



# Energy Perspectives 2017

## Long-term macro and market outlook

Russia, June 2017

Eirik Wærness, Senior vice president and Chief economist

# Energy Perspectives 2017

Macro and market outlook to 2050 – [www.statoil.com/energyperspectives](http://www.statoil.com/energyperspectives)

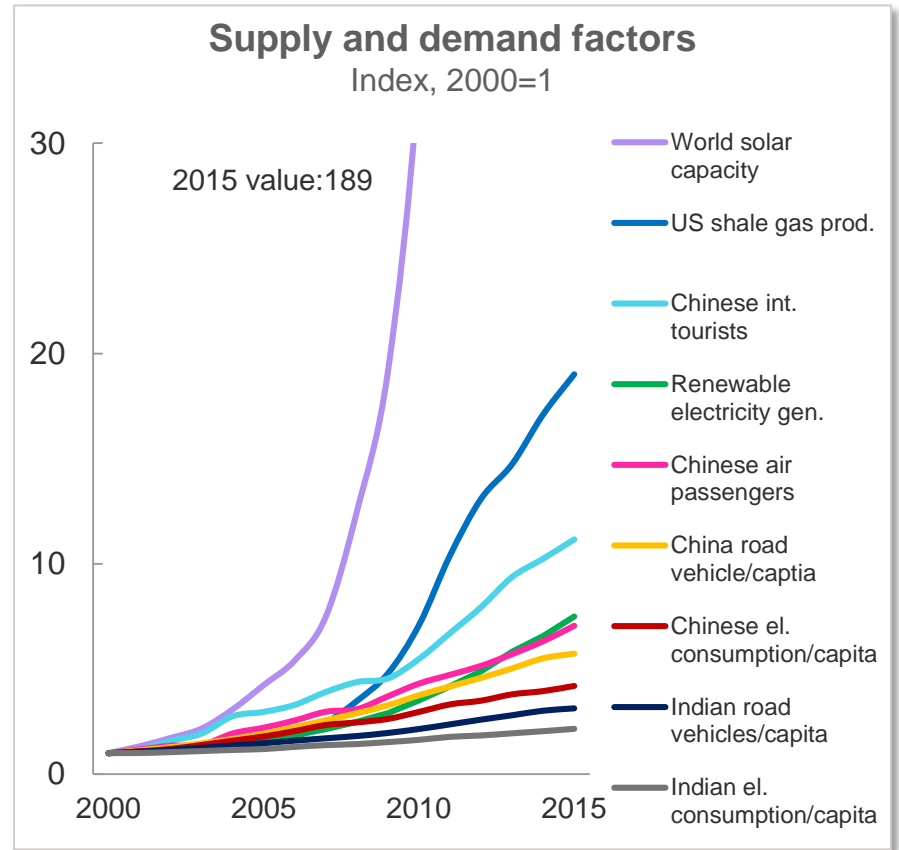


# Significant uncertainty and large changes

... calling for the use of scenarios



Source: The Economist

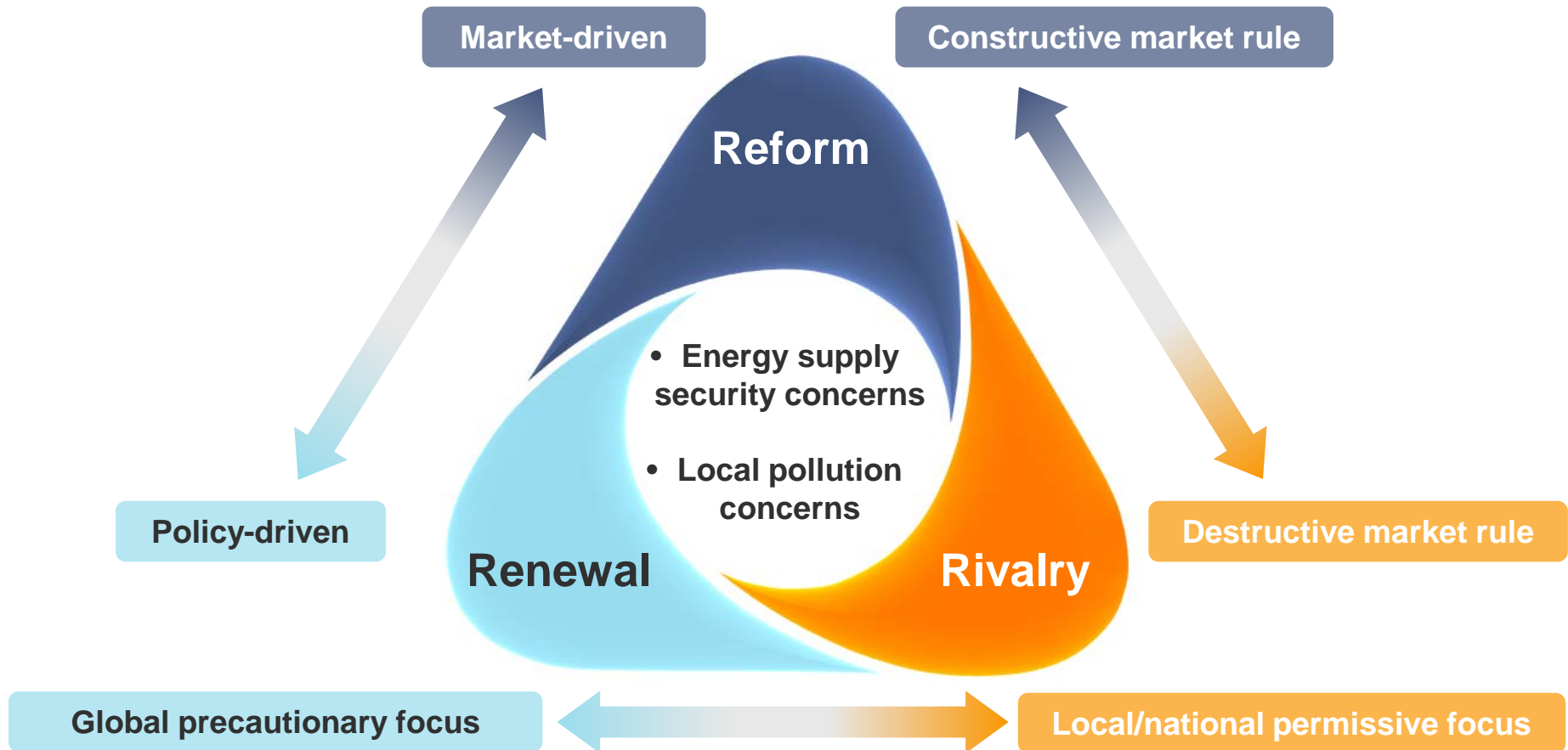


Source: World Bank, IEA, IRENA, EIA



