Update: Shell emissions forecast

September 2022

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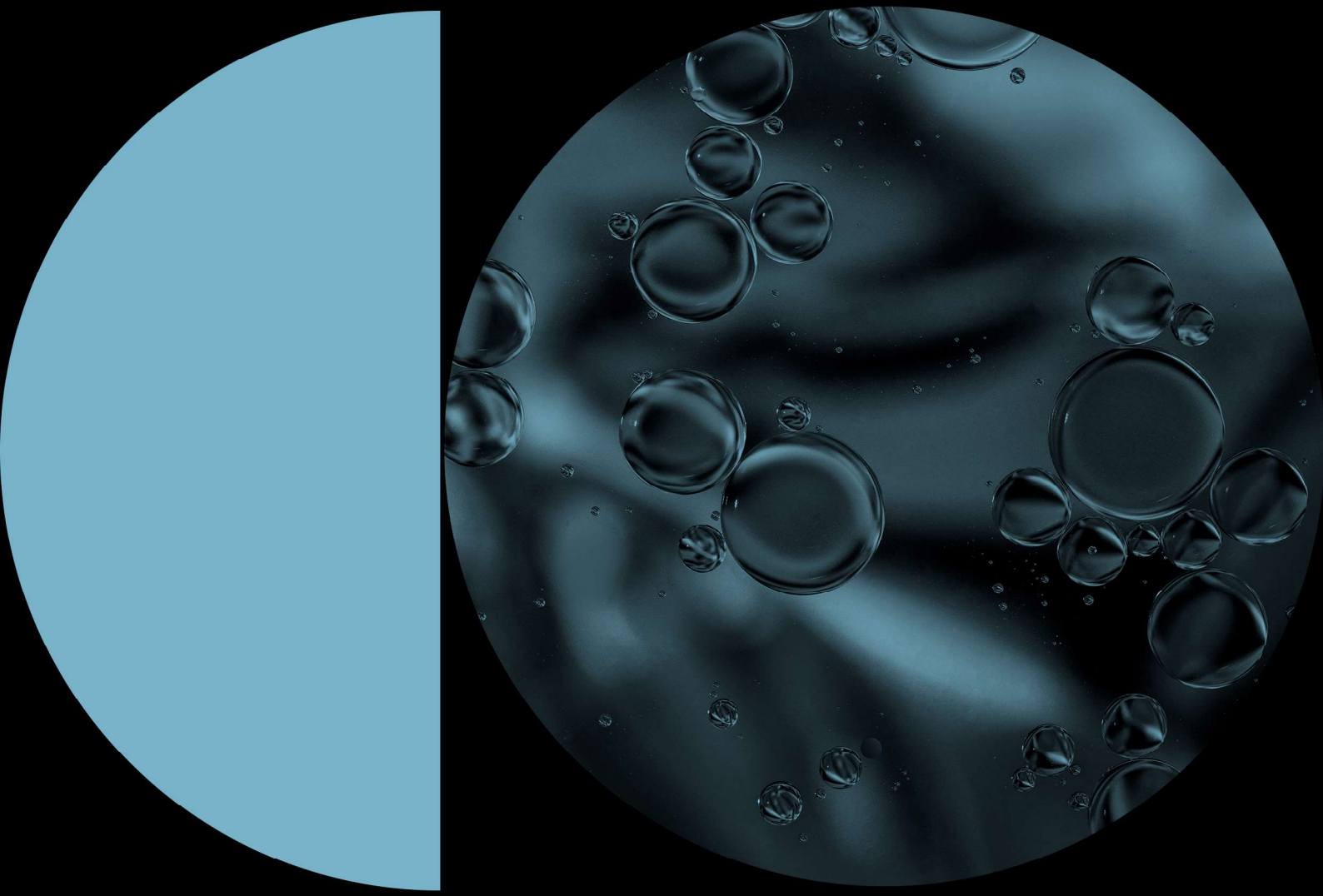

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Update: Shell emissions forecast

1 September 2022 | LSE: SHEL

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Lowering Shell's FY30 emission forecast post 1H22, shrinking but not yet transitioning

Shell's FY30 absolute emissions are forecast to reach 1,691 Mt CO2e, 22% above FY21 (1,381 Mt CO2e) and 9% lower than our prior forecast due to lower oil and gas volumes, and divestments. Shell's recent performance indicates it is right-sizing its oil and gas business but not yet transitioning customers to alternatives. A 15-56% CAGR in low carbon fuels sales is needed between FY22-FY30 to deliver on net-zero ambitions. Lack of guidance on 3rd party pipeline gas and 3rd party oil sales (~43% of emissions in FY21) creates a risk to our forecast. If they grow faster than expected, emissions will be higher.

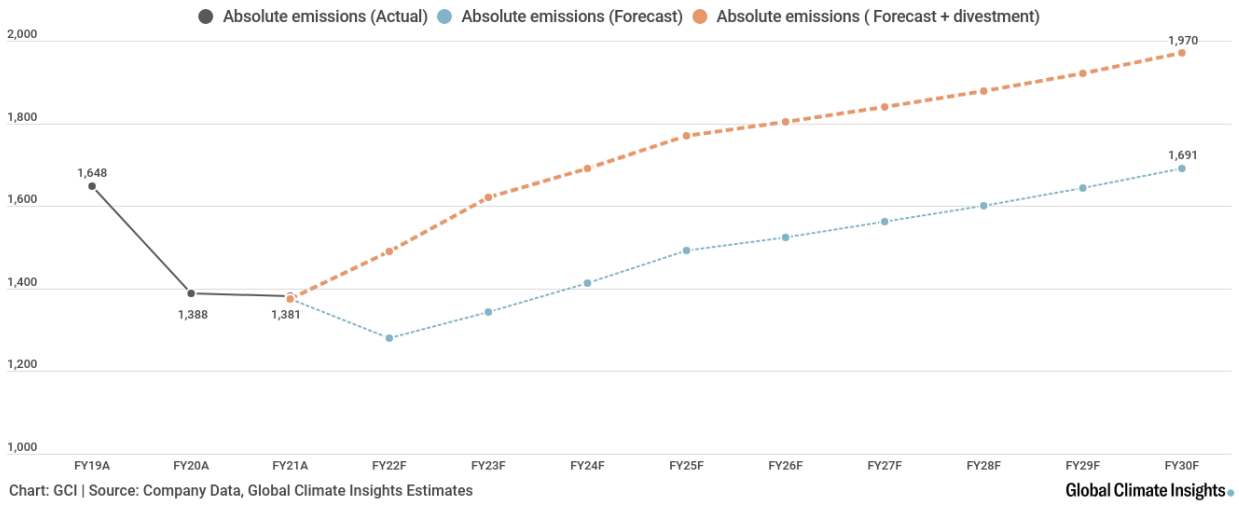
Are we asking for the right things in seeking net zero?

Not yet. Stakeholders overly fixate on the targeted emissions reduction number and not the strategy. Even though we forecast Shell will achieve its FY30 target of 20% reduction in net carbon intensity, absolute emissions are forecast to be 20% higher in FY30 than FY19 (ex. divestment, CCUS, offsets). Greater scrutiny is needed. Our analysis indicates that existing decarbonisation levers focus on lowering corporate emissions boundaries. Stakeholders need to question precisely how these measures will contribute to real-world emissions reduction for 1.5°C.

Our view on stepping up climate integration

A credible transition plan should prioritise 1.5°C alignment and leverage its challenges as a driver for business growth and innovation. Shell can improve its strategy by quantifying how it will transition existing oil and gas customers to zero carbon alternatives. The strengths of Shell's plan are: 1) Shell's integrated model has the opportunity to accelerate customer transition to low carbon, 2) its disclosure of GHG emissions appears more complete than peers. Key gaps remain: 1) linkage between customer decarbonisation with scope 3 absolute emissions reduction, 2) climate strategy for responsible divestment, 3) over-reliance on uptake of CCUS and offsets.

