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ANU Energy Change Institute submission to the Joint Standing Committee on Trade and Investment Growth

Please find below a submission by the Australian National University Energy Change Institute (ECI) to the Joint Standing Committee on Trade and Investment Growth.

As well as providing this submission, the ECI would like to offer its expertise to discuss these issues further at a public hearing with the Committee.

We thank you for the opportunity to provide this submission.

Yours sincerely,



Professor Ken Baldwin,
ECI Director

On behalf of: Emma Aisbett, Ken Baldwin, Fiona Beck, Llewelyn Hughes, Penelope Howarth and John Pye

ANU ENERGY CHANGE INSTITUTE submission to the Joint Standing Committee on Trade and Investment Growth

The ANU Energy Change Institute comprises over 300 researchers from the full spectrum of energy disciplines. The Institute currently has a major initiative relevant to the Joint Standing Committee on Trade and Investment, namely, the Zero-Carbon Energy for the Asia Pacific (ZCEAP) Grand Challenge. The ZCEAP Grand Challenge recognises that Australia is a renewable-energy powerhouse and a resource-rich nation, whose immediate neighbours in the Indo-Pacific will account for two-thirds of the world's energy demand growth in the coming decades. It aims to provide research which underpins transformation in the way Australia trades with the world and specifically with the Indo-Pacific – based on renewable energy.

Below, we provide the following input to the Committee, focussing on the Terms of Reference for which we have specific expertise.

- a. Consider if Australia is too reliant on any one market for exports. If so, what factors are contributing to this dominance

Already at the turn of the millennium, Australia was one of the most Asia-oriented economy in the world defined in terms of its trade share going to, and derived from, Asian economies ([Armstrong, Drysdale & Kalirajan, n.d.](#)). The importance of Asia in our trading relationships is consistent with the size, growth and proximity of their market. However, the growth in recent decades of trade with Asia has arguably contributed to a narrowing of Australia's economic base. In particular, Chinese commodity markets have grown substantially (see Figure 1) and now dominate Australia's export profile (see Figures 2a & 2b).

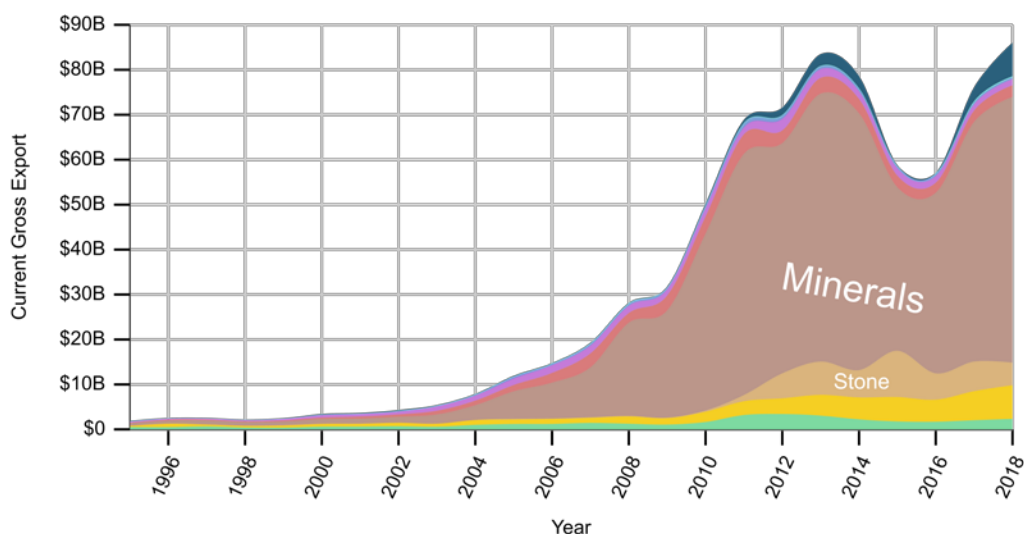


Figure 1: Australia's exports to China over time: Source <https://atlas.cid.harvard.edu/>

