

SCOPE 3 EMBEDDED EMISSIONS

EIANZ Climate Change Supplemental Position Statement

November 2023

Summary

Addressing climate change requires work across international affairs, domestic mitigation, adaptation, and disaster recovery, with close attention to supporting the most impacted people and ecosystems.

This paper supports the EIANZ Climate Change position statement (2022) by giving further attention to Scope 3 greenhouse gas (GHG) emissions.

In relation to Scope 3 emissions, the EIANZ:

- i. Recognises that Scope 3 emissions are a major contributor to global emissions and a source of domestic economic risk for Australia and Aotearoa New Zealand.
- ii. Considers it important for governments, companies and other organisations to understand, report and reduce their Scope 3 emissions.
- iii. Calls on Australia and Aotearoa New Zealand to report and reduce Scope 3 emissions, through implementing domestic policies and programs, whilst recognising that the Paris Agreement does not require countries to specifically address Scope 3 emissions.
- iv. Considers that governments should work with organisations and trading partners on meaningful accounting, reporting, target setting, and strategy development and implementation.
- v. Recognises the complexity of Scope 3 emissions accounting and mitigation.

In addition, the EIANZ considers that specific actions should be undertaken in the near term that focus on reporting and reducing emissions embedded in internationally traded goods and services, particularly given the volumes of estimated GHG emissions from these sources in Australia and Aotearoa New Zealand.

Background

Under the UNFCCC and the IPCC, Scope 3 emissions have not been a primary focus. While there have been some bilateral and multilateral studies into mitigation pathways for major traded goods (e.g. steel, aluminium, and cement production), and Europe is instigating a carbon

border adjustment mechanism, the EIANZ considers that more action is needed.

While the following recommended approaches are generally relevant to all Scope 3 emissions, the EIANZ considers that there should be a specific focus on the emissions embedded in internationally traded goods and services, particularly given the volumes of estimated GHG emissions from these sources in Australia and Aotearoa New Zealand.

Role of Decision Makers

- **National Scope 3 Accounting** – Australian and Aotearoa New Zealand governments should prepare annual Scope 3 emissions inventories by sector to inform management of national import and export risks and opportunities as the world transitions to net zero. These should be staged to firstly capture the largest Scope 3 sources and then eventually to cover all sources.
- **National Scope 3 Targets and Mitigation Strategies** – Governments should set Scope 3 emissions targets, implement strategies to achieve them, and report on progress. Scope 3 targets must be consistent with Paris Goals, the remaining GHG budget, and domestic emission reduction targets.
- **Corporate Scope 3 Reporting** – Government-mandated corporate GHG reporting schemes should be expanded to include Scope 3 emissions for current reporting entities and for other entities with Scope 3 emissions greater than current direct emissions reporting thresholds.
- **Environmental Impact Assessments** – Scope 3 emissions should be included in the assessments of potential impacts of new and expanded projects. New developments should demonstrate that predicted Scope 3 emissions are consistent with the Paris goal of limiting global warming to 1.5°C and apply a precautionary approach to likely actions by other organisations and governments.
- **Socio-economic Studies** – Governments should disclose, under a range of global scenarios, national environmental, economic, and social risks associated with the nation's Scope 3 emissions, and the pathways to reduce adverse risks.
- **Commence taking action** – Governments and companies should immediately start to build understanding, capability and capacity through incentives to those that are already willing, and in priority areas (e.g.

new green materials and fossil fuel trade), whilst making it clear that those that delay will bear higher risks and costs.

- **Smart and Just Transition** – Governments should help the most vulnerable and adversely impacted as regions decarbonise. They should promote investment in low emission export activities that can substitute for loss of carbon intensive exports, to enable developing economies to have low Scope 3 emissions profiles in the future.
- **Shared Accountabilities** – Governments should work internationally and with Scope 3 supplier- and customer-countries to advance low emissions technology development and implementation, whilst avoiding carbon leakage, economic disruption, or bureaucratic delay.
- **Transparency** – Governments should use clear and internationally recognised protocols for calculating and disclosing Scope 3 emissions, reduction strategies, and actual mitigations. Disclosed information should be readily accessible to consumers for informed decision-making. Sanctions will be needed to drive real emissions mitigation and manage willfully misleading or materially inaccurate national or individual entity disclosures.