Chart: Forecast absolute GHG emissions (Mt CO_2e, excludes CCUS and offsets)



1. Shell FY30 emissions forecast

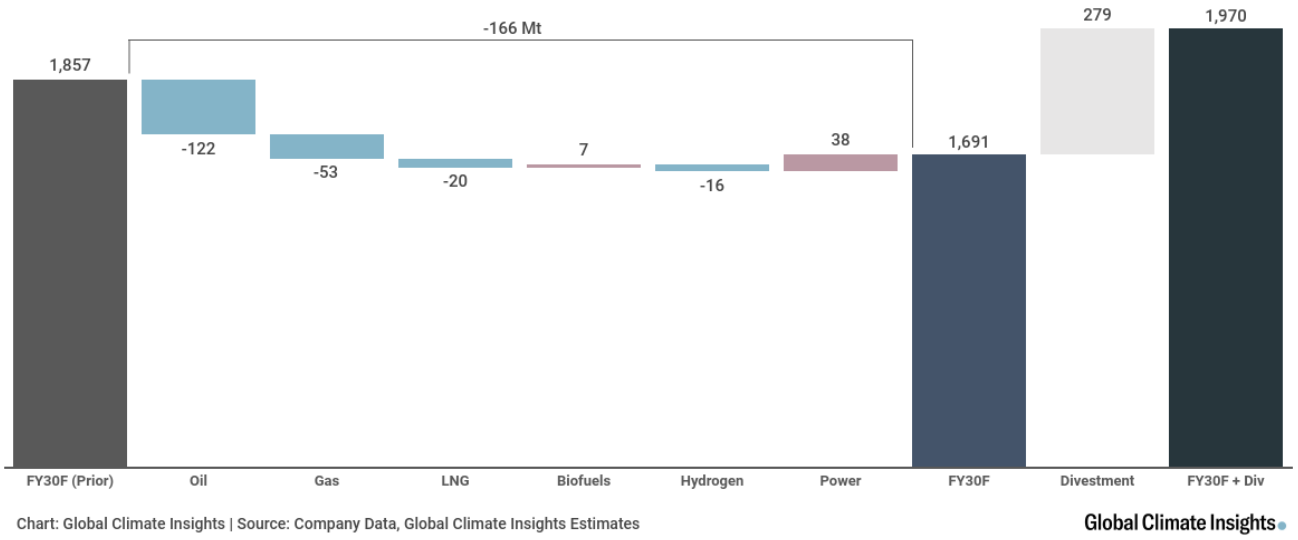
We forecast Shell's absolute GHG emissions to reach 1,691 Mt CO2e by FY30, -166 Mt CO2e or 9% lower than our prior forecast (1,857 Mt CO2e). Our change to forecasts has been made following Shell's 1H22 results.

Key drivers of the change in absolute GHG emissions (ex-CCUS and offsets) include:

- **-122 Mt CO2e decline from oil sales**. Reflecting lower oil sales over FY21 and 1H22, due to refinery divestments and a delayed COVID-19 rebound. Shell's 1H22 sales (ex-divestments) remain lower than FY19, unlike global demand, which has rebounded to pre-COVID-19 levels[1]. We now anticipate a lower and delayed COVID-19 rebound for oil sales to occur over FY23-25.
- **-53 Mt CO2e decline from gas (pipeline gas sales).** Pipeline gas is expected to be lower, due to our lower gas production forecasts. Shell has a target to shift its hydrocarbon portfolio to 55% gas. We estimate ~37% of Shell's pipeline gas comes from its gas production. We assume the current decline in oil sales flows onto weaker growth in pipeline gas sales from third-parties, and Shell's gas production.
- **-20 Mt CO2e decline from LNG (third-party and liquefaction).** We have removed the prior expected COVID-19 rebound as we now expect it to be captured within forecasts for market growth.
- **+29 Mt CO2e net increase from biofuels, hydrogen and power.** This follows additional guidance by Shell on its targets for low-carbon fuels and electricity delivered. The decrease in hydrogen reflects an update to Shell's hydrogen target, which is now 10% market share of clean hydrogen by FY35 (prior assumption FY30), and GCI's lower assumed market size in FY35 at 54.8 Mt p.a.

Divestment has become a large driver of Shell's emissions reduction. Between FY19 and FY30 we estimate at least 279 Mt CO2e of Shell's scope 1, 2, and 3 emissions reduction will come from divestment.

Chart: FY30 changes to forecasts absolute GHG emissions (Mt CO_2e, excludes CCUS and offsets)



[1] IEA (2022), August Oil Market Report

Absolute and Net GHG emissions FY19 to FY30

Shell's absolute GHG emissions are forecast to increase to 1,691 Mt CO2e in FY30, ~3% above Shell's GHG emissions in FY19 (using Shell's disclosure), or 1% using GCI's calculations (GCI base, as shown in the chart below). The reduction in emissions is expected to come from oil (-348 Mt CO2e), offset by growth in gas and LNG (+202 Mt CO2e) and power/low-carbon fuels (+167 Mt CO2e).

Shell's net emissions (after CCUS and offsets) are forecast to be 1,563 Mt CO2e, 6% lower in FY30 in comparison to FY19 (GCI base), assuming it is on track to achieve its targets for CCUS and offsets. Once we add back divestments and post-emissions compensation, emissions in FY30 are estimated to be 1,970 MtCO2e, 20% higher than FY19 (using Shell's disclosure), or 18% higher than FY19 (GCI base).

Chart: GHG emissions FY19 (GCI base) to FY30F (Mt CO_2e, includes emissions from divested assets)

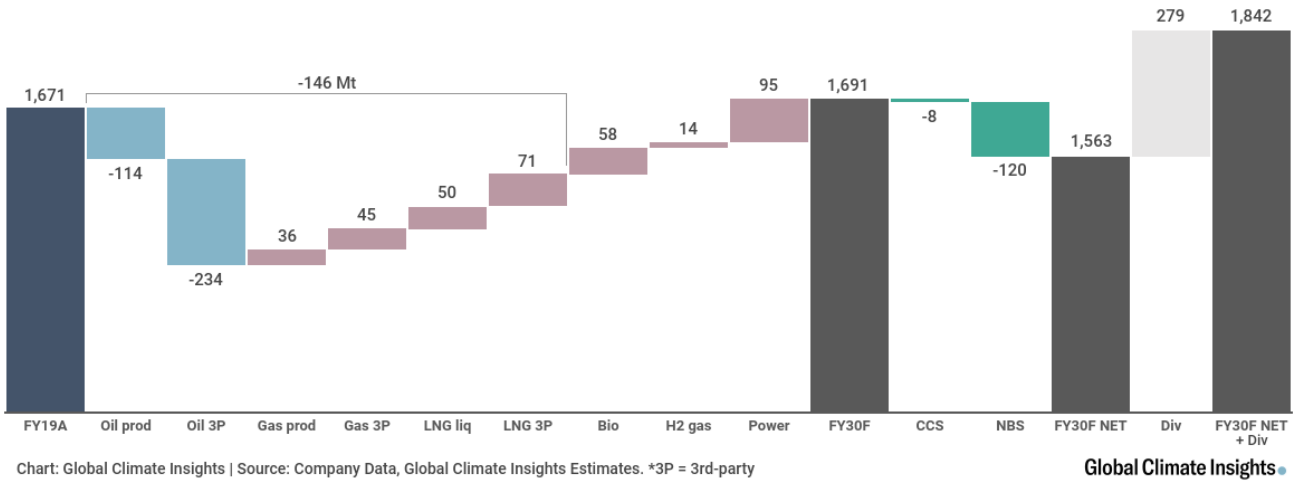


Chart: Global Climate Insights | Source: Company Data, Global Climate Insights Estimates. *3P = 3rd-party

Global Climate Insights

Net Carbon intensity FY19 to FY30

Shell's Net Carbon Intensity is forecast to decrease 20% by FY30, meeting its target. 6% is expected to come from offsets. Shell's absolute emissions will not decline despite reductions in carbon intensity.

