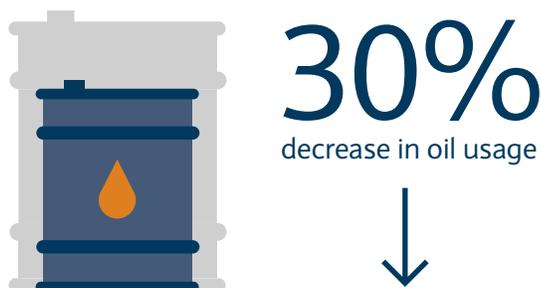


A race against the carbon clock

The burning of fossil fuels is one of the largest contributors to carbon dioxide (CO₂) emissions and, therefore, global warming. Will oil consumption in the next few decades allow the world to deliver on its pledge to cap rising global temperatures?

What will it take to limit global warming?

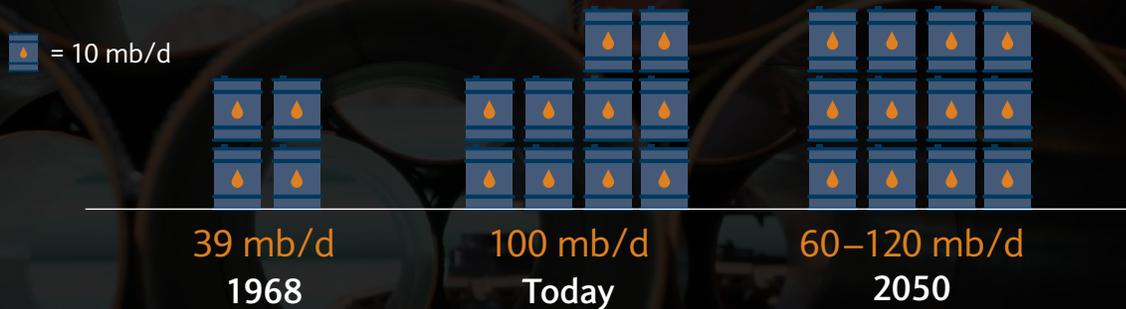
In 2015, world leaders committed to working to restrict the rise in the average global temperature to 2°C by the end of the century. Recently the UN warned that a cap of 1.5°C was required to avert disaster. To stem global warming, Barclays Research analysts predict that oil usage may need to fall by 30% by 2050.



Source: Barclays Research

Oil usage has jumped 30% in the past 20 years

Oil is used not only for transport but also to generate energy and create petrochemicals, a key part of many everyday materials. The world currently consumes just under 100 million barrels of oil per day (mb/d), or roughly 16 billion litres. In 1968, it was about 39 mb/d. By 2050, demand could range from 60 mb/d to 120 mb/d.

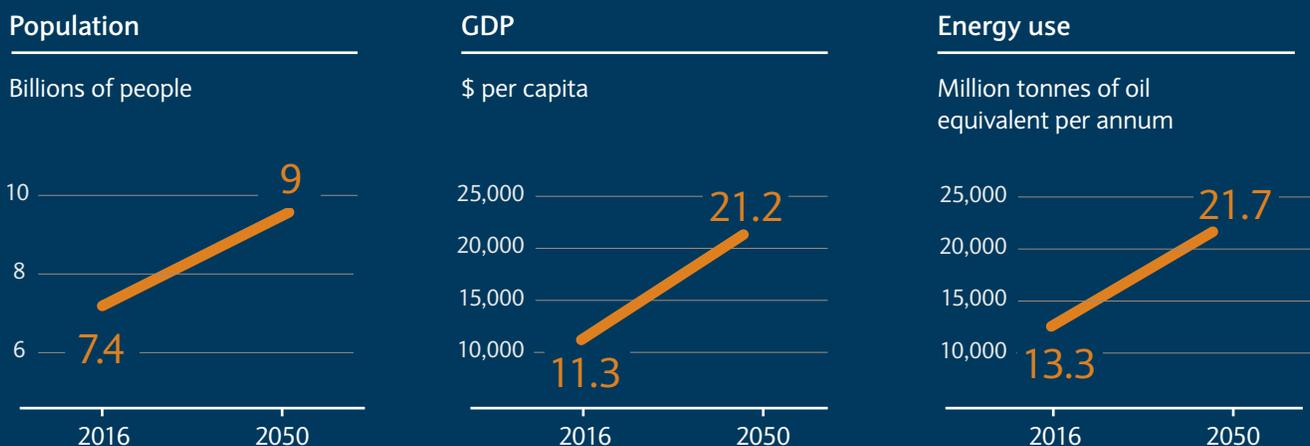


Source: BP Statistical Review and Barclays Research

Population growth and GDP are the main drivers of this increase

Over the next 30 years, the demand for oil is expected to rise as the world's population and global gross domestic product (GDP) continue to grow.

