

# Technical Annex 3: Industry

## 1. CCC indicators – energy and emission trends

In our 2014 Progress Report we set out an indicator framework for monitoring progress in industry towards meeting the first four carbon budgets (Table 3.3). This included industrial direct CO<sub>2</sub> emissions and manufacturing & refineries CO<sub>2</sub> emission intensity, energy consumption and energy intensity. Estimates suggest that industry is ahead of these indicators, but the industry chapter in the main report discusses that part of this will be due to structural changes in industry and uncertainty around the provisional 2014 estimates.

We present what has happened in in the total level of energy/emissions and their intensity in relation to output since 2007 (Figures 3.1 to 3.4). Overall, while industry’s energy consumption and emissions are ahead of our indicators to 2013, this has mainly been due to the impact of the economic recession on carbon-intensive sectors. It is quite possible therefore, that savings may be short-lived. Also, whilst there are reductions in 2014 provisional industrial energy consumption and emissions, these provisional estimates have been prone to revision once finalised in previous years. We will continue to monitor industrial energy consumption and emissions in our future progress reports.

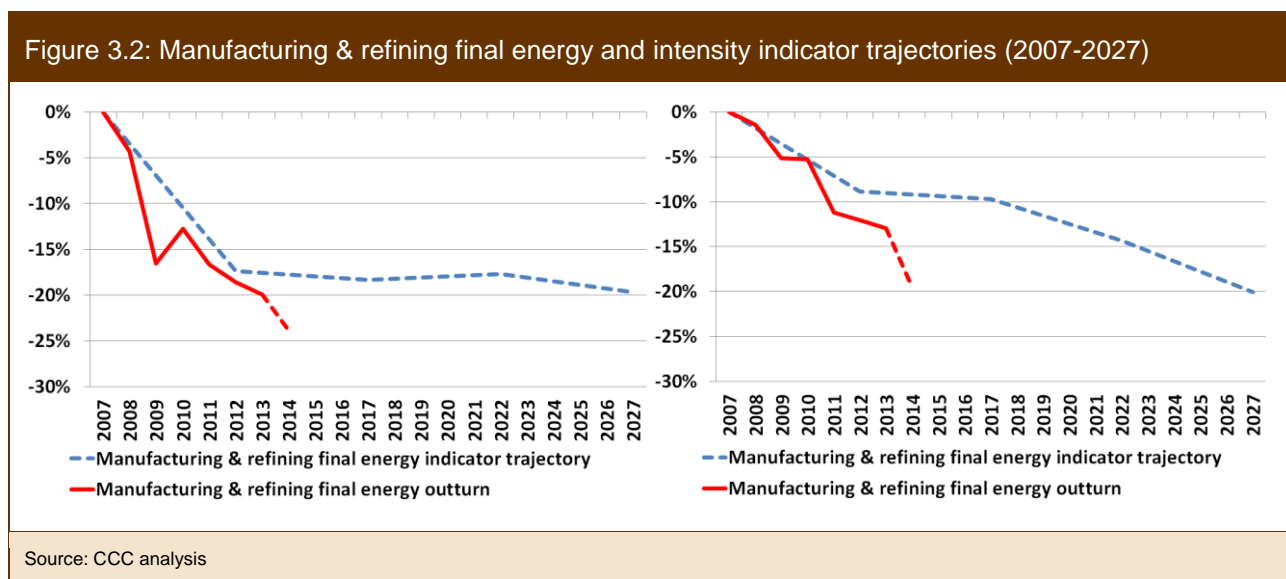
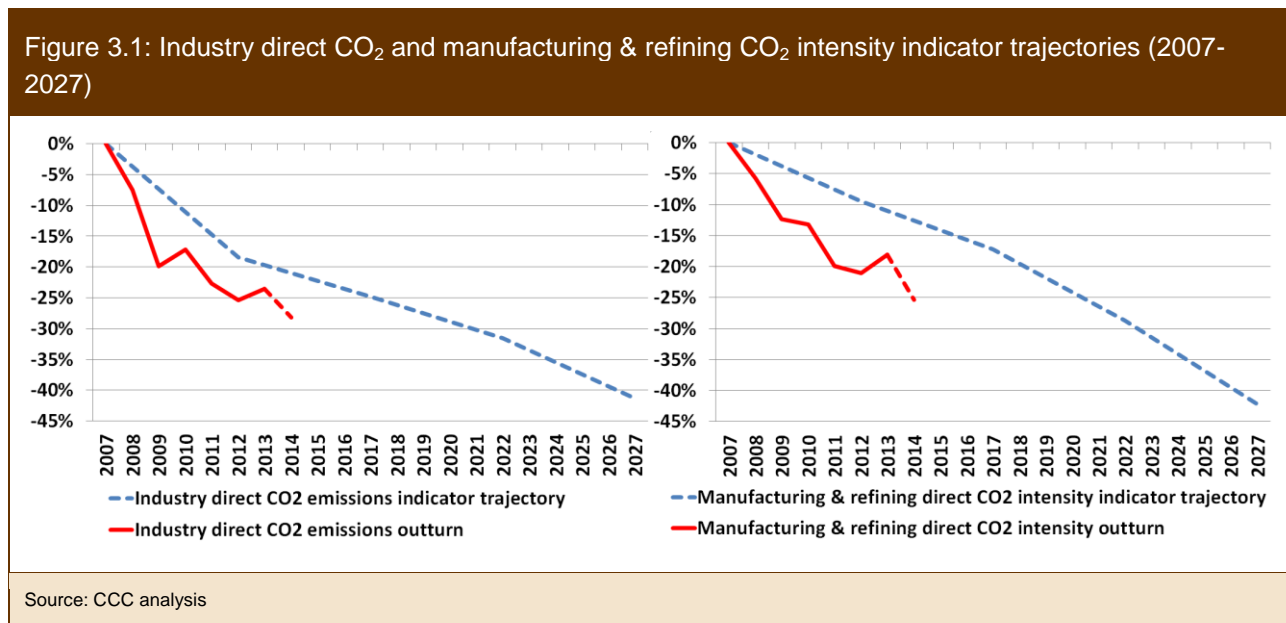
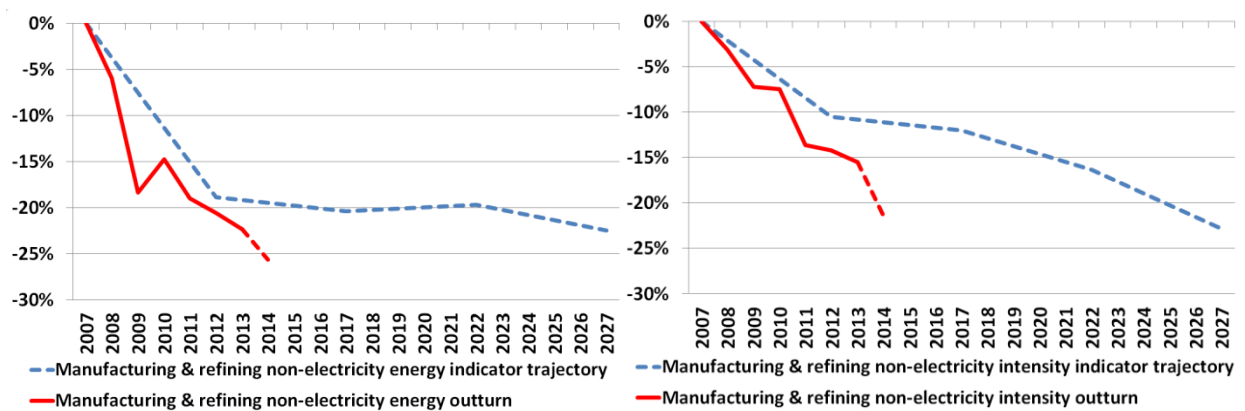
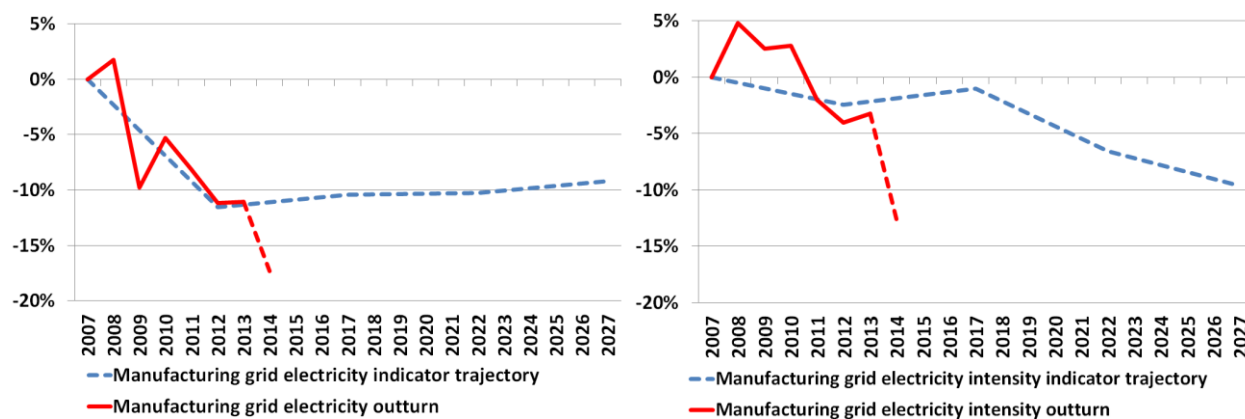