# Three different tales of the future towards 2050

None are BAU – Renewal a tremendous challenge, Rivalry unpleasant

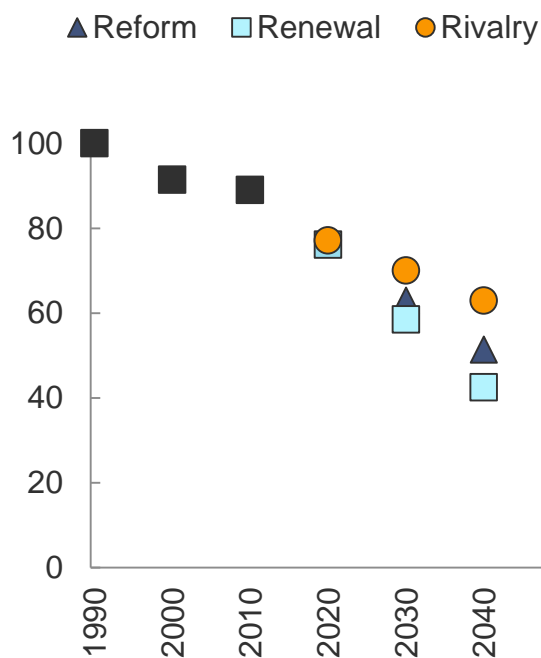


# Key #1: Energy efficiency improvement

Global GDP 2-2.6 times higher in 2050, Energy demand -5% – + 30%

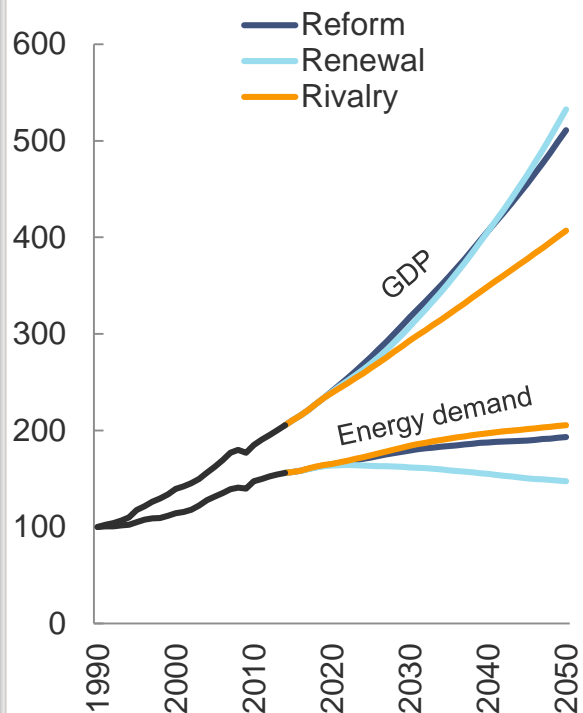
## Energy intensity

Index, 1990=100



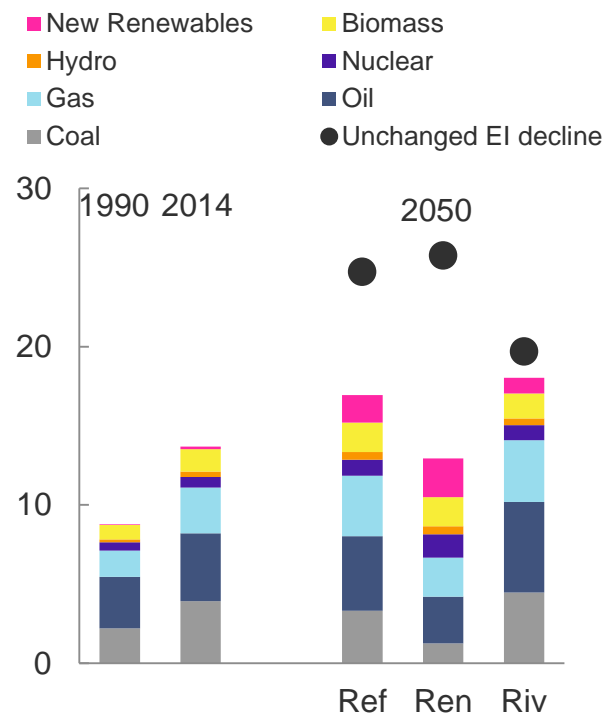
## World GDP and energy demand

Index, 1990=100



## World energy demand per fuel

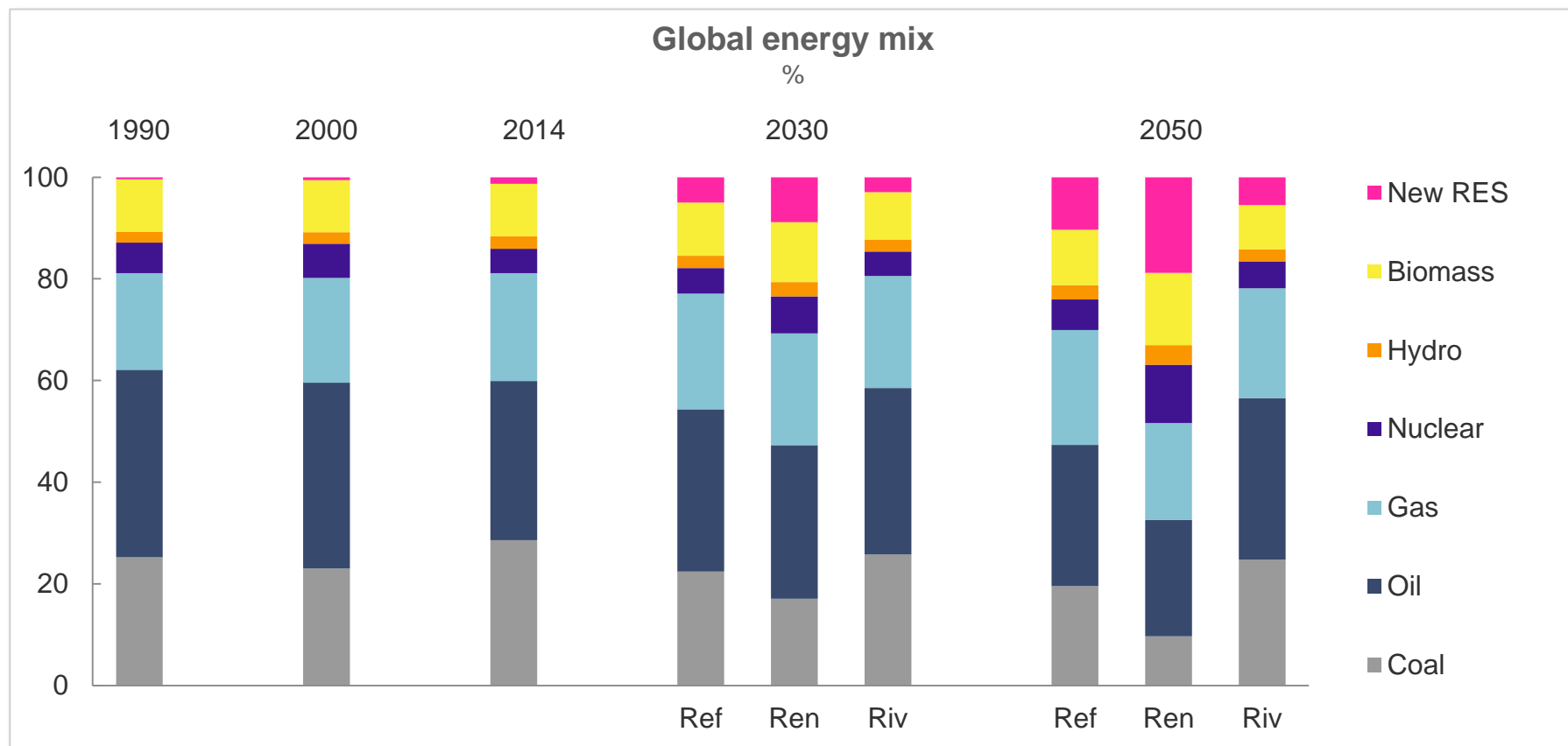
Billion toe



Source: IEA (history), Statoil (projections)