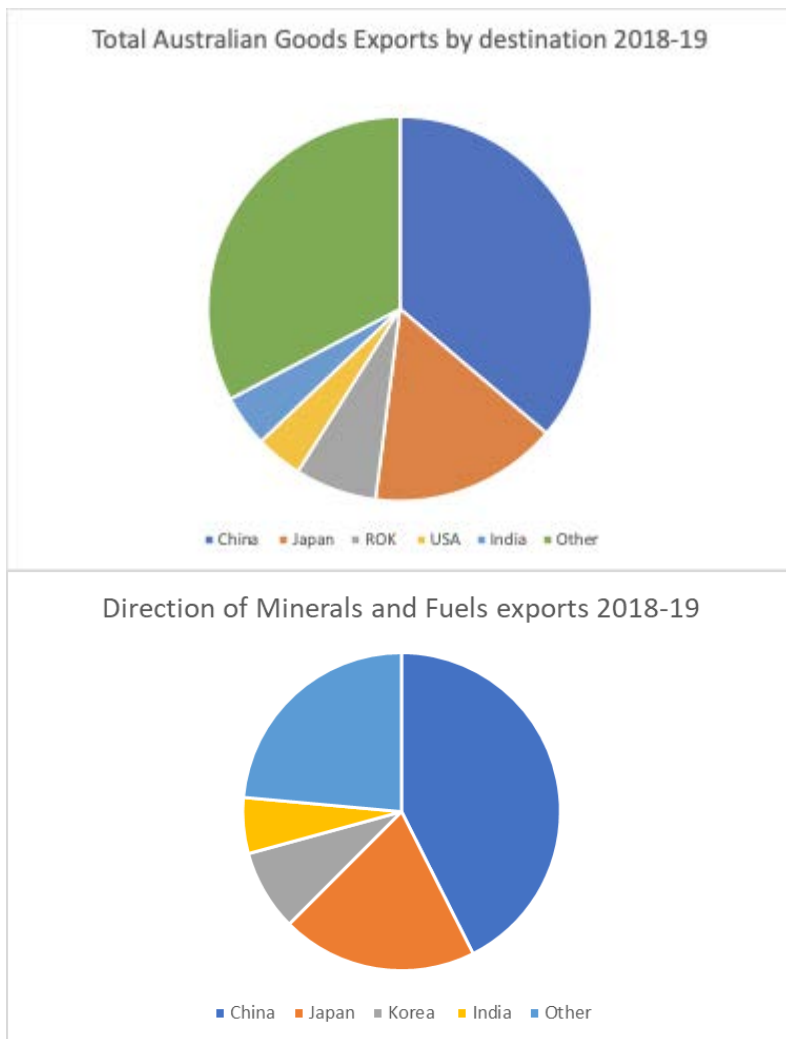


Figure 2: Australia's goods export destinations: source Composition of Australia's Trade 2018-19 (DFAT)

On the one hand, the magnitude of the commodity (especially mineral) trade relationship between Australia and China is simply a reflection of mutually-beneficial trade according to comparative advantage. In broad terms China's dominance of our export market is consistent with the size of its economy and relative geographic proximity.

An alternative view is that the current importance of Chinese commodity markets simply reflects that Australia has yet to recognise the economic potential of alternative exports, alongside an absence of policies addressing market barriers for new industries. Figure 3 illustrates the magnitude of some of the export potential which could be realised from the export of Australian renewable energy, as well as the significant value-add to our mineral resources using renewable energy rather than exporting them raw to Asia. The [Asian Renewable Energy Hub](#) and [Suncable](#) are examples of multi-tens of billions of dollar proposed projects that would help diversify our export base by expanding our exports of hydrogen/ammonia (Asian Renewable Energy Hub) and initiating direct export of electricity (Suncable). The Asian Renewable Energy Hub is located in close proximity to Australia's world-leading iron ore deposits, meaning it could provide plentiful, cheap electricity and clean hydrogen to power green steel production. As a premium product, green steel will be in most demand in advanced markets and products such as cars.