Figure 3.3: Manufacturing & refining non-electricity energy and intensity indicator trajectories (2007-2027)



Source: CCC analysis

Figure 3.4: Manufacturing grid electricity energy and intensity indicator trajectories (2007-2027)



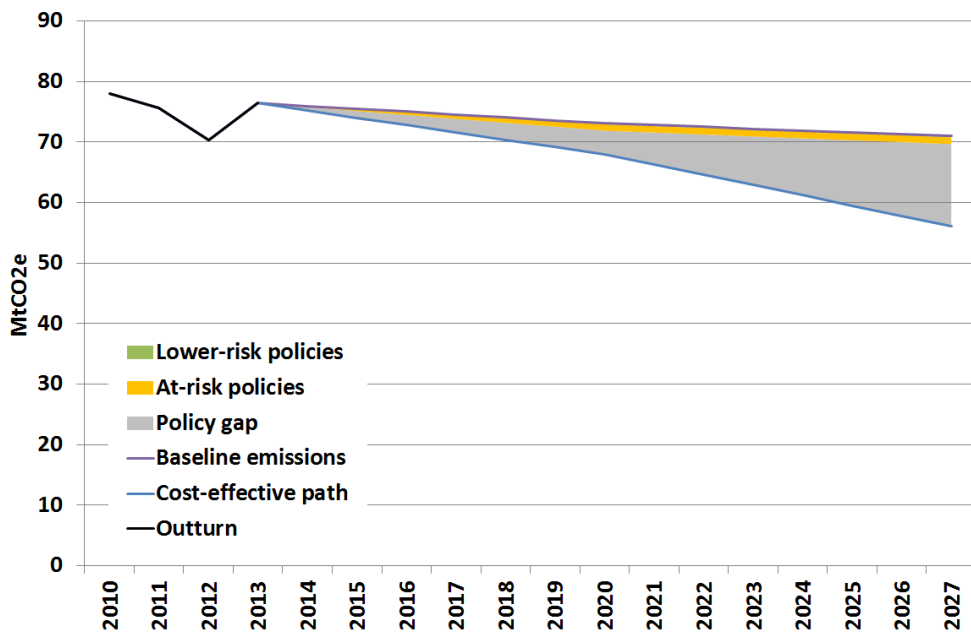
Source: CCC analysis

## 2. Forward look

In our *Fourth Carbon Budget Review* we suggested that direct industry emissions could fall to 84 MtCO<sub>2</sub> in 2025 to meet carbon budgets. According to DECC's *'Energy and Emission Projections'* (EEP), industry emissions in the absence of policy would be 101 MtCO<sub>2</sub> in 2025, falling to 99 MtCO<sub>2</sub> when estimated savings of current and planned government policies are included. This leaves a gap of around 15 MtCO<sub>2</sub> in 2025 to be addressed to stay on the cost-effective path we have identified to meet carbon budgets.

