the notes to Table 1.1. Exports of products that are confidential or partly confidential in ABS statistics are estimated from partner import data as outlined in the notes to Table 2.2.

equipment and machinery and mechanical appliances. Prominent exports included surveying instruments and appliances ($25 million) and parts for cranes and for sinking, sorting and boring machinery ($21 million). Instruments for physical and chemical analysis ($42 million) were the most prominent imports (Table 10.2).

Exports of selected services to Singapore, part of which might be relevant to the METS sector, are shown in Table 10.3. High percentages of ASEAN exports in these categories going to Singapore – around 80 per cent when taken together – reflect Singapore's central role in business-related services in ASEAN. There has been solid growth in all of these services since 2013, including in professional, technical and other business services, which is the most prominent of the categories shown and the most relevant for mining and METS.

Singapore is the second-ranked country destination for Australian exports of professional, technical and other business services after the United States. Imports of these services from Singapore are also substantial and at levels generally comparable to exports.

Table 10.2

Australia's trade with Singapore that could include mining equipment, 2018

Source: ITC Trade Map Database

Product description	Exports ($m)	Imports ($m)
Rubber manufactures and headgear, of which:	0.7	3.0
... conveyor belts	(0.6)	(0.9)
... tyres for heavy vehicles for construction, mining or industrial handling		(1.4)
Railway manufacturing, of which:	5.4	4.3
... electrical signalling, safety equipment etc	(2.4)	
... containers designed for carriage by one or more modes of transport		(4.3)
Professional, scientific and electronic equipment, of which:	55.2	70.7
... surveying instruments and applicances	(25.4)	(9.6)
... instruments for physical and chemical analysis	(16.3)	(42.1)
... regulating or controlling instruments and apparatus	(7.9)	(6.0)
... instruments for measuring and checking	(3.4)	12.5)
Electrical equipment, of which:	6.7	7.6
... electric generating sets and rotary converters	(4.0)	(2.4)
... electric motors and generators	(1.8)	(4.8)
Iron and steel articles, of which:	4.6	6.3
... line pipes for oil or gas pipelines	(2.5)	(3.5)
... drill pipes and casing and tubing for drilling for oil and gas	(2.1)	(2.8)
Machinery and mechanical appliances, of which:	66.0	44.1
... various pumps and parts of pumps	(9.6)	(10.4)
... earthmoving and boring machinery	(7.9)	(7.0)
... ships' derricks; cranes, including work trucks fitted with a crane	(7.5)	(5.1)
... machinery for sorting, screening etc. earth, ores or minerals; machinery for agglomerating mineral fuels, plastering materials; machinery for forming foundry moulds	(4.5)	(0.7)
... furnaces and ovens for ores and metals	(4.4)	
... parts for cranes, and for sinking, sorting, boring etc machinery	(21.1)	(10.5)
Vehicle parts and accessories (excluding railways and tramways), of which:	15.2	4.9
... special purpose vehicles, other than for transporting goods	(14.0)	
... dumpers for off-highway use	(0.5)	(4.9)
Total for possible METS products	**185.0**	**147.6**

Note: Possible METS products are as defined as in Table 1.6. Exports of items confidential in ABS statistics are estimated from partner import data. On the procedure used and products covered by confidentiality restrictions, see the notes to Tables 2.1 and 2.4.

Table 10.3

Selected Australian services exports to Singapore

Source: ABS, *International Trade: Supplementary Information, Calendar Year 2018*, Catalogue 5368.0.55.004

Product description	2013 $m	2017 $m	2018 $m	2013-18 Annual growth %	2013-18 % of ASEAN
Financial services	116	193	213	20.7	80.1
Intellectual property charges, n.i.e.	41	76	60	3.7	54.2
Telecom, computer and information services	133	270	401	32.8	68.9
Professional technical and other business services	1365	2183	1701	7.0	82.0

Note: Only a small part of these services would be mining-related. Exports of construction, maintenance and repair services to Singapore, which can be relevant to the METS sector, were insignificant from 2013 to 2018.

However, these service imports are most likely to cover areas in which Singapore's expertise is most concentrated, such as urban infrastructure, hospitality and healthcare services rather than mining and METS-related services.[283]

Services delivered by Australian-affiliated companies in Singapore – generally the principal mode for delivering mining services – are not included in the export data. Incomes from these services are reflected in Australian outward foreign direct investment (FDI) and Singaporean inward investment data (see below).

Investment

Singapore's investment relationship with Australia very much reflects its role as ASEAN's financial hub, and its rankings among the world's top five destinations for FDI and top ten for outward FDI. It accounts for around 70 per cent of total stocks of inward and outward investment to and from ASEAN members, and 60 per cent of total inward and outward FDI.

Total FDI in Australia from Singapore was $28 billion in 2018. Australian FDI in Singapore was $24 billion. Industry-based data from the Singapore Department of Statistics show that the direct investment relationship is focused principally on financial and insurance services, which accounted for 57 per cent of Australia's direct investment and 48 per cent of Singapore's FDI in Australia in 2017.

Mining-related industries are not prominent in bilateral investment flows. The Singapore data do not identify foreign investment in mining separately. Industry data for inward and outward investment include mining in the 'other' category, along with agriculture, education and other industries. The Singapore data also shows that around 5 per cent of FDI from Australia in 2017 (around $1 billion) was for professional, scientific and technical support services, which would include mining-related services.[284]

Available data indicates that investment in Australian mining is not a key target for

Singapore's investment abroad. Australian Foreign Investment Review Board approvals data shows that of $64 billion in investment approvals from Singapore between 2010 and 2018, only 3 per cent ($1.9 billion) were for mineral exploration and development, compared with 18 per cent ($262 billion) of approvals from all countries. Singapore investors do, however, appear to have a significant interest in Australian METS firms. The 2015 Austmine METS National Survey reported that, of the 19 per cent of surveyed foreign-owned METS companies, just over one in ten were Singapore-owned.[285]

Energy

Singapore is an important regional centre for refining petroleum and producing petrochemicals: ExxonMobil and Royal Dutch Shell, for example, have tens of billions of dollars invested in Singapore. It is a major market for Australia's crude petroleum and a leading source of refined petroleum.

The electricity market is open and competitive. Around 95 per cent of Singapore's electricity is produced using natural gas piped from Malaysia and Indonesia, and, increasingly, LNG from Australia and Qatar. More LNG is being imported as gas pipeline contracts expire. Singapore is also positioning itself as a regional trading hub for LNG, leveraging off its world class trading infrastructure, geographic position and deep and liquid capital markets. Singapore's LNG exports have risen from close to zero in 2014 to more than US$300 million in 2018.[286]

The remaining electricity is produced from waste to energy (1.9 per cent of electricity generated in 2018), coal (1.3 per cent) and solar (0.8 per cent). There are no plans to expand coal-fired power generation.[287] But there are moves to transition towards a more sustainable and lower emissions energy mix, including by substantially expanding use of solar power: one proposal is for imports from Australia by undersea cable.[288] Singapore is also exploring opportunities to harness hydrogen as an energy source and possibly to replace LNG in its power plants.[289]

The business environment for Australian mining and METS

For many years, Singapore has been rated as the most attractive place in the East Asian region for doing business and among the most attractive in the world. It was rated second overall in the World Economic Forum's (WEF's) *Global Competitiveness Index 4.0 2018* rankings and the World Bank's *Ease of Doing Business* 2019 rankings.

Its high rankings have been underpinned by world-class infrastructure, a highly educated workforce, efficient goods and labour markets, ease in trading across borders, a well-developed financial sector, high-quality public administration, and a well-functioning legal system.

While Singapore is not a major market for Australian minerals, its business environment makes it attractive to mining and METS companies as a regional centre for marketing and other mining-related services, and for purchasing and selling equipment. The fast pace of technological change also makes innovation a key consideration and Singapore is certainly making its presence felt.

Its WEF ranking for innovation is a respectable 14th, though below the rankings for most other criteria used to assess its overall ranking. Singapore was ranked highly, at 5th in the Global Innovation Index 2018, ahead of the United States (6th) and Australia (20th).[290] The government aspires to be a global innovation powerhouse and has allocated S$4.5 billion to an Industry Transformation Program with technological innovation a key focus.

Goods: tariffs and non-tariff measures

All Australian products enter Singapore duty-free. Amendments to SAFTA entering into force on 1 December 2017 included provisions to facilitate preferential treatment for Australian exporters, with simplified rules of origin based on product-specific rather than content-based rules, and provision for self-certification.

Australia and Singapore have agreed in SAFTA to ensure the transparency of non-tariff measures (NTMs) on bilateral goods trade and to apply them in ways that would not unnecessarily obstruct trade.[291] Singapore's NTMs mostly target food safety and protection of the environment; the government endeavours to align them to best practice regulations and international standards and minimise impacts on openness to trade.

A 2016 survey of Singapore's NTMs identified over 500 measures, of which 59 per cent were classified as technical barriers to trade (TBTs) and 24 per cent as sanitary and phyto-sanitary (SPS) measures. TBTs include product identity, labelling, authorisation and testing requirements. There are also some export requirements including, for example, in relation to conformity with the Kimberley Process for exporting rough diamonds.[292]

Services and investment

Under SAFTA, all Australian services suppliers and investors are treated on the same terms as Singaporean suppliers (national treatment) and without quantitative and market access restrictions, unless identified in a 'negative listing' of exceptions. There is little of direct concern to mining and METS in the negative listing, except perhaps Singapore reserves the right to adopt or maintain measures affecting the supply of scientific and consulting services, including scientific prospecting, surveying and map making services, and to apply measures relating to nuclear energy. No such measures are currently in place.[293]

The most recent review of SAFTA will reduce red tape and promote regulatory coherence. A framework was established to support mutual recognition of professional qualifications, including for engineers and accountants; allow Australian lawyers to practice Singapore law and work in international commercial arbitration; liberalise financial services, including brokerage services for commercial insurance; and facilitate free cross-border flows of data for service suppliers and investors.

The SAFTA review brought the Foreign Investment Review Board screening threshold for Singaporean investment in non-sensitive areas into line with the threshold for Australia's other CPTPP partners, our North Asian FTAs and the United States. The threshold was $1154 million. The 2019 review also updated the agreement's investor-state dispute settlement (ISDS) mechanism with safeguards to protect governments' rights to regulate in the public interest.

CPTPP includes commitments for mining-related services ('services incidental to mining') that are closely comparable to those in SAFTA, including provision for information over the internet. Singapore has also guaranteed not to impose economic needs tests, numerical quotas or require specific types of legal entities or joint ventures that may limit market access.[294]

Australian and Singaporean services industries personnel benefit from generous conditions for working in each other's countries. There are no residency requirements for Australian professionals such as engineers and accountants. Independent executives, contractors and their families can stay for up to two years and

intra-corporate transferees and their families can stay for three years with extensions of up to three years at a time for total terms up to 15 years. There are streamlined processes for temporary entry and work permits.

There are few restrictions directly relevant to Australian mining and METS investors in Singapore. There are restrictions applying to investments in government-linked companies, some professional services and investment in real estate. The Singapore government screens investment proposals, but usually only to assess their eligibility for incentive regimes. These include corporate tax holidays and concessional tax rates, including on operational headquarters for approved services. Singapore's standard corporate tax rate is 17 per cent but the effective rate is usually lower for most companies as a consequence of a range of exemptions and incentives.

Opportunities for Australian mining and METS: Marketing and innovation

Singapore stands out as the most attractive destination for Australian businesses looking to enter and grow their businesses in Asian markets. The recent review of SAFTA, including the easing of conditions for Australians working in Singapore, has added to its appeal.

Mining and METS are a significant part of the Australian business presence in Singapore and are set to remain so because of Singapore's close commercial links with the other members of ASEAN, India and the key resources markets of Northeast Asia. Singapore's proximity to major mines, especially in Australia and Indonesia and to the burgeoning markets of South and East Asia make it a natural base for both mining and METS companies looking to build their businesses in ASEAN and beyond.

In the past decade, since the move away from annual contracts between iron ore miners and steelmakers, Singapore has become a major trading hub for iron ore, including a thriving derivatives (futures) trade pioneered by the Singapore Stock Exchange. Singapore has also become a trading hub for thermal and metallurgical coal and steel and for procuring mining equipment. The major focus is China, but other potential and emerging markets, including in ASEAN and India, also get close attention.

METS companies can engage in mining equipment innovation in Singapore on the back of active support from the government's Industry Transformation Programme, which is giving increased priority to innovation, including in digital technologies and their applications to advanced manufacturing. Many major global companies have established research and development centres in Singapore.

An example relevant to mining and METS is Accenture, which is researching the digitalisation and automation of industrial equipment in Singapore.[295] For mining, this includes technologies in fast developing areas such as artificial intelligence (for instance in managing and predicting the condition of mining equipment), robotics, drones, remote operating centres and wearable technology, which can make mines safer, more productive and environmentally sustainable.

There are many opportunities to collaborate, including with researchers in its highly regarded universities such as the National University of Singapore and the Nanyang Technological University (NTU).[296] The NTU, for instance, undertakes research in areas such as AI, robotics, energy efficient technologies and sustainability. There may also be opportunities for METS companies

BOX 10.1

Singapore: Green urbanisation

Singapore is now engaged increasingly on sustainability, climate change resilience and the circular economy (which aims to achieve zero waste by recovering resources at every stage in production and consumption).

Singapore has put in place a carbon tax, albeit initially at a relatively low rate.[297] Its waste strategy focuses on electrical and electronic material, packaging and food waste.

Singapore's emphasis on 'green urbanism', especially if it influences other Asian cities, has implications for the profile of global mining, including:

- Increased use of renewables and electric vehicles will raise demand for metals used in them such as nickel, cobalt, lithium and copper
- Packaging reforms could affect demand for commodities like aluminium (though exports of Australian aluminium to Singapore were very small in 2018)
- METS companies could have opportunities to provide more services associated with sustainability and recycling activity (or 'urban mining').

Source: Speech by Mr Masagos Zulkifli, Minister for the Environment and Water Resources, 6 June 2019; Ministry for the Environment and Water Resources, 'Environmental Strategy in Singapore', Briefing to EU Circular Economy Mission, 6 June 2019; CSIRO, *Mining Equipment, Technology and Services: A Roadmap for unlocking future growth opportunities for Australia*, May 2017, p.36.

with expertise in mining sustainability and recycling in Singapore's 'green urbanisation' initiative (Box 10.1).

Commitments in CPTPP and SAFTA mandating free flow of digital information also add to Singapore's appeal as a base for exchanging and delivering electronic services to and from expert METS staff based in Singapore. CPTPP outcomes on cooperation on cyber security add an extra layer of certainty. They also extend many of the benefits associated with SAFTA to mining services provided by Australian companies based in Singapore to CPTPP partner economies in ASEAN.

Singapore stands out as the most attractive destination for Australian businesses looking to enter and grow their businesses in Asian markets.

Policy challenges

Singapore will remain a natural crossroad between Northeast Asia, India, ASEAN and Australia.

However, Singapore's productivity growth has slowed appreciably compared with elsewhere in the region. From 2010 to 2016, total factor productivity (essentially changes in the efficiency with which labour and capital are used) fell by 0.3 per cent per annum, whereas in ASEAN as a whole it rose by 0.3 per cent per annum.[298] An ageing society, slowing population growth and delays in the implementation of reforms to harness greater innovation and productivity could also rein in its standing relative to emerging competitors.

The government is well aware of these challenges. It continues to be a powerful advocate for the rules-based multilateral trading system on which it relies heavily as a trading and investment entrepôt. It is also responding with a suite of programs to promote innovation-led growth and higher productivity. It has a suite of initiatives including the Industry Transformation Program, a SkillsFuture program and a Smart Nation initiative which focus on digitalisation and high technology solutions.[299]

The implications of China's Belt and Road initiative (BRI) for Singapore are still emerging. The BRI will undoubtedly add to growth of resources and infrastructure-related markets inside and outside China. Singapore actively supports collaborating with China on the BRI – both in terms of specific projects and strengthening the institutional framework and is positioning itself to benefit substantially from increased demand for mining commodities, energy, technology and associated financial and other services that will flow from the BRI.

For example, it is considering how it can leverage its geographical and cultural proximity to China to become a key centre for settling legal disputes between investors, governments and other stakeholders on BRI projects.[300]

Regardless, demand for steel and other mining-based products in Southeast Asia, India and South Asia more widely is set to continue to rise for some time, and Singapore will remain central for as long as it retains its pre-eminence as one of the world's most competitive economies.