Chart: Shell's FY19 to FY30 carbon intensity (g CO_2e/MJ)

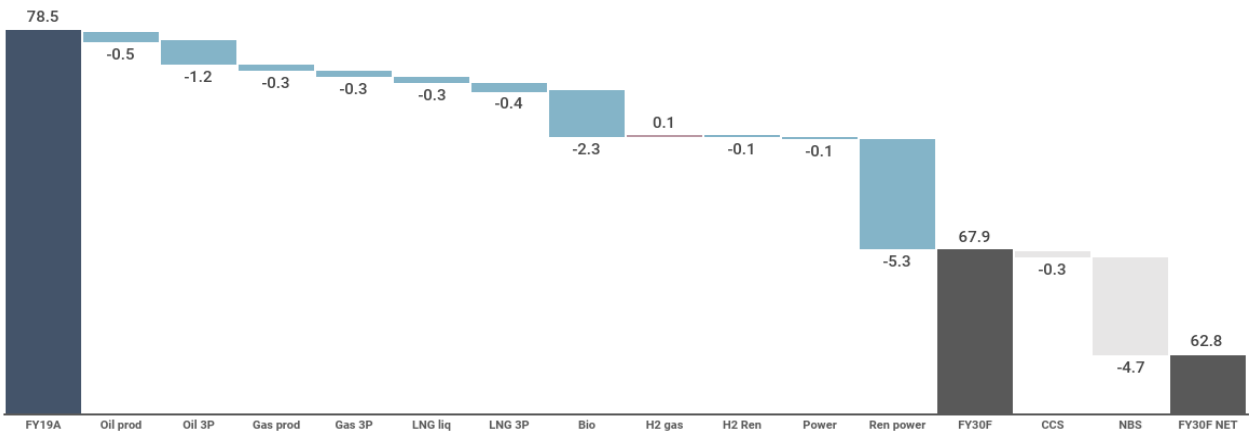


Chart: Global Climate Insights | Source: Company Data, Global Climate Insights Estimates. *3P = 3rd-party

Global Climate Insights

2. Will Shell meet its emissions reduction targets?

Shell has two emission reduction targets (full details in Appendix).

Its FY22 and FY30 targets are (FY16 base year):

- Scope 1 and 2: 50% net emissions reduction by FY30
- Net Carbon Intensity: 3-4% reduction by FY22, 20% reduction by FY30.

Scope 1 and 2 target

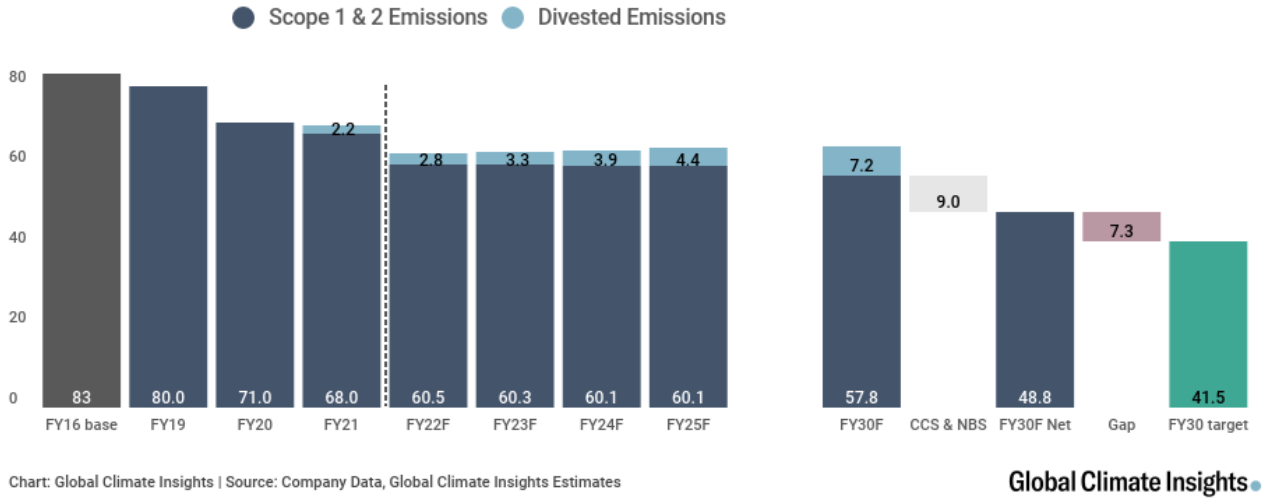
This target addresses just 5% of Shells total GHG emissions footprint in FY21. As of FY21, Shell has delivered over a third of its target (18% reduction in net scope 1 and 2 emissions). In comparison to its 50% net emissions reduction target, we forecast Shell is on track to deliver a 41% reduction in its scope 1 and 2 emissions by FY30. We estimate CCUS and offsets to contribute ~11% and divestments 9%.

Table: Shell's Scope 1 and 2 target

	FY16A Baseline	FY21A	FY30F
Net scope 1 and 2 GHG emissions (Mt CO_2e)	**83.0**	**68.0**	**48.8**
Change from FY16 (%)	-	-18%	-41%
Shell targeted reduction (%)	-	-	*-50%*
Target forecast to be achieved?	**-**	**-**	**9% gap - likely addressed by renewable power and efficiency**

Source: Company data, Global Climate Insights estimates

Chart: Shell scope 1 and 2 emissions forecast vs targets (Mt CO_2e)



Net carbon intensity target

We forecast Shell will be able to reach its net carbon intensity reduction targets between FY22 and FY30. Half of Shell's 20% carbon intensity reduction is expected to come from divestments and post-emissions compensation:

- 7% from CCUS and offsets
- 3% from divestments.

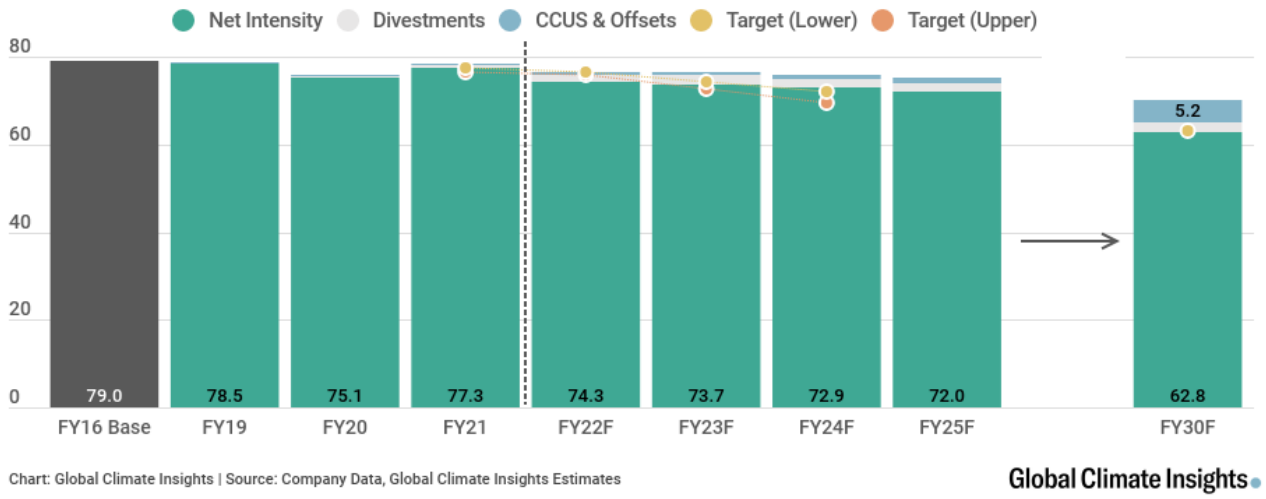
We forecast that Shell's absolute emissions will not decline despite reductions in carbon intensity.