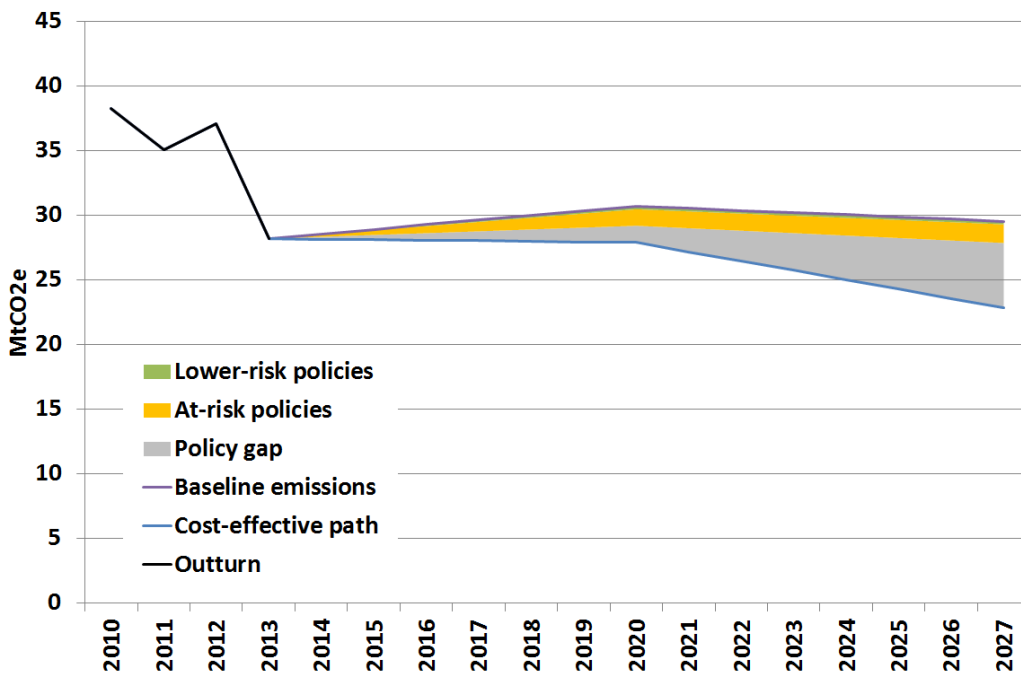
- **Traded sector.** The gap is almost 11 MtCO<sub>2</sub> in 2025, with options in energy-intensive industries accounting for 5 MtCO<sub>2</sub>, low carbon heat 4 MtCO<sub>2</sub>, conventional energy efficiency 1 MtCO<sub>2</sub> and CCS 1 MtCO<sub>2</sub> (Figure 3.5).
- **Non-traded sector.** The gap is almost 4 MtCO<sub>2</sub> in 2025, with low-carbon heat accounting for 3 MtCO<sub>2</sub> and conventional energy efficiency 1 MtCO<sub>2</sub> (Figure 3.6).

Figure 3.5: DECC Industry traded emission projection risk assessment (2007-2027)



Source: CCC analysis

Figure 3.6: DECC Industry non-traded emission projection risk assessment (2007-2027)



Source: CCC analysis

Furthermore, not all policy savings are necessarily assured. We have made an assessment of the risk associated with the policies in DECC's projections, based on the policy discussion in earlier sections of this chapter. While 0.4 MtCO<sub>2</sub> is to be delivered by lower-risk policies, 2.5 MtCO<sub>2</sub> savings are dependent on policies with design/delivery problems or are currently underfunded (Table 3.2).