Likely outcomes: growth and increased oil usage



Source: Barclays Research

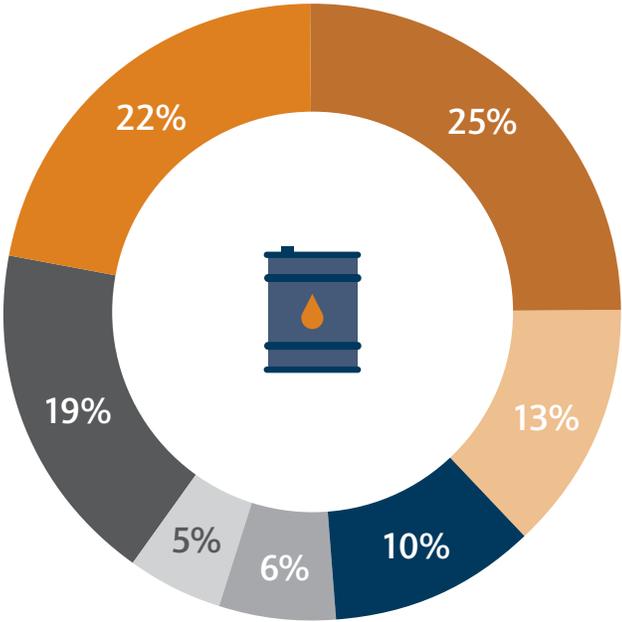
The transportation sector is the largest user of oil, followed by petrochemicals

Led by trucks and cars, the transportation sector is currently the largest user of oil worldwide, with petrochemical usage forecast to rise in the next few decades.

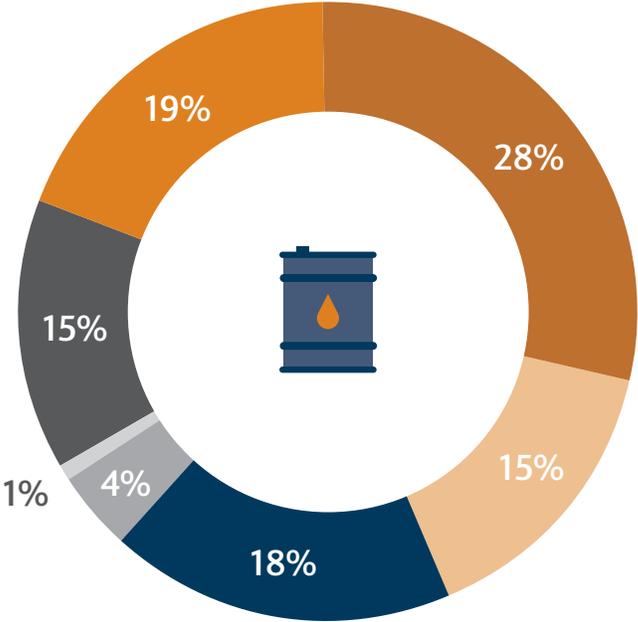
World oil demand by sector



Current (2017)



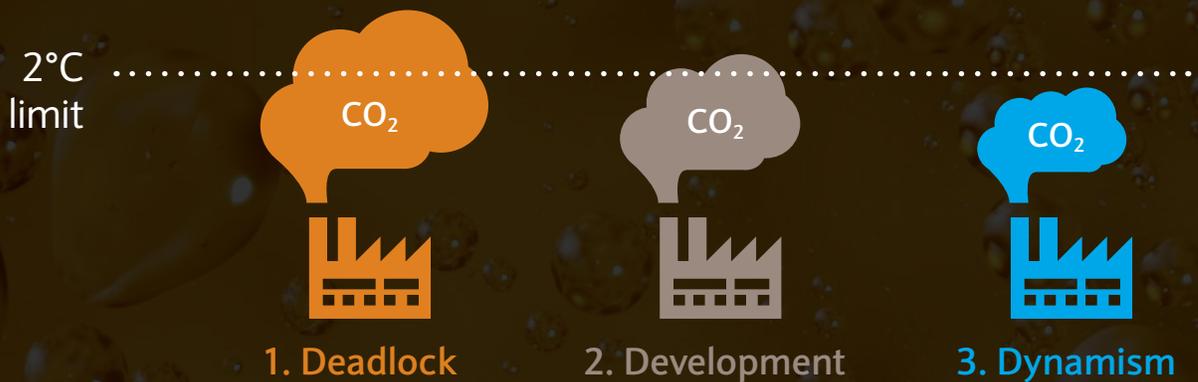
Future (2050 estimated)