Table: Shell's net carbon intensity target: short term

	FY16A Base	FY21A	FY22F	FY23F	FY24F	FY30F
Net carbon intensity forecast (g CO_2e/MJ)	**79.0**	**77.3**	**74.3**	**73.7**	**72.9**	**62.8**
Forecast change from FY16 (%)	-	-2%	-6%	-7%	-8%	-20%
Targeted reduction (%)	-	*-2% to -3%*	*-3% to -4%*	*-6% to -8%*	*-9% to -12%*	*-20%*
Target forecast to be achieved?	-	**Target met**	**Target met**	**Target met**	**1% gap**	**Target met**

Source: Company data, Global Climate Insights estimates. Note: actual net carbon intensity may differ to Shell's disclosure due to rounding

Chart: Shell net carbon intensity forecast vs targets (Mt CO_2e)



3. Shell FY50 emissions scenarios

We forecast Shell's absolute emissions to be between 1,707 Mt CO_2e and 1,030 Mt CO_2e under Shell Sky and IEA NZE respectively (net emissions 1,562 Mt CO_2e and 885 Mt CO_2e, with 145 MtCO_2e from CCUS and offsets).[2] This is slightly lower than our prior FY50 forecast using Sky which resulted in 1,765 Mt CO_2e in absolute emissions (1,620 Mt CO_2e net). Research has shown that Shell's Sky scenario does not fit the definition of Paris alignment given it overshoots 1.5°C warming by a significant margin (0.3°C) and has a higher chance of exceeding 2°C.[3]

There is a large gap between FY50 absolute emissions and net zero, potentially requiring more than 1 GtCO_2e in post-emissions compensation. Despite a difference of 677 Mt CO_2e in absolute emissions, net carbon intensity outcomes will be similar across both Sky and the IEA NZE scenarios, as shown in the table below.

Chart: Shell forecasted emissions FY19A-50F: IEA NZE vs Shell Sky (Mt CO_2e)

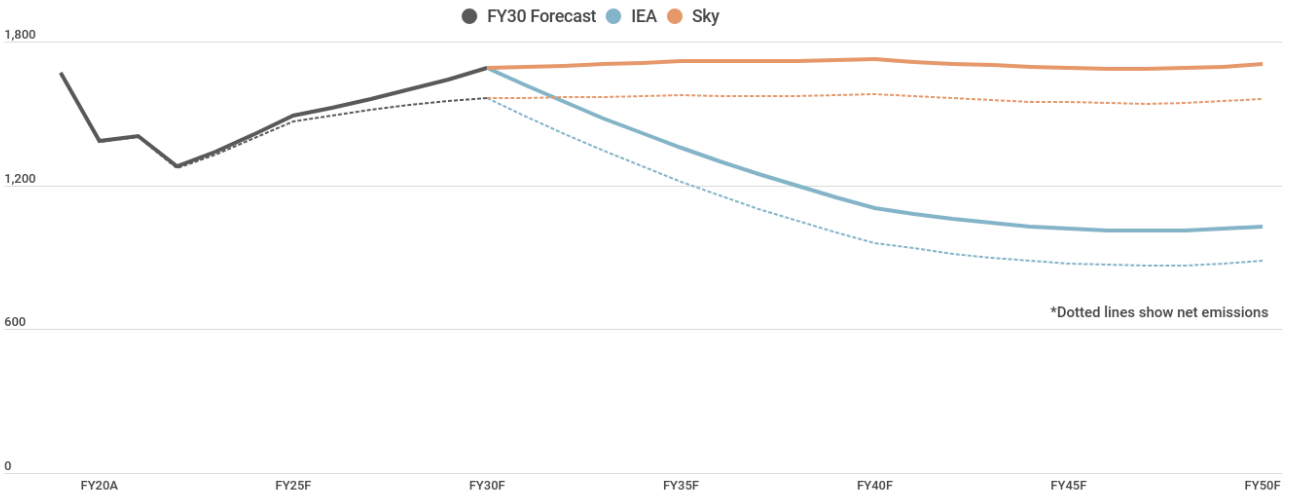


Chart: GCI | Source: Company Data, Global Climate Insights Estimates

Global Climate Insights

Table: Shell's net carbon intensity target: medium to long term

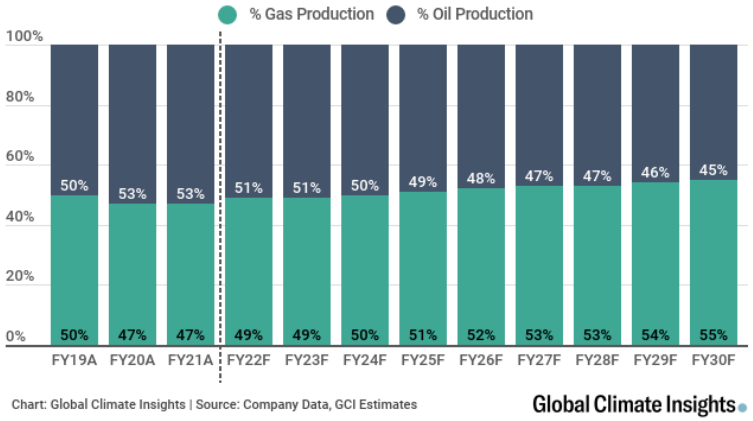
	FY16A	FY35F		FY50F	
	Baseline	**Sky**	**IEA**	**Sky**	**IEA**
Net carbon intensity forecast (g CO_2e/MJ)	**79.0**	**57.5**	**55.3**	**44.7**	**39.7**
Forecast change from FY16 (%)	-	-27%	-30%	-43%	-50%
Targeted reduction (%)	-	*-45%*	*-45%*	*-100%*	*-100%*
Shell target achieved?	-	**18% gap**	**15% gap**	**57% gap**	**50% gap**

Source: Company data, Global Climate Insights estimates

[2] There is uncertainty in how longer-term fuel use will evolve to align with a 1.5°C world. In this note we move to a new methodology for forecasting company emissions between FY30 and FY50. We contrast two scenarios on fuel use, IEA Net Zero Emissions (IEA NZE) and Shell's Sky, to provide us with a range of Shell's potential long-term emissions.
[3] Brecha, R.J. et al (2022), https://www.nature.com/articles/s41467-022-31734-1

4. Shell guidance: oil and gas production

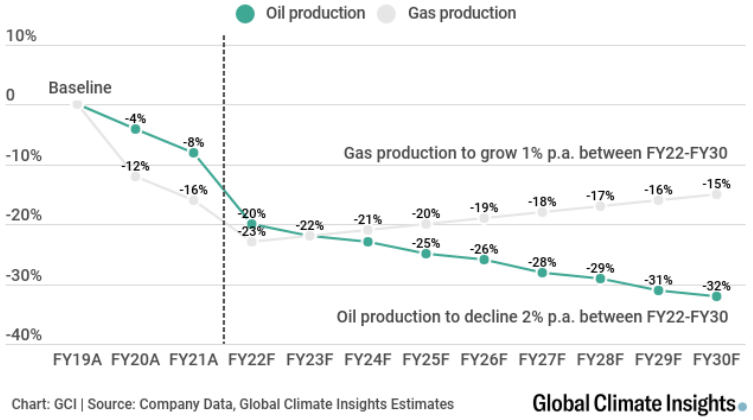
Chart: Shell production of gas/oil (%)



~47% of Shell's hydrocarbon production is from gas in FY21A

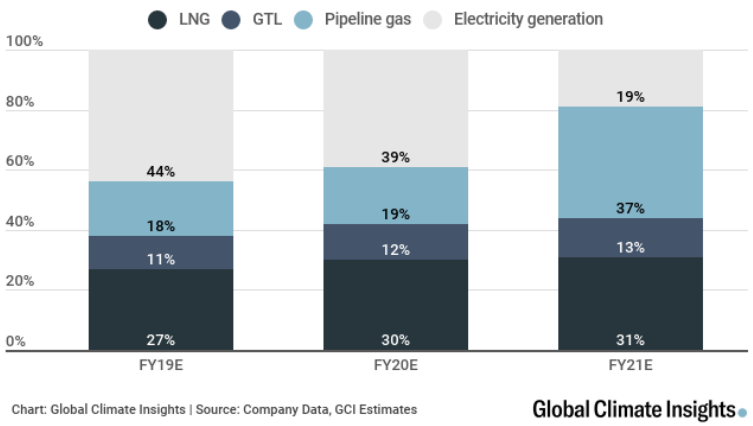
Shell has a target to increase gas to 55% of hydrocarbons by FY30

Chart: Oil and gas production growth on FY19 baseline (%)



Between FY22-FY30 we assume a 2% oil decline at the upper end of the Shell's 1-2% range, which results in a 1% p.a increase in gas production

Chart: Estimate of gas production split across Shell's emissions profile (%)



