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WARWICK BUSINESS SCHOOL  
THE UNIVERSITY OF WARWICK

## For the Game Changers

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# The Future Potential of Local Smart Energy Networks

## SIRACH: Smart Energy Networks of the Future



# PROVIDING EVIDENCE FOR scaling up smart local energy systems

## Smart Local Energy Systems

Energy systems around the world are going through a phase of rapid change. However, the concept of energy transition isn't new - society has seen many changes associated with energy over time. In the UK, the Industrial Revolution saw a shift from an energy system primarily reliant on traditional biomass and other renewable sources (e.g. wind, water, muscle power) to an industrial system reliant on steam power fuelled by coal. Before the 1950s most energy systems relied on local rather than the global energy networks that are available today.



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Climate Change

Independent advice to government on building a low-carbon economy and preparing for climate change

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## Net Zero – The UK's contribution to stopping global warming



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2 May 2019

This report responds to a request from the Governments of the UK, Wales and Scotland, asking the Committee to reassess the UK's long-term emissions targets. Our new emissions scenarios draw on ten new research projects, three expert advisory groups, and reviews of the work of the IPCC and others.

The conclusions are supported by detailed analysis published in the [Net Zero Technical Report](#) that has been carried out for each sector of the economy, plus consideration of F-gas emissions and greenhouse gas removals.

# Theresa May confirms UK will adopt tough new climate targets

## FINANCIAL TIMES

Outgoing PM promises to legislate for net zero carbon emissions by 2050



© Alamy

Jim Pickard and Leslie Hook in London JUNE 11, 2019

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**Bloomberg**



Climate Changed

# **U.K. Adopts Law for Net Zero Fossil Fuel Pollution by 2050**

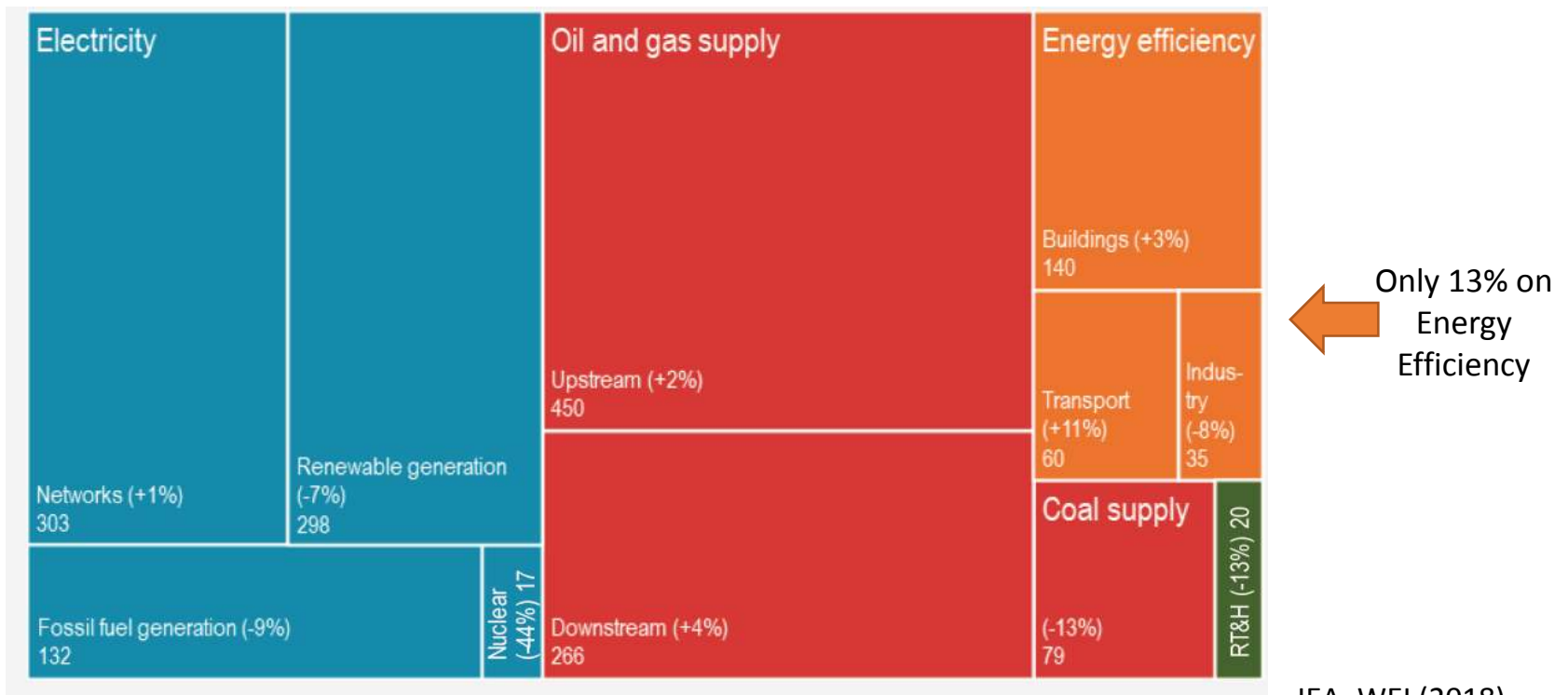
Jessica Shankleman

June 24, 2019, 7:58 PM GMT+1

The lower chamber of Britain's Parliament approved a move to toughen targets on fossil fuel pollution, setting a goal of reaching a level of net zero by 2050.