Source: Barclays Research and BP Statistical Review

Carbon and the future: three possible paths

Barclays has identified three scenarios that correspond to differing degrees of carbon reduction over the next few decades. Each scenario reflects varying degrees of government action and technological innovation aimed at reducing reliance on fossil fuels.



Outlook for capping emissions

Worst case

Most likely

Most optimistic

Rate of policy change and action towards carbon reduction

Slow

Gradual

Rapid

Priorities reflected

Short-term economic growth

Balancing economic growth with gradual progress toward a lower-carbon economy

Long-term investments in efficiency, technology and low-carbon alternatives

Influencing factors

Near-term, low-cost transportation and industrial solutions

Tighter environmental policies

Aggressive implementation of low-carbon policies and alternatives

Trade wars

Increase in energy efficiency

Rapid electrification

Little technological adoption

Aligns with 2°C limit

No

No

Yes

What the world could look like in 2050

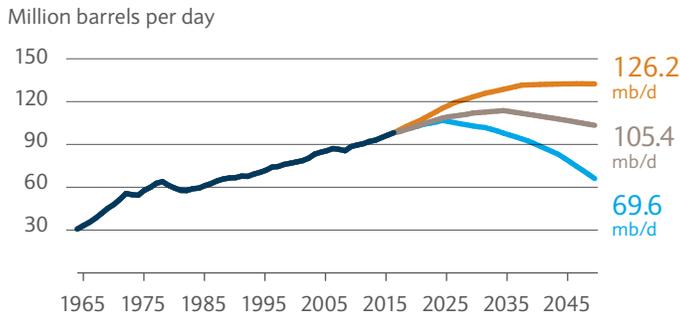
Carbon emissions correlate with oil usage; if oil demand drops, so will CO₂ emissions.

Of the three scenarios, only Dynamism will lead to a dramatic drop in emissions.

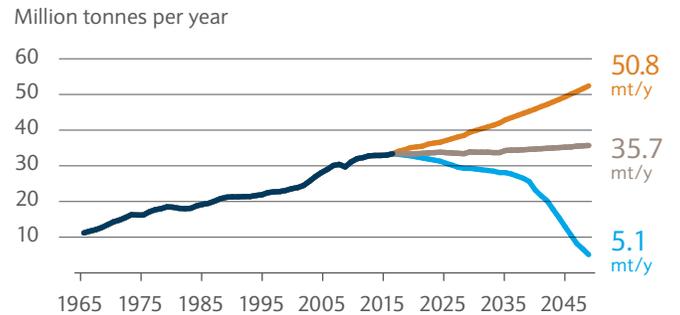
In Development, emissions will plateau. Because the Deadlock scenario projects an increase in oil demand of more than 20%, emissions would increase significantly as well.

● Deadlock ● Development ● Dynamism

Oil consumption:



CO₂ emissions:



Source: Barclays Research and BP Statistical Review

The path forward

To honour the pledge to cap global temperature rises, immediate action needs to be taken on carbon pricing, energy efficiency and electrification as well as stricter policy enforcement and a rapid change in consumer habits.

Our analysis shows that the global energy system is a long way from implementing these changes, and only the level of changes enacted in the Dynamism scenario will allow us to remain within the temperature goal.

2°C
limit



1. Deadlock



2. Development



3. Dynamism

Stay on top of this and other topics at [barclays.com/ib](https://www.barclays.com/ib)

Disclosures

BARCLAYS

This communication has been prepared by Barclays.
“Barclays” means any entity within the Barclays Group of companies, where “Barclays Group” means Barclays Bank PLC, Barclays PLC and any of their subsidiaries, affiliates, ultimate holding company and any subsidiaries or affiliates of such holding company.