CHAPTER 11

Cambodia

KEY POINTS

- Australia cooperates closely with Cambodia on issues like development assistance and border security, but the business relationship is largely undeveloped.
- Trade and investment is small (two-way trade was just over $600 million in 2018), but Cambodia's economy has been expanding rapidly and is projected to grow at around 7 per cent per annum over the next few years. If continued, this could lead to greater per capita use of minerals and metals and create opportunities for Australian business.
- Cambodia's own resource endowment is largely unknown but there are so far unproven reports of significant deposits of gold, titanium, copper, bauxite, and gemstones, as well as of offshore oil reserves and onshore oil and gas reserves. As of December 2016, 84 domestic and foreign companies had mining and exploration licences. The Government has been seeking to put in place an updated legal and regulatory framework for mining.
- Power consumption has risen five-fold since 2007. Coal fired generation and hydro each contribute around 45 per cent of Cambodia's domestic power production. An additional 5.3 GW of generating capacity is planned between 2017 and 2030 as Cambodia moves to connect all towns and villages to the grid. There are possible opportunities for Australia to supply small quantities of coal to Cambodia, but they are likely to be taken by neighbouring countries given their transport advantage.
- With the exception of the energy sector, opportunities for mining and METS are likely to be small-scale. But more and bigger opportunities could emerge over time. There is a reasonable possibility that mining could emerge as a significant sector of the economy. METS offers the best prospect in this market.

The Australia-Cambodia trade and investment relationship is undeveloped, in part reflecting Cambodia's still early stage of development. Cambodia is currently not a priority market for Australian business.[301] Cambodia's heavy export specialisation is in clothing, handbags and shoes (for US, European and Japanese markets) and dependence on Asian partners for the great bulk of its imports and foreign direct investment (FDI) requirements.

Total bilateral trade in goods and services amounted to just over $600 million in 2018. On the Australian side, exports were dominated by food (vegetables and animal products) and education services, and on the Cambodian side by textiles, clothing and footwear, and tourism services: Australia supplied around 0.1 per cent of Cambodia's imports and took 0.8 per cent of its exports. Trade in minerals, metals and mining technology was negligible.

The investment relationship in both directions is also small. From an Australian perspective there are other, more attractive, options for investing in ASEAN. Some Australian companies, including some large ones, have interests in Cambodian property, infrastructure and construction; marketing and communications; finance; and education and training.[302] And some are engaged in mining and mining exploration. For example, Renaissance Minerals, the Brighton Mining Group and Geopacific Resources have exploration interests in copper and gold,[303] and Austrade organised its first mining mission to Cambodia in 2015. But the major Australian mining, energy and METS companies that have a strong presence in ASEAN are noticeably absent from Cambodia.[304]

The smallness of the trade and investment relationship in mining and METS has little to do with tariffs, though tariff escalation may be an issue in some specific cases for METS equipment and metals. Nor has it much to do with non-tariff barriers (such as technical standards), though again they are an issue for some specific mining equipment.

Limited Australian trade and investment in mining and METS has much more to do with the under-developed state of Cambodia's mining sector; the low priority seemingly accorded to modernising mining compared to sectors like infrastructure, agri-food and tourism; the risks inherent in doing business in Cambodia; and the strengthening trade and investment ties between Cambodia and its close neighbours.

On balance prospects do not seem to be bright for trade in resources and metals, but could be much brighter for METS depending on the pace of modernisation in Cambodia's mining and energy sectors.

Factors supporting moderate growth in Australia's trade and investment in resources and METS

While Cambodia might never become one of Australia's significant mining and METS partners, there are good reasons for expecting some firming of the current weak partnership. Cambodia's economy has grown strongly over recent years and looks set to continue growing strongly. In the normal course of events this should increase demand for minerals and energy as Cambodia urbanises and continues to improve its physical infrastructure.

This may provide opportunities for Australian mining companies, though competition from neighbouring countries will be intense. Growing demand for resources should increase economic and political appetites in Cambodia for some degree of mine sector

modernisation. METS seems by far the best prospect for Australia in this market. Linked to this, there is some evidence that the Cambodian Government wants to put the minerals sector on a sounder regulatory footing. This may provide opportunities for METS, as well as providing openings for further cooperation between different tiers of government in Australia and Cambodia.

Economic and social performance

Over the last couple of decades, Cambodia has been one of the 10 fastest growing economies in the world[305] and has been dubbed one of Asia's 'new tiger economies' by the Asian Development Bank.[306] Annual growth has averaged around 7-8 per cent, driven by the 'factory Asia' model of development – the deployment of cheap labour and FDI to produce garments, handbags and shoes for high income markets – and rapidly expanding service industries, particularly finance, tourism, communications, and construction. Growth has also been supported by a stable macroeconomic environment, a reasonably open market-oriented economy, location in the world's fastest-growing region, and a youthful population.[307]

Cambodia has been one of the fastest growing economies in the world and has been dubbed one of Asia's 'new tiger economies' by the Asian Development Bank.

This sustained growth has produced large improvements to living standards: according to the World Bank, per capita GDP stood at just over US$1500 in 2018, more than five times higher than in the mid-1990s. The middle class has expanded rapidly. The share of population still living in poverty has fallen from around one-half in the mid-2000s to around 13 per cent currently.[308]

According to the United Nations, Cambodia was an 'early achiever' in meeting all of its Millennium Development Goals, especially through reducing poverty, hunger and the incidence of disease and by promoting education and sustainable development.

Social and economic progress should continue given the prospect of continuing fast economic growth. Growth is expected to average around 7 per year per year over the next few years.[309] This projection is based on assumptions of firm external demand for Cambodia's principal exports and strong continuing growth in finance, tourism, communications and construction. But, as observed for Laos and Myanmar, economic gains to date are still fragile and growth and development challenges are increasing for low and lower middle income countries seeking more prosperous futures. Added to these, Vietnam and several other Southeast Asian countries have a considerable edge in labour-intensive manufacturing over Cambodia, particularly as China moves into higher value-added activities.[310]

To achieve strong and sustainable growth in its principal exports and growth in the services sector, Cambodia will need to focus on structural reforms to increase international competitiveness and encourage diversification through lower energy costs, better human capital and infrastructure, and stronger rule of law and transparency. It also will need to address deficiencies in its banking industry, reduce the costs of doing business and improve its transport system.[311] There is some uncertainty about the pace, comprehensiveness and effectiveness of future reform.

Opportunities for mining and METS

If Cambodia can continue its extraordinary growth, per capita consumption of metals and energy should increase substantially over coming decades along with demand for improved mining technology and related services. But the extent to which increased demand for resources and energy provides opportunities for Australia is far from certain. There is a natural tendency for near neighbours to trade and invest intensively with each other.

The vast bulk of Cambodia's modest recorded import and export trade in minerals, metals and fuels is with these neighbours,[312] while most of its FDI comes from China, Vietnam, Hong Kong, Malaysia, the Republic of Korea, and Chinese Taipei.[313] Further strengthening of ties between Cambodia and these near neighbours is probably based, among other things, on progressive economic integration between ASEAN members and on the close political, strategic and economic ties between Cambodia and China.

Australian resources and METS firms have some potential advantages in the Cambodian market. Australia is recognised for its world-leading minerals-related knowledge and technology. And trade and investment initiatives – such as the ASEAN-Australia-New Zealand FTA Review (currently underway) and the Regional Comprehensive Economic Partnership (RCEP) negotiations – should generate opportunities to deepen Australian involvement in Southeast East Asian supply chains across the board. But whether our resources and METS firms develop any real traction in this difficult market will depend fundamentally on what Cambodia has to offer them compared with opportunities elsewhere in Southeast Asia.

Looking for these opportunities requires looking past what currently is on offer. According to the most recent US Geological Survey report on Cambodia:

- The mining sector is under-developed with small-scale quarries producing industrial minerals such as granite, gravel, laterite, limestone, marble, and sand, and 'artisan' and small-scale miners running seasonal operations to extract gold and gemstones

- Industrial scale mining for precious minerals is virtually non-existent
- There is no established regulatory and legislative framework to oversee the mining industry
- There is little or no infrastructure to support the industry.[314]

Beyond this rudimentary development, four things are notable. First, Cambodia is in the early phases of mining exploration. Its mineral potential has not been surveyed systematically using modern techniques, and therefore the potential and extent of mineral resources is largely unknown. There are, however, some unproven indications of significant deposits of gold, titanium, copper, bauxite, and gemstones, as well as of offshore oil reserves and onshore oil and gas reserves. As of December 2016, a total of 84 domestic and foreign companies held mining and exploration licences. Under these licences, 61 exploration projects were authorised, of which 23 relate to mining. The projects include exploring for metallic minerals, coal, kaolin, silica sand, antimony, chromite, bauxite, and oil and gas. The first gold mining extraction licence covering mining and processing ore was granted in 2016 to Mesco Gold, a subsidiary of the Indian steelmaker Mesco Steel Ltd.[315]

Second, small-scale mining and quarrying for industrial minerals appears to have grown appreciably from a low base over recent years in response to urban construction and infrastructure projects.[316] More broadly, there is some evidence that mining's contribution to Cambodia's economy may have increased somewhat. This is suggested in data provided by the Cambodian Government in the World Trade Organization's (WTO's) latest trade policy review of Cambodia,[317] and by the International Council on Mining and Metals in its ranking of countries based on mining's contributions to national economies. Cambodia was ranked 182 out of 183 countries in 2014, and 108 out of 182 countries in 2016.[318] Given quality problems with Cambodian economic statistics in general and particular difficulties in the accuracy of mining statistics, it is difficult to conclude that a dramatic step change is occurring in Cambodian mining and quarrying, but there is a basis for concluding that the sector is certainly growing.

Third, the Cambodian Government is trying to create an updated legal and regulatory framework for mining. Where this stands is difficult to assess. What seems clear is that the Cambodian authorities are struggling to implement legislation modelled on the West Australian *Mining Act*; the Government recognises that the 2001 Law on Mineral Resource Management and Exploitation is outdated.[319]

What also seems clear is that mining industry policy at least acknowledges policy aspirations such as regulatory transparency, environmental protection and good governance. It also continues to welcome private sector involvement in mining and domestic processing of minerals before export.[320] This suggests at least a medium-to-long term interest in raising mining standards and building domestic capacity in minerals processing, which could, over time, generate opportunities in METS.

And fourth, Cambodia has great potential in power generation. Over the last decade, the power sector has been transformed. Up to around 2007, electricity production came almost entirely from diesel and heavy fuel oil generation in isolated mini-grids. Since then, there has been a five-fold increase in electricity consumption. Initially, demand was

Table 11.1

Cambodia key energy statistics, 2000-2016

Source: International Energy Agency

Year	Energy production Mtoe	Net energy imports Mtoe	Electricity consumption TWh	Total primary energy supply Mtoe
2000	2.3	0.7	0.4	3.4
2005	2.5	0.1	0.9	3.4
2010	3.6	1.8	2.1	5.3
2011	3.8	1.8	2.4	5.5
2012	3.9	1.9	3.3	5.8
2013	4.1	1.2	3.6	5.6
2014	4.3	2.2	4.2	6.4
2015	4.4	2.7	5.1	7.0
2016	4.6	3.1	6.2	7.6

Note: Mtoe = million tons oil equivalent

met largely through imports from Vietnam, Laos and Thailand, but reliance on imports has declined sharply in the last few years as heavy Cambodian investment in coal-fired generation and hydro has lifted domestic supply capacity.

More or less in line with the National Strategic Development Plan 2014-2018, energy production has just about doubled since 2007 (Table 11.1), and coal generation and hydro each now contribute about 45 per cent of total domestic power production (Table 11.2).[321]

In 2017, an additional 135 megawatts of coal capacity, 100 MW of hydro and 10 MW of large-scale solar generation became operational. An additional 5.3 GW of generating capacity from coal and gas-fired plants and hydro are envisaged in Cambodia's Energy Sector Development Master Plan 2017-2030 as Cambodia moves to connect all towns and villages to the grid (the current electrification rate is around 60-70 per cent) and as per capita consumption of electricity rises. In 2016, annual per capita consumption was roughly one-tenth of Thailand's level and one-fifth of Vietnam's.[322]

Ambitious targets also have been set for large-scale solar generation. In line with recent developments, the great bulk of additional generating capacity is expected to be owned by independent power producers – either fully owned by international investors or by international investors partnering with local companies. The majority of foreign investment to date has been sourced from China, with some from Japan, Malaysia and Vietnam.[323]

As new capacity comes on stream, there will be opportunities to supply coal (measured in terms of hundreds of thousands of tonnes), although it is likely that most of the supply

Table 11.2

Cambodia electricity generation by fuel type, 2000-2016

Source: International Energy Agency

Year	Coal GWh	Oil GWh	Biofuels GWh	Hydro GWh	Solar PV GWh
2000	–	447	–	–	1
2005	–	905	14	44	1
2010	31	914	20	32	3
2011	34	951	20	52	3
2012	37	857	20	517	3
2013	169	579	11	1016	3
2014	863	327	17	1852	3
2015	2128	228	17	2000	3
2016	2551	379	42	2619	3

Note: GWh = gigawatt hours

will come from neighbouring countries given their transport advantage: trade facilitation costs in Cambodia are approximately one-third higher on average than in the more developed ASEAN economies.[324]

There also will be opportunities to provide technologies and expertise from a broader range of suppliers where transport costs are not such an impediment. Cambodia is looking for partners in the energy sector, including in the use of technologies to reduce the overall cost of producing reliable electricity supplies, establishing regulatory and technical best practice for grid integration across generational sources; and developing storage infrastructure.[325]

Similarly, there should be opportunities to participate in Cambodia's oil and gas sector, which is divided into six offshore blocks and 19 onshore blocks. Each block is allocated to private companies to explore the potential of oil and gas. While no oil or gas has been produced so far,[326] the Cambodian Government is strongly promoting international investment: this was a key focus of Cambodia's 2014-18 National Strategic Development Plan and continues to reflect the Government's interest in boosting revenue and accelerate economic growth.

This interest should flow through to developing laws and regulations for the oil and gas sector, strengthening processing and use of oil and gas resources, and promoting research and development in the oil and gas sector.[327] Australia is well placed to provide support.

Realising the potential

Tariff reductions and elimination achieved through the ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA) and the prospect of further concessions in the AANZFTA Review and the RCEP negotiations are expected to ensure tariffs are not one of the many obstacles to Australian mining and METS companies taking advantage of opportunities in Cambodia.

Without these concessions, Cambodia's average applied tariff on mineral products is around 7 per cent, the bound rate 20 per cent and tariffs escalate with the degree of processing.[328] With them, tariffs on mineral resources, typically 5 per cent in 2019, will be mostly eliminated by 2021. This also applies to mining-related products like basic metal manufactures and, with some significant exceptions, to products that could fit within the definition of METS. Tariffs will be reduced but not eliminated on products like safety headgear, pumping equipment, remote controlled radios, and some scientific equipment unless this is taken up in ongoing negotiations.

Non-tariff barriers are more challenging for Australian mining and METS companies in the Cambodian market. This covers issues like technical standards, non-transparent and seemingly arbitrary customs practices, much the same for government procurement, and the growing prevalence of export taxes on various mining products, including uncut precious stones.[329]

Problems are less at the level of mineral products, though the Ministry of Industry, Mines and Energy is responsible for around one-tenth of all of Cambodia's regulations that can be classified as non-tariff measures.[330] The problem is much more at the level of suppliers of machinery of various types, chemicals and metals where a specific good might typically be subject to multiple regulations.[331]

These difficulties merge with the general difficulty of doing business in Cambodia. In 2018, the World Bank ranked it 135th out of 190 countries on its *Doing Business Index*: its rankings were especially poor on starting a business (183), dealing with construction permits (179) and then enforcing them (179), getting access to electricity (137), registering property (123), protecting minority investors (108), paying taxes (136) and trading across borders (108).[332]

Cambodia has ageing infrastructure, limited supplies of skilled labour and suffers endemic corruption. In 2018, Transparency International ranked it 161 out of 180 countries on its *Corruption Perception Index*. Political connections matter, institutions are weak, laws and regulations may or may not be enforced, intellectual property rights are weak and legal processes are best avoided.[333]

Cambodia's political, business and investment environment

Doing business in Cambodia is not for the faint-hearted. The AANZFTA Review and RCEP negotiations should help in removing some impediments but many of the biggest obstacles to trading and investing in Cambodia – and particularly in mining-related activities that are capital intensive and are bound up with sensitive issues like land and water – lie well outside the scope of these negotiations.

In general, trading with Cambodia would seem to offer a much safer path than investing. That said, there are opportunities for mining and especially for METS. Most of these – with the exception of the energy sector – are likely to be small-scale and below the thresholds adopted by major companies.

More and bigger opportunities could emerge over time. Given limited scientific exploration of Cambodia's onshore and offshore mineral resources and at least some so far unproven reports of substantial mineral resources, there is a reasonable possibility that mining could emerge as a significant sector of the economy.

The Cambodian Government appears to have the political will to undertake some of the reforms needed to underpin strong economic growth and increase Cambodia's competitiveness among its ASEAN peers. Part of this, like in much of the Mekong sub-region, will involve continuing investments in education and health and physical infrastructure. But part of this investment could, depending on the outcome of geological surveys, involve developing mining as one of Cambodia's leading sectors. This would take time and outcomes would be far from certain, but there is some evidence that the government wants to develop mining that is environmentally sensitive, meets acceptable health and safety standards, and is respectful of local community interests.