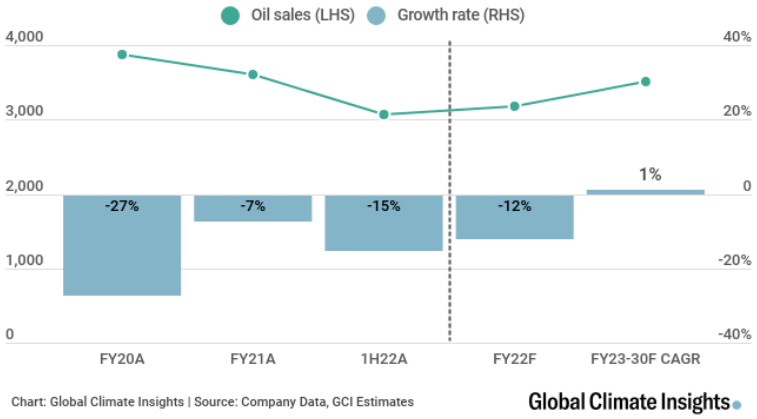
In FY21, it appears that Shell's gas production has shifted away from its own power generation towards pipeline gas (incl. utilities)

Shell's scope 1 emissions may be benefiting from a move away from gas to the grid for electricity

5. GCI forecast: fuel outlook

Oil

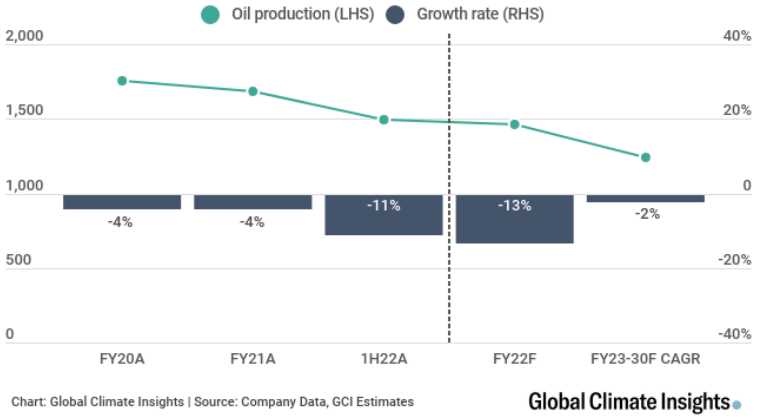
Chart: Total oil sales (kboe/d) and growth p.a (%)



Oil sales of refined products have declined significantly between FY20-1H22, driven by lower 3rd party sales

We forecast a 1% CAGR between FY23-30

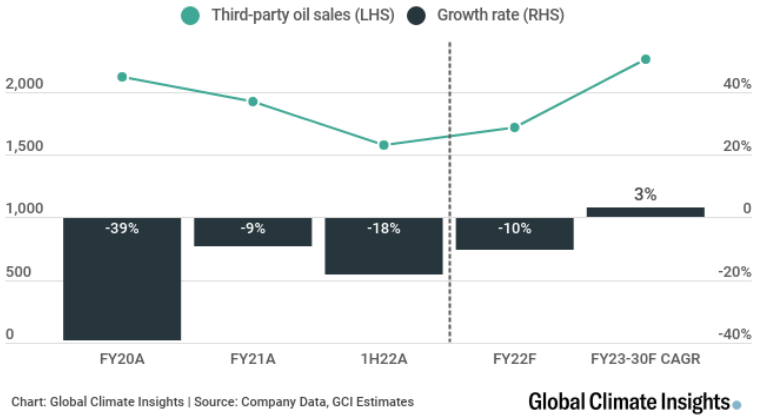
Chart: Total oil sales - Shell's production (kboe/d) and growth p.a (%)



Total oil sales are influenced by Shell's own oil production, which has declined over FY20, FY21, 1H22. This includes the the Permian basin divestment in 4Q21

Our forecast of a 2% p.a decline between FY23-30 aligns with the upper end of Shell's target

Chart: Total oil sales - third-party (kboe/d) and growth p.a (%)

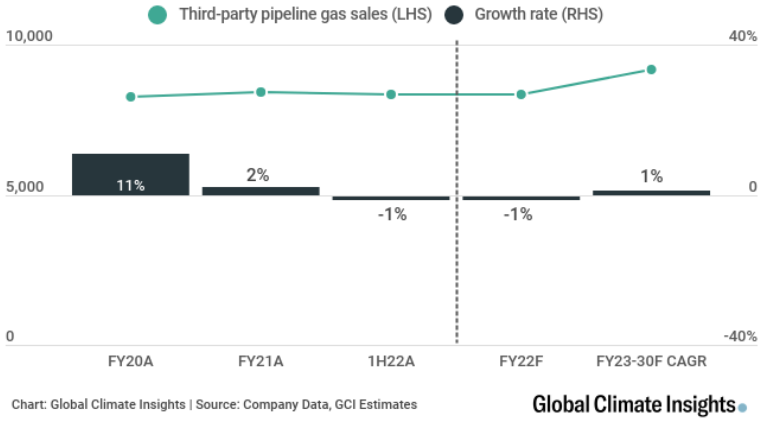


The residual oil sales are from third-party oil. We estimate third-party oil declined 39% in FY20, primarily driven by COVID-19

We forecast a delayed COVID-19 recovery will return some demand between FY23-FY25, driving a 3% CAGR to FY30

Gas

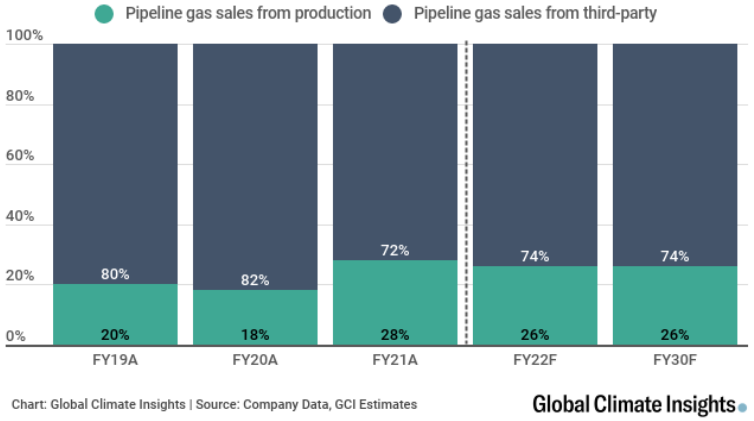
Chart: Sales of pipeline gas - third-party only (bcf/d) and growth p.a (%)



Our FY22 forecasts align with Shell's 1H22 third-party sales volumes, which declined 1% in 1H22

We assume a CAGR of 1% from FY23-FY30 in line with gas production

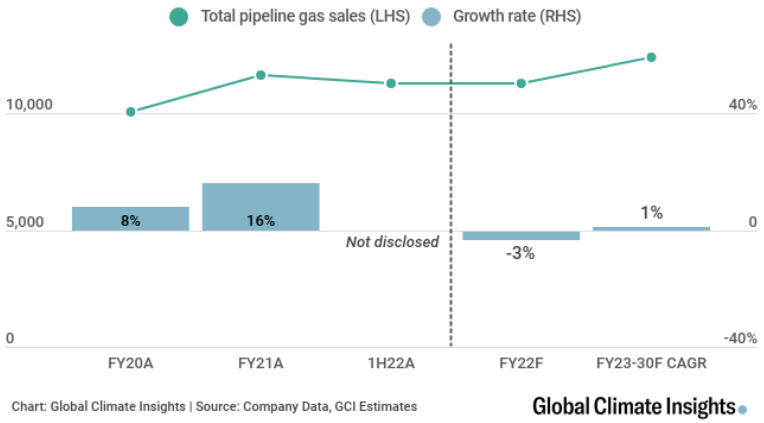
Chart: Sales of pipeline gas (% third-party vs Shell)



~70% of sales of pipeline gas is from third-party gas

We forecast this proportion will stay relatively constant through to FY30

Chart: Total sales of pipeline gas (Shell and third-party, bcf/d) and growth p.a (%)