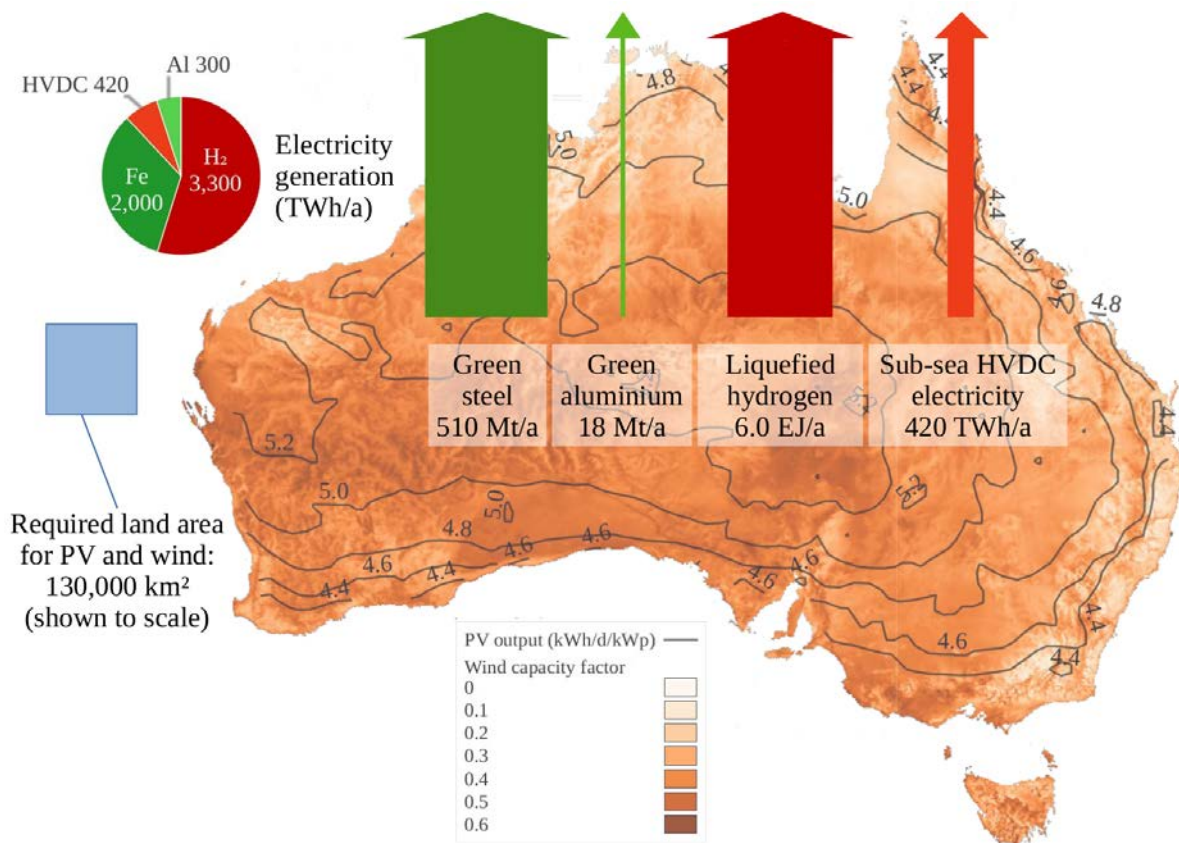


Figure 3: Electricity and land requirements under a new Australian energy export model. Renewable energy exports are equivalent in energy to Australia's current thermal coal and natural gas exports; green steel and green aluminium exports are produced from current iron ore, bauxite, and alumina exports. Data are for 2018-2019. A ratio of 80% hydrogen, 20% electricity is used for the renewable energy exports. Quantities are expressed in millions of tonnes per annum (Mt/a) for steel and aluminium, in exajoules per annum (EJ/a) for liquefied green hydrogen, and terawatt-hours per annum (TWh/a) for green electricity. Arrow widths are weighted by the annual export tonnage for metals, and the 80/20 energy ratio for hydrogen and electricity exports. The segmented circle shows the electricity requirements (TWh/a) for the four export commodities. The square shows the aggregated area required for wind and solar farms. **Source: ANU ECI, Zero Carbon Energy for the Asia Pacific Grand Challenge.**

b. The advantages and disadvantages, including in relation to the national interest and national economic risk, to an over reliance on any one market