If and when this happens, it should create opportunities for international mining and METS companies starting with satellite surveys for mineral deposits. Such surveys, and the modern mining that might follow in their wake, rely on abundant data and on the capacity of companies to analyse information flows rapidly and make appropriate responses quickly. Australian companies would be in a good position to benefit from this given their strong credentials in data and analytics. They also would be in good standing to provide advisory services on environmental, social and gender issues linked to mining: gender has emerged as an issue in Cambodia as it has in other countries in the Mekong sub-region like Myanmar.

There would, almost inevitably, be many obstacles along the way, not least being the Cambodian Government's strong commitment to controlling economic activity and specific sensitivities regarding mapping, border issues and access to data.

Cambodia's reliance on China might be another obstacle in widening access for Western mining and METS companies. If Australian companies are to have any serious chance of engaging in the possible modernisation of Cambodia's mining sector over time, they will need to work closely with the Australian Government at a number of levels. This could start with showcasing Australian technology. But at some point it would also need to involve building more assured access to relevant Cambodian decision makers and establishing stronger links between universities and research organisations with mining-related interests and between government agencies that can engage on the policy and regulatory issues underpinning modern mining.

CHAPTER 12

The People's Democratic Republic of Laos

KEY POINTS

- Laos is rich in minerals across metals, industrial minerals, construction materials, gem stones, and solid fossil fuels. Mining and quarrying contribute 6 to 7 per cent of Lao GDP and around half of merchandise exports.
- Australia has a minor economic relationship with Laos. Australian exports fall predominantly within the category of elaborately transformed engineering products (excluding household equipment). A sizeable part of Australia's $25 million in merchandise exports support Australian or other mining ventures.
- Lao electricity production has increased substantially from a low base in the second half of the 1990s and took off from around 2009-12. Strong growth is expected to continue through the 2020s. Hydro generation is dominant but coal-fired generation has become significant in recent years. Its share of the energy mix should increase through the 2020s using domestically-produced lignite.
- Mining took off in the decade or so prior to 2012. Rapid growth exposed problems in mining regulation. In June 2012, the Government suspended approval of new mining licences. The moratorium is forecast to be lifted on 31 December 2020, though the relevant authorities have not confirmed this.
- Amendments to the 2011 Minerals Law came into force in July 2018. The extent to which it improves the legislative framework is still uncertain. The legal language is general and accompanying regulations were not yet in place at the time of writing.
- There is potential for moderate-to-rapid growth in mining over the medium-to-long term. Lao's demand for construction materials, metals and fuel minerals will increase as its economy grows. Hard infrastructure is improving steadily and proximity to major markets in China, India, Thailand, and Vietnam should give Lao miners a shipping edge over more distant producers.
- Laos is a challenging country to do business, and is currently not a significant potential market for internationally traded resources and energy. But it is a market for METS and could become much bigger. Australia is well placed to benefit from this given strong brand recognition across the mining supply chain, and Lao's high priority on training engineers and building technical and vocational skills more broadly.

Laos has grown rapidly over the last two decades. In many ways it now stands at an economic crossroad. One path could see this country of seven million people make sizeable inroads into skilling its workforce, developing hard infrastructure, increasing industrialisation, and developing regulatory capacity compared to other members of ASEAN.

This would require good stable government, a focus on education and upskilling, and a capacity to take advantage of the fast growing Mekong sub-region.[334] Confidence that Laos can make up some of this distance is supported by increasing inflows of foreign direct investment (FDI) from China, other members of ASEAN (especially Malaysia, Thailand and Vietnam) and, to a much lesser extent, Korea, Japan and France. It is also supported by the prospect of moving from its current Least Developed Country status by 2024.[335]

Another path could see Lao's potential limited by the cumulative effects of low labour productivity; growing development gaps within the country with enclaves of growth and prosperity around hydropower generation and mining; limited modern infrastructure; limited access to regional production networks; inefficient state-owned enterprises in key sectors such as finance, telecommunications, energy, and mining; corruption, and the difficulty of charting a steady course amid larger regional powers.

The general consensus among international forecasting organisations supports the more optimistic scenario. Mining will be an important part of its future along with hydropower generation, agro-food processing, tourism, and construction materials – the five key sectors identified in the 10-year Socio-Economic Development Strategy (2016-2025).

Australia-Laos trade and investment

Australia has a small but reasonably significant economic relationship with Laos. Australian companies have trade and investment interests in minerals and mining services, financial and legal services, agriculture and forestry. Australia is one of Lao's largest bilateral aid donors, focusing on improving access to basic education, strengthening human resources through scholarships, and building stronger trade capabilities.

More than 12,000 people in Australia identify as having Lao ancestry. Over 700 Laotians have studied in Australia under Australia Awards since 2007. And more than 190 young Australians had travelled to Laos to study under the New Colombo Plan by the end of 2018.[336]

Two-way trade in goods and services is worth around $120 million per year, but is unusual compared to Lao's trade with its neighbours like Cambodia and Myanmar in that there is no focus on food exports from Australia or on textile and clothing imports. Goods trade is focused on manufactures.

Australian exports fall predominantly within the category of elaborately transformed engineering products (excluding household equipment), and include products that could fall within the definition of mining and METS used in these studies. Examples include pumps for liquids; specialised machinery and parts for sorting, screening, separating, washing, crushing, grinding, mixing or kneading earth, stones and ores; boring and sinking machinery; and surveying equipment.

Because such products can have multiple uses, it is not practical to give a dollar value to mining and METS exports but there is a reasonable presumption that a significant part of Australia's $25 million a year

merchandise exports to Laos are destined to support Australian or other mining ventures.

Elaborately transformed engineering products such as telecom equipment and parts are also prominent in Lao exports to Australia. This is the reverse of its exports to near neighbours where mineral products (especially copper ores and concentrates, refined copper, copper alloys and other metals) and electricity dominate.[337] Australia-Laos trade in mineral resources is negligible. Services trade is predominantly in travel and transport-related services in both directions.

There is no published data for Lao direct investment in Australia but it is likely to be miniscule. Cumulative Australian direct investment in Laos is estimated at around $95 million for the period 1995-2017, equivalent to less than 0.5 per cent of total Australian direct investment in ASEAN over these years.[338] Investment is spread across mining, financial and legal services and, to a smaller extent, transport services.

Several large companies such as Rio Tinto (prospecting and exploring for bauxite and related minerals across two Lao provinces), Westpac, ANZ and Linfox have a commercial presence along with many smaller companies, particularly in mining and METS. Many are involved across the mining supply chain from prospecting and exploration to mining operations and providing specialist services such as training, project evaluation and environmental impact assessments.

Australian mining and related activities in Laos fall well short of activities in Indonesia or even Thailand and Vietnam, but are important in at least three ways:

- Phu Bia Mining Ltd and Lane Xang Minerals Ltd are Chinese-owned but Australian operated. Their gold, copper and silver mines account for over 90 per cent of Lao's total mining production[339]
- Australian mining companies use services provided by Australian financial and legal firms that have a commercial presence in Laos. There also is potential to extend this to firms in other sectors. For example, logistics company Linfox wants to set up operations across Laos and neighbouring countries to deliver copper concentrate and other minerals for shipment to smelters elsewhere in Asia
- Awareness of emerging opportunities in Laos is increasing across resources, agriculture, forestry, education, transport and logistics, and services (including tourism). This is occurring from a low base but is suggested by initiatives such as the inaugural Lao–Australia Business Forum during the ASEAN–Australia Special Summit in Sydney in March 2018 and events to link Lao alumni from Australian Universities with Australian business.[340]

Factors shaping this growing interest in Laos

Laos is rich in minerals across metals (base, precious and rare), industrial minerals, construction materials, gem stones, and solid fossil fuels, which helps to explain why mining and quarrying contribute 6 to 7 per cent of Lao GDP and around half of merchandise exports.[341]

But the size of Lao's mining sector will not by itself shape Australia's mining and METS interests there. What will is the pace of economic growth and the effectiveness of economic and social reforms that underpin it, and how these variables impact on both demand for resources and productivity within Lao's mining sector.

Laos, like Cambodia, Myanmar and Vietnam, is one of the few countries in the world to have achieved annual per capita GDP growth of at least 5 per cent over the period between

1996 and 2016,[342] and to have averaged around 7 per cent annual growth over the past decade.[343]

Over recent years at least, much of this growth can be attributed to a combination of reform and strong inflows of FDI from neighbouring countries into mineral resources (especially copper, gold and silver), hydropower generation and, to a lesser extent, forestry.[344] The tenacity and breadth of reform is especially impressive, ranging across specific sectors like resources to targeted measures to attract FDI such as strengthening intellectual property rights and measures aimed more generally at strengthening the macro economy.[345]

Rapid growth has delivered a development dividend that is impressive by many measures: the poverty rate halved between the early 1990s and the early 2010s; living standards have improved substantially; Laos has officially made the transition from low income to lower middle income country; infant and maternal mortality rates have fallen steeply in recent years; primary school enrolment is now nearly universal; and the country is now integrated to some degree into global and regional markets.

But these major achievements should not downplay the many obstacles to continued growth and development:

- The success of mining, hydro-electricity generation and forestry has not significantly changed the basic structure of the Lao economy in part because of their weak links to the rest of the economy, particularly in terms of creating employment. Agriculture's share of GDP has fallen over the last couple of decades but without any decisive boost (on some measures) in sectoral productivity. The share of manufacturing has never exceeded 10 per cent, and the share of services has changed little since 2000
- Modern infrastructure is lacking not only in terms of roads and bridges, but also in terms of the education, skills and information technology access needed to support a more diversified economy that can generate more jobs
- Public governance continues to be diminished by widespread corruption, big gaps in capacity and uneven application of laws and regulations.

On top of all this, the development task for Laos, like for other low and low-middle income countries, is arguably more complex now than for the 'Asian Tiger' economies in the 1970s and 1980s – in part because of slowing world economic growth and growing protectionism. But in the specific case of Laos, large labour surplus countries like Myanmar, Vietnam, India and Bangladesh will have an edge over a much smaller country with a much smaller surplus labour pool in labour-intensive activities.

This suggests that, if Laos is to gain an edge, it may attempt to bypass traditional stages of development and create competitive advantages in some high value-added niche products.[346] Alternatively, and perhaps more realistically, it may seek to introduce new technologies rapidly in specific areas to create platforms for new or improved industries.

These obstacles demonstrate that the onus for continued growth and development is squarely on improving human capital and connectivity and on strengthening institutions and governance capabilities, which comes back to sustained, effective economic and social reform.

The Lao Government has high ambitions for the future. Its vision for 2030 includes pursuing a hybrid socialist market economy

strategy to create an upper-middle income country where investments in hard and soft infrastructure support modern manufacturing and services industries, and where living standards continue to rise and disparities between urban and rural areas narrow.[347]

It is impossible to say with confidence whether this vision is realisable or not, but there is a basis for expecting significant further progress based on Lao's proven capacity to develop – and stick with – a reform agenda that addresses its many economic vulnerabilities.[348]

There are excellent opportunities to build on existing strong trade and investment relations with near neighbours by improving road and rail links – the Kunming-Vientiane Railway is expected to be completed by 2021.[349] Accelerating programs to reduce border processing costs are certainly possible and are a government priority.[350]

And Laos has been adept at using its membership of institutions such as ASEAN, the ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA) and the World Trade Organization (WTO) to align Lao standards with those at a regional and global level and to use trade policy as a tool to drive domestic economic reform.

Potential energy and mining-related opportunities in Laos

Lao's Eighth Five-Year National Socio-Economic Development Plan (2016-2020) may mark the beginnings of a gradual adjustment away from growth based around hydropower and mining to more balanced and inclusive growth in which manufacturing, services and hard and soft infrastructure play more prominent roles.

In the energy sector, the focus over the next decade will still be on rapid expansion of hydropower but in combination with growth in coal-fired power and, to some extent, non-hydro renewables. In mining, strong growth should remain a development priority – but not in the top rank – with more emphasis on productivity, environmental impact management and domestic mineral processing.[351]

Energy sector transformation

Electricity production in Laos increased substantially from a low base in the second half of the 1990s, remained steady at around 4,000 gigawatt hours (GWh) per year through most of the 2000s and then took off in the period between 2009 and 2012 to reach 16,500 GWh per year by 2015. The majority of installed capacity is privately owned. To some extent, increasing domestic generation is a response to growing domestic consumption: per capita consumption rates have risen as a normal part of development and Laos has been remarkably successful in lifting the national electrification rate from around 15 per cent in the mid-1990s to over 90 per cent currently.

However, increasing domestic generation has been a response to import demand from Lao's regional neighbours.[352] Around two-thirds of production is exported – down from 80 per cent a few years ago. Laos is connected to the electricity grids of southern China, Cambodia, Thailand and Vietnam, allowing two-way trade, and is active in negotiating new electricity trading agreements. Electricity exports make up around one-quarter of Lao exports (predominantly to Thailand) and, as previously indicated, remain a key driver of economic growth (Table 12.1).

Table 12.1

Laos: Export and import of electricity

Source: Lao Ministry of Energy and Mines and ERIA, *Lao PDR: Energy Statistics 2018*, Economic Research Institute for ASEAN and East Asia, 2018

Year	**Export** GWh	**Import** GWh	**Net trade** GWh
2000	2793	180	2613
2010	6646	1210	5437
2011	10,669	904	9764
2012	10,363	1329	9034
2013	12,494	1272	11,222
2014	11,936	1559	10,377
2015	11,549	2050	9499

Note: GWh = gigawatt hours

Prior to 2013, all of Lao's electricity came from hydro. Since then, there have been small increases in generation from solar and biomass, but the main change has been the emergence of coal-fired generation (Table 12.2). Laos has small proven coal resources; most are lignite with some anthracite, and a significant number of possible coal deposits remain unexplored.

Coal production has increased rapidly over recent years from a little over 200kt in 2000 to more than 1 Mt by 2013 and accelerated to 4.8 Mt in 2015. This increase was associated with construction of the Hongsa Mine Mouth Coal Power Plant, an initiative that went on line in 2015 and uses domestically sourced mid-grade lignite to supply electricity to Thailand.[353]

Table 12.2

Laos: Sources of electricity generation

Source: OECD, *Economic Outlook for Southeast Asia, China and India 2019: towards smart urban transport*, OECD Publishing, Paris, 2019

Year	**Hydropower** GWh	**Coal** GWh	**Solar** GWh	**Biomass** GWh
2010	8449	–	–	–
2011	12,969	–	–	–
2012	13,057	–	–	–
2013	15,505	–	–	5
2014	15,270	–	0.001	5
2015	14,039	2259	0.001	4

There is a reasonable prospect that these recent trends will continue through the 2020s, based on the following planning parameters used by Lao's Ministry of Energy and Mines:

- Total installed capacity by 2030 will remain predominantly coal-fired and hydro generation. The Lao Government is examining non-hydro renewables as a major priority. The cost gap between hydro and solar is narrowing but still favours hydro. Some regulatory uncertainty on solar also places question marks over foreign investors' willingness to commit to projects. Nevertheless, there is an expectation that non-hydro renewables, especially solar, will increase their share of the total energy mix.[354]
- The private sector will supply the great majority of the 13,000 megawatts (MW) of additional installed capacity required to 2030 to meet projected increases in domestic and foreign demand. Depending on assumptions on Lao's rate of economic growth, domestic demand for electricity could increase five to seven fold over the period 2016-2030. Similarly, electricity consumption among Mekong sub-region countries should increase strongly. Laos has agreements or prospective agreements with all of them with the aim of ramping up exports through the 2020s.[355]

What happens beyond 2030 is not as clear. By that time, Laos will probably have reached the point where it is generating the maximum amount of commercially viable hydropower[356] and where continued over-reliance could be inconsistent with goals such as universal access to electricity (some areas are unsuited to hydropower) and protecting the environment. This cross-over presents several interesting issues and opportunities.

First, current evidence suggests that demand for thermal coal will increase, but Laos is most likely to focus on domestic production of lignite as a cheaper option to imports.

Second, a stronger focus on coal-fired power could lead to more prospecting and exploration for coal. An attractive opportunity could involve creating modern databases and developing detailed mapping of coal resources and reserves showing coal classifications, calorific value, deposit depth, sulphur content and so forth. This would also be useful to policy makers in energy planning and power plant location planning.[357]

Third, international cooperation on domestic non-hydro renewable resources might be welcomed by the Lao Government. This could extend beyond the technical issue of the potential size of these resources to include medium-term policy issues like how these resources can contribute to improved energy security and reliability, lower power costs, and better respond to growing domestic and international demand.[358] In turn, this could extend to further cooperation on ways to collect, maintain, share, and use data.

Mining and METS

From the perspective of the modern mining industry, Laos was uncharted territory up to the 1980s and early 1990s. Some small mines and artisan gold mines operated but much beyond that was constrained by the virtual absence of geological surveys, research on underground mineral resources[359] and advanced mining technology.

Mining took off in the decade or so prior to 2012. This generated a great deal of growth but over time also generated concerns that the country was becoming over-dependent on mining, and that overly rapid expansion was causing environmental damage and exposing fundamental weaknesses in mining

regulation and regulatory processes.

