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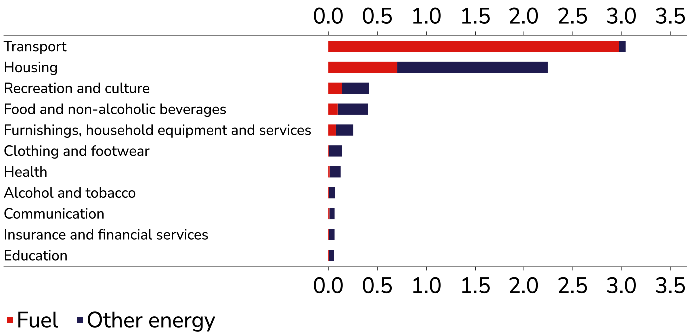
ENERGY PRICES, COSTS AND INFLAITON

Key points

- Energy is far more embedded in domestic activity than direct usage suggests. Once indirect supply chain impacts are captured, around 40 cents of energy inputs are required for every $1 of output in the non tradable (or domestic) sector. **The extent of this exposure explains why energy shocks can have broad, persistent inflationary effects.**
- Not all production flows to households. Some is exported or invested so the pass through to CPI inflation is smaller but significant. We estimate that around 7 cents of energy is embedded in every $1 of spending on the CPI basket. This captures the energy used in producing items in the CPI basket and is over and above imported fuel.

Energy intensity levels by CPI group

Energy usage per dollar of spending on the CPI basket in cents



Source: ABS, Macrobond, Westpac Economics

- Thus far Australia's exposure to the conflict in the Middle East has been concentrated in oil and fuel. If that remains the case, CPI impacts should be roughly half those seen under a broad based energy shock. Higher prices would need to spread to gas and electricity, as in 2022, for inflation risks to be more persistent and harder to unwind. The wholesale gas price cap ($12 per gigajoule) now in place helps to limit this risk.

Why energy shocks matter more than you think

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The supply disruptions to oil and gas stemming from the conflict in the Middle East are unambiguously negative. Higher energy prices erode real incomes and slow spending, even before confidence effects are felt. But the economic impact will be highly uneven, varying across countries, sectors and industries. To identify where domestic cost pressures and inflation risks are most likely to surface, we estimate energy intensity levels across the Australian economy.

Direct vs indirect energy use

ABS input-output tables allow us to trace not only direct energy use, but the much larger, and often overlooked, indirect energy embedded in supply chains.[1]

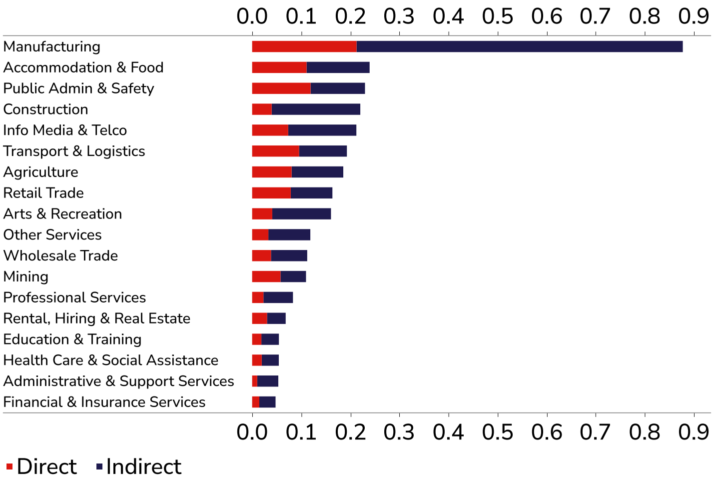
Direct energy is energy consumed on site, such as electricity used by a food packaging manufacturer or diesel burned by farm machinery. Indirect energy captures the upstream energy required to produce intermediate inputs, such as the energy used to make cement, steel and glass for construction, or the fuel used to transport goods.

For most industries, direct usage captures only a small share of the true energy exposure. What matters far more is indirect energy usage, or the energy embodied in intermediate inputs such as materials, transport and upstream production.