The heavy reliance on iron ore, coal and gas exports leaves Australia vulnerable to negative economic effects arising from climate-change related policy changes in overseas markets. The EU's proposed carbon border tariff adjustment is an example of a policy that could have major consequences for the competitiveness of Chinese steel, and hence demand for Australian iron ore and coking coal (Aylor et al., BCG, 2020). China has already limited imports of Australian thermal coal in order to protect its domestic producers and is likely to do so more as global demand and hence coal prices fall (Smith, AFR, 2019). India has also indicated it hopes to move toward self-sufficiency in thermal coal over the next few years by increasing domestic production as well as increasing its domestic renewable energy generation (Smeets, Guardian, 2019).

The bigger concern is that a reliance on a few commodity exports (while efficiently exploiting comparative advantage in the short term) is detrimental to long-term growth prospects. Economic complexity (diversity) is one of the best predictors of underlying economic growth (Harvard, World Bank). Australia's increasing dependence on commodity exports has seen it fall in global complexity (diversity) rankings. A similar (though less dramatic) trend can be observed in other developed countries with comparative advantage in primary products such as Norway and New Zealand (see Figure 4). Saudi Arabia is an example of a resource-

rich country that has improved its complexity (diversity) ranking through industrial policy aimed at value-adding a fraction of their resources before export. Harvard University recommends that Australia also adopt industrial policy to improve its economic complexity (diversity) (Patrick, AFR, 2019).

It is important to note that industrial policy should, as far as possible, remain technology neutral and aim to rectify specific market failures which are preventing the growth of productive and sustainable industries (Aisbett, Beck and Cheng, 2020). Furthermore, “industrial” in this context does not strictly refer to manufacturing. Industrial policy could be aimed at optimal development of Australia’s comparative advantage in services. Service industries comprise around 70% of GDP, 80% of employment and 22% of exports (DFAT). Our largest service export – higher education – is the third or fourth largest export during recent years. Government policy has a strong influence on Australia’s ability to continue its successful growth in tourism, education and other services (Treasury, 2006).