In June 2012, the Government suspended approving new mining licences. Contrary to occasional rumours, this was not a response to stirrings of economic nationalism similar to that in Indonesia[360] but a response to problems with licensing processes: lack of transparency; rampant speculation in licences; failure to remove licences from corrupt operators using them for illegal logging and from speculators using them for 'land banking'; and an inadequate focus on attracting high quality direct investments. It also reflected a broad understanding at the top of government that:

- Modern mining is based on high technology
- Laos could benefit from high-end expertise available on the international market
- Responsible, sustainable mining required building capacity at the technical level and across government ministries with mining remits
- Lao's regulatory regime was an obstacle to modern mining
- Poorly designed regulations were delivering harmful social and environmental outcomes.

At the outset there was an expectation that the moratorium on new licences would terminate as soon as effective monitoring systems were put in place for mining operations and land management.[361] This was initially expected to take four years. Amendments to the 2011 Minerals Law came into force in July 2018 and the moratorium is now predicted to be lifted on 31 December 2020, though relevant authorities are still hesitant to confirm this.

There appears to be a consensus that the amended law is an improvement on the 2011 law. For example, it eliminates the need for pre-feasibility studies and, in the case of metallic mineral projects, investors can move into prospecting and exploration work immediately after obtaining their business licence.

The new law also provides a clearer clause on 'rights to mine' and introduces new provisions on operational planning; work health and safety issues; environmental protection; and a requirement for adequate funding for mine closure. But it is still difficult to determine just how big an improvement the new law is. This is because the legal language is very general in places, opening up scope for different interpretations. Indeed, different sections of Lao's Ministry of Energy and Mines (MEM) – the agency directly responsible for the legislation and preparing accompanying regulations – appear to have different views on particular provisions.

It also does not help that accompanying regulations are not yet in place and that, at the time of writing, the MEM still has not set out a clear timeframe for developing them.

Similarly, it is difficult to determine whether the moratorium on new licences will be lifted at the end of 2020 and what influence, if any, the new law may have on the moratorium. In part this is because the moratorium is being undermined by the recent Government practice of issuing Lao Development Agreements, which are de facto exploration licences.

It also in part reflects the Lao Government's equivocation on a highly charged political issue. With a history of damaging the environment and generating clashes with farmers over land-use rights, potential opportunities for modern, sustainable mining for gold, copper and bauxite cannot be expected to overcome negative community perceptions of mining

easily or quickly. Nor can such opportunities be expected to turnaround the present Lao Government's often fairly tepid views on mining: despite the priority given to mining in the Socio-Economic Development Strategy (2016-2025), the Government seems to be more focused on diversifying the economy away from natural resources.

At the very least, there are good grounds for arguing that the new law is moving in the right direction, but it will take the formal lifting of the moratorium to take the mining industry out of its current limbo. Assuming this is the case, a gradual pick up in mining activity would seem to be more likely than some kind of boom given prevailing community and government perceptions.

But the potential for moderate-to-rapid growth is certainly there over the medium to long term. Lao's demand for construction materials, metals and fuel minerals will increase as its economy grows. Hard infrastructure is improving steadily: the Asian highways network and the railway system should all play a role in making it easier and cheaper to get product to market. And proximity to major markets in China, India, Thailand, and Vietnam should give Lao miners a shipping edge over more distant ones.

Laos is not a significant potential market for internationally traded resources and energy, but is a potential growth market for mining technology and advanced services from which Australia is well placed to benefit. There is strong brand recognition across the mining supply chain, and one of Lao's key priorities is training engineers and building technical and vocational skills more broadly.[362] Building cooperation in this area, as well as across the METS spectrum, would benefit both countries.

Challenges for Australia in Laos

Tariffs

Tariffs, as seen in much of the rest of Southeast Asia, are not a significant barrier to Australian exports of resources and mining technology. Lao's MFN tariffs on this group of products can be high (Table 12.3), but Australia has a significant preference through AANZFTA. Most of the tariffs on resources, as set out in Lao's AANZFTA Schedule, are around 5 per cent and will fall to zero by 2021.

Exceptions include a number of lines where AANZFTA-scheduled tariffs are still 8 or 10 per cent, and some where tariffs are scheduled to fall to 3 per cent only by 2025. These exceptions include quicklime and various types of cement, unwrought tin, and products in Chapter 81 of the HS nomenclature like titanium and manganese.[363] Tariffs also are high on some metal manufactures of possible indirect interest to the mining industry. For example, scheduled tariffs on some types of iron and steel wire are 10 per cent and are to remain at this level out to 2020, dropping to 3 per cent by 2025.

Non-tariff measures

NTMs have proliferated in Laos over recent years in line with the growing value attached globally to product safety and strategies to minimise the social and environmental impacts of economic activity. As at 2015, only 12 NTMs had been notified to the WTO and as of 31 December 2017 no anti-dumping, countervailing or safeguards actions were in effect and notified to the WTO.[364]

However, recent research has identified between 290 and 300 NTMs.[365] Fourteen separate agencies across the Lao Government have responsibility for developing these

Table 12.3

Laos: Tariffs by broad product group, 2017

Source: WTO, ITC & UNCTAD, *World Tariff Profiles 2018*, p. 105

	Final bound duties				MFN applied rates		
Year	Average %	Duty free %	Maximum %	Binding in %	Average %	Duty free %	Maximum %
Mineral and metals	15.5	0	40	100	5.8	0	20
Chemicals	19.7	0.5	50	100	6.6	0.2	40

measures. Agencies often have limited awareness of each other's activities – there is no central regulatory oversight even within individual ministries. New regulations can be introduced without taking into account existing ones. And there is often limited understanding of the impact of measures that collectively apply to Lao's entire tariff regime.[366] In this environment, NTMs can easily become non-tariff barriers (NTBs).

Over three quarters of mining-related products are subject to three or more NTMs. Mining ranks alongside food and transportation equipment in terms of the concentrated use of these measures. About half of the mining-related measures affect exports, for example export taxes and prohibitions. Price controls on imports to support domestic prices follow – roughly one-third – and finally an assortment of import licensing measures on products like petroleum, gas, cement, and steel; import quotas; pre-shipment inspection; and labelling issues. NTMs on chemicals and allied products are mainly financial restrictions on payment for imports and price controls on imports to support domestic prices. Goods that might be used in mining like protective head gear and machinery are subject to restrictions on payments for imports.[367]

Business environment

Lao's challenging business environment ranks alongside regulatory uncertainty in mining as the preeminent challenge for mining and mining-related companies. Among ASEAN members only Myanmar ranks worse in terms of ease of doing business (Table 12.4), only Myanmar and Cambodia rank worse in terms of measures of government effectiveness, and only Myanmar ranks worse for regulatory quality (Table 12.5).

At a general level, challenges range across endemic corruption, lack of transparency in regulatory frameworks, unpredictable taxation decisions, unpredictable legal processes, uneven protection of intellectual property, lengthy approval processes, and lack of skills in areas such as information technology, accounting and administration.[368]

Table 12.4

Ease of Doing Business Index, selected ASEAN member states, 2019

Source: World Bank, *Doing Business 2019: training for reform*, International Bank for Reconstruction and Development/World Bank, 2019

Economy	EDB Rank (1–190)	Starting business (1–190)	Dealing with construction permits (1–190)	Getting electricity (1–190)	Registering property (1–190)	Getting credit (1–189)	Paying taxes (1–190)	Trading across borders (1–190)	Enforcing contracts (1–190)
Cambodia	138	185	179	141	124	22	137	115	182
Laos	154	180	99	156	85	73	155	76	162
Myanmar	171	152	81	144	136	178	126	168	188
Vietnam	69	104	21	27	60	32	131	100	62

Note: Rank refers to position out of 190 countries.

Table 12.5

Governance indicators, selected ASEAN member states, 2017

Source: World Bank, Worldwide Governance Indicators database

	Government effectiveness		Regulatory quality		Control of corruption	
Country	Estimate	Rank	Estimate	Rank	Estimate	Rank
Cambodia	-0.7	25.5	-0.5	32.2	-1.3	8.7
Laos	-0.4	38.5	-0.7	25.5	-0.9	15.9
Myanmar	-1.1	13.5	-0.8	11.1	-0.6	32.2
Vietnam	0.0	52.9	-0.4	26.4	-0.6	31.7

Note: Estimate ranges from -2.5 (weak) to 2.5 (strong). Rank is the percentile rank among all countries ranges from 0 to 100.

The US State Department's most recent assessment of the business environment provides further insights into the realities of doing business in Laos. The thrust is that practical efforts to improve the environment have not caught up with the spirit of new laws:

> Though the situation continues to improve, the realities of doing business in Laos can fail to correspond with existing legislation and regulation. Implementation and enforcement often do not strictly follow the letter of the law, and vague or contradictory clauses in laws and regulations provide for widely varying interpretations. Regulations at the national and provincial levels can often diverge, overlap, or contradict one another.[369]

Specific obstacles to trade and especially direct investment are in line with much of the rest of Southeast Asia. For example:

- Regulatory transparency is very weak. Laos trails Thailand and Vietnam, is ahead of Cambodia and about on par with Myanmar.[370]
- Contracts are a framework for negotiation rather than binding agreements[371]
- Registering a business is lengthy and complex
- Land rights are complex and especially complex outside urban areas. In theory assets are protected against expropriation. However, the US State Department assesses that in practice 'land grabs are feared by Lao nationals and expatriates alike'.[372]
- Laos has fewer restrictions on foreign investment than some other Southeast Asian economies, but has more than Cambodia and Vietnam and slightly more than Myanmar[373]
- The judicial system is subject to political interference[374]
- Privatising state enterprises or parts of them is floated from time to time but has not been followed up.

The business environment story may be bleak but there are useful upsides: four are especially noteworthy. Corruption affects all levels of the economy and is common among officials approving or expediting applications but appears to be declining in some areas according to recent research by the OECD.[375]

Intellectual property (IP) protection is improving, though it has a long way to go.[376] In December 2015, Laos completed its accession to the Protocol Relating to the Madrid Agreement Concerning the International Registration of Marks (the Madrid Protocol), and in November 2017 Lao's National Assembly approved new amendments to the Law on Intellectual Property.[377] There also is increasing media coverage of the economic damage caused by weak IP protection.

Trade facilitation is another example with upsides. Laos has more than its fair share of trade facilitation problems but was one of the first countries to ratify the WTO Trade Facilitation Agreement and is making progress in implementing trade facilitation reform. It has introduced a new digital payment system for importers to cut down on corruption, is expanding automated customs clearance under ASYCUDA (Automated System for Customs Data) to 24 offices across the country, and has begun drafting a Trade Facilitation Roadmap and Action Plan for 2017-2022.[378]

Laos now performs markedly better than Cambodia, Myanmar and Vietnam on ease of cross-border trading (Table 12.4). The time needed for documentary and border compliance is substantially less than in these countries, and is better than in other ASEAN members like Indonesia and Philippines, though is not as good as in Malaysia and Thailand.

And, perhaps above all, Laos is now considered to be a peaceful and politically

stable country. The risk of political violence directed at foreign enterprises or businesspersons is low.[379]

In a general way, Table 12.6 attempts to put together elements of these negative and positive sides of the business environment based on surveys of top supply chain issues for international businesses operating in Cambodia, Laos, Myanmar, and Vietnam (CLMV). The main takeout for Laos is that complex regulatory processes, lack of clarity in regulations and poor enforcement are more pressing issues for international business than corruption or lack of regional integration.

Among Australian mining services and technology companies, the chief concerns appear to be the approvals and licencing regime, uncertain tax obligations, and the continuing absence of 24-hour customs clearance on the various bridges connecting neighbouring counties.

From an Australian perspective, a massive amount of effort is required for approval to set up businesses, access electricity, pay taxes, and trade across borders. This last factor is especially important because it gets to the heart of one of the major impediments to doing business in Laos. Given its small population, modern industries need to be linked into larger industrial clusters beyond the borders. This requires squeezing logistic costs to centres such as Bangkok (and prospectively Hanoi and Kunming), further simplifying customs procedures, launching mixed loading services that respond to the supply requirements of small and medium sized enterprises,[380] and getting to grips with border and behind-the-border barriers to trade and investment.

Patience and an understanding of Laos' developing regulatory regime are necessary for companies doing business there.

Table 12.6

Comparison of top supply chain issues, CLMV, 2017

Source: American Chamber of Commerce in Singapore and others, *ASEAN Business Outlook Survey 2018*

% of respondents who listed as top issue

Country	Corruption at port/point of entry	Lack of regional integration and uniformity of regulatory cooperation	Unpredictability of customs procedures from port to port	Unnecessary and redundant data, regulatory and enforcement mandates	Lack of clarity on regulations and enforcement
Cambodia	80	*	50	40	70
Laos	**25**	**25**	**50**	**75**	**100**
Myanmar	50	29	50	*	86
Vietnam	49	*	49	46	72

* Not highlighted

Policy Implications

Two sets of policy conclusions seem relevant, one relating to increasing access to the Lao market and the other – perhaps more importantly – relating to deepening bilateral cooperation in ways that will have a positive impact on the Lao regulatory environment and boost trade and investment over time.

On access, two initiatives warrant attention. First, under AANZFTA, Lao tariffs on mining products and most mining equipment from Australia will be at nuisance levels by 2020: 2 per cent is the most common value. They could be phased out at an accelerated pace either in negotiations for RCEP or in the AANZFTA Review in return for better access for Lao products in the Australian market or closer institutional ties or both.

Consideration could also be given to abolishing tariffs that are to continue at 3 per cent. It would be particularly useful to allow explosives and detonators for mining purposes to enter at a lower rate of duty and for vehicles used in mining to be accorded more favourable tariff treatment.

Second, Laos has made limited commitments on market access and national treatment on trade in services, investment and movement of skilled workers. In AANZFTA, it made the following 'horizontal' or sector-wide commitments on market access:

- Foreign enterprises can establish a commercial presence in Laos in the form of business co-operation by contract, joint venture enterprises, or 100 per cent foreign-invested enterprises. In practical terms, mining ownership is negotiable with AANZFTA parties but the government must own at least 10 per cent.
- Foreign entities incorporated under the law of other parties can establish representative offices in Laos to collect information, study the feasibility of investment and coordinate for the purpose of applying for investment
- Business visitors from other parties can have a maximum stay of 60 days. Intra-corporate transferees, including executives, managers and specialists, can have temporary residency and work permits for six months renewable for up to one year.

Limits on national treatment on trade in services, investment and movement of skilled workers in AANZFTA include: foreign parties cannot own land but can own property and lease land for up to 75 years; foreign investors must provide training, upgrade professional skills and promote Lao nationals to higher skilled and specialised positions, including managerial; and Lao services and service suppliers can receive more favourable tax treatment than foreign services suppliers.

No limits on national treatment were set on subsidies, investment incentives and other state support measures, though eligibility may be limited to particular regions, categories of persons or enterprises.

Given Lao's limited market access commitments to date under both AANZFTA and the WTO on services, investment and people movement and also given its potential as a market for Australian mining technology and services, building on existing horizontal market access commitments should be a priority for RCEP and the AANZFTA Review. This could be especially powerful if linked to deeper bilateral cooperation at the sectoral or industry level.

On government-to-government cooperation and institution building, two initiatives could potentially add to the robustness and

sustainability of the Lao mining sector while advancing Australian mining interests.

First, Australia should continue to be a prominent advocate in Laos of the wider economic and social benefits arising from developing a well managed, world-standard mining sector. Securing these benefits – jobs, rising wages, training opportunities, and strong linkages to the rest of the economy – hinges on Laos being competitive in attracting quality, long-term investment. This depends in turn on Laos having clear national mining policies, providing commercially relevant geological data and promoting Lao-specific opportunities that include value-adding possibilities.

These messages have been delivered by Australian ministers and officials. They need to be spelt out by business in practical terms and should be reinforced by Australian governments through tangible policy actions that promote regulatory and technical cooperation in mining.

Second, Australia should boost support for mining reform in Laos. Australia supports reform in various ways such as through dedicated funding for mining under the World Bank's Hydropower and Mining Technical Assistance project, and through funding for training, networking opportunities and support for sustainable mining under Australia's Extractives Sector Development Assistance Program.

Developing the hub concept that underpins the Program on a more commercial basis warrants consideration, as does the use of aid-for-trade funding to support activities relating to, say, advanced training in mining-related disciplines and institutional capacity building.

Australia's official development assistance for Laos in 2019-20 is estimated at $37.9 million. For the most part this is invested in improving access to basic education for disadvantaged children; providing scholarships, training and organisational capacity building; and strengthening Lao's trade regime and developing a more competitive private sector.

After supporting Lao's accession to the WTO in 2013, Australia has supported Laos to implement its WTO commitments, reduce trade facilitation costs and improve skills in export industries.

Given the synergies between Australia and Laos in mining, a dedicated program for sustainable mining that embraces cross-border trade across Southeast Asia deserves serious consideration.

