

# Current Pattern of Effective Carbon Prices

## Future Carbon Policy for Clean Growth



Energy Systems Catapult's 'Rethinking Decarbonisation Incentives' (RDI) is exploring how UK policies can promote clean growth by taking a 'Whole Systems' perspective on carbon policy.

We have begun by looking at the current economic signals for decarbonisation in the UK. The analysis shows that the strength of incentives to cut carbon emissions (effective carbon prices) varies widely across different sectors and activities. The [main report](#) and [supporting spreadsheet](#) contains further details than described here.

### Methodology

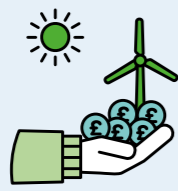
Effective carbon prices are calculated by examining the taxes/subsidies on fossil fuel use/low carbon alternatives.

Specifically, positive effective carbon prices arise from either:



Taxes on emitting activities

or



Subsidies to low carbon alternatives

Conversely, negative effective carbon prices arise when:



Emitting activities are subsidised

or



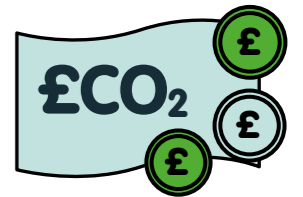
Low carbon alternatives are taxed

Some taxes and subsidies are applied with climate change policy goals explicitly in mind (e.g. renewable energy subsidies in power generation), whereas in some cases they are in place for other reasons (e.g. reduced VAT rates on domestic electricity and gas consumption).

We compare resulting effective carbon prices against the level calculated by the Department for Business, Energy and Industrial Strategy (BEIS) as being required by 2030 to be on track for 2050 decarbonisation targets. BEIS uses a carbon price range of between £40-119/tCO<sub>2</sub>, reflecting uncertainty over the cost of abatement and the global pathway to 2050.

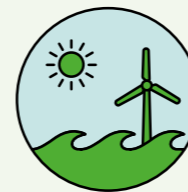
### Effective Carbon Prices

The table summarises how effective carbon prices that apply to emitting activities (and low carbon alternatives) compare against the government's estimated range for carbon prices consistent with meeting decarbonisation targets.



Carbon Price Below Target ("Too Low")		Carbon Price Above Target ("Too High")	
Emitting Activity (CO <sub>2</sub> emissions currently 'under-taxed')	Low Carbon Alternative (CO <sub>2</sub> savings currently 'under-subsidised')	Emitting Activity (CO <sub>2</sub> emissions currently 'over-taxed')	Low Carbon Alternative (CO <sub>2</sub> savings currently 'over-subsidised')
<ul style="list-style-type: none"> <li>Agriculture</li> <li>Air transport (assumes that passenger duty is not a pure energy/carbon tax)</li> <li>Coal and gas based electricity generation</li> <li>Natural gas consumption by all main end users</li> <li>Electricity use by households and large business</li> <li>Oil and gas production</li> <li>Fuel use by business and industry</li> <li>Land use change</li> </ul>	<ul style="list-style-type: none"> <li>Lowest cost Solar PV schemes</li> </ul>	<ul style="list-style-type: none"> <li>Road transport (if congestion and other externalities not subtracted)</li> </ul>	<ul style="list-style-type: none"> <li>Rail transport (to replace road transport)</li> <li>Historical renewables projects</li> <li>Nuclear power</li> </ul>

Sectors where current effective carbon prices are broadly aligned with expected target prices for 2030 include:



Solar PV and the most recent offshore wind bids of CfD auctions.



Possibly road transport (if the value of congestion and other externalities is offset against tax receipts).

The full range of effective carbon prices by sector can be found in an accompanying [infographic](#).