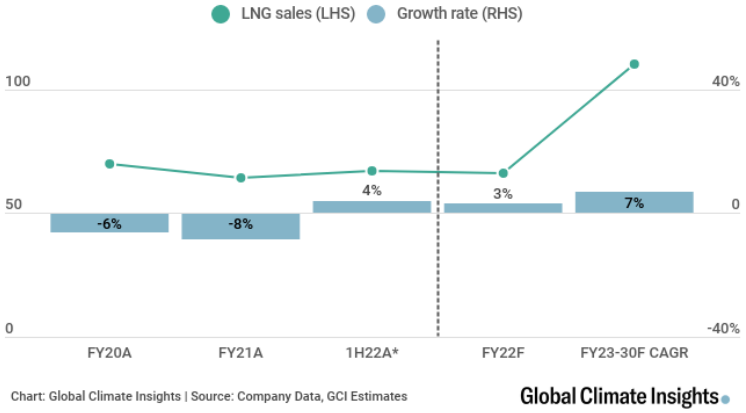


Shell does not disclose quarterly total pipeline gas sales

We assume a CAGR of 1% from FY23-FY30 in line with gas production

LNG[4]

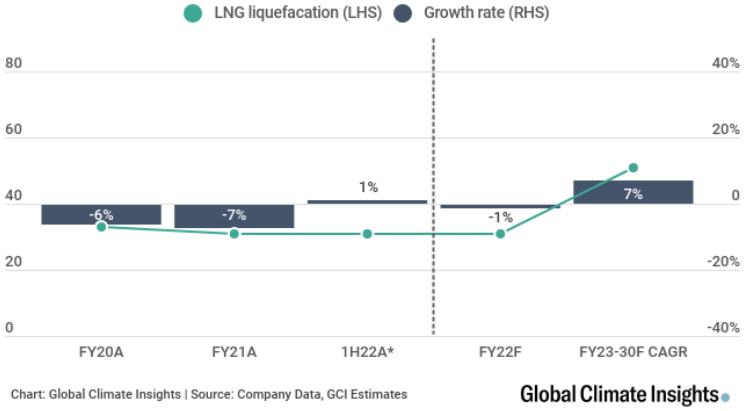
Chart: Total LNG sales (Mt p.a) and growth p.a (%)



Total LNG sales have declined over FY20 and FY21, rebounding 4% in 1H22

We forecast LNG sales to grow at a ~7% CAGR between FY23-30, driven by Shell's LNG targets

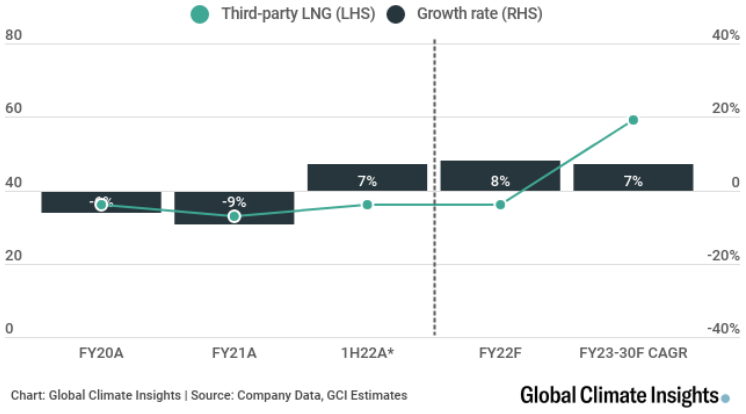
Chart: LNG liquefaction (Mt p.a) and growth p.a (%)



LNG liquefaction volumes declined in FY20 and FY21, increasing 1% in 1H22 due to lower maintenance

2H22 is expected to be lower due to derecognition of Sakhalin in Q2

Chart: Third-party LNG (Mt p.a) and growth p.a (%)



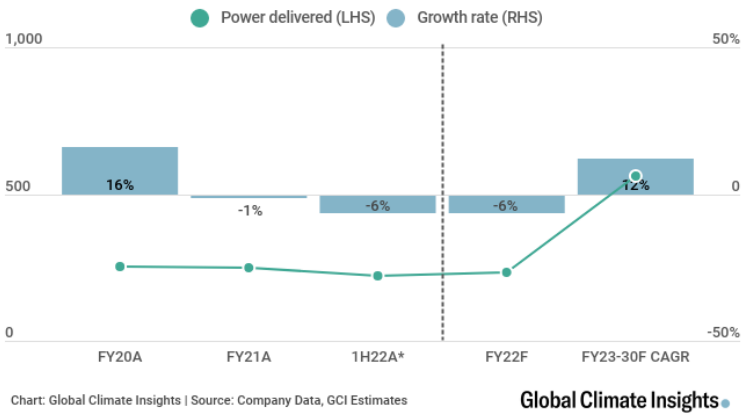
Third-party LNG sales have declined in FY20 and FY21, rebounding 7% in 1H22

Volumes post-FY23 are forecast to grow in line with Shell's liquefaction

[4] 1H22* LNG volumes are annualised

Electricity[5]

Chart: Power (TWh) and growth p.a (%)

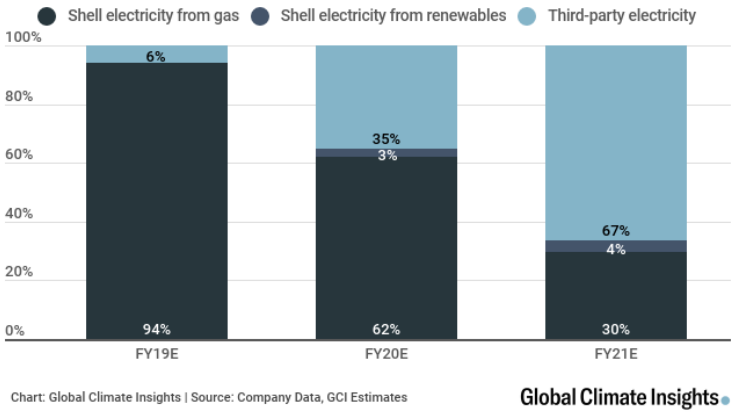


Electricity sales grew 16% in FY20, and have declined in FY21 and 1H22

Sales would need to grow by a 12% CAGR between FY23-FY30 in order to reach Shell's guidance of 560TWh delivered by FY30

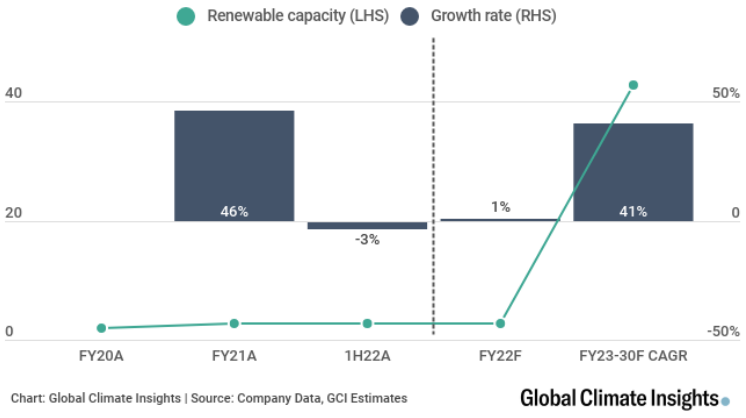
Power includes gas used for electricity generation by Shell

Chart: Shell power delivered estimated split by source (%)



We estimate that Shell's electricity sales are now largely driven by third-party sales, contributing ~67% in FY21

Chart: Renewables (GW) and growth p.a (%)



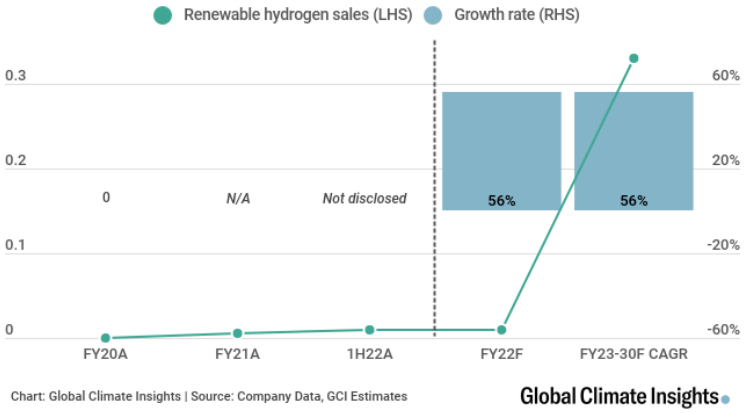
Operating renewable capacity grew in FY21 and 1H22, and is now at 2.7GW (total, Shell's share is 1.1GW)