CHAPTER 13

Myanmar

KEY POINTS

- Myanmar is one of the most mineralised economies in the world, but is chronically short of capital, technology and skills.
- The economy has grown at around 7 per cent annually in recent years and has reasonable prospects for growth of 5 to 6 per cent per annum (or more) over the next 10-15 years if peace and stability take hold and the global and regional environment is favourable.
- Economic and business links with Australia are currently weak, with two-way trade in goods and services in the order of $370 million (Myanmar trades mainly with its near neighbours). Mining-related trade is very small, but there are around 30-40 Australian firms operating in the country, with Woodside the most significant.
- Myanmar has the most difficult business environment in ASEAN by a considerable margin. It is the least open economy in ASEAN and is poorly integrated into global value chains. However, FDI inflows have increased since 2010, with China remaining the most significant source.
- Tariff barriers are not a significant impediment to trade, but non-tariff barriers are a concern. Informal barriers to trade and investment, such as social and political instability and the challenging business environment, are the most significant.
- Myanmar will need to transform its energy sector if it is to achieve its development objectives. Demand for electricity over the coming decades should increase strongly and, while hydro power and natural gas will form the basis of a supply response, the Government is seeking to increase the proportion of coal in the energy mix. This may create opportunities for Australia and Indonesia.
- There is real opportunity in the METS sector. Austrade has identified a number of possibilities ranging from exploration technologies and surveying to mineral testing and mining information technology. Myanmar, potentially, could become a very bright spot for Australia in the Mekong sub-region.
- In considering future development assistance, capacity building in the mining sector should be a priority along with cooperation on professional, technical and vocational education. Taking a more proactive approach to professional development and competency-based training could open doors for Australian business in Myanmar.

Burma (Myanmar) won its independence on 4 January 1948. It was then one of the more developed countries in Southeast Asia with substantial natural advantages, including a large and youthful population and abundant agricultural and mineral resources.

It is one of the most diversely mineralised countries in the region. Measured by reserves, Myanmar is home to at least three mineral deposits of global significance: Bawdwin (lead, zinc and silver); Monywa (copper); and Mawchi (tin and tungsten).[381]

From the outset, however, Burma has been beset with political, social and economic challenges, and only in recent years has Myanmar (Burma was officially renamed in 1989) re-engaged with the international economy and begun political and economic reform.[382] It remains under-developed and struggles to restore peace and achieve national unity, but is growing quickly and has considerable potential, not least as a producer and exporter of minerals and energy but also as a market for METS.

The mining and energy sectors will support Myanmar achieving its economic goals over the next 10-15 years.

Australia-Myanmar trade and investment

Australia-Myanmar trade remains low. Bilateral merchandise trade in 2018 was valued at around $200 million and services trade at close to $170 million. It has risen from a very low base over the past 10-15 years, especially following the transfer of power to the civilian Union Government after 2011.

In very recent years total trade values have changed little. Australian exports account for the bulk of the trade: our dominant trade interests are various agricultural products and education services. On the Myanmar side, there are small trades in seafood, vegetables, clothing, travel bags and footwear.

Mining-related trade is not significant, though Australia has exported small quantities of coal and ferrous and non-ferrous metals from time to time, and continues to engage in a more substantial trade in engineering products. Some of this may be mining or natural gas-related (Table 13.1).

Myanmar trades and invests predominantly with its near neighbours, and trade flows are both much larger and more varied than with Australia. Agricultural products feature strongly in Myanmar's exports. But unlike trade with Australia, natural gas (particularly to Thailand and China) and minerals more broadly are major exports while mining products, metals, machinery and chemical products are major imports.[383] Mineral products are imported overwhelmingly from Thailand followed by China and Malaysia.

These trade patterns go some way to explaining flows of foreign direct investment (FDI) into Myanmar. In broad terms inflows have increased significantly from 2010, with a big focus on developing the gas and power sectors and, to a much lesser extent, manufacturing and transport and communications.

China was by far the main source of FDI in the early years and remains the main source country, but its share declined steeply from around 90 per cent a decade ago to a little over one-third by 2015.[384] The mining sector, by and large, has not been a focus for international investors, attracting less than 4 per cent of cumulative inflows between 1988 and 2017.[385] Data is of variable quality, and it may be that setting aside a large investment in the Letpadaung copper mine, mining attracted less than 1 per cent of incoming direct investment after about 2010.[386]

Table 13.1

Selected Australian merchandise exports to Myanmar, 2000 to 2018 (A$000)

Source: DFAT

	2000	2005	2010	2015	2017	2018
Unprocessed food/live animals	1503	26,133	56,414	110,011	122,813	110,771
Unprocessed minerals*	21	8	903	40	49	66
Unprocessed fuels**	0	0	0	3980	7308	2686
Processed food	8434	2926	14,815	14,311	11,996	12,926
Processed fuels	816	1801	0	519	626	779
SImply transformed manufactures***	1752	386	349	1075	251	590
Elaborately transformed manufactures****	8080	7296	6779	11,894	28,370	33,289
Other (including confidential)	1238	1211	1305	787	1121	945
Total exports	**21,853**	**40,039**	**80,991**	**142,621**	**172,564**	**162,106**

* Mostly metalliferous ores and concentrates
** Mostly coal anthracite and bituminous
*** Including metallic mineral manufactures, iron and steel, non-ferrous metals
**** Mostly engineering products

There is no published data on Australia-Myanmar FDI flows, though those flows are expected to be very modest. Approximately 30 to 40 Australian businesses operate in Myanmar across energy, mining, financial services, construction, and consultancy services.[387] Woodside Energy has invested in Myanmar's offshore gas fields and, typical of an emerging mineral province, small exploration companies predominate.

Most foreign companies are from China, Thailand, Korea and Australia.[388] In Australia's case, junior miners, among other things, provide exploration services, prepare environmental management plans and digitise databases for mining projects. The number of Australian companies fluctuates with changes in the legal and regulatory framework and prospects for moving from exploration to production.[389]

Factors shaping opportunities in Myanmar

Myanmar is chronically short of capital, technology and skills. Developing its extraordinary mineral wealth, and developing the country more broadly, requires FDI. Large and increasing inflows are only feasible so long as the Government remains committed to economic and social reform and providing there is domestic political stability and security.

If Myanmar 'fails to build a compelling growth plan and implement it effectively, today's goodwill and cautious optimism could evaporate all too rapidly.'[390]

Recent economic performance has been encouraging. Economic growth has averaged around 7 per cent per year over recent years,[391] and seems well set to continue at about this

pace over the next three or four years.[392] Myanmar has many intrinsic strengths including rich endowments of mineral and energy, water and arable land and a geography that bridges fast growing South and East Asia.

It shares borders with countries that generate more than 20 per cent of global GDP and that support two-fifths of the world's population. Myanmar also has acquired strengths through reforms focused initially on restoring peace and encouraging national unity and later on strengthening the economy, including sectors like mining (Box 13.1).

These reforms are not perfect – for the most part they are slow and steady – but they do add up over time and are improving the business environment. Reform momentum is building and, short of a descent back into political instability, will likely continue.

In mining, the legal landscape is changing rapidly so it is understandable that there is some misalignment – perhaps even contradiction – between some laws and regulations. Similarly there are concerns about which government agencies have responsibility for monitoring and enforcing particular regulations and about their competence.[394]

And it is unclear what formal role, if any, state owned enterprises play in overseeing compliance, even though they appear to play a central role in allocating mining licences and collecting fees.[395] There is, however, a stronger sense that the legal and regulatory environment for mining is improving – a perception that has already started to attract more international companies to Myanmar, including from Australia. There also is a stronger sense that Myanmar has made a good beginning on its overall economic reform program that goes some of the way, albeit limited, to unlocking potential over the medium-to-long term.[396]

What this might mean in terms of economic growth rates over the next 10 to 15 years is unclear. The McKinsey Global Institute has raised the possibility that Myanmar's economy could quadruple in size to over $200 billion by 2030.[397]

In a similar vein, De and Raychaudhuri argue that Myanmar could grow at 7 to 8 per cent per year to 2030, triple per capita income and become a middle-income country as currently defined by the World Bank.[398] If this were to happen, it would be in line with the 6 to 9 per cent growth bands identified in Myanmar's National Comprehensive Development Plan (2011-30).

On Myanmar's growth potential, it still lacks a credible and consolidated legal and regulatory framework to support the private sector, and it has large gaps in soft and hard infrastructure which are a major brake on development.

This issue and a still uncertain political and economic environment make forecasting Myanmar's medium-to-long term growth difficult. It seems feasible, however, that Myanmar could grow at 5 to 6 cent per year over the next 10 to 15 years: 5 per cent is probably the minimum reflecting average growth in the decade prior to the reform era.

Growth rates of 7 to 8 per cent or even 9 to 10 per cent per year are also feasible if the nation remains at peace and stable, the global and regional economies remain reasonably strong, and market-oriented reforms are sustained.

Notable economic and mining reforms in Myanmar

2012 The multiple exchange rate regime was abolished. The exchange rate was unified under a managed float.

2013 Operational autonomy was granted to the Central Bank of Myanmar.

2014 Foreign banks were allowed to form joint ventures in Myanmar. Banks from other ASEAN members were allowed to open branch offices.

2014 Myanmar became an Extractive Industries Transparency Initiative (EITI) candidate country[393]

2015 The Mining Law increased the maximum production permit period to 50 years for large scale production projects; gave exploration permit holders a clear right to production permits; allowed joint ventures between foreign investors and local investors for small- and medium scale production projects to be upgraded to large scale production projects; and provided guaranteed rights to extraction/production permits for companies that had carried out successful prospecting and exploration and completed feasibility studies.

2016 The Twelve Point Economic Policy emphasised market economy-led growth, less red tape, more competition, and easier access to credit.

2017 The Myanmar Investment Law (MIL), among other things, permitted foreign investors to own 100 per cent of businesses that were not on restricted or prohibited lists; devolved authority for screening foreign investments below US$5 million in non-strategic and non-restricted sectors to the state/regional level; allowed long-term leasing of land; provided for compensation for expropriation of assets; and set up dispute settlement processes.

2017 The Financial Institutions Law set down rules on liquidity ratios for banks, exposure to large loans and monthly reporting requirements.

2017 Work on a minerals and gemstone cadaster was initiated. Its objectives include: more transparency in managing mineral and gemstones licenses; setting guidelines for formatting data, maps and reports for internal and external clients; providing various levels of security and access to this information; providing reports and statistics for internal and external dissemination; and developing systems to handle non-compliance.

2018 Myanmar Companies Act allowed foreigner investors to own up to 35 per cent of local companies and retain local company status. Previously any foreign investment, however small, would change that status.

2018 The Mining Rules set out application processes for different categories of mining permits, specified the duties of permit holders, and set out rules on mine closure, safety, labour, accidents, inspection etc.

Potential opportunities for Australia in Myanmar

Recent surveys of Australian business indicate that Myanmar is not a priority for Australian companies trading with, or investing in, ASEAN. This pattern applies both to multi-sector surveys as well as to surveys targeted at a specific sector like METS.[399] Along with Cambodia and Laos, Myanmar languishes at the bottom of rankings of most popular FTA goods and services markets for Australian companies.

Myanmar could, nevertheless, offer medium-to-long term commercial opportunities for Australian companies. Potential opportunities exist in several sectors, including:

- Technical and vocational education and training in Australia or in-country. Significant skill gaps exist across the board in Myanmar
- Myanmar could again become a major agricultural producer and exporter. Opportunities are emerging in dairy and aquaculture technology, where Australian technology and expertise could assist in lifting productivity
- Premium food and beverages for major hotels
- Financial and professional services
- Major infrastructure projects, particularly in the power and transport sectors
- Oil and gas extraction, and mining and related technology and services.[400]

Depending on the effectiveness of governance and policy development, several opportunities warrant careful monitoring in the mining and energy sector: energy efficiency and planning; hard and soft infrastructure in developing natural gas reserves; trade in thermal coal; and METS.

Energy sector transformation

If Myanmar is to achieve its development objectives, it must transform the energy sector. The sector is under-developed, reflecting inadequate financial resourcing and technical skills, and decades of isolation.[401] Myanmar's overall level of per capita electricity consumption is among the lowest in the world and a major obstacle to development.

On current indications, demand for electricity should increase strongly over coming decades based around Myanmar Government assumptions of average annual GDP growth rate of 7.1 per cent to 2030, annual population growth rate of 1 per cent and the national electrification rate rising from around 30 per cent in 2015-16 to 100 per cent by 2030-31.

On this basis, maximum demand for power could rise from under 2,000 megawatts (MW) to around 4,500 MW by the start of the 2020s and then treble to around 9,100-14,500 MW by the end of that decade,[402] though realistically this range might fall well short of getting electricity to all who want it: 18,000 MW might be needed to achieve this particular goal.

Hydro power and natural gas will continue to form the backbone of the supply response. Myanmar is among the world's leaders in unexploited hydropower potential and has nationally significant reserves of natural gas.

The National Energy Plan suggests that, while there will be a massive increase in installed capacity for hydro and natural gas-generated power, their share in the electricity supply mix could decline from around 95 per cent in 2017-18 to 58 per cent by 2030-31. The Plan also suggests that:

- Installed coal-fired capacity should increase substantially – reaching almost 8,000 MW by the early 2030s – and its share of the energy mix could rise from 3 per cent to 33 per cent over this period[403]

- Non-hydro renewables' share could rise from negligible levels currently to around 9 per cent over the same period.

In all, total installed capacity could exceed 23,000 MW by 2030-31. Achieving anywhere near this level will depend on substantial energy sector reform, including reforming energy prices to better reflect costs of production and private sector involvement.

Transforming the sector on this scale may or may not be achieved but continuing solid progress should create at least niche opportunities for Australia and others to supply physical infrastructure and equipment for power generation, transmission and distribution. It could lead to opportunities to supply services in areas as diverse as professional skills (geologists and engineers), vocational training, risk analysis, training and skills accreditation, and environmental and social impact assessment.

It might also lead to more government-to-government cooperation on issues including modernising laws and regulations, and building institutional capacity in areas such as improving energy planning and forecasting.[404]

Beyond this, the National Energy Policy puts a spotlight on energy efficiency, developing pricing regimes that respond to market forces, developing energy standards appropriate for a transforming economy, privatising some state energy assets, using renewables in off-grid areas, and using LNG in thermal power plants. These are all areas where different levels of Australian governments, as well as the private sector, have considerable expertise.

Natural gas

Large offshore gas deposits were discovered from the early 1990s and production started in the late 1990s. The Yadana, Yetagun, Shwe, and Zawtika gas fields were explored and developed by major international companies. Most production is exported, principally to China and Thailand, which made sense at the time given low domestic usage rates.[405] It now makes less sense given strong growth in domestic demand from the power sector and manufacturing. Demand is projected to grow from 457 million cubic feet per day (mcfd) in 2017 to 1142 mcfd by 2040,[406] assuming massive investment – mostly FDI – in the upstream sector, pipelines, LNG, and city gas.[407]

Domestic natural gas production is unlikely to meet this demand. According to the Economic Research Institute for ASEAN and East Asia:

> Two offshore fields and several onshore fields are in development, and production from these new supply sources will increase; however, such growth, even if fully realised as scheduled, will only partially offset the decline in production from existing fields...As domestic production declines, the export volume will also need to be reduced. To make up the gap between declining supply and increasing demand, three LNG-receiving projects are being discussed. All three projects are in the south of the country and are associated with gas-fired power generation.[408]

Some consideration is being given to developing 'national champions' in the oil and gas sector perhaps along the lines of those developed in Malaysia and Vietnam.[409] While far from being settled policy, it may offer opportunities for Australian companies as the sector modernises.

Thermal coal

Myanmar has limited low-quality lignite and sub-bituminous coal deposits. All mines are open cut and most are run by state-owned enterprises or private Myanmar companies using basic technologies. Aside from Chinese companies, investment by international mining companies is not a viable option given the remoteness of most mines and their small scale.

Myanmar's coal production (by some measures) peaked at about 1.4 million tonnes in 2007 and data for 2015-16 suggest that it is now a little over 400,000 tonnes and used mostly for producing cement and steel.[410]

Should the Government implement the National Energy Plan strategy to reduce dependence on hydropower by increasing the share of coal in the electricity mix, thermal coal imports presumably must increase, creating opportunities for countries like Australia and Indonesia.

Just how definite the 33 per cent share of coal-fired power might be in the 2030 electricity mix is not clear. The Myanmar Government continues to use that figure, but several contracts for coal-fired plants with international companies have been cancelled in recent years following opposition from farmers and environmental groups.