# Key #2: Speeding up the change in global energy mix

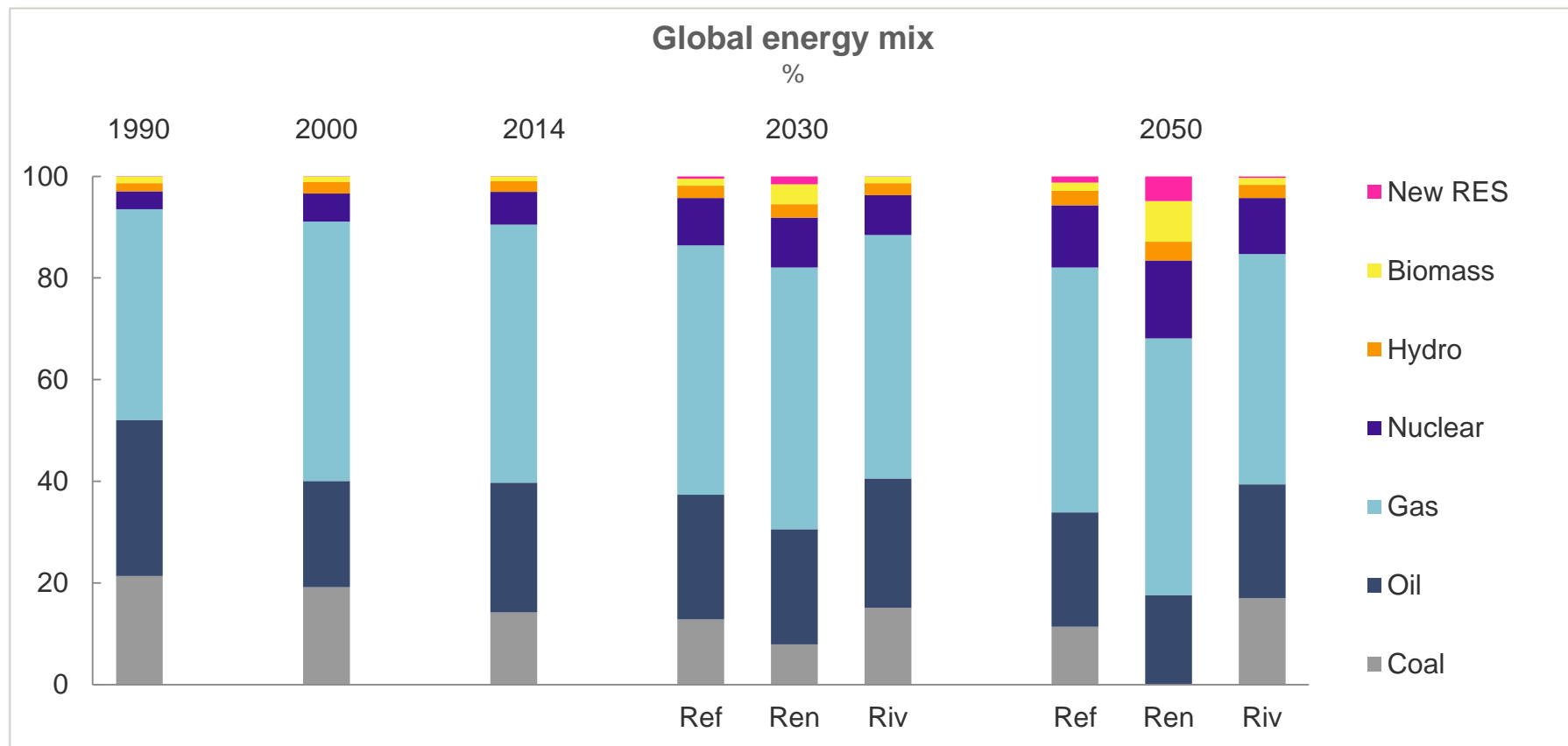
... with Renewal displaying a paradigm shift



Source: IEA (history), Statoil (projections)

# Key #2: Changing the Russian energy mix

... with coal disappearing and new renewables becoming visible in Renewal



Source: IEA (history), Statoil (projections)

# A strong trend affecting economics and energy

All growth in energy demand in emerging economies, in particular in Asia

## The global population centre is in Asia

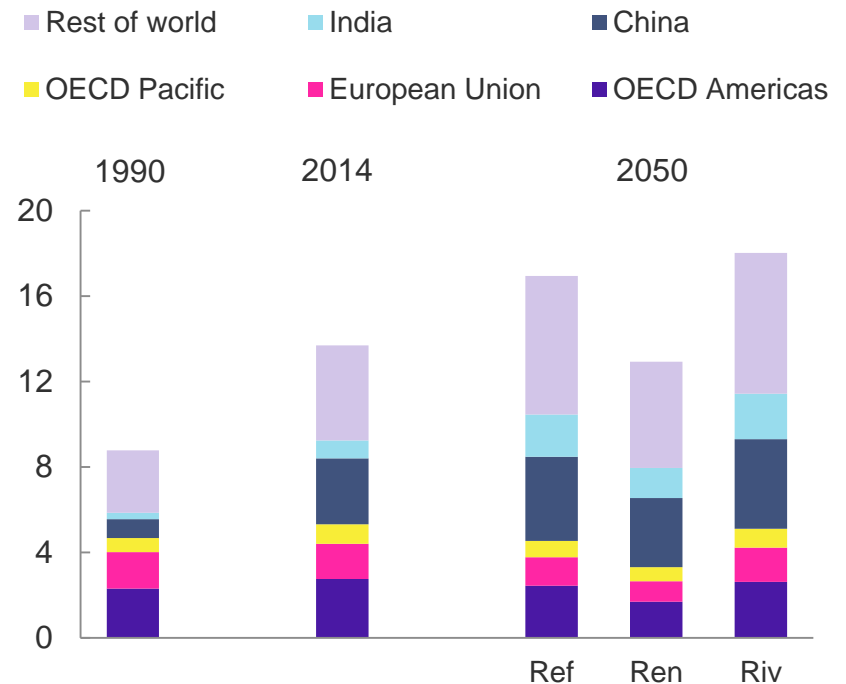
If the world were a village of 100 people...