Renewable capacity would need to grow by a 41% CAGR between FY23-FY30, assuming Shell has 42.7GW of operational capacity by FY30

[5] 1H22* power volumes are annualised

Other fuels

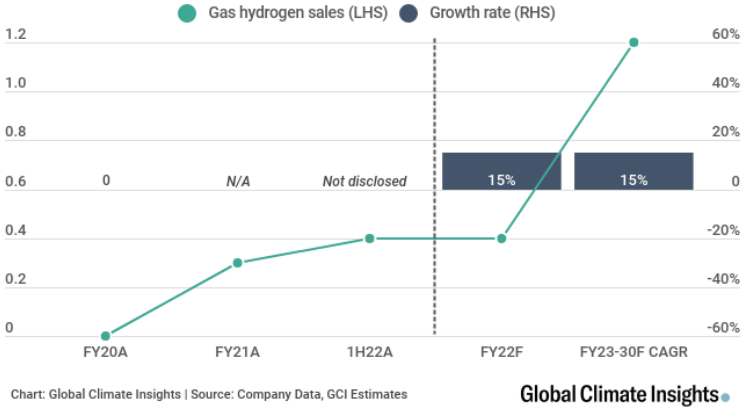
Chart: Hydrogen - renewable (Mt p.a) and growth p.a (%)



Renewable gas would need to grow by 56% CAGR between FY22 and FY30

This reflects Shell's updated guidance to deliver 10% of global clean hydrogen sales by FY35 (total estimated market size of renewable hydrogen is 31 Mt)

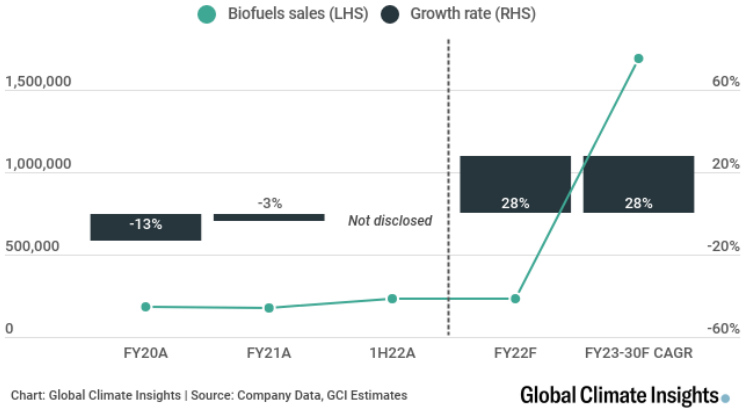
Chart: Hydrogen - gas (Mt p.a) and growth p.a (%)[6]



Gas hydrogen sales would need to grow by 15% CAGR between FY22-FY30

This reflects Shell's updated guidance to deliver 10% of global clean hydrogen sales by FY35 (total estimated market size of gas - hydrogen is 24 Mt)

Chart: Biofuels (TJ) and growth p.a (%)



Shell does not disclose quarterly biofuel sales

Biofuels sales have declined over FY20, FY21

Sales would need to grow by a 28% CAGR between FY23-FY30 to deliver on target for 8x more biofuels between FY19 and FY30

[6] Shell would need to use CCUS for its "clean" gas based hydrogen. Our forecasts for CCUS are based on Shell's guidance, rather than its growth aspirations in hydrogen.

6. Appendix

Shell emission reduction targets

Table: Shell net zero targets

Targets	Target type	Base	Short-term	FY2030/35	FY2050
Scope 1 and 2 operational	Net emissions reduction on FY2016	83 Mt CO_2e	-	FY30 50%	Net zero
Scope 1-3 for sales of energy products	Net carbon intensity reduction on FY2016	79 g CO_2e/MJ	3%-4% FY22 6%-8% FY23 9%-12% FY24	FY30 20% FY35 45%	Net zero

Source: Company data, Global Climate Insights estimates

GCI forecast for Shell's emissions

Note: Actual GHG emissions align to Shell's Net Carbon Intensity calculation.

Table: Shell absolute and net GHG emissions (Mt CO_2e and growth % p.a)

	FY19A	FY20A	FY21A	FY22F	FY23F	FY30F	FY35 - Sky	FY50 - Sky	FY35 - IEA NZE	FY50 - IEA NZE
Absolute GHG emissions forecast	**1,648**	**1,388**	**1,381**	**1,279**	**1,342**	**1,691**	**1,720**	**1,707**	**1,358**	**1,030**
Change on FY19 (%)	*n/a*	*-16%*	*-16%*	*-22%*	*-19%*	*3%*	*4%*	*4%*	*-18%*	*-38%*
Net GHG emissions forecast	**1,646**	**1,384**	**1,375**	**1,270**	**1,330**	**1,563**	**1,575**	**1,562**	**1,213**	**885**
Change on FY19 (%)	*n/a*	*-16%*	*-16%*	*-23%*	*-19%*	*-5%*	*-4%*	*-5%*	*-26%*	*-46%*

Source: Company data, Global Climate Insights estimates. Actual GHG emissions use Shell's NCI.

Shell carbon forecast assumptions

Table: Fuel assumptions (company guidance and GCI assumptions)

		Growth FY22-FY29	CAGR FY30-FY50	
Fuel	**Shell guidance & GCI assumptions**	**Sky**	**IEA**
Oil sales from Shell production	Company guidance for oil production: • Q3-22 volumes: Upstream 1,279 kboe/d, Integrated Gas 140 kboe/d • Target: -1 to -2% p.a between FY21 to FY30 GCI assumptions: • Oil product sales forecasts are based on Shell's oil production • FY22: in line with company Q3-22 guidance • FY22 to FY30: -2% p.a at the upper end of Shell's guidance	-1.0%	-5.7%
Oil sales from third-party	Company guidance oil sales: • Q3-22 volumes: Marketing sales 2,600 kboe/d. Trading not disclosed. • No Target GCI assumptions: • FY22: in line with company Q3-22 guidance for marketing sales • FY23-FY25: 7% p.a from FY23 to FY25, reflecting a delayed COVID-19 rebound • FY26-FY30: 1% p.a, arriving at flat total oil sales		
Pipeline gas sales from Shell's own production	Company guidance for gas production: • Q3-22 volumes: Upstream 571 kboe/d, Integrated Gas 776 kboe/d • Target: Share of gas to increase to 55% of hydrocarbon production by FY30 GCI assumptions: • FY22: in line with company Q3-22 guidance for production • Pipeline sales growth mirrors gas production growth	-1.6%	-3.8%
Pipeline gas sales from third-party	Company guidance for pipeline gas sales from third-party: • No volume guidance • No target GCI assumptions: • Pipeline sales from third-party growth mirrors gas production growth		
LNG sales from Shell liquefaction	Company guidance: • Q3-22 volumes: liquefaction 7.2 Mt • Target: 7 Mt p.a of new LNG capacity by FY25 (FY19 base year) GCI assumptions: • FY22: in line with company Q3-22 guidance for liquefaction • FY23-25: meets LNG target • FY26-30: 3.5% CAGR		
LNG sales from third-party	Company guidance for LNG sales from third-party: • No volume guidance and no target GCI assumptions: • LNG sales from third-party mirrors LNG sales growth from Shell liquefaction		

Biofuels sales	Company guidance: • No volume guidance • Target: Produce 8x more low-carbon fuels by FY30 GCI assumptions: • Growth in line to meet company target	+6.9%	+1.8%

Hydrogen sales	Company guidance:
	• No volume guidance
	• Target: Double-digit (10%) share of global clean hydrogen by FY35
	
	GCI assumptions:
	• Growth in line to meet company target
	• FY35 clean hydrogen market share assumed to be 54.8 Mtpa, the midpoint of range provided in Shell transition strategy report
	• Based on IEA figures, clean hydrogen split is assumed to be:
	  ○ 30.6 Mtpa for renewable hydrogen
	  ○ 24.2 Mtpa for gas hydrogen with CCUS
	
	Note: GCI's Shell report (Oct-21) assumed Shell reached a 10% market share in FY30. Shell has since clarified its guidance is for FY35.
		No growth provided in Sky for "clean" hydrogen only
		
		IEA NZE shows 6.4% CAGR
		
		Under both scenarios for FY50, we have used a +15.4% CAGR, taken from Shell's clean hydrogen market size in its transition report	

Power sales	Company guidance: • No volume guidance • Target: 560 TWh of electricity sold by FY30 • Target: Delivering >50 million households equivalent renewable power by FY30 GCI assumptions: • Growth in line to meet company target	+3.4%	+2.2%

Source: Company data, Global Climate Insights estimates, IEA (2021) Net zero by 2050: A roadmap for the global energy sector.