CONFLICTS OF INTEREST

BARCLAYS IS A FULL SERVICE INVESTMENT BANK. In the normal course of offering investment banking products and services to clients, Barclays may act in several capacities (including issuer, market maker and/or liquidity provider, underwriter, distributor, index sponsor, swap counterparty and calculation agent) simultaneously with respect to a product, giving rise to potential conflicts of interest which may impact the performance of a product.

NOT RESEARCH

The information provided does not constitute ‘investment research’ or a ‘research report’ and should not be relied on as such. Investment decisions should not be based upon the information provided.

BARCLAYS POSITIONS

Barclays may at any time acquire, hold or dispose of long or short positions (including hedging and trading positions) and trade or otherwise effect transactions for their own account or the account of their customers in the products referred to herein which may impact the performance of a product.

FOR INFORMATION ONLY

THIS INFORMATION HAS BEEN PREPARED BY THE RESEARCH DEPARTMENT WITHIN THE INVESTMENT BANK OF BARCLAYS. The information, analytic tools, and/or models referenced herein (and any reports or results derived from their use) are intended for informational purposes only. Barclays has no obligation to update this information and may cease provision of this information at any time and without notice.

NO OFFER

Barclays is not offering to sell or seeking offers to buy any product or enter into any transaction. Any offer or entry into any transaction requires Barclays’ subsequent formal agreement which will be subject to internal approvals and execution of binding transaction documents.

NO LIABILITY

Neither Barclays nor any of its directors, officers, employees, representatives or agents, accepts any liability whatsoever for any direct, indirect or consequential losses (in contract, tort or otherwise) arising from the use of this communication or its contents or reliance on the information contained herein, except to the extent this would be prohibited by law or regulation.

NO ADVICE

Barclays is not acting as a fiduciary. Barclays does not provide, and has not provided, any investment advice or personal recommendation to you in relation to any transaction and/or any related securities described herein and is not responsible for providing or arranging for the provision of any general financial, strategic or specialist advice, including legal, regulatory, accounting, model auditing or taxation advice or services or any other services in relation to the transaction and/or any related securities described herein. Accordingly Barclays is under no obligation to, and shall not, determine the suitability for you of the transaction described herein. You must determine, on your own behalf or through independent professional advice, the merits, terms, conditions and risks of any transaction described herein.

NOT A BENCHMARK

The information provided does not constitute a financial benchmark and should not be used as a submission or contribution of input data for the purposes of determining a financial benchmark.

INFORMATION PROVIDED MAY NOT BE ACCURATE OR COMPLETE AND MAY BE SOURCED FROM THIRD PARTIES

All information is provided “as is” without warranty of any kind. Because of the possibility of human and mechanical errors as well as other factors, Barclays is not responsible for any errors or omissions in the information contained herein. Barclays is not responsible for information stated to be obtained or derived from third party sources or statistical services. Barclays makes no representation and disclaims all express, implied, and statutory warranties including warranties of accuracy, completeness, reliability, fitness for a particular purpose or merchantability of the information contained herein.

PAST & SIMULATED PAST PERFORMANCE

Any past or simulated past performance including back-testing, modelling or scenario analysis contained herein is no indication as to future performance.

No representation is made as to the accuracy of the assumptions made within, or completeness of, any modelling, scenario analysis or back-testing.

OPINIONS SUBJECT TO CHANGE

All opinions and estimates are given as of the date hereof and are subject to change. The value of any investment may also fluctuate as a result of market changes. Barclays is not obliged to inform the recipients of this communication of any change to such opinions or estimates.

IMPORTANT DISCLOSURES

For important regional disclosures you must read, visit the link relevant to your region. Please contact your Barclays representative if you are unable to access.

EMEA

<https://www.home.barclays/disclosures/important-emea-disclosures.html>.

APAC

<https://www.home.barclays/disclosures/important-apac-disclosures.html>.

U.S.

<https://www.home.barclays/disclosures/important-us-disclosures.html>.

ABOUT BARCLAYS

Barclays Bank PLC is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority and is a member of the London Stock Exchange. Barclays Bank PLC is registered in England No. 1026167 with its registered office at 1 Churchill Place, London E14 5HP.

COPYRIGHT

© Copyright Barclays 2019 (all rights reserved).