Source: visualnews

## World energy demand per region

Billion toe

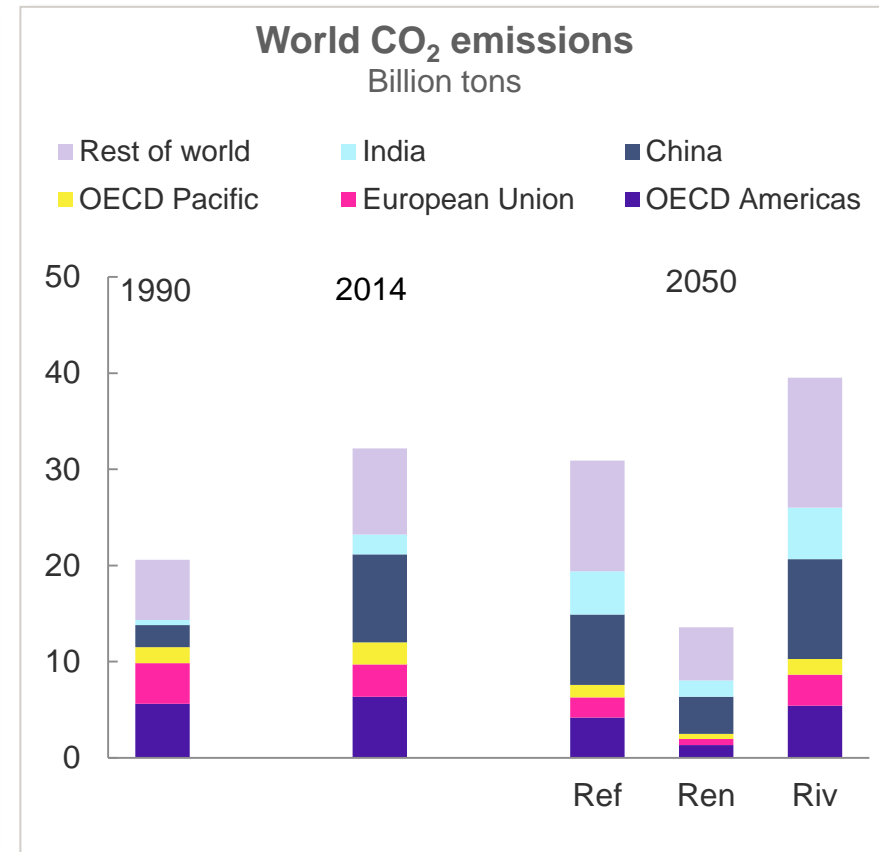
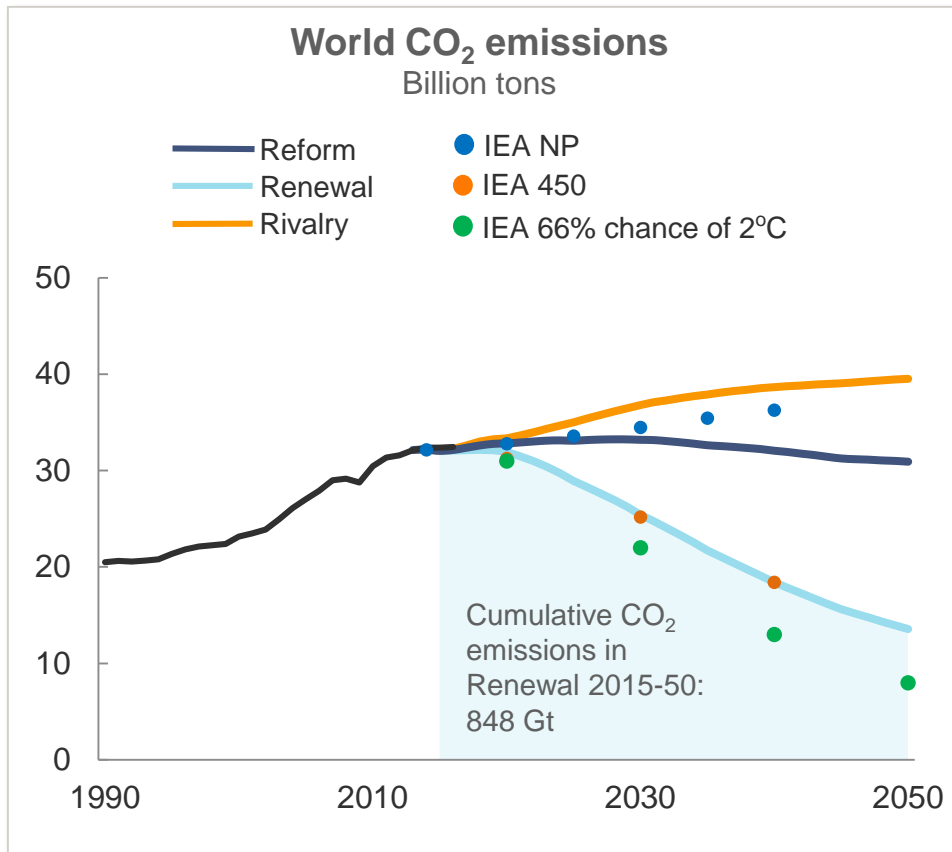


Source: IEA, Statoil (projections)