Shell climate transition data

Table: Shell actual GHG emissions

Key climate transition data	FY19A	FY20A	FY21A
Disclosed emissions (Mt CO_2e)			
Scope 1 and 2 (operational)	80	71	68
Scope 3 (own production)	564	452	380
Scope 3 (third-party sales)	886	749	777
Scope 3 (other)	102	103	142
Total disclosed emissions[7]	**1,632**	**1,375**	**1,367**
% change (year on year)	-5.1%	-15.7%	-0.6%
% change - scope 1 and 2	-2.4%	-11.3%	-4.2%
% change - scope 3	-5.3%	-14%	8%
Total emissions (net carbon intensity)	**1,646**	**1,384**	**1,375**
Carbon intensity (gCO_2/MJ) energy delivered, Net Carbon Intensity (NCI)	78	75	77[8]
% change (year on year)	-1.3%	-3.8%	+2.7%
Offsets disclosed	2.2Mt in NCI (0.5Mt other)	3.9Mt in NCI (0.4Mt other)	5.1Mt in NCI (1.3Mt other)

Source: Company data, Global Climate Insights estimates

[7] Total emissions differ slightly to the emissions included in Shell's Net Carbon Intensity
[8] FY21 increase driven by a change in methodology

Table: Shell low carbon segment and capital expenditure

Capital expenditure (organic and inorganic)		
Low carbon business definition	**Low-Carbon Capex FY21**	**Low Carbon Capex guidance**
Renewables and Energy Solutions: • Renewables • Integrated power • Gas Marketing and Trading • Hydrogen • CCUS and offsets **Marketing:** • Sectors & Decarbonisation - low carbon fuels (biofuels, SAF, biodiesel) • Mobility - includes EV charging, fuel sales • Lubricants	• Renewables and Energy Solutions US$2.4bn, 12% of group • Sectors & Decarbonisation (within Marketing segment) US$360m, ~0.2% of group	FY22: Capex from Renewables and Energy Solutions ~$3bn and Marketing $5-6bn capex (~34% of group). FY22 guidance total capex $23-27bn. Over FY23-30 capital expenditure from Renewables and Energy Solutions, and Marketing expected to be 45-50% of group. FY25, 40-45%[9] of total spend (capex and opex) from Renewables and Energy Solutions, and Marketing. Subject to Board approval, investing £20-25 bn ($26-33 bn) in the next ten years (low- carbon projects including offshore wind, hydrogen, EV charging).

Source: Company data, Global Climate Insights estimates

Table: Shell low carbon capital expenditure (US$m)

Capital expenditure for Low carbon (organic and inorganic)				
	FY19A	FY20A	FY21A	1H22A
Total Capex	**23,919**	**17,827**	**19,698**	**12,088**
Renewables and Energy Solutions capex ($US m)	Not disclosed	900	2,400	1,307
Sectors & Decarbonisation capex, (Marketing, $USm)	Not disclosed	139	360	306
Low carbon capex % of group capex	**Not disclosed**	**5.0%**	**12.2%**	**13.34%**

Source: Company data, Global Climate Insights estimates

[9] Shell Energy transition progress report (2022)

Table: Shell fuel performance and guidance

Company guidance				
Fuel	**FY20A**	**FY21A**	**1H22A**	**FY30 target**
Renewables operating capacity (GW)	0.96	1.22	1.05	>50m household equivalent
Power delivered (TWh)	252	248.2	222 annualised	560
Bioenergy production (kb/d)	1.1b litres (19kb/d)	1.1b litres (19 kb/d)	Not disclosed	~8.8 litres (150 kb/d, 8x more low-carbon fuels)
"Clean" hydrogen (renewables & gas with CCUS) production	Not disclosed	2 MW electrolyser capacity	Not disclosed	10% market share by FY35
Oil production (kboe/d)	1,752	1,686	1,496	1-2% p.a. decline in oil production
Gas production (kboe/d)	1,584	1,499	1,395	55% of hydrocarbon production from gas +7 Mt p.a. LNG capacity by FY25
Refining throughput (kb/d)	2,063	1,639	1,370	Reduced production of traditional fuels to 45Mt p.a (from FY19)
Third-party oil and gas sales (kboe/d)	3,542	3,369	GCI estimate 3,153	No guidance

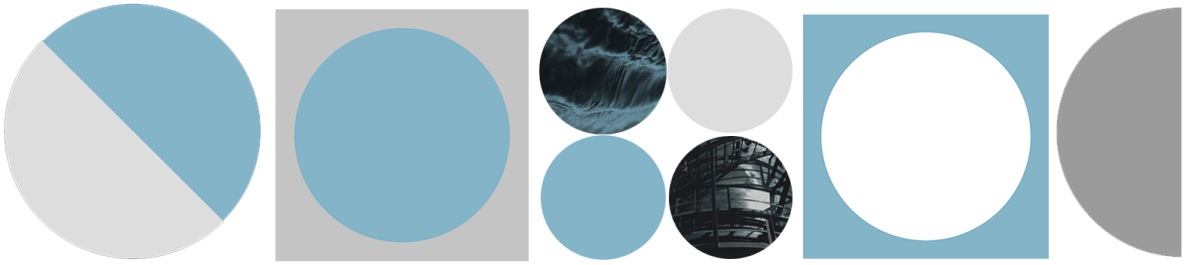
Source: Company data, Global Climate Insights estimates

Definitions

The key terms we use in this report are listed in the table below.

Term	Meaning
Financial	
Free cash flow	Operational cash flow less investing cash flow.
Organic capital expenditure	Investment in new equipment and long-term assets, as disclosed under capital expenditure in a company cash flow statement. Accounting treatment differs by company.
Organic and inorganic capital expenditure	Organic capital expenditure and investments in external entities including minority investments and acquisitions.
Climate	
SOC vote	Say on Climate Vote is an annual, non-binding vote on a climate report issued by the company. Some companies covered in this report have used this style of mechanism but have not committed to an annual vote.
Absolute GHG emissions	Absolute GHG emissions are used interchangeably with Total GHG emissions which are the total amount of emissions being released into the atmosphere before any 'netting off' is applied using post-emissions compensation such as CCUS or carbon offsets. Where possible, we have also accounted for divestments separately to absolute emissions to illustrate the difference between actual real-world emissions impact and corporate carbon accounting.
Net GHG emissions	Net GHG emissions and Net Absolute Emissions are used interchangeably to illustrate a company's emissions footprint after accounting for post-emissions compensations (CCUS and carbon offsets).
Post-emission compensation technology	Carbon offsets and carbon capture and storage (CCUS) are both post-emission compensation measures. We consider both in our assessment of company targets but separately from the measures that reduce emissions from being released in the first instance.
Net Carbon Intensity	A metric used by Shell to track emissions from its energy products, it is the average amount of greenhouse gas emissions produced for each unit of energy that Shell sells. It is net as it accounts for post-emissions compensation including CCUS and carbon offsets.

Metrics and denominations	
$	All financial values unless specified are denominated in US$
b, bn	Billion
boe/d, boed	barrels of oil equivalent per day
gCO_2/MJ	Grams CO2 per million joules
GW	Gigawatt
k	Thousand
kb	Thousand barrels of ethanol equivalent, unless specifically stated
kboe	Thousand barrels of oil equivalent
M, M, mm	Million
Mboe	Million barrels of oil equivalent
Mt	Million tonnes
TWh	Terawatt hours



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