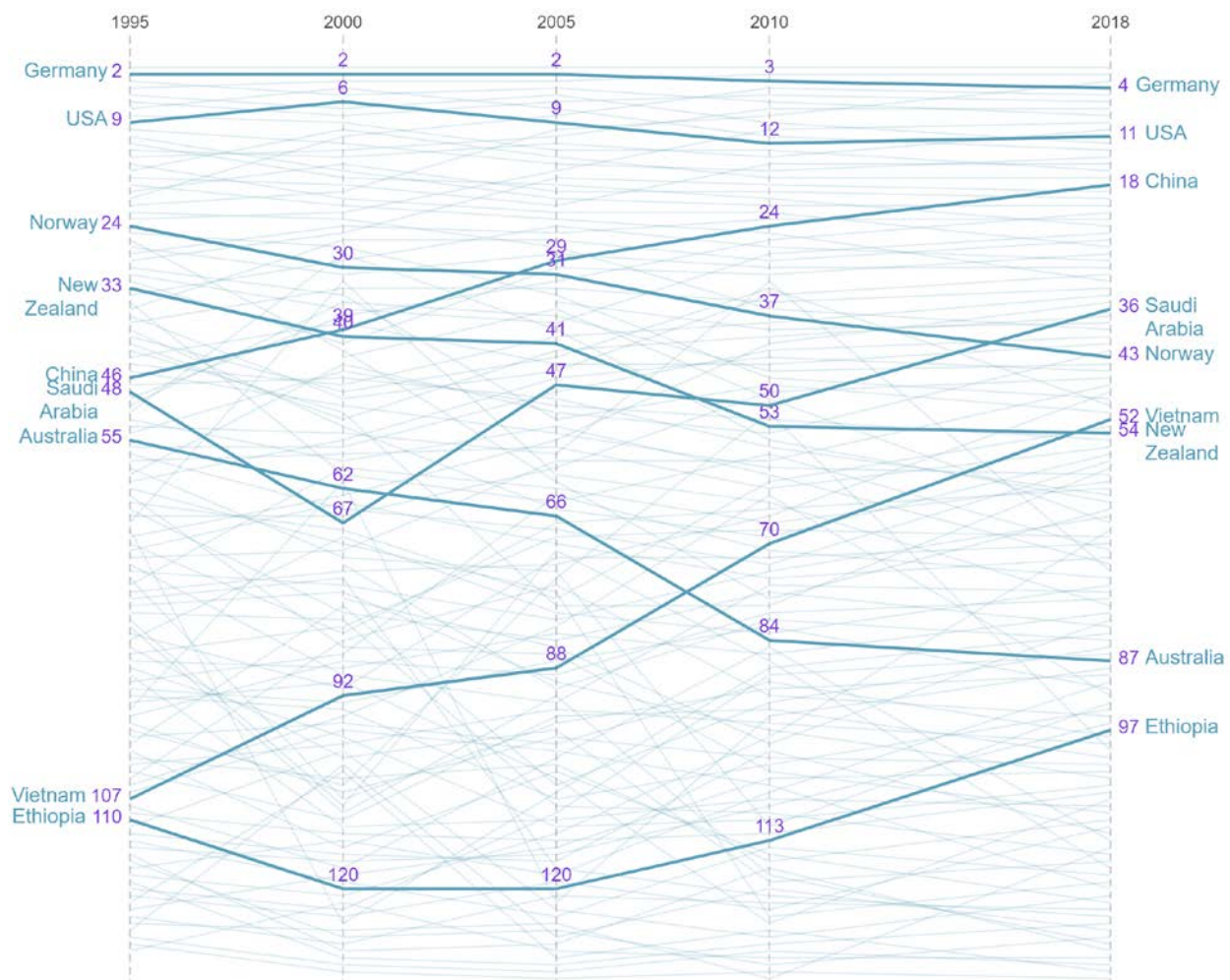


Figure 4: Economic complexity (diversity) rankings 1995-2018 for selected countries. Source <https://atlas.cid.harvard.edu/>

c. Consider if Australia is too reliant on foreign investment. If so, what factors are contributing to this dominance

Australia has traditionally had an open and stable investment climate that has been conducive to attracting domestic as well as foreign investment from around the world. Arguably, some aspects of our investment climate provide advantages to foreign firms that domestic investors do not have. Investment protections contained in international investment agreements (such as Investment Promotion and Protection Agreements and certain Preferential Trade Agreements) are supported by investor-state dispute settlement provisions. These provisions currently provide foreign firms greater recourse to compensation for losses

resulting from government action than is available to domestic firms. In heavily regulated or politically contentious industries, this extra protection provides a competitive advantage to foreign investors over domestic ones. For example, were a future government to reduce support for (or increase taxes on) coal and gas industries, foreign-owned interests would have greater recourse to compensation than Australian owned. Similarly, foreign-owned companies would have greater recourse to compensation if laws around the protection of natural or cultural heritage (e.g. sacred sites) were strengthened. In theory these advantages can cause foreign investors to dominate industries more than they otherwise would.

Direct government investment and public-private partnerships to help kick-start industries with high growth potential is one way of ensuring Australians obtain lasting benefit from new export industries. The Government may also wish to consider measures to improve domestic savings rates coupled with domestic investment incentives, which would increase the amount of private Australian capital available for potential Australian-sourced private sector investment in Australia. Government policies, including taxation and savings policies should be technology neutral, and not incentivise investment in carbon intensive industries, and potentially expose Australian investors to stranded asset risks in the future. Any such measures should not discriminate against foreign investors to ensure that Australia also remains an attractive destination for foreign investors, and Australian enterprises have free access to both foreign and domestic sources of capital needed to underpin prosperity, subject of course to national interest and national economic policy risk management policies as assessed by the Australian Government.