According to one energy expert:

> The new administration is looking to overhaul the national long-term power strategy, aiming to hike the planned share of hydropower, natural gas, solar, and wind in the electricity mix of the country at the cost of coal, as it tries to attract foreign investment.[411]

What this might mean in practice is difficult to assess. A plausible working assumption might be that no new coal-fired plants will be built in Myanmar and that natural gas will be used to provide baseload and back up for hydro and other renewable energy. Another option, as pointed out by the Asian Development Bank, might be to supply coal-fired plants through imports and by boosting domestic coal production using international technology and funding.[412]

In moving towards an optimum power strategy for the country, the Myanmar Government and other stakeholders will need to consider implications for Myanmar's declared goals of energy independence and environmental protection. How coal stacks up as a baseload fuel compared to natural gas also will need to be considered. The experience of other members of ASEAN could be instructive but not conclusive. Vietnam has opted to reduce dependence on hydro by emphasising natural gas. Malaysia, on the other hand, has found it more profitable to export natural gas and import coal.

Mining and METS

It is difficult to get precise estimates of mining's importance to the Myanmar economy given the informal nature of much of the sector, the prevalence of micro companies,[413] the opacity of state enterprises, and the huge discrepancies between official and unofficial estimates of production and trade in commodities like jade and other precious stones.

On some estimates, mining contributes between 2 and 6 per cent of GDP, about 20 per cent of Union Government revenues and 50 per cent of total exports if natural gas and gems are included. Myanmar supplies 90 per cent of the world's rubies and is the largest source of superior jade.[414]

Parts of the mining sector are being developed and modernised, including with the assistance of Australian companies such as PanAust, Myanmar Metals, Ventis (natural gas) and Woodside. PanAust and Myanmar Metals are now wholly owned by Chinese firms. But the model of Australian management and professional skills combined with Chinese ownership is becoming more prominent in mining and energy. It also is extending to sectors like construction and food processing.

Production of metals and industrial minerals should increase as existing mines expand and new mines are commissioned in response to demand pressures from urbanisation and the Government's infrastructure plans for oil and gas pipelines to China, highways and deep-sea ports.

In line with this, the minerals processing industry will need to expand. There were no large-scale tin-ore smelting facilities in Myanmar in 2015, and tin concentrate had to be exported to Thailand, Malaysia or China.[415] More broadly, 'Mineral processing in Myanmar is undertaken at the mine-mouth and production levels are dictated by local market demand. Given the scale of mining in Myanmar, it seems likely that minerals processing will continue to develop to service local market demands.'[416]

This presumably will benefit local firms but it implies that Myanmar will depend for a considerable time on importing steel, other metals and engineering items principally from its near neighbours.

There are opportunities for Australian METS companies to expand operations in Myanmar as the mining sector grows and becomes less informal and more focused on applying and meeting international standards. Austrade recently identified the following opportunities:

- Aerial exploration, storage, analysis and dissemination of exploration data
- Geo-mining consulting: resource estimation, detailed project reporting
- Mining equipment: pumps, valves, gears, hydraulic hoses, radiators
- Surveying: mine survey, face mapping and stockpile calculations
- Mineral testing: test sample preparation equipment, mineral test equipment, in motion/on belt mineral analysers
- Mining information technology: mine planning software, mine management and truck despatch systems for fleet monitoring and optimisation with reporting and enterprise resource planning for mining.[417]

To these could be added environmental technology and services, vocational training and skills development and capacity building within government agencies. Over the medium term, major opportunities should emerge in exploration.

Myanmar is not fast tracking exploration activities by foreign mining and METS companies because of likely tensions with farmers and minorities in remote areas. But over time, this must ramp up if Myanmar is to achieve anywhere near its mining potential. The geology of large areas of the country has not been mapped and, where it has been, there is still a reliance on antiquated geological data.

Myanmar knows it must deliver sustainable mining projects that demonstrably deliver broad-based social, environmental and economic benefits. A particular focus is to have more such projects in place prior to the 2020 general election, but the political imperative to develop sustainable mining goes well beyond that timing.

Myanmar's political and business leaders know what Australian mining and METS companies can do, and Myanmar could potentially become a significant METS market for Australia in the Mekong sub-region.

Challenges for Australia in Myanmar

There are some considerable difficulties in doing business in Myanmar. Tariffs are the least of them: tariffs have fallen and many have been eliminated through the ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA), or soon will be, though they remain an impediment to potential trade in some mining commodities and mining equipment (Table 13.2).

With less than 20 per cent of Myanmar's tariff bound,[418] tariff bindings in AANZFTA are important in increasing business certainty about market access. As such, they are one of the planks underpinning potential expansion of Australia's goods trade with Myanmar.

Non-tariff barriers are a more serious problem. Based on official sources, Thein and Naing report that regulatory functions in Myanmar are scattered over a number of ministries and agencies, which have few incentives to work together.[419]

Regulations are often adopted in response to narrow mandates, despite their possible wider trade or investment impacts.[420] Around one-half of product categories appear to be covered by one or more non-tariff measures (NTMs). Most are sanitary and phytosanitary measures or other technical standards, but also include export-related measures and price controls.

Thein and Naing conclude that a few NTMs are relevant to mining and metals such as export taxes on hydrocarbons, prohibitions on foreign companies mining jade and precious gems, and government monopolies on exports of some hydrocarbons and mineral products. The incidence on NTMs, however, is seen as low but rises steeply for chemicals, transportation, machinery and electrical equipment that might contain products that fall within the definition of METS used in this report.[421]

Thein and Naing's assessment may well be the tip of the iceberg. Inventories of NTMs are hard to compile. As at December 2018, Myanmar had notified only two to the WTO.

Various reports raise concerns about opaque and arbitrary practices by the customs administration, and problems with protecting intellectual property and accessing government procurement.[422] These problems quickly merge into the overall challenge of just doing business in Myanmar.

Well respected international measures of the business environment, such as the World Bank's *Doing Business Index, Worldwide Governance Indicators* and *Logistics Performance Index*, reveal a consistent story:

- Myanmar is the most difficult market for doing business in ASEAN. There are major challenges in starting a business, getting electricity, registering a property, getting credit, trading across borders, and enforcing contracts (Table 13.3). Corruption[423] (Table 13.4) and access to skilled labour, technology and land are other obstacles
- Myanmar is at the bottom of ASEAN rankings of government effectiveness and regulatory quality by a sizeable margin (Table 13.4)
- Myanmar is poorly integrated into global value chains and is the least open economy in ASEAN, in part because its trade and industry policies tend to be more protectionist than most other Asian low-income countries
- Another part is inefficient border processes: completing documentary and border compliance processes takes four or five times longer than in Malaysia. Yet another part is gaps in transport, logistics and communications infrastructure

Table 13.2

Myanmar: AANZFTA preferential tariffs, selected goods

Source: AANZFTA Goods Schedule, Myanmar

Code	Commodity	Tariff
2600	Various metal ores and concentrates	1% in 2019 to zero in 2020
2700	Mineral fuels, mineral oils, bituminous substances	Coal products zero, low tariffs on some oil products: to zero by 2020 or 2024t
3602	Prepared explosives	Unbound
36030010	Safety fuses, detonators	Unbound
65061020	Safety headgear - industrial	5% in 2019 to zero in 2020
7106-7110	Silver/gold/platinum, unwrought or semi--manufactured	7.5% to 15% in 2019 Monetary gold unbound Tariffs reduce to 5% in 2021
7201	Pig iron, blocks or other primary forms	1% in 2019. Zero from 2020
7202	Ferro alloys	1% in 2019. Zero from 2020
7203	Ferrous products obtained by direct reduction of iron	1% in 2019. Zero from 2020
7204	Ferrous waste	1% in 2019. Zero from 2020
7403	Refined copper and copper alloys, unwrought	7.5% in 2019. 5% from 2025
8101	Tungsten and articles thereof, including waste and scrap	2% in 2019. Zero from 2020
8102	Molybdenum and articles thereof, including waste and scarp	2% in 2019. Zero from 2020
820713	Rock drilling and earth boring equipment	1% in 2019. Zero from 2020
841391	Pumps, parts thereof	0-1% in 2019. Zero from 2020
843031	Self-propelled coal or rock cutters and tunnelling equipment	1% in 2019. Zero in 2020
843050	Machinery; for handling earth, minerals or ores, self-propelled, n.e.c. in heading no. 8430	1% in 2019. Zero from 2020
843143	Parts of boring or sinking machinery	1% in 2019. Zero from 2020
847410	Machinery for sorting, screening, separating, washing, crushing, grinding, mixing or kneading earth, stone, ores in solid form, shaping, moulding machinery for solid mineral fuels	1% in 2019. Zero from 2020
852692	Radio-remote control apparatus	Unbound
9027	Instruments and apparatus; for physical or chemical analysis (e.g. polarimeters, spectrometers), for measuring or checking viscosity, porosity, etc., or quantities of heat, sound or light	Mostly 1.5% in 2019. Zero from 2020 except for exposure meters – 5% in 2019, to zero from 2021

Table 13.3

Ease of Doing Business Index, selected ASEAN member states, 2019

Source: World Bank, *Doing Business 2019: training for reform*, International Bank for Reconstruction and Development/World Bank, 2019

Economy	EDB Rank (1–190)	Starting business (1–190)	Dealing with construction permits (1–190)	Getting electricity (1–190)	Registering property (1–190)	Getting credit (1–189)	Paying taxes (1–190)	Trading across borders (1–190)	Enforcing contracts (1–190)
Brunei	55	16	55	31	142	1	84	149	67
Cambodia	138	185	179	141	124	22	137	115	182
Indonesia	73	134	112	33	100	44	112	116	146
Laos	154	180	99	156	85	73	155	76	162
Malaysia	15	122	3	4	29	32	72	48	33
Myanmar	**171**	**152**	**81**	**144**	**136**	**178**	**126**	**168**	**188**
Philippines	124	166	94	29	116	184	94	104	151
Singapore	2	3	8	16	21	32	8	45	1
Thailand	27	39	67	6	66	44	59	59	35
Vietnam	69	104	21	27	60	32	131	100	62

- Formal barriers to trade and investment, such as those measured by various regulatory restrictiveness indexes, appear to be less onerous than more informal barriers such as social and political instability and perceptions of the difficult business environment.

The challenges confronting the mining sector are at the more difficult end of the 'doing business' spectrum and go well beyond poor infrastructure, remote locations and weak legal and regulatory enforcement.

Mining has significant challenges in Myanmar. Human rights and environmental and social protections are now enshrined in mining laws and regulations, but enforcement is weak.

Jade mining is a particularly troubled sector with reported involvement of criminal elements and illegal trading and conflict.[424]

As in many developing countries, land acquisition for mining and energy projects, as well as for infrastructure and modern farming systems, remains a sensitive issue:

> Despite initial reforms, the legal and policy framework on land remains fragmented, internally inconsistent and incomplete. In the context of mining activities this means people frequently have limited legal ownership or usage rights over the land on which they live, farm or mine and correspondingly weak bargaining positions when confronted with land transfer and transactions.[425]

Table 13.4

Governance indicators, selected ASEAN member states, 2017

Source: World Bank, Worldwide Governance Indicators database

	Government effectiveness		Regulatory quality		Control of corruption	
Country	Estimate	Rank	Estimate	Rank	Estimate	Rank
Brunei	1.1	84.1	0.7	75.5	0.7	75.0
Cambodia	-0.7	25.5	-0.5	32.2	-1.3	8.7
Indonesia	0.0	54.8	-0.1	51.9	-0.3	48.1
Laos	-0.4	38.5	-0.7	25.5	-0.9	15.9
Malaysia	0.8	76.4	0.7	74.5	0.0	58.2
Myanmar	**-1.1**	**13.5**	**-0.8**	**11.1**	**-0.6**	**32.2**
Philippines	-0.7	51.9	0.0	55.8	-0.5	39.9
Singapore	2.2	100.0	2.1	99.5	2.1	97.6
Thailand	0.4	66.8	0.1	59.6	-0.4	42.8
Vietnam	0.0	52.9	-0.4	26.4	-0.6	31.7

Note: Estimates of governance performance range from weak (- 2.5) to strong (2.5). Rank refers to percentile rank out of 213 countries/territories, ranging from 0 (lowest regulatory quality) to 100 (highest regulatory quality)

A recent international mining survey placed Myanmar very close to the bottom of a 100+ jurisdictional grouping in terms of disputed land claims.[426]

Policy implications

Myanmar's challenging business environment makes predictions difficult. The potential is unquestionably there: Myanmar is one of the most mineralised countries in the world, and the mining and energy sectors must be modernised if the country is to achieve some of its lofty ambitions over the next 10 to 15 years. Sustained, tangible progress in economic reform is a prerequisite.

Closer integration with other ASEAN economies and participating in ASEAN-wide institutions that build policy and technical capacity will certainly help Myanmar to play a more active role in regional trade and investment, including with Australia.

Using the AANZFTA Review and Regional Comprehensive Economic Partnership (RCEP) negotiations to push the pace of domestic reform could help. Myanmar has made few commitments on services and investments either in the WTO or AANZFTA, and none specifically on mining. Commitments on engineering and construction services in AANZFTA that could be relevant to mining and METS have been overtaken by recent reforms.

Australia has provided technical assistance to Myanmar's mining sector, among others, for over 30 years. This history needs to be better understood in Australia because it is potentially valuable in developing future business, particularly given the fact that Myanmar's governing elite is highly positive about Australia's environmental and technical credentials in mining. In recent times (2015), Australia was one of the countries involved in setting up and funding the Natural Resources Governance Institute (NRGI) in Myanmar – a group that researches and lobbies for greater transparency and improved laws and regulations for the resources and related sectors, including in the jade industry.

More broadly, Australia continues to play a role in supporting and embedding Myanmar's political, economic and social reforms through the Official Development Assistance (ODA) program.

ODA in 2019-20 is estimated at $80.4 million. In line with the Myanmar Aid Investment Plan for 2015-2020, this investment is spread across education, peace and stability, and promoting economic growth and government management capacity.

In considering the next phase of the Aid Investment Plan, building capacity in a modern mining sector stands out as an opportunity. One possibility might be to work actively with countries in the Greater Mekong sub-region on mining and METS issues. Australian expertise is valued in all of these countries. This would benefit Myanmar directly by focusing on a core comparative advantage, and might be one element of a broader policy approach to addressing resources nationalism, which is raising its head in the lead-up to Myanmar's 2020 General Election and is a growing force across Southeast Asia. Over time, this might benefit Australian METS firms both in Myanmar and across this large and fast-growing region.

Another possibility might be to intensify cooperation on professional and technical and vocational education. The energy and mining sectors can play a big role if Myanmar is to achieve anywhere near its economic potential.

To do this, it needs professional skills – geologists, engineers and accountants – and managerial skills to operate businesses that respond to market signals and not government directives. Australia has much to offer in these areas, a quality recognised by policy, business and education leaders in Myanmar. Taking a more proactive approach to professional development and competency-based training could open many doors for Australian business in Myanmar.

PART 3

Policy priorities

CHAPTER 14

Priorities for engaging ASEAN

In the first three volumes of the New Frontiers series, the following questions were posed in slightly different ways: what are the priority issues facing mining and METS in East and South Asia and what policy instruments are available to Australia to deal with them?[427]

The answers ranged across priorities like reducing or eliminating tariffs and non-tariff barriers (NTBs), and using policy instruments like bilateral and regional free trade agreements (FTAs) to increase access to markets and strengthen institutional ties across countries.

The questions posed here address the same set of issues but from a different perspective. The questions are: what has been fundamentally important to Australia's economic and social success, what is its relevance to ASEAN, and what specifically is relevant to Australia-ASEAN engagement on trade and investment in mining and METS?

The aim is to focus less on the detail of policy choices on engaging ASEAN and more on structural elements that might guide them.

Keeping regional trade open and growing

The latest retreat in globalisation started shortly after the Global Financial Crisis. Most measures of global integration across trade and investment have stagnated or gone backwards: cross-border data flows are the most prominent exception.

There are various reasons for this retreat: tariffs and transport costs as a share of trade goods are no longer falling; trade finance is harder to get; services are a growing share of global economic activity and are harder to trade than goods; emerging economies are getting better at making their own inputs; cheap labour is no longer such an important drawcard in multinational companies' supply chain decisions; and major powers are using tariffs, technology, financial systems, currencies, and membership of regional institutions to achieve geopolitical ends.[428]

From a trade policy perspective, the retreat in globalisation has produced mixed signals. On the positive side of the balance, some key agreements have been negotiated. For example, the ASEAN Economic Community has become a major milestone in the economic integration of Southeast Asia, the US-Korea Free Trade Agreement was re-negotiated successfully, the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP) has partially entered into force,[429] and the World Trade Organization's (WTO's) Trade Facilitation Agreement has entered into force.

On the negative side, multilateral progress on trade and investment issues has been underwhelming for the best part of two decades. The biggest immediate challenges, however, arise from growing protectionism and the risk of trade disputes and geopolitical tensions threatening regional and global economic growth.

For countries like Australia and members of ASEAN that depend on international trade and investment for their livelihoods, the danger lies in being left stranded in the middle of these contending global forces.

Depending on how trade and geopolitical developments pan out, there could be an immediate danger to trade-exposed industries, including mining and energy in the case of Australia. And sustained and escalating tensions could trigger second round impacts if governments and companies in the Asia-Pacific region and beyond reassess risks and move to defensive policies to protect jobs and shareholder interests.