# CO<sub>2</sub> emissions determined by demand and mix

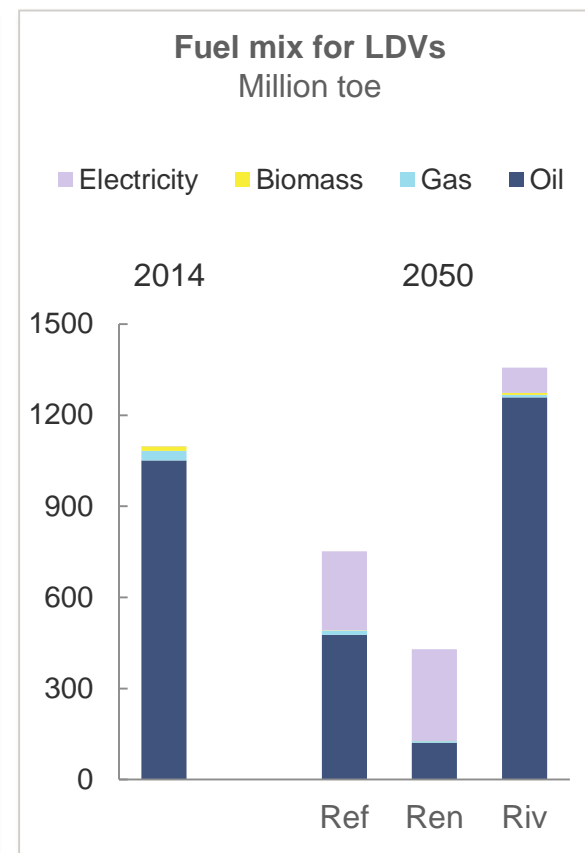
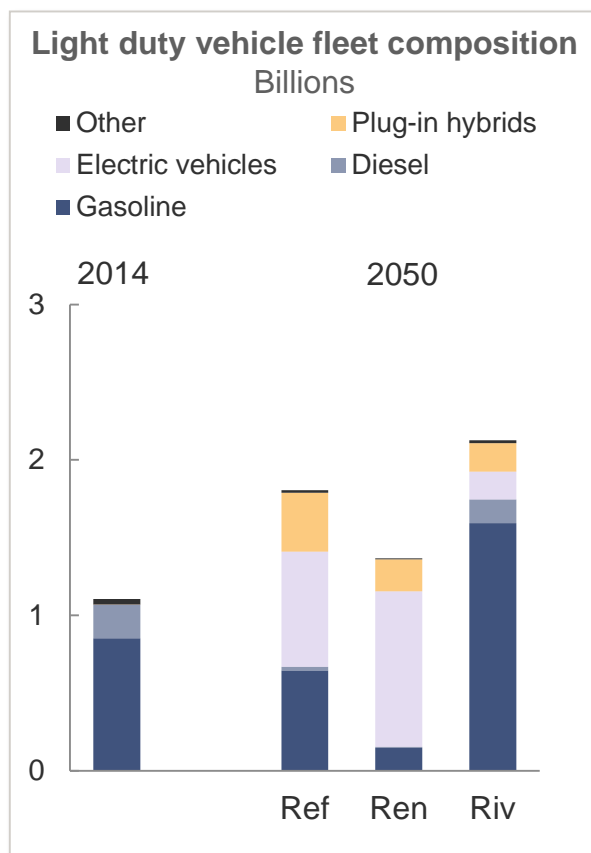
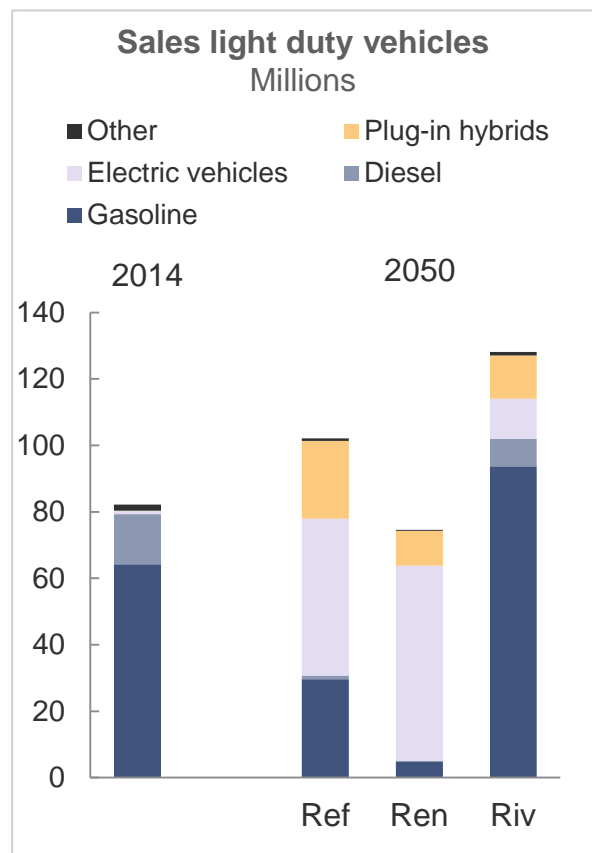
Policies, markets, and technology having varying impact



Source: IEA (history), Statoil (projections)

# Technology shift for light duty vehicles

... in all scenarios, and a revolution in Renewal

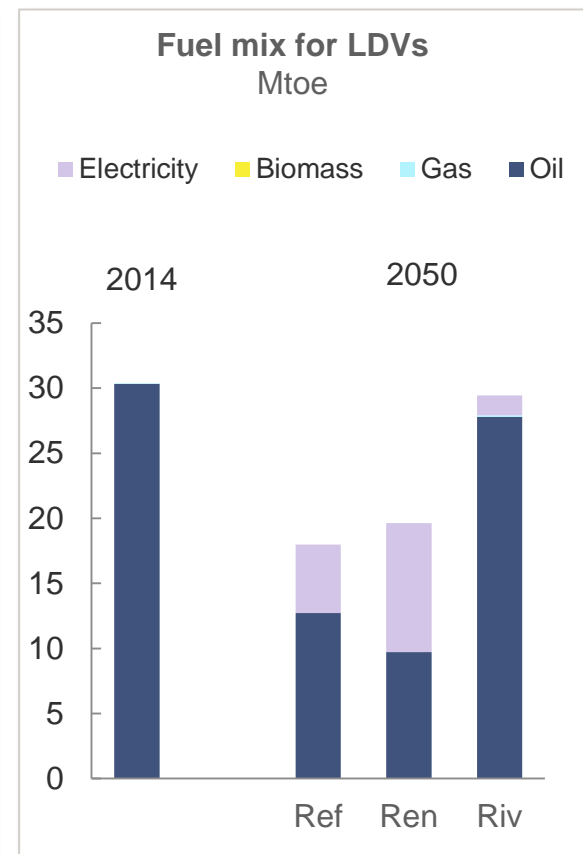
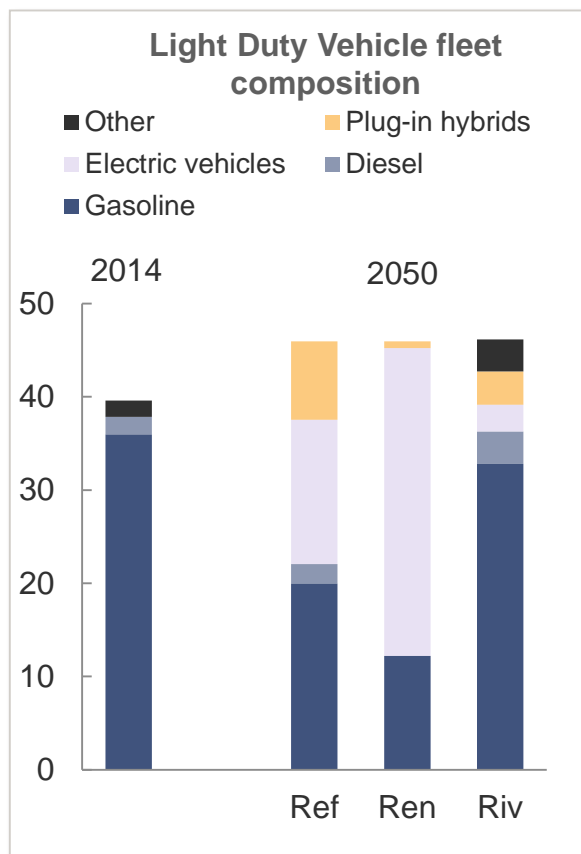
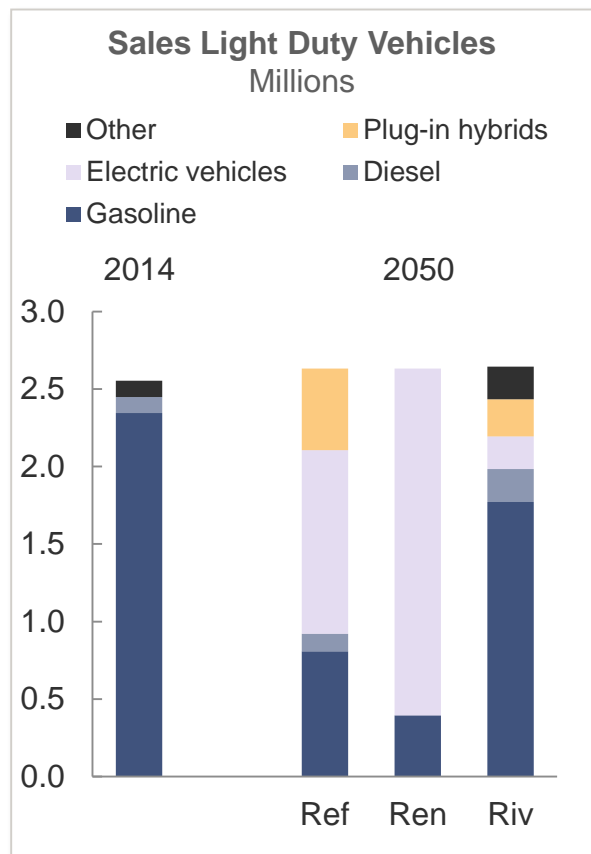


