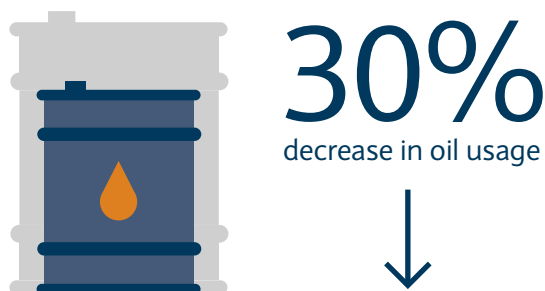


# A race against the carbon clock

The burning of fossil fuels is one of the largest contributors to carbon dioxide (CO<sub>2</sub>) 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?

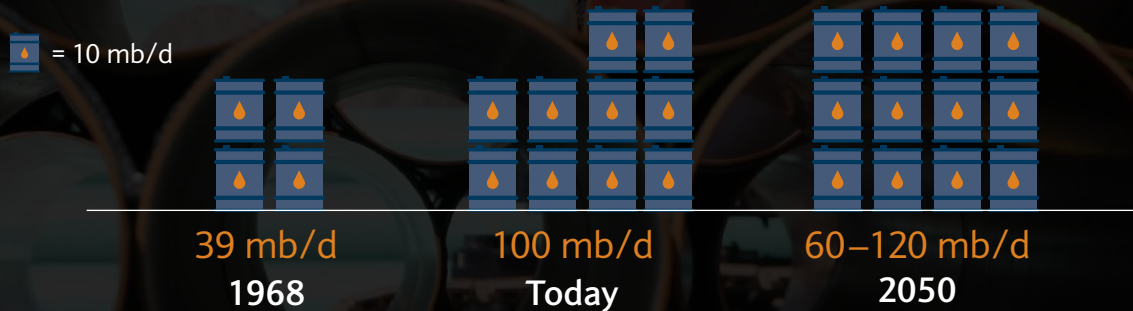
In 2015, world leaders committed to working to restrict the rise in the average global temperature to 2°C by the end of the century. Recently the UN warned that a cap of 1.5°C was required to avert disaster. To stem global warming, Barclays Research analysts predict that oil usage may need to fall by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

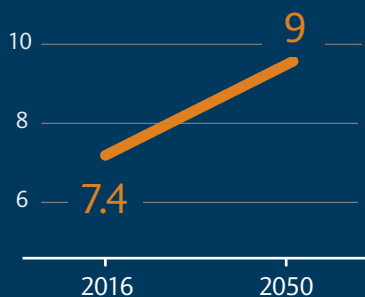
## Population growth and GDP are the main drivers of this increase

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

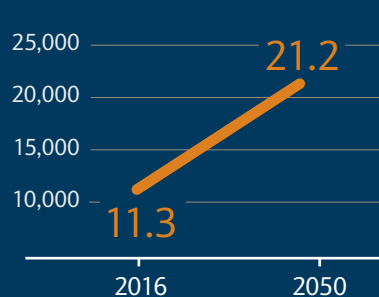
#### Population

Billions of people



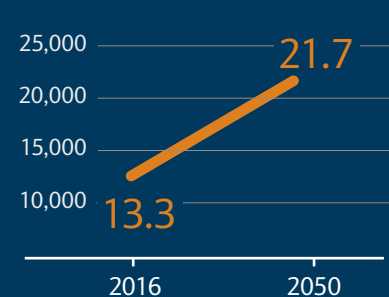
#### GDP

\$ per capita



#### Energy use

Million tonnes of oil equivalent per annum

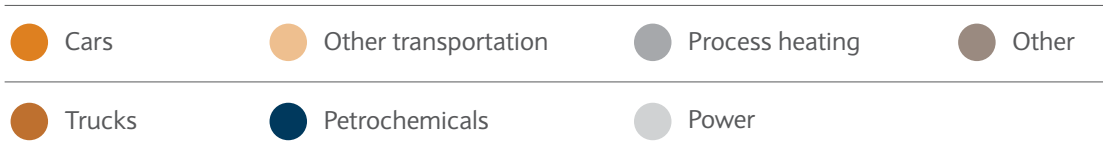


Source: Barclays Research

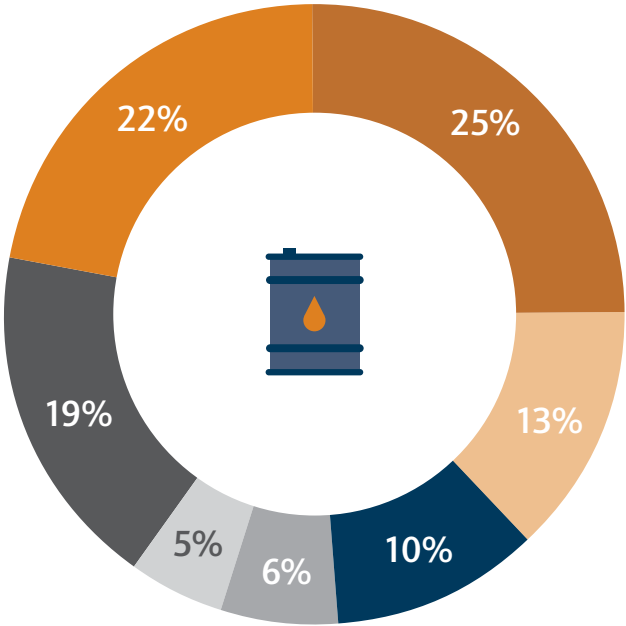
# The transportation sector is the largest user of oil, followed by petrochemicals

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.