Construction illustrates this clearly. While direct energy use is modest, total energy intensity jumps to more than five times that level once steel, cement, transport and other inputs are included. In total, around 22 cents of energy inputs are required for every $1 of construction output or value added, **making construction one of the economy's most sensitive sectors for energy price shocks.**

Energy intensity levels by sector

Energy usage per dollar of gross value added in cents



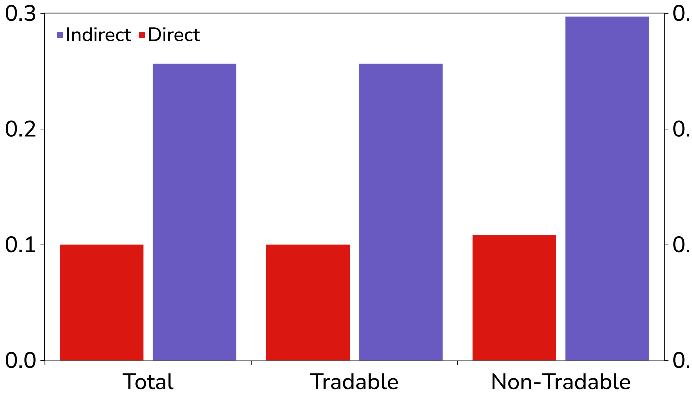
Source: ABS, Macrobond, Westpac Economics

Tradable vs nontradable sectors

Perhaps more surprisingly, the non tradable sector is more energy intensive than the tradable sector. Despite being dominated by labour intensive market services, total energy use is higher once indirect, supply chain energy is taken into account. This exceeds the energy required to produce tradables, which are concentrated in goods production and the export of rural and non rural commodities, including energy intensive long distance transport.

Energy intensity levels by sectors

Energy usage per dollar of gross value added in cents



Source: ABS, Macrobond, Westpac Econom

In the non tradable sector, producing one dollar of output requires around 40 cents of energy inputs, with roughly 30 cents driven by indirect energy embedded in supply chains. In the tradable sector, energy intensity is lower, at around 27 cents per dollar of output, with about 17 cents attributable to indirect exposure.

In both cases, **indirect channels dominate, highlighting how energy price shocks propagate through supply chains rather than appearing only in energy intensive industries**. Note, our tradable and non tradable classifications follow the ABS convention, where an industry is defined as tradable if imports or exports exceed 10 per cent of domestic supply.

[1] The use of ABS input-output tables assumes production processes, consumption patterns and preferences remain fixed. If an energy shock is prolonged, businesses and households may respond to relative price changes, altering the CPI impacts estimated here. This needs to be weighed against the fact that the analysis is confined to domestic production and excludes energy embedded in imported final consumption goods, such as fuel or motor vehicles. As a result, the estimates should be interpreted as capturing domestic cost-pass-through channels rather than the full exposure of the CPI basket to global energy prices.

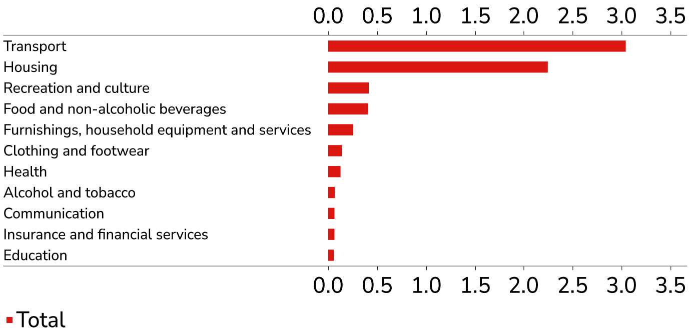
What does this mean for households?

Input–output analysis tells us where cost pressures are created. Consumer spending patterns and the CPI tell us where those pressures are likely to show up for households.

We estimate that total energy exposure embedded in consumer prices is around 7 cents per dollar of spending on the CPI basket. **Importantly, this reflects how pressures on the production side of the economy flow through to consumer prices, it excludes the direct impact of higher refined fuel import prices on the CPI.** The chart shows the main pass through to the CPI is via Transportation (such as freight, taxi and air fares, and other logistical services), Housing (including the cost of constructing a dwelling and dwelling maintenance) and Recreational and cultural services (such as entertainment, leisure, accommodation, subscriptions).

Energy intensity levels by CPI group

Energy usage per dollar of spending on the CPI basket in cents



Source: ABS, Macrobond, Westpac Economics

While 7 cents per dollar of spending on the CPI basket may sound modest, it is significant. For example, a broad based 20% increase in energy costs over two quarters, consistent with past energy price spikes, including early 2022 following Russia's invasion of Ukraine, could add close to 0.8 percentage point to year ended inflation, solely through the energy embedded in domestic production of CPI items.