Role of EIANZ

- **Membership Engagement** – The EIANZ will promote understanding and refinement of our message and recommendations and support practical implementation by environmental practitioners.
- **External Engagement** – The EIANZ will continue to collaborate with governments and like-minded organisations.

Differences between Scope 1 & 3 reporting:

- **Materiality** – Only some types of upstream and downstream emission categories need to be reported e.g. where they: are large relative to the organisation's Scope 1 & 2 emissions; contribute to the organisation's GHG risk exposure; are deemed critical by key stakeholder (e.g. customers, suppliers, investors, or civil society); and can be reduced by actions undertaken or influenced by the organisation.
- **Overlap with others** – Two or more entities may report the same Scope 3 emission sources – where they share responsibility and /or exposure.
- **Interorganisation comparisons** – These can be difficult where companies are in different sectors or have their emissions predominantly in different reporting categories.
- **Non-additivity** – Companies have different levels

of influence across the 15 reporting categories. The value of Scope 3 reporting is in the strategic insights gained rather than the number derived from simple summation of the emissions from each category. There can often be double counting within a Scope 3 inventory – e.g. the emissions from two products sold may overlap in their estimated emissions, or overlap with upstream emission sources.

Concluding comments

National reporting of emissions embedded in traded goods is not a substitute for current national reporting arrangements under the Kyoto Protocol or the Paris Accord. It will come into more focus as countries / regions address issues of carbon leakage to places with lesser emissions controls.

Estimation of Emissions in Traded Goods and Services

Introduction

This summary sheet sets out what is known about the emissions embedded in Aotearoa New Zealand's and Australia's traded goods and services. These facts are provided to support EIANZ's related position.

Summary

- Government estimates of emissions embedded in Aotearoa New Zealand's imports are published. No comparable estimates have been found for Australia's import commodities. For Aotearoa New Zealand, these represent half of national emissions.
- Australia's three largest exported (mineral and energy) commodities have large carbon intensities and emissions footprints that represent 50%-250% of the national emissions inventory. Australia should be planning for leading in the inevitable adjustments as the world progresses to net zero emissions.
- Aotearoa New Zealand's main exports are not as Scope 3 emissions intense as Australia's.
- Much more analysis is necessary in order to properly understand and manage these Scope 3 emissions.

Aotearoa New Zealand

For the year ended March 2023, Aotearoa New Zealand's [GDP](#) was NZ\$385 billion. In 2022, exports (US\$44bn) and imports (US\$54) were roughly one-fifth of GDP.

Aotearoa New Zealand's 2021 net emissions were 55.7Mt CO₂-e - 3% less than the 57.2 Mt CO₂-e of emissions in 2005. Aotearoa New Zealand's Nationally Determined [Contribution](#) (NDC1) under the Paris Agreement is to reduce net GHG emissions to 50% below gross 2005 levels by 2030.

[Exports](#) – Eight of the top 10 export commodities are primary products or processed primary products. All of them are expected to have relatively low Scope 3 downstream emissions intensities.

Commodity	US\$ billion	Per cent
Dairy, eggs, honey	13.4	30.4
Meat	6.3	14.3
Wood	3.3	7.6
Fruits, nuts	2.4	5.6
Beverages, spirits, vinegar	1.6	3.7
Modified Starches, glues	1.6	3.6
Cereal/milk preparations	1.6	3.5
Fish	1.2	2.6
Machinery	1.1	2.6
Aluminium	1.1	2.4
Other	11	23.7
Total	44	100

[Imports](#) – Machinery and equipment, vehicles, fuels, and pharmaceuticals are Aotearoa New Zealand's largest 2022 import items. There are 30.7 Mt CO₂-e emissions associated with 2019 [imports](#) – equivalent to 51% of NZ's carbon footprint in that year. Seventy-six per cent and 8% of these emissions respectively were "manufacturing" and "transport" related.