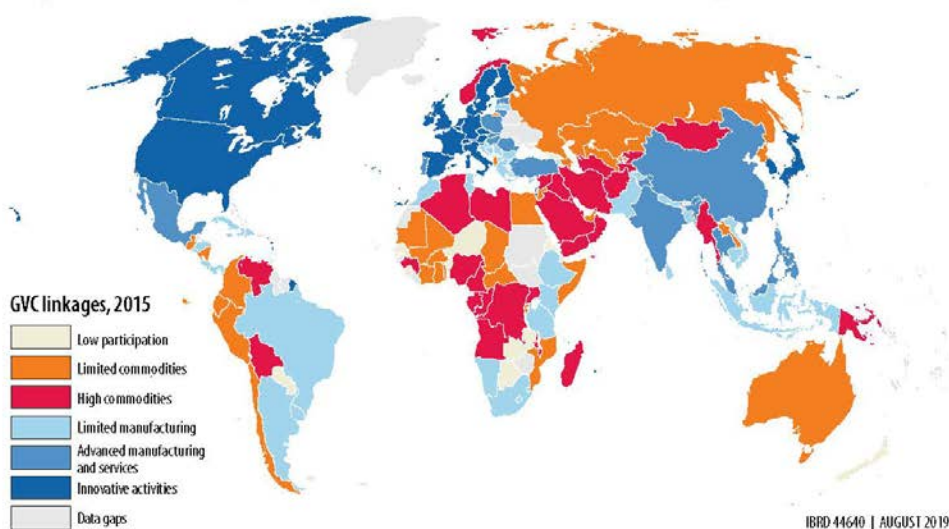
d. The advantages and disadvantages, including in relation to the national interest and national economic risk, to an over reliance on foreign investment, especially foreign investment by state-owned enterprises

The modern global economy is built on supply chains which stretch across multiple national borders. These supply chains all depend to some extent on foreign investment. To exclude foreign investment also risks excluding Australia from the income-generating opportunities provided by global supply chains.

While participation in global supply chains supports economic growth, they do so more for countries downstream than they do for countries at the very upstream (raw material) end. Australia with its dependence on raw-material exports currently sits at the very upstream end of many important global supply chains (see Fig 4). Growth prospects improve when countries can successfully diversify and move downstream in global supply chains ([World Development Report 2020: Trading for Development in the Age of Global Value Chains \(GVCs\), Ch. 3, World Bank](#)).

Foreign investment from technology-leading countries such as Germany and Japan could help Australia capture more of the downstream value from its natural resources. For example, investment by German electrolyser and chemical manufacturers could help turn Australia's solar and wind resources into valuable exports including hydrogen, ammonia and other hydrochemicals. European firms are also leading the way piloting production of "green" steel. For Australia to overcome the disadvantage of high labour costs and become competitive in low-cost steel production it will need to combine its low-cost mineral and renewable resources with frontier technologies from around the world, including supporting the commercialisation of Australian-generated cutting edge technologies from the research and development sector which are often more easily commercially exploited at-scale abroad. Government policy could support the productive adoption of Australian-developed technology and know-how in Australia.

Map 1.1 All countries participate in GVCs—but not in the same way



Source: WDR 2020 team, based on the GVC taxonomy for 2015 (see box 1.3).

Note: The type of a country's GVC linkages is based on the country's extent of backward GVC participation, measured as the portion of imports embodied in manufacturing exports as a percentage of a country's total exports, combined with the country's sector specialization of domestic value added in exports and engagement in innovation. Countries in the commodities group have a small share of manufacturing exports and limited backward GVC integration. Their share of commodity exports can be low, medium, or high. Countries specialized in limited manufacturing GVCs engage in some manufacturing exports, often alongside commodities exports, and exhibit medium backward GVC integration. Countries specialized in advanced manufacturing and services GVCs have a high share of manufacturing and business services exports and high backward GVC integration. Countries specialized in innovative GVC activities spend a large share of GDP on research and development, receive a large share of GDP from intellectual property, and exhibit high backward GVC integration.