Source: IEA (history), Statoil (projections)

# Russia:

## Technology shift for light duty vehicles

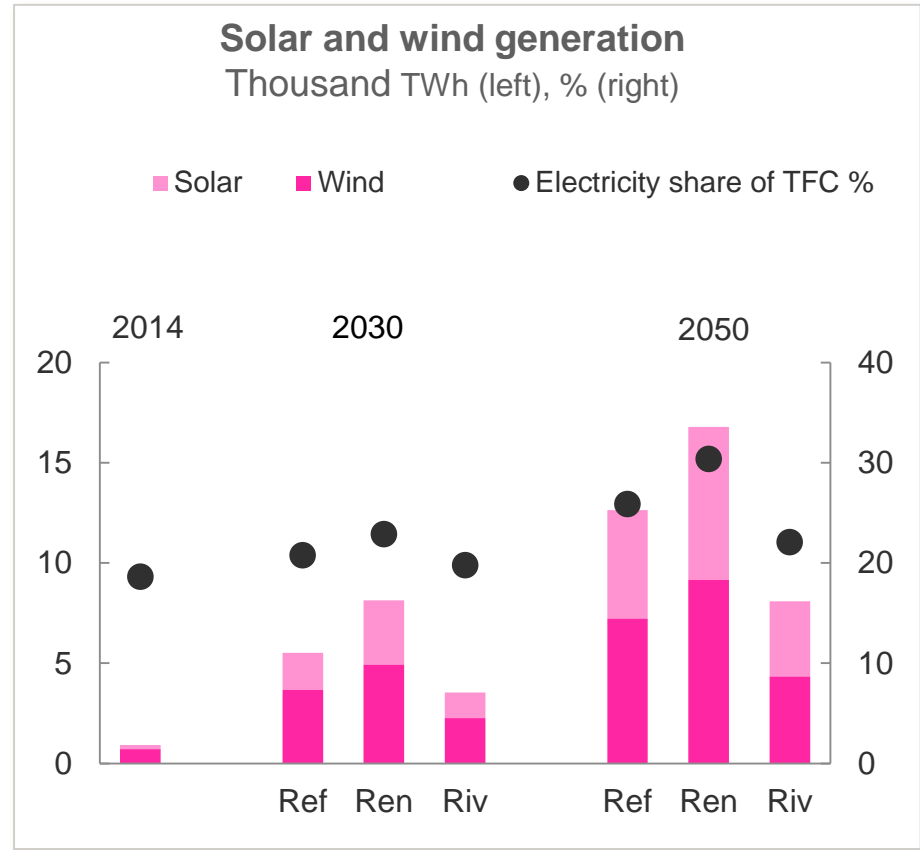
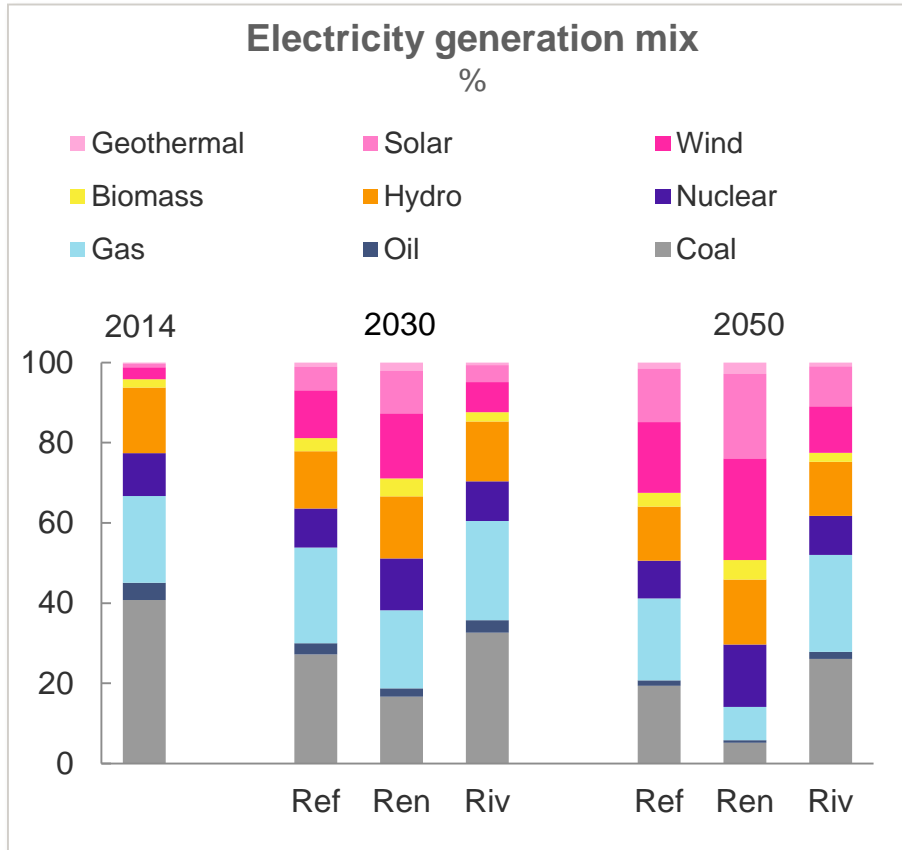
... in all scenarios, and a revolution in Renewal



Source: IEA (history), Statoil (projections)