With an outlook weighted to downside risk, Australia, ASEAN and possibly other small-and-medium sized countries have a common vital interest in working together to keep regional and global markets open and growing and lessening the consequences of great power rivalry.

Cooperation is needed at many levels. An obvious starting point is continuing to support the rules-based global trading system. Most of the recent innovations in international trade policy have been achieved through ambitious FTAs. While far from perfect, the WTO's rules, transparency, dispute settlement system, and continuing capacity to deliver liberalising outcomes have enormous immediate value in resisting protectionist pressures and, over time, rolling them back.

At the regional level, completing and implementing the Regional Comprehensive Economic Partnership (RCEP) agreement and agreements like the Indonesia-Australia Comprehensive Economic Partnership (IA-CEPA) are important priorities.

Whether or not they achieve the ambition that countries like Australia would like is a secondary issue, particularly if agreements set out forward agendas that can be built on over time.

It also seems compelling for Australia and other signatories of the CPTPP (which includes four members of ASEAN) to use the agreement over time to build momentum for more ambitious trade outcomes.

In its most basic form, this can be achieved by its eleven members delivering on their substantial market opening commitments on goods, services, foreign investment and at the border/behind the border regulations.

More broadly, it can be achieved by being open to new members that are willing to take on the agreement's high standards of openness.

Indonesia's President Widodo, for example, considered whether Indonesia should become a party to TPP-12. If the United States rejoins the group at some point, it would seem highly probable that some members of ASEAN would be keen to join. Countries such as Indonesia meanwhile will watch with interest how the CPTPP benefits Vietnam and Malaysia.

It is strongly in Australia's and ASEAN's interests that competing conceptions of regionalism do not produce an economic fault line across the Asia-Pacific that impedes trade and investment flows.[430]

At the geopolitical level, managing the complexities of trade amid the uncertainties of the multipolar world will be vital for the future growth of foreign trade-exposed industries and the economies that depend on them. This will require Australia cooperating closely with regional partners and partners around the world to strengthen regional and international architecture:

> When groups of countries deepen their economic cooperation, they will enhance

not just their shared prosperity but also their collective security. With more stake in one another's success, they will have greater incentive to uphold a conducive and peaceful international order. This will benefit many countries big and small.[431]

Adapting and evolving to changing international and domestic circumstances

The resources sector is critically important to Australia. This is most obvious in the trade relationship with Asia and the prosperity of regional and remote Australia.

But it is no less true for the growth and jobs generated through the resource sector's powerful links to industries supplying essential hard infrastructure and advanced services: more jobs are created through these linkages than directly through mining exports.

And it is no less true for policy development. There were many who initiated Australia's historic shift from protectionism to more open markets a generation or more ago, but the minerals sector was, and remains, among the vanguard pushing for unilateral reform and internationalisation of the economy.

There were many who initiated Australia's historic shift from protectionism to more open markets, but the minerals sector was, and remains, among the vanguard pushing for unilateral reform and internationalisation of the economy.

Minerals and resources are set to continue to play a major part in Australia's future, both in the direct sense of building on Australia's historical role in exchanging commodities for manufactures, and in the more modern sense of how the sector leverages trade and investment in manufactures, services embodied in minerals trade and services in their own right like finance and professional services.

But for this to happen in an optimal way, Australian governments must provide a predictable and competitive domestic policy framework.

Governments adding value to minerals and energy industries' productivity

Australia has a window of opportunity in the next 10 years to sharpen its edge in mining and METS markets, including in ASEAN, particularly with continued rapid technological development including in automation and artificial intelligence.

Australia has a raft of advantages and a great opportunity to consolidate our leadership in global mining, including by highlighting the vital role of METS in the mining value chain:

- Forty out of the world's top 100 METS companies have headquarters in Australia. Canada has only nine
- The domestic mining sector is very active and is being propelled both by technological change (big data/data analytics) and the wider and more stringent regulatory requirements of modern, sustainable mining
- Australian companies are active in the region and beyond where they can apply their leading-edge skills.

Many countries want what Australia has to offer, but the opportunity is not open-ended. Others will step in if Australia steps aside.

Australian governments can add value to that generated by Australian companies in several ways. Three policy areas – policies dealing directly with competitiveness, exploration and new developments in mining; trade policy; and trade promotion – are considered here.

Core mining and mining-related policy: International mining and METS is being transformed by new suppliers, new technology and broadening priorities and risks. It is important to know how these industries are evolving globally and domestically, where Australia is world best, where we lag, and the reasons behind our performance. This needs evidence-based research. For example, mining and METS depend on the quality of the science, information technology and engineering that support them.

Is Australia investing enough in these disciplines in leading universities, research institutes and government agencies? And is Australia competitive in its vocational training programs and training at university level to supply and retain the diverse and broadening skills that are critical to the future success of the sector? Governments at state and federal levels need to seek answers to such questions and be prepared to act on the findings.

Trade policy: At the highest level, strengthening the resources sector must become a sustained trade policy priority for Australia, just as it is in our competitors like the United States and Canada, and just as it was in selling LNG to China: this became a theme for every prime ministerial and ministerial visit to China in the early 2000s.

At a more detailed level, tariffs are not an issue for Australian minerals exports to ASEAN: they have been mostly eliminated or are at nuisance levels in the less developed member countries.

Tariffs are an issue for some mining equipment. But the most pressing challenge for traders and investors – both within ASEAN and for its external partners – is the proliferation of NTBs. Identifying the widening range of border and behind-the-border barriers is itself challenging given lack of transparency and the evolution of regulatory measures: anything approaching full identification at a point in time will require solid business input.

Understanding how these measures interact to distort trade and investment will also be challenging and will call for institutional cooperation across the region. But halting incremental protectionism, and then rolling it back, will be more challenging still.

Some of the tools to do this are potentially at hand. At a high political level, ASEAN members want to roll back NTBs as part of achieving closer economic integration. These measures also are covered in the ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA), and IA-CEPA has broken new ground for Australia's FTAs by including a separate chapter on NTBs and setting out a process for dealing with them.

This may prove to be a model for other agreements, including the Thailand-Australia Free Trade Agreement (TAFTA), the Malaysia-Australia Free Trade Agreement (MAFTA) and AANZFTA as they are reviewed over time. And it may be a model for RCEP. But it is important not to expect quick results. Making headway on something as difficult and changing as NTBs will be a long and hard road.

In a world with limited trade policy resources, Australian governments can make a very worthwhile return on their trade policy investments by focusing on impediments to trade and investment in METS.

This report has demonstrated that investment in extractive mining is the riskiest option for Australian miners operating in ASEAN – a fact that will not change until more predictable policy and regulatory frameworks are implemented there.

METS, on the other hand, is a less risky investment option because demand is strong in parts of the region and has not been overly impacted by resources nationalism. Australia can add value to these trades and investments: unlike large Australian mining companies with their extensive contacts and considerable expertise in dealing with governments in trading commodities, most Australian METS companies are small and medium-sized, need partners and many have problems with market access.

Trade promotion: There are two sides to this coin: what is done internationally to promote Australia's strong mining and METS brand, and what is done domestically.

On the international front, the challenge is to take the brand further. This can take many forms, for example:

- Showcasing Australia's digital technology to enhance productivity and improve environmental, health and safety outcomes in mining
- Participating at global mining and METS events. Canadian and German companies have a strong presence at these events. Australia's presence is more variable. There is a possible role for the Australian Government to fund effective participation or at least to work with industry in ways that provide non-monetary support
- Sending the message that Australia welcomes mining investment from ASEAN and the rest of the world, and supporting this with well-researched information on exploration opportunities. Eighty per cent of Australia remains under-explored or unexplored using modern technologies.[432]

On the domestic front, the government's public diplomacy would benefit greatly from a more informed understanding of the sophisticated modern mining industry – it is still seen in many quarters as reflecting an 'old economy' that no longer resonates with Australia's smart country future.

One way to address this misperception is to invest in statistical collections that capture the contributions and linkages of both mining and METS to the wider economy and region.

Another way might be to highlight the science behind mining in public messaging.

Benefits of cooperation: Making the whole greater than the sum of the parts

With their deep expertise in solving technical challenges in mining, identifying market opportunities and creating systems to promote sustainable, safe and efficient mining, many of the benefits from international cooperation in mining must depend on the quality of business-to-business cooperation.

But government-to-government cooperation is important and in certain areas can be decisive. Five areas are illustrated here.

Creating shared value for mining stakeholders through appropriate policy and regulatory formulation and implementation is fundamental.

Australia has much to offer on mining governance – laws, regulations, government administration, government monitoring and enforcement of regulations, private sector engagement, and community engagement to achieve social and environmental outcomes.

To varying extents, different ASEAN countries want to improve their mining governance regimes. The ASEAN Minerals Cooperation Action Plan 2016-2025 emphasises the need for stronger public-private-academic partnerships in mining; better information flows on minerals exploration, development, consumption, and value-added activities, including minerals laws and regulations; and stronger cooperation on sustainable minerals development, new technologies, technology transfer, and the health, environment and social benefits of mining.[433]

There are potentially big opportunities to increase cooperation in these areas. One possible model for fostering more cooperation around mining, energy and METS is funded by the AANZFTA Economic Cooperation Support Program.

Developed by Treasury and the Australian Competition and Consumer Commission (ACCC) and other specialist agencies in relation to competition policy, the Competition Law Implementation Program (CLIP) delivers tailored training and mentoring to ASEAN member states to implement national laws and policies to meet commitments under the ASEAN Economic Community Blueprint, AANZFTA and ASEAN's post-2015 vision for competition. This in turn benefits Australia through potentially more trade, more high-level contact and closer institutional ties.[434]

CLIP demonstrates the importance of:

- Good initial work to build relationships and confidence with counterpart organisations in ASEAN countries to identify shared interests and opportunities for cooperation
- Developing medium to long-term strategies for sustainable cooperation and institution-building that have buy-in from competition agencies and other interested players
- Being able to mount a strong case for government funding for cooperation.

Developing a clear national objective around mining and energy is unlikely to be any easier than for CLIP. It would depend on strong interest within the Australian Government in ASEAN's mining and energy reforms; having an agency or group of agencies in Australia with the vision to see the benefits of collaboration for the region and Australia; buy-in from relevant agencies in the region; and enlightened self-interest within the Australian Government to make funding available.

Improving training for mine managers, engineers and project coordinators in a wide range of mining-related disciplines is

an ASEAN priority.[435] Australia providing more scholarships, training and organisational capacity building in these disciplines should be a core part of the Australia-ASEAN Strategic Partnership. Technical and vocational education and training (TVET) is especially important. Southeast Asian countries want to upskill their workforces quickly. The old apprenticeship system is labour intensive and takes many years. And Australia has a strong international brand in TVET.

Responding to the impact of climate change provides numerous opportunities for productive regional and broader cooperation. ASEAN's energy consumption will grow rapidly over the next two decades and coal will play a central role in meeting this demand. Countries like Malaysia and the Philippines are building coal-fired plants using the latest technology to produce more power using less coal. There is a strong coincidence of interest amongst suppliers of high energy coal best suited to these plants (Australia), providers of new super-efficient generation technologies (Japan and China), and energy-hungry nations like India and Malaysia.

Responding to the impact of climate change provides numerous opportunities for productive regional and broader cooperation.

High efficiency, low emissions (HELE) technology, such as ultra-supercritical and advanced ultra-supercritical plants, can virtually eliminate particulate pollution and reduce carbon dioxide emissions by up to 50 per cent.[436] Adopting carbon capture and storage technologies could potentially increase emissions savings to 90 per cent.

Given the importance of thermal coal in Australia's minerals exports to Southeast Asia and to East Asia more broadly, Australia should promote and support clean energy initiatives, including those that lessen emissions from burning coal.

This would best begin with a building block approach that initially brings together a small number of interested regional countries. A wider approach probably would not work at this stage because of potentially strong opposition in some countries. Business groups in Indonesia, for example, might be opposed if initiatives entailed restrictions on using locally mined coal or more regulations on blended coal or more onerous international environment standards across the board.

The Australian Government should continue to find ways to support infrastructure investment in Asian economies, including through active engagement in the Belt and Road Initiative (BRI). There are opportunities to work more proactively with China and others to increase its effectiveness, including by developing and implementing world-class governance standards:

- BRI could deliver significant economic benefits at a time of slowing growth in world trade provided it is backed up by complementary policy reforms that make infrastructure projects an integral element of national economic and social reform[438]
- BRI projects need to be backed up by trade and investment agreements between corridor economies that reduce current policy fragmentation, promote trade facilitation and generally encourage flows of goods, services, investment and skills across borders. Seen in this way, BRI and initiatives like the AANZFTA, RCEP negotiations and even, in the course of time, an expanded CPTPP, are complementary.
- BRI provides part of the 'hardware' for regional economic integration, while regional trade policy initiatives provide the 'software'. Australia and ASEAN countries have a strong national interest in keeping regional and global trade growing and open and not being fractured by completing blocs. The synergies between an evolving BRI and regional FTAs could play a useful role in pursuing this core national interest
- To the extent BRI helps to increase regional connectivity and integration and therefore long-term development, it must add to business opportunities for Australia.

Finally, direct trade or foreign policy approaches to resources nationalism in Southeast Asia will probably not work.

National ownership of mines is very popular. Policies requiring international mining companies to process metals are hugely popular. And both appeal strongly to national pride and, as such, are highly political.

The limited potential of trade and foreign policy options for dealing with resources nationalism needs to be recognised. In that way the focus could shift from the intractable problems of foreign investment in extractive mining assets to creating more opportunities in METS and developing business models where host countries own the mines and international companies have operational control of specific mining projects.

Endnotes

Introduction

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5 The American economist Paul Krugman famously argued in 1994 that East Asian economies, like the former Soviet Union, had built their growth around increasing inputs of labour and capital, rather than productivity increases that could form the basis for sustained increases in living standards. But subsequent work has challenged this view and confirmed that total factor productivity growth has played an important role in growth in most ASEAN economies.

6 See *ASEAN Sustainable Urbanisation Strategy*, ASEAN Secretariat, Jakarta, October 2018, pp.3, 15-16.

7 Data are from the IMF World Economic Outlook Database, April 2019. The five major developing economies of ASEAN are Indonesia, Malaysia, the Philippines, Thailand and Vietnam. Singapore is not described as a developing economy in this report, though it is still identified as such by some international organisations.

8 This pattern of development is often described as the 'flying geese' model. The analogy is to the V-shaped formation of flying geese and was developed by Kaname Akamatsu in the 1930s. The country at the apex of a V-shaped formation in the region, usually taken to be Japan, is the technological leader. Industries gradually pass to countries further back in the formation as development proceeds.

9 Concentration is calculated from products defined at the four-digit level of the HS.

10 Influences which could be investigated include price movements for key commodities (such as oil, LNG and coal) that might have a different impact on intra-ASEAN and ASEAN's global trade, differences in growth rates between ASEAN and its major trading partners and the conclusion of new free trade agreements between ASEAN and non-ASEAN economies.

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[20] Data are from ASEAN Secretariat, ASEAN FDI Database, at https://data.aseanstats.org/fdi-by-sources-and-sectors. ASEAN is counted as a single source in deriving these rankings, the EU as individual countries and the item 'unspecified country' is not included.

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[22] These and other qualifications to the FIRB data are presented in its annual reports. See, for example, *Foreign Investment Review Board Annual Report 2017-18,* Canberra, 2018, Appendix B. An important change in 2017-18, which makes comparisons with earlier years difficult, is that the basis of reporting investor countries 'has changed from primarily being based on likely country of control of the foreign person to country of beneficial ownership'. The country of ownership and of control may differ ibid, p.45.

[23] Singapore was the source in 2010-11 of a very sizable amount ($1.75 billion) identified as 'resource processing'. The resource processing category covered activities such as sugar milling and wood chipping as well as mineral processing, so it has not been included in the discussion in this chapter. The category was dropped from source country tables in the FIRB annual reports from 2014-15.

Chapter 3: Mining and METS in ASEAN: three shaping forces and one opportunity

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[130] T Jackson & K Green, *Annual Survey of Mining Companies 2016*, Fraser Institute, 2016.

[131] Under the Rules of Origin provisions in MAFTA, Australian exporters do not need to supply a certificate of origin, but rather a simpler declaration of origin. Malaysian exporters under MAFTA still have to use certificates of origin, although Malaysia is expected to move to using declarations (this is provided for in the Agreement). As in AANZFTA, the exporter can claim origin on the basis of either a change of classification rule or a regional value content rule. MAFTA also has business-friendly requirements, including on the use of distribution hubs.

[132] CPTPP extends the provision for sellers to include 'service sellers'. Contractual service suppliers and independent professionals (e.g. engineers) would be able to stay for up to 12 months or the duration of their contracts, whichever is less. CPTPP would, in general, extend other provisions for movement of natural persons in MAFTA to other parties.