Table 3.2: Assessment of DECC energy model policy savings

Policy	Comment
<b>Lower-risk policies</b>	
<b>RHI to April 2016</b>	Right mix of technologies are targeted. Policy savings have been revised downwards based on market forecasts, and are now reasonably cautious. Although uptake to date has been mainly biomass, government has responded with recent changes to the scheme including new tariffs, which are now broadly at the right level. Funding has been committed until April 2016.
<b>Policies with delivery at risk</b>	
<b>EU Products Policy tranche 1 &amp; 2</b>	As with domestic products, minimum standards for products are set under the Ecodesign directive and ratcheted up over time. Realised savings are at risk due to delays to implementation and uncertainty around stock replacement rates. There is also uncertainty around the current modelling of uptake, which is under review.
<b>Building Regulations part L 2010 &amp; 2013</b>	Focuses on the right barrier by regulating that developers meet certain CO <sub>2</sub> reducing standards compared to previous 2006 regulations. There are however some questions around the modelled savings based on the Simplified Building Energy Model (SBEM), which are being reviewed in light of new bills data. This leads to uncertainty around compliance and the 'performance gap' between buildings as designed, built and in-use. There is also some uncertainty around build-rates.
<b>RHI from April 2016</b>	No committed RHI funding after the 2015-16 financial year.
<b>CRC energy efficiency scheme</b>	The scheme is targeting energy use not covered by existing policies, incentivising energy efficiency and addressing an information barrier. However, its credibility has been weakened due to the changes to the scheme, including the loss of the reputational lever of the performance league table. It is now a modest carbon tax which is hampered by the original trading scheme design.
<b>Private rented sector regulations</b>	This is a legislated policy for the introduction of minimum energy efficiency standards by 2018.
<b>Energy Savings Opportunities Scheme (ESOS)</b>	There is little evidence to suggest the energy audits are leading to any uptake of measures or energy savings. The policy has a number of weaknesses (no reporting; can be undertaken by a member of staff, no follow-up) which puts the carbon savings at risk.

## Indicator Table

Table 3.3: The Committee's industry energy and emission indicators (% change from 2007)						
INDUSTRY		Budget 2	Budget 3	Budget 4	2014 indicative	2014 outturn
<b>Headline indicators</b>						
<b>CO<sub>2</sub> emissions</b>	<b>Direct (non-electricity)</b>	-25%	-32%	-41%	-21%	-28%
	<b>Total</b>	-18%	-18%	-20%	-18%	-24%
<b>Final energy consumption</b>	<b>Non-electricity</b>	-20%	-20%	-22%	-19%	-26%
	<b>Grid electricity</b>	-10%	-10%	-9%	-11%	-17%
<b>Manufacturing &amp; refining CO<sub>2</sub> emission intensity</b>	<b>Direct (non-electricity)</b>	-17%	-29%	-42%	-13%	-25%
	<b>Total</b>	-10%	-14%	-20%	-9%	-20%
<b>Manufacturing &amp; refining energy intensity</b>	<b>Non-electricity</b>	-12%	-16%	-23%	-11%	-21%
	<b>Grid electricity</b>	-1%	-7%	-10%	-2%	-13%
<b>Supporting indicators</b>						
<b>Industrial CCS</b>	<b>DECC/BIS to set out approach to deploying initial industrial CCS projects compatible with widespread deployment from the second half of the 2020s</b>	End 2016				

<b>Low-carbon heat</b>	<b>Low-carbon heat penetration</b>	5%	13% in 2020*		1.3%	1.7%
<b>Industrial decarbonisation</b>	<b>Publish industrial sector 2050 decarbonisation Roadmaps</b>	End 2015				March 2015
	<b>Publish industry strategy setting out milestones, incentives and mechanisms for meeting carbon budgets</b>	End 2017				
<b>Effectiveness reviews</b>	<b>Publish evaluation of effectiveness of compensation package to date</b>	End 2016				

Source: CCC analysis.

Notes: Energy and emission intensity here is different to that described in Box 3.2 of chapter 3 in the main Progress Report. In this table intensity is change in energy or emissions over the change in output. Therefore it does not take into account structural, fuel switching or fuel carbon intensity effects