Commodity	US\$ billion	Per cent
Machinery incl computers	7.3	13.4
Vehicles	7.2	13.2
Mineral fuels	6.2	11.5
Electrical machinery, equipment	4.7	8.6
Plastics	2.0	3.7
Optical, technical, medical	1.7	3.1
Pharmaceuticals	1.7	3.1
Food industry waste, fodder	1.3	2.3
Articles of iron or steel	1.2	2.2
Furniture, bedding, lighting, sign	1.1	2.0
Other	20	36.9
Total	54	100

Australia

No definitive publication has been identified that details Australia's Scope 3 emissions.

For the year ended March 2023, Australia's GDP was [A\\$2.2 trillion](#) – placing it, in size, in the low teens globally. The economy is open to both imports and exports and in the year ended June 2022 both were valued at around \$A0.5 trillion (roughly one-quarter of GDP).

[Exports](#) – The three most valuable exports (iron ore, coal [both metallurgical and thermal] and natural gas) have high Scope 3 emissions intensities (i.e. emissions per \$M revenue). The remaining seven of the top 10 exports were mineral, energy, agriculture, or education related. Aluminium metal production is also emissions intensive.

The Australian economy, certain regions and society in general, would be much poorer without the export revenue from these export items.

Australia's Top 10 Exports (2021-22)		
Commodity	\$A billion	Per cent
Iron ore & concentrates	132	22.3
Coal	114	19.1
Natural gas	71	11.9
Gold	23	3.9
Education-related travel services	21	3.5
Crude petroleum	14	2.3
Wheat	11	1.9
Aluminium ores & conc (incl. alumina)	10	1.7
Beef	10	1.7
Copper ores & concentrates	8	1.3
Other	182	30.5
Total	595	100

Imports - The top 10 imported items include: petroleum products, vehicles, technology equipment, pharmaceutical items, and professional services. No quantitative estimate of their upstream emissions has been carried out. Several of the commodities could have embodied emissions in the low tens of Mt CO₂-e and there are similarities with Aotearoa New Zealand in the types of commodities imported.

Apart from the refined petroleum products, each of these imports contain appreciable non-energy intensive value-add in their production and hence will be not as emissions intensive as the top three export commodities. Emissions associated with petroleum refining will be a fraction of that at the final point of use.

Australia's Top 10 Imports (2021-22)		
Commodity	\$A billion	Per cent
Refined petroleum	40	8.7
Passenger motor vehicles	23	5.1
Freight	23	5.0
Telecom equipment & parts	16	3.4
Goods vehicles	13	2.8
Computers	12	2.7
Professional services	11	2.4
Pharm products (excl. medicaments)	9	2.1
Medicaments (incl veterinary)	9	1.9
Crude petroleum	8	1.8
Other	295	64.2
Total	460	100

Size relative to domestic emissions – The combined Scope 3 emissions associated with Australia's main exports are 2 – 3 times Australia's [domestic](#) emissions.

The Scope 3 emissions from the use of exported [coal](#) and the processing exported [iron ores](#) (assume 62% iron in the ore) both significantly exceed

Australia's domestic emissions. These two emission sources cannot be added as metallurgical coal is used in steelmaking and effectively is the source of steelmaking emissions. The quantity of metallurgical coal exported from Australia is insufficient to smelt all of Australia's iron ore exports.

Emissions from use of liquified natural gas ([LNG](#)) are equivalent to around half of Australia's national emissions, whereas those from the production of [aluminium](#) from bauxite and [alumina](#) are dependent upon the source of electricity used in the smelting process, and the quoted figure could rise to 200Mt CO₂-e if the electricity is fossil fuel derived.