Figure 4: Australian GVC participation in a global context. Source: WDR2020, World Bank

e. The impact of bilateral trade agreements on Australia's exports and whether they contribute to concentrated export markets

Trade agreements which preferentially liberalise trade in certain sectors, with certain partners, run a risk of increasing the concentration of export markets. This is particularly true if the preferential liberalisation applies to partners and/or sectors which are already major components of trade flows. Non-discriminatory liberalisation through regional or multilateral trade agreements, can however, be a powerful force for diversification. For example, recent analysis by one of our team members found that growth in Australia's alcohol exports resulting from Australia's preferential trade agreements was strongest for product/market combinations that had been weakest initially ([Schram, Aisbett et al., Addiction, 2020](#)).

Inter-governmental agreements targeted at potential growth opportunities can be even more effective at diversifying export markets. An example of such an agreement is the proposed Australia-Singapore Memorandum of Understanding "to drive cooperation on low-emissions solutions, including new and emerging low-emissions technologies." (<https://www.pm.gov.au/media/joint-statement-prime-ministers-australia-and-singapore>). Our ANU ZCEAP Grand Challenge is supporting this Government initiative by preparing a joint symposium with the National University of Singapore on regional renewable energy trade, such as the recently announced [Major Project Status](#) for [Sun Cable's Australia-ASEAN Power Link](#).

f. The impact of bilateral trade agreements on Australia's domestic market and whether they contribute to an over reliance on foreign investment

This is relevant to point (c) above on the topic of international investment agreements which are often embedded in modern preferential trade agreements (bi-lateral and pluri-lateral). Investment treaty protections such as those in IPPAs can provide a competitive advantage to protected foreign investors both compared to domestic investors and compared to investors from countries that do not enjoy investment treaty protections.

There is the potential for export markets to dominate domestic markets as has been seen in the effect on domestic gas prices resulting from Australia's entry into major international markets. Future export

industries need also to be cognisant of such flow-on effects. An example is the potential export of renewable hydrogen and hydrogen-intensive products such as ammonia, as proposed by the [Asian Renewable Energy Hub](#). Inasmuch as bilateral trade agreements can enhance export over domestic markets, the long-term implications of such dominance need special consideration.

g. Analysis of industry and government preparations to diversify its trading partners and secure new markets for Australia's exports, including through further free trade agreements

The search for new export markets is linked to the search for new export products. China will remain a dominant importer of iron ore globally, almost independently of Australian policy. On the other hand, if Australia makes use of its potential to future-proof and value-add to its export economy by trading on its abundant renewable energy and producing green steel from its own iron ore, a whole range of new markets in Europe and elsewhere will potentially open up.

Given the climate-related policies being introduced in many countries, demand for “green” products is growing in many markets. Given Australia's large land mass, and bountiful sun and wind, these markets provide an excellent opportunity to diversify Australia's export base. In addition to green steel, green hydrogen and ammonia are realistic opportunities for Australia.

Federal and state governments are beginning to realise these opportunities and act on them. The last year has seen the development of Australia's National Hydrogen Strategy as well as hydrogen strategies for several states. The Australian Renewable Energy Agency has also allocated tens of millions of dollars of funding to applied research and development of renewable energy based export opportunities – particularly for hydrogen.

Here at the Australian National University, the ZCEAP Grand Challenge is a \$10 million investment in research to support the identification and realisation of Australia's potential to diversify its export markets, based on renewable energy. We work closely with government and industry stakeholders to ensure our research supports national goals. For example, we have provided research that has helped inform the Australian National Hydrogen Strategy. We are currently undertaking research on the design of certification systems to support low-carbon exports – especially hydrogen and ammonia.