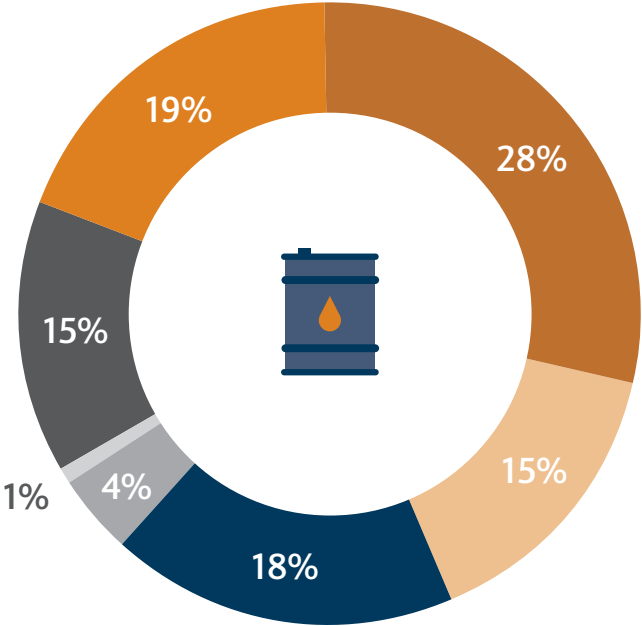
World oil demand by sector



Current (2017)



Future (2050 estimated)

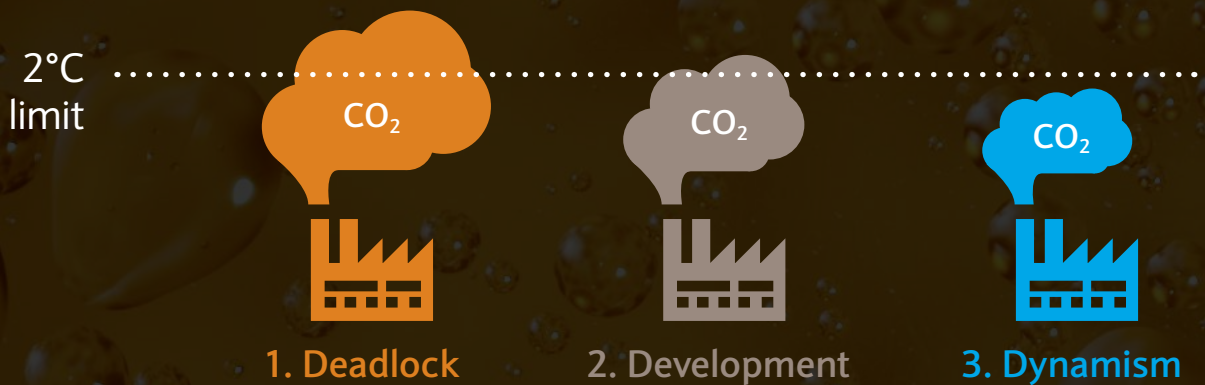


Source: Barclays Research and BP Statistical Review



# 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

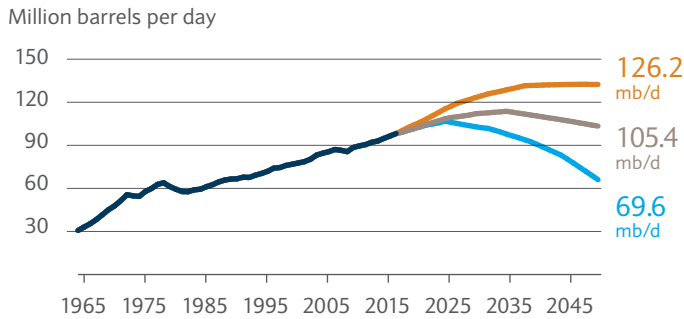
Carbon emissions correlate with oil usage; if oil demand drops, so will CO<sub>2</sub> emissions.

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

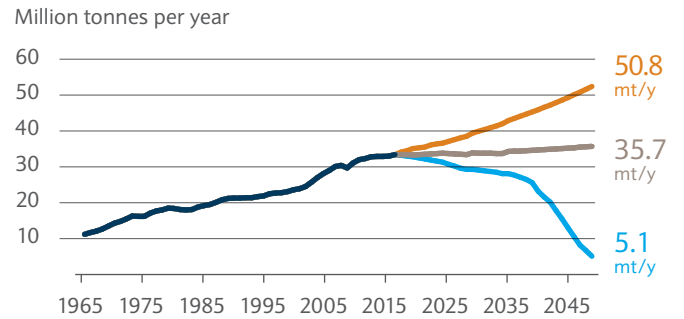
In Development, emissions will plateau. Because the Deadlock scenario projects an increase in oil demand of more than 20%, emissions would increase significantly as well.

● Deadlock ● Development ● Dynamism

## Oil consumption:



## CO<sub>2</sub> 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

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