Changes since 2005 - The physical amounts of these exports have all increased since 2005, which is the base year for Australia's domestic emissions [targets](#) under the UNFCCC Paris accord (i.e. 43% reduction by 2030 and 100% by 2050).

Economic and greenhouse gas contributions and growth of key Australian exports

	Iron Ore	Coal total	LNG	Al - feed
Export Revenue (\$bn)	132	114	71	10
Mtonnes Exported	874	359	83	18
Per Cent commodity growth (from 2005);	283%	54%	686%	116%
Downstream Emissions (Mt CO ₂ -e)	1200	880	230	40
Downstream Emissions Relative to 2022 National Emissions	250%	180%	50%	10%

NOTES:

Coal total = Thermal + Metallurgical coal exports. In 2022 47% of exported coal was metallurgical coal. Assume carbon content for bituminous coal (0.663 t C/t fuel). DISR (2021) National Greenhouse Account Factors.

Al feed = approximation of the amount of aluminium made from bauxite and alumina exports - viz ~ 2 tonnes of bauxite is needed to produce 1 tonne of alumina and 2 tonnes of alumina is required to produce one tonne of aluminium metal

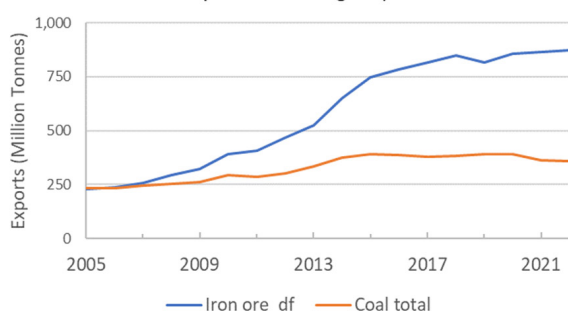
Emissions from processing of exported Al-feed is dependent upon emissions intensity of electricity used in smelting. This figure assumes 1.2t CO₂-e/t alumina and 1.7 t CO₂-e from anode use and PFC emissions during smelting. Emissions associated with smelter electricity consumption are excluded but can be quite high depending upon country of location.

Percent commodity growth (from 2005) - growth in physical exports since 2005 (the base-year for Australia's greenhouse gas emissions targets). For comparison of the same period Australia reduced its emissions by 22% (to 487Mt CO₂-e) and has committed to a 46% per cent reduction by 2030 and net zero by 2050.

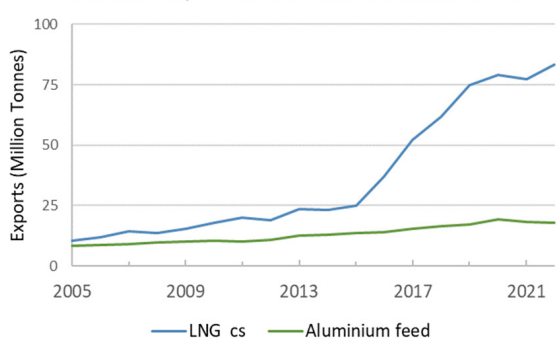
The emissions in traded goods and services are not included in Australia's Nationally Determined Contribution, so in this regard Australia is not in breach of international undertakings. However, as

the world works to the Paris Accord goal of net zero, Australia and its subregions will likely have to accommodate large changes in the markets for each of these commodities.

Australian Exports of Iron Ore and Coal (thermal plus metallurgical)



Australian Exports of LNG and Aluminium Feed



Concluding comments

There are plausible decarbonisation pathways for steelmaking, using hydrogen and electrification, and for aluminium production, using zero emissions electricity and inert anodes.

The only approach currently suggested for decarbonisation of fossil fuels is carbon capture and storage (CCS). CCS remains under-performing, expensive, socially contested, and dependent upon local geology and cannot be relied upon.

Some coal types are less emissions intensive than others (e.g. they have lower moisture content). Even so, relative to the need to achieve net zero by 2050 or earlier, there must be rapid phase-out of coal use, irrespective of differences in coal qualities.

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