# Decarbonise electricity, and go electric

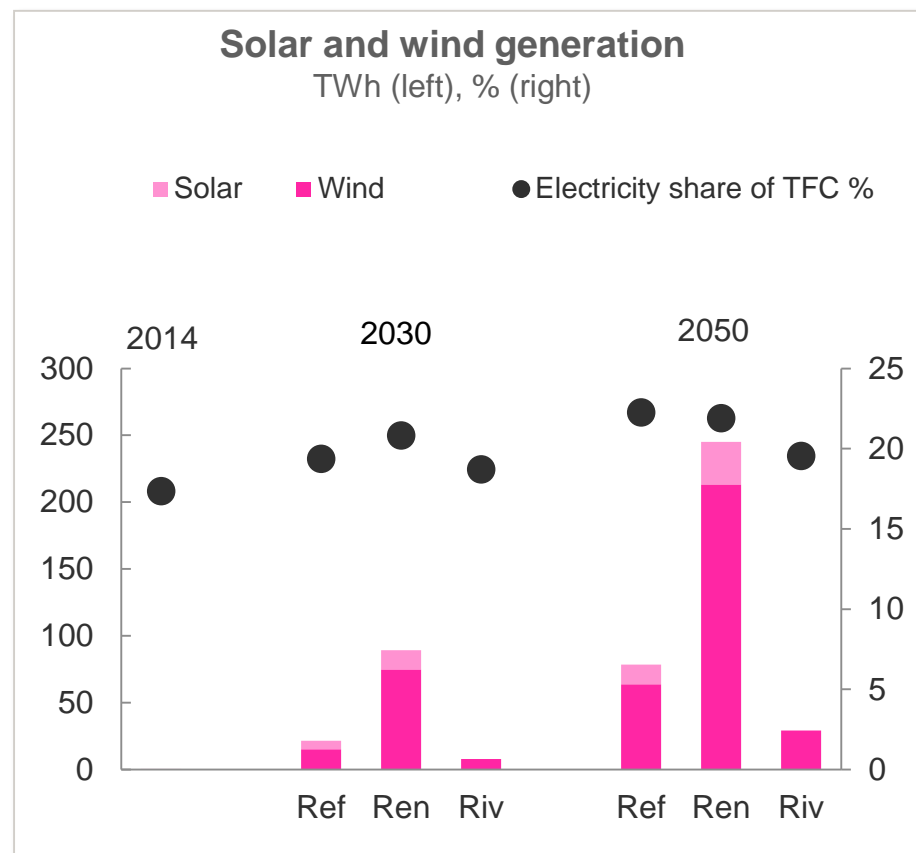
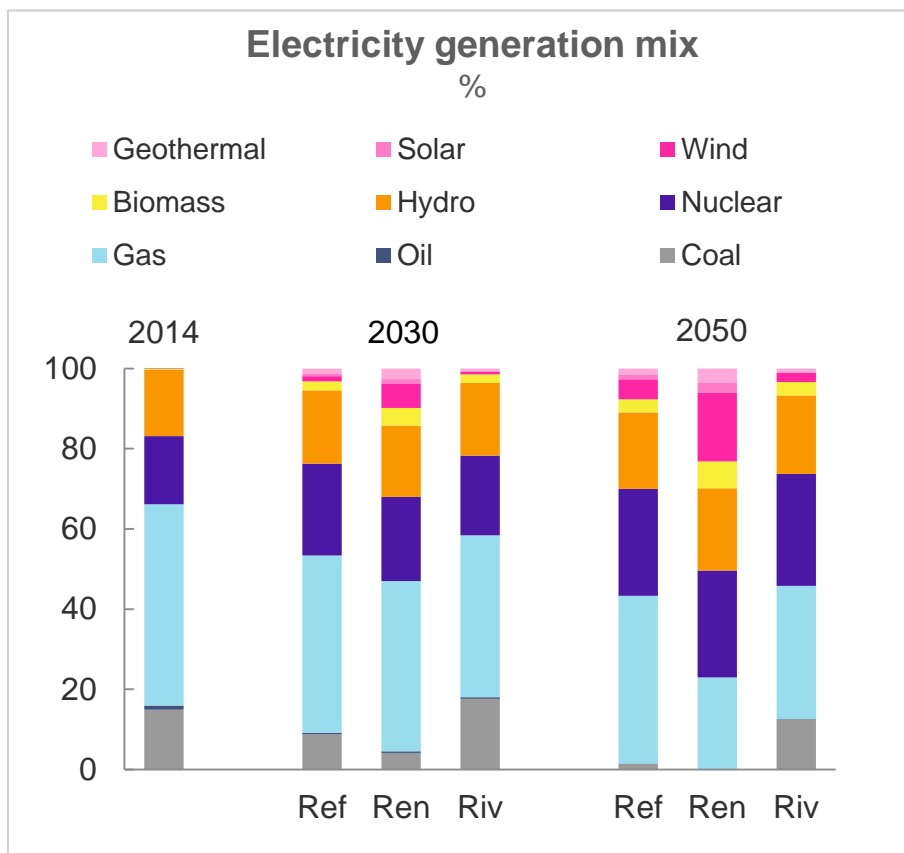
13-doubling of wind, 39-doubling of solar generation in Renewal



Source: IEA (history), Statoil (projections)