The good news is that risks appear far more contained, for now

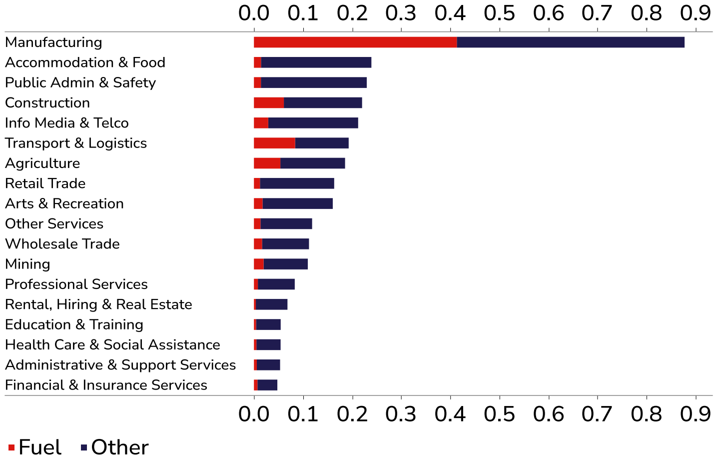
This exercise is based on a broad definition of energy, encompassing not only fuel but also domestic electricity and gas. At present, we expect the conflict in the Middle East to have a material impact on fuel prices, but a more muted effect on domestic gas and electricity prices than was seen in 2022. As a result, the inflationary impact should be smaller than under a broad based energy price shock.

Fuel is also less central to the domestic production process than energy more broadly. While it is an important input for manufacturing, transport, construction, and agriculture, fuel plays a more limited role across much of the non tradable, services dominated sector.

As a result, the inflationary impulse should be smaller and less persistent than under a broad based energy shock, with effects concentrated in sectors with high direct fuel use, rather than energy inputs more generally. In this scenario, a 20% increase in fuel costs over two quarters, broadly consistent with forecasts published in the February Westpac Market Outlook, could add close to 0.35 percentage point to year ended inflation, via fuel embedded in the domestic production of CPI goods and services.

Energy intensity levels by sector

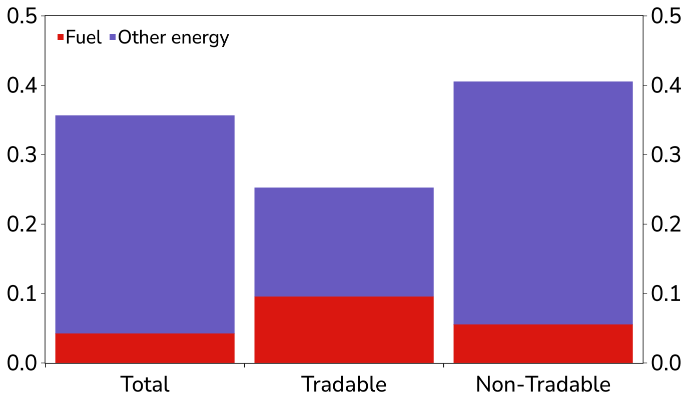
Energy usage per dollar of gross value added in cents



Source: ABS, Macrobond, Westpac Economics

Energy intensity levels by sectors

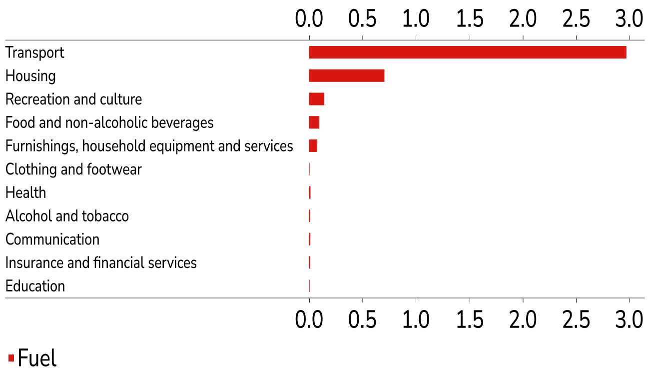
Energy usage per dollar of gross value added in cents



Source: ABS, Macrobond, Westpac Economics

Fuel intensity levels by CPI group

Energy usage per dollar of spending on the CPI basket in cents



Source: ABS, Macrobond, Westpac Economics

However, if the shock were to feed more broadly into electricity and gas costs, the indirect channel would become far more powerful. In that case, the economic impact would grow materially, with larger and more persistent flow on to both activity and inflation, similar to the experience in 2022.

Bottom line

Energy matters not just where it is consumed directly, but where it is embedded throughout the economy. That is why energy shocks tend to have broad and persistent macroeconomic effects. If the fallout from the conflict in the Middle East remains largely confined to fuel, the inflationary impact should be smaller, but still meaningful. A more widespread energy shock would pose significantly greater risks to the inflation outlook.

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