# Global capital investment in the supply and use of energy has been persistently focused on more supply

Global Capital Investment in the Supply & Use of Energy (\$1.8Tn in 2017)

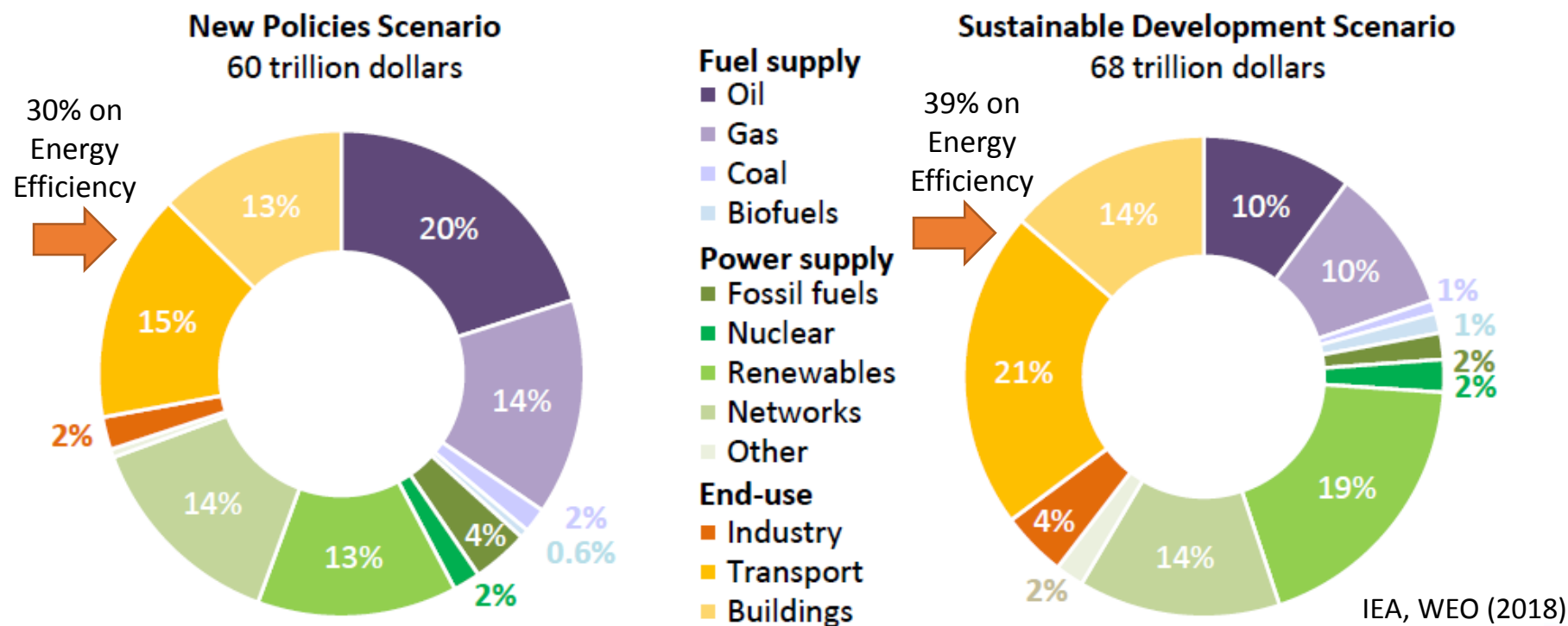


IEA, WEI (2018)



## Looking ahead over 20 years, end use efficiency investment needs to rise to 30% or to nearly 40% for a 1.5°C goal

Cumulative investment needs by sector in the IEA's New Policies and Sustainable Development scenarios, 2018-2040



# “Delivery must progress with far greater urgency”



- Many current plans are insufficiently ambitious; others are proceeding too slowly, even for the current 80% target
- 2040 is too late for the phase-out of petrol and diesel cars and vans, and current plans for delivering this are too vague.
- There is still no serious plan for decarbonising UK heating systems and no large-scale trials have begun for either heat pumps or hydrogen.
- Carbon capture (usage) and storage, which is crucial to the delivery of zero GHG emissions and strategically important to the UK economy, is yet to get started.
- Afforestation targets for 20,000 hectares/year across the UK nations (due to increase to 27,000 by 2025), are not being delivered.



## The Energy Transition: sustainable, secure and affordable but also....

Incremental ..... Exponential  
Supply focus ..... Consumption & storage focus  
Large, centralised ..... Distributed  
Technologies ..... Systems  
Power ..... Heating & Cooling  
Unhealthy ..... Healthy  
Rules ..... Principles  
Not very smart ..... Much smarter  
Markets ..... Governments