[133] See 'Economic analysis of LAMP: more precious than rare earths', *economists at large*, 10 September 2011, http://www.ecolarge.com/economic-analysis-precious-rare-earths/

[134] For further background on foreign investment policies and Bumiputera preferences, see US Department of State, *2017 Investment Climate Statements*, Malaysia, 19 July 2018, https://www.state.gov/reports/2018-investment-climate-statements/malaysia/

[135] WTO, op. cit., 2017, p.69.

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136 Aggregate mining exports and imports (including basic manufacturing and processing of minerals) were estimated from the International Trade Centre Trade Map Database. Data cited from the Mines & Geosciences Bureau are from *Mining Industry Statistics*, 15 March 2019. Exports from Australia to the Philippines for copper and nickel cited here include ores and basic manufactures, http://www.mgb.gov.ph/attachments/article/162/MIS(2018)%20-%203Y-%20uploaded.pdf

137 Mining and basic metals imports from the Philippines other than gold in recent years have included small quantities of non-metallic products (sands and the like), unrefined copper and unwrought lead.

138 Austrade information on mining and METS in the Philippines is at https://www.austrade.gov.au/australian/export/export-markets/countries/philippines/industries/mining

139 Austmine, 'New Realities, Bigger Horizons: Australian Mining Equipment, Technology and Services (METS) National Survey, June 2015', Sydney, p.28.

140 Data on aggregate Philippines FDI are from the UNCTADstats database.

141 There are scant data available for Philippines investment abroad by country and industry. The ASEAN Secretariat ASEAN FDI Database shows total investment flows in 2016 and 2017 of US$699 million from the Philippines to other ASEAN economies, of which US$137 million was for manufacturing and US$536 million for other (unspecified) services: ASEAN Secretariat and United Nations Conference on Trade and Development, *ASEAN Investment Report 2018*, ASEAN Secretariat, Jakarta, 2018, p.253.

142 Macquarie Bank funds have also invested in other Philippines renewable energy, transport and pipeline assets. See *Macquarie Infrastructure and Real Assets Credentials*, 31 March 2018, p.16 https://www.macquarie.com/dafiles/Internet/mgl/com/mirafunds/about-mira/docs/mira-credentials.pdf

143 Mining industry statistics are from the Philippines Mines & Geosciences Bureau.

144 Red 5 suspended operations at Siana in April 2017 because of delays in approving construction of a new tailings storage facility. Approval was given in 2018 but at time of writing Red 5 is evaluating options. OceanaGold's Didipio Mine received an order on 14 February 2017 calling for the suspension of its operations. OceanaGold filed an appeal, which stayed the execution of the suspension order. Didipio has continued to operate during the appeal process. See OceanaGold, *Annual Information Form For the year ended 31 December 2018*, 29 March 2019, p.37, https://www.oceanagold.com/wp-content/uploads/2019/03/OceanaGold-AIF-2018.pdf

145 The USTR's *2019 National Trade Estimate Report on Foreign Trade Barriers Washington*, D.C. p.405, notes: 'Both foreign and domestic investors have expressed concern about the propensity of Philippine courts and regulators to stray beyond matters of legal interpretation into policymaking, as well as about the lack of transparency in judicial and regulatory processes. Investors have also raised concerns about courts being influenced by bribery and improperly issuing temporary restraining orders to impede legitimate commerce.'

146 See L Simeon, 'Philippines losing more mining investment due to policy stalemate', *The Philippine Star*, 11 March 2019, https://www.philstar.com/business/2019/03/11/1900310/philippines-losing-more-mining-investments-due-policy-stalemate

147 For a recent account of the moratorium on new mining, see 'Monitoring the mines', editorial, *Philippines Daily Inquirer*, 25 March

2019, https://opinion.inquirer.net/120337/monitoring-the-mines

148 A Stedman & K Green 2019, *Annual Survey of Mining Companies 2018*, Fraser Institute, p.34, https://www.fraserinstitute.org/studies/annual-survey-of-mining-companies-2018

149 The Philippines is moving to invest in LNG terminals, but so far little has happened. Philippines power company First Gen Corp and Tokyo Gas Co have signed a preliminary agreement to build an LNG terminal project south of Manila. Other proposals have been discussed but not materialised: T Daiss, 'The race is on for Philippines' first LNG terminal', oilprice.com 6 December 2018.

150 Both 'business-as-usual' and 'clean energy' scenarios prepared by the Philippines Department of Energy show renewables are projected to grow more slowly than fossil fuels because opportunities for expanding geothermal and hydro generation are seen to be limited and other renewables are rising off a very low base. Use of coal grows by 6.4 per cent per annum with business-as-usual through to 2040 and by 4.4 per cent with the clean energy scenario. The Department of Energy's clean energy scenario assumes greater use of natural gas (including imported LPG): Department of Energy, Philippines, *Philippine Energy Plan, Sectoral Plans and Roadmaps 2017-2040*.

151 Vietnam (77th) and the smaller ASEAN economies, including Brunei Darussalam (62nd), had lower rankings than the Philippines in the *Global Competitiveness Index 2018*.

152 USTR, *2019 National Trade Estimate Report on Foreign Trade Barriers*, p.401. The Philippines was ranked 99th of 180 countries in the Transparency International Corruption Perceptions Index in 2018, well below the Asia Pacific average score of 44, https://www.transparency.org/cpi2018

153 WTO, *Trade Policy Review: The Philippines*, Report by the Secretariat WT/TPR/S/368, 5 February 2018, p.50.

154 For data on Philippines NTMs, see the World Bank's World Integrated Solution (WITS) database, https://wits.worldbank.org/tariff/non-tariff-measures/en/type-count/country/PHL/ntmcode/B. See also L C de Dios, 'An Inventory of Non-tariff Measures in the Philippines, in L Y Ing, S F de Corboda and O Cadot (eds.), *Non-Tariff Measures in ASEAN*, ERIA Research Project Report 2015-1, Jakarta, ERIA, 2016, pp.113-126.

155 Initiatives due to be implemented in 2020 are commitments under the WTO Trade Facilitation Agreement, https://www.tfadatabase.org/implementation

156 The Philippines does not feature in the OECD Services Trade Restrictiveness Index. The World Bank Services Trade Restrictions Index (updated July 2014) showed the Philippines to be more restrictive than other ASEAN economies in the index (Cambodia, Indonesia, Malaysia, Thailand, and Vietnam). See http://iresearch.worldbank.org/servicetrade/#

157 WTO, op. cit., p.82

158 Business visitors can stay up to 59 days and can apply for extensions every two months to stay up to one year. Contracted service suppliers, including technical advisers and professionals (accountants, landscape architects and engineers) must obtain permits from the Filipino Professional Regulation Commission. Specialists contracted to a higher education twinning or bridging program can be in a number of fields, including industrial resource management, engineering and science and technology: AANZFTA Schedules for the Philippines, and AANZFTA Fact Sheets at www.dfat.gov.au.

159 The Philippine Constitution limits licencing for the practice of professions to Filipino citizens. Foreigners are, however, allowed to practice professions not specifically prohibited by

the Constitution if their country allows reciprocity for Philippine citizens on the recommendation of the relevant professional regulatory bodies, WTO, op. cit., p.82.

160 The OECD FDI Regulatory Restrictiveness Index is at: https://www.oecd.org/investment/fdiindex.htm

161 For the purposes of OceanaGold's Financial or Technical Assistance Agreement (FTAA) with the Philippines Government, the 'net revenue' from OceanaGold's mining operations is generally gross revenue from mining less 'allowable deductions' including operating expenses, exploration, mine development, depreciation and other taxes and imposts paid to the government: OceanaGold, *Annual Information Form, for the year ended 31 December 2018*, 29 March 2019, p.40, www.oceanagold.com

162 For example, the Sual and Pagbilao coal power plants use high-grade Australian coal to control sulphur content. Sual coal power plant is increasing its high grade coal content from 25% to 50%. San Miguel Corporation and Abolitz Energy buy Australian coal to blend with Indonesian coal for their power plants. Information provided by Austrade.

163 Companies in the Philippines investing or planning to invest in HELE supercritical power plants include Masinloc Power Partners, GN Power, Atimonan One Energy (two ultra-supercritical plants) and H&WB Asia Pacific: information provided by Austrade.

164 Environmental issues forced the suspension of the operations of the country's only iron ore mine in 2016. See ABS CBN News, 8 August 2016, https://news.abs-cbn.com/business/08/08/16/lone-philippine-iron-ore-miner-suspended-in-govt-crackdown

165 In 2018, Philippines steel production was 1.4 million tonnes and entirely by electric furnaces. From 2010 to 2017, dependence on imports rose from around 80 per cent of steel used to 85 per cent. (Authors' calculations from World Steel Association, *Steel Statistical Yearbook 2018*, https://www.worldsteel.org/en/dam/jcr:e5a8eda5-4b46-4892-856b-00908b5ab492/SSY_2018.pdf)

166 See 'China's HBIS to invest in $4.4 billion steel project in the Philippines', Reuters, 17 December 2018, https://www.reuters.com/article/us-china-steel-philippines/chinas-hbis-to-invest-in-4-4-billion-steel-project-in-philippines-idUSKBN1OG18V. HBIS Group also imports metallurgical coal from other countries, including the United States, Mongolia and Russia, and iron ore from Brazil (Vale).

167 An assessment of opportunities for mining and METS is available from the Austrade website, https://www.austrade.gov.au/australian/export/export-markets/countries/philippines/industries/mining

168 N Corrales, 'Duterte wants to learn responsible mining from Australia', *Philippines Daily Inquirer*, 17 March 2017, https://globalnation.inquirer.net/153464/duterte-wants-learn-responsible-mining-australia

169 Import market shares are from the ITC Trade Map Database.

170 WTO, *Trade Policy Review: Philippines*, Minutes of the Meeting, Addendum, WT/TPR/M/368/Add.1 29 May 2018, p.33, https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S006

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172 Austmine, 'New Realities, Bigger Horizons: Australian Mining Equipment, Technology and Services (METS) National Survey', June 2015. These findings are broadly consistent with those in the 2016 Australia's

International Business Survey on METS. See 'Industry Profile Report: Mining Equipment, Technology and Services (METS)', *Australian International Business Survey 2016*, conducted by the University of Sydney for the Export Council of Australia and partner institutions.

173 See C Kruger, 'How Kingsgate's billion dollar bonanza turned to fool's gold', *Sydney Morning Herald* online edition, posted 19 November 2016, at www.smh.com.au/business; Kingsgate Consolidated Limited, 'Quarterly Report for the period ending 31 December 2018', at http://www.kingsgate.com.au/wp-content/uploads/2019/01/KCN_QR_Dec18_31Jan19.pdf . The Thai Government has indicated that it would welcome a 'properly managed' reactivation of the Chatree Mine. See 'Statement Regarding the Dispute with Kingsgate Consolidated Limited', Department of Primary Industries and Mines, Ministry of Industry, Bangkok, 22 December 2017.

174 PanAust, 'Puthep Copper Project', at www.panaust.com.au/thailand-puthep

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178 OECD, *Multi-dimensional Review of Thailand: Volume 2: In-depth Analysis and Recommendations*, OECD Development Pathways, OECD Publishing, Paris, 2018, p.18.

179 PwC, *The Long View: How will the global economic order change by 2050?* February 2017, pp.23, 68, at https://www.pwc.com.au/publications/world-in-2050.html

180 Information on Thai production and reserves is from US Geological Survey, *Mineral Commodity Summaries 2019*, at https://minerals.usgs.gov/minerals/pubs/mcs/2019/mcs2019.pdf. In the case of rare earths, mine production was around 1000 tonnes in 2018, or about one twentieth of Australia's mine output. Reserves are not given. Thailand exported about 650 tonnes of rare earths (including scandium and yttrium) in 2018, valued at over US$34 million. Almost all of the 2018 exports went to Japan and Vietnam. Thailand was also an importer of rare earth metals, with imports valued at US$16 million in 2018. It was a significant importer of chemical compounds of rare earth metals as well, with these valued at US$35 million in 2018.

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183 H Kotani, 'Protests upend a coal-fired power plant in southern Thailand', *Nikkei Asian Review*, 9 March 2017, at https://asia.nickkei.com/magazine

184 See, S Liangwonnaporn, 'Thailand Energy Sector', U.S. Commercial Information Service, Bangkok, undated; 'Power plan backed along with 2 plants', *The Nation*, 25 January 2019; DFDL, 'Thailand's 2019 Power Development Plan: What to Expect', at https://www.dfdl.com/resources/legal-and-tax-updates/2019-power-development-plan/

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193 World Bank, *Doing Business 2019:Training for Reform*, Washington, DC, 16th ed., 2019, especially p.208, at http://www.worldbank.org/content/dam/doingBusiness/media/Annual-Reports/English/DB2019-report_web-version.pdf

194 See World Bank, '2018 International Logistics Performance Index', at https://lpi.worldbank.org/international/global

195 See K Schwab (ed.), *The Global Competitiveness Report 2018*, World Economic Forum, 2018, pp.555-557, at http://www3.weforum.org/docs/GCR2018/05FullReport/TheGlobalCompetitivenessReport2018.pdf

196 Transparency International, Corruption Perceptions Index 2018, at https://www.transparency.org/cpi2018

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198 See C Intaravitak, 'Non-tariff Measures in Thailand', in L Ing, S de Cordoba and O Cadot (eds.), *Non-Tariff Measures in ASEAN*, Economic Research Institute for ASEAN and East Asia and UNCTAD, 2016, Chapter 11. The UNCTAD TRAINS Database also suggests that non-tariff measures are widespread for minerals and metals and include import licencing and technical barriers to trade.

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211 World Bank & Ministry of Planning and Investment of Vietnam, *Vietnam 2035: towards prosperity, creativity, equity and democracy*, International Bank for Reconstruction and Development, The World Bank & Ministry of Planning and Investment of Vietnam, Washington D.C., 2016, p.69.

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213 ibid., p.127.

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262 Marie-Sybille de Vienne, *Brunei: From Age of Commerce to the 21st Century*, NUS (National University of Singapore) Press in association with IRASEC (Research Institute on Contemporary Southeast Asia), Singapore, 2015, pp.162-163.

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272 USTR, *2019 National Trade Estimate Report on Foreign Trade Barriers*, Washington, DC, 2019, p.67.

273 For excise rates, see the Brunei Government's National Single Window, at http://www.bdnsw.gov.bn/Pages/CustomsImportDuty.aspx It is not completely clear whether headgear on this list includes safety headgear of the kind used in the mining sector.

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281 Singapore has one steel mill, which recycles scrap through electric arc furnaces to produce hot rolled bars. The figure of $100 million for iron ore exports from Australia to Singapore should be treated with caution. Singapore statistics recorded minimal iron ore imports and exports since 2000 (always less than US$1 million per annum) and zero imports from Australia in 2018.

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295 See https://www.accenture.com/au-en/service-accenture-innovation-hub-resources-singapore

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Mike Adams

Mike Adams is a former Department of Foreign Affairs and Trade (DFAT) economist with extensive experience in trade-related aspects of e-commerce, free trade agreements, climate change and agricultural protectionism.

Mike was Australia's economic counsellor in Beijing from 2000 to 2004 and commercial counsellor in Wellington from 1989 to 1992. He holds a PhD in economic history from the University of Hull.

Nicolas Brown

Nicolas Brown headed DFAT's branch responsible for analysis and strategic advice about trade and economic issues for five years to 2008. He also headed the Canada and Latin America Branch over 2009 and 2010 and was Australia's Deputy High Commissioner to Malaysia from 2000 to 2003.

Nic joined DFAT in 1996 from the Department of Prime Minister and Cabinet and worked in the Australian Bureau of Statistics in the early part of his career. He holds a Masters degree from the London School of Economics.

Ron Wickes

Ron Wickes was Director of the Trade Analysis Section of DFAT from 1999 until 2008. Before that, he worked in the Asia-Pacific Economic Cooperation (APEC) Branch and in the East Asia Analytical Unit.

Ron has a PhD in International Relations from the Australian National University and a graduate qualification in econometrics from the University of New England. In 2005 he was awarded a Public Service Medal for contributions to trade policy.

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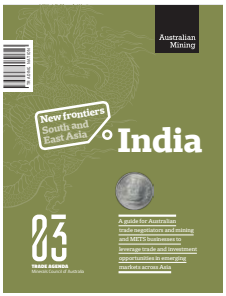

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44 Sydney Avenue, Forrest ACT 2603
P. + 61 2 6233 0600
E. info@minerals.org.au
www.minerals.org.au

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ASEAN has a combined GDP of US$3.1 trillion. It is larger than India and its collective economy has grown by over 60 per cent over the past decade. ASEAN is forecast to overtake the EU and Japan to become the fouth largest economy in the world by 2050, behind China, India and the United States. ASEAN's middle class is expected to double by 2030 and it is estimated that nearly 70 per cent of ASEAN's population will live in urban areas by 2050.

Mining and mining services are key sectors which ASEAN economies will rely on as their economies grow and urbanise. Australia can provide the minerals and energy and mining services to help ASEAN countries grow. Equally, a deepening relationship can help Australia and ASEAN countries embrace the economic, environmental and social benefits that arise from trade and investment, and the sharing of technical, policy and regulatory know how.

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