# Russia: Decarbonisation of electricity

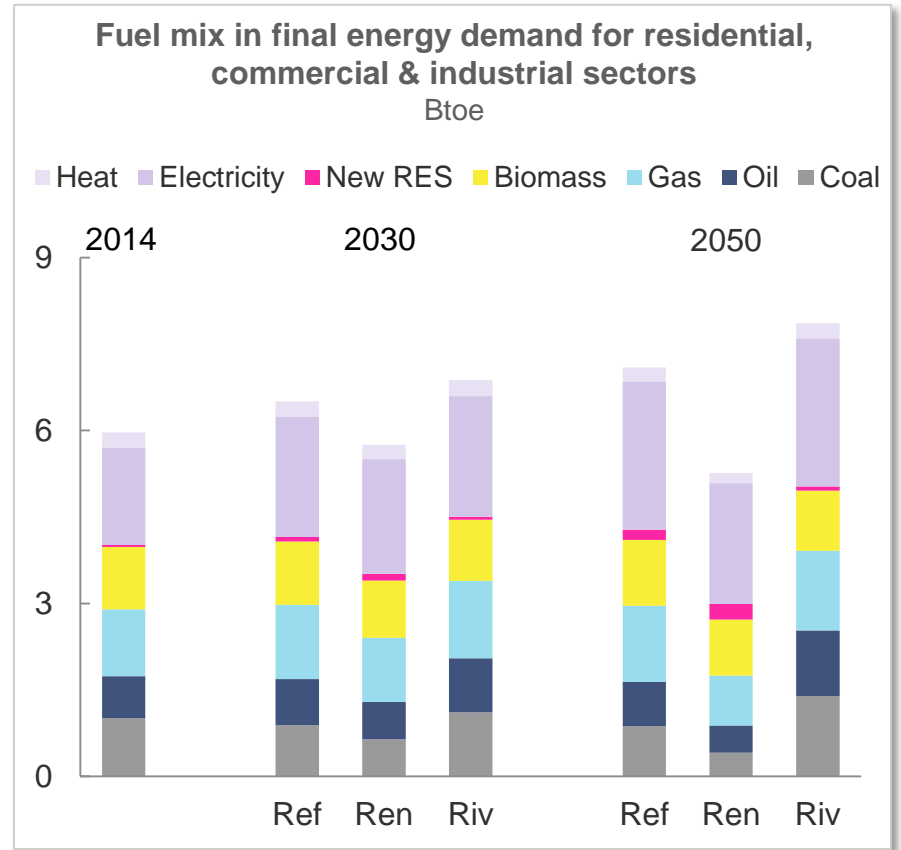
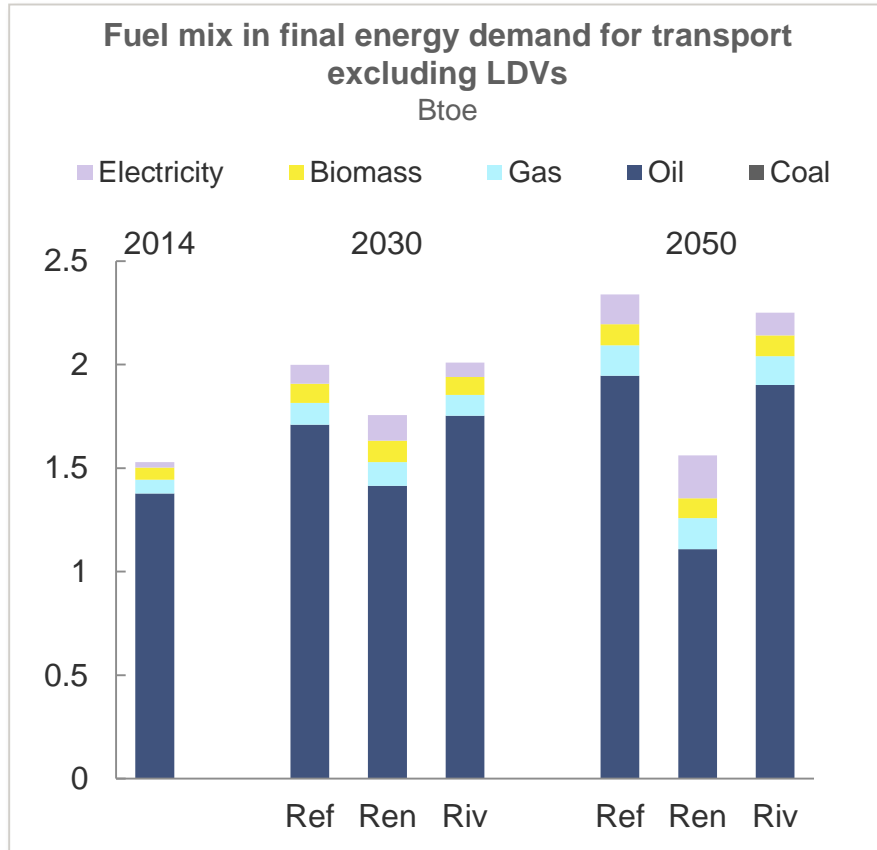
Large investments in new renewables required, especially in Renewal



Source: IEA (history), Statoil (projections)

# Oil and gas dominate in other sectors

... contributing to maintaining demand for fossil fuels

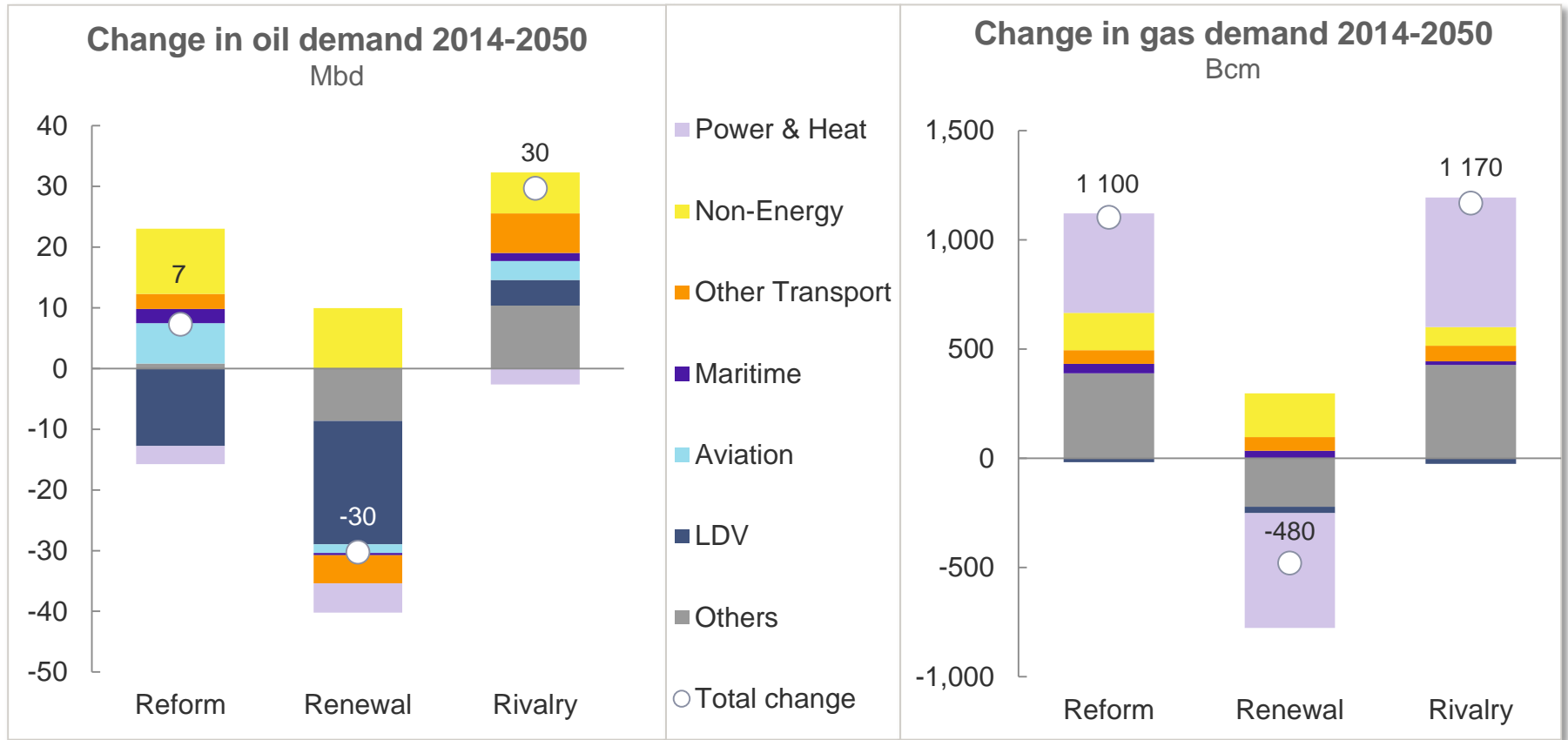


Source: IEA (history), Statoil (projections)



# Global oil and gas demand growth varies

Depending on scenario – but non-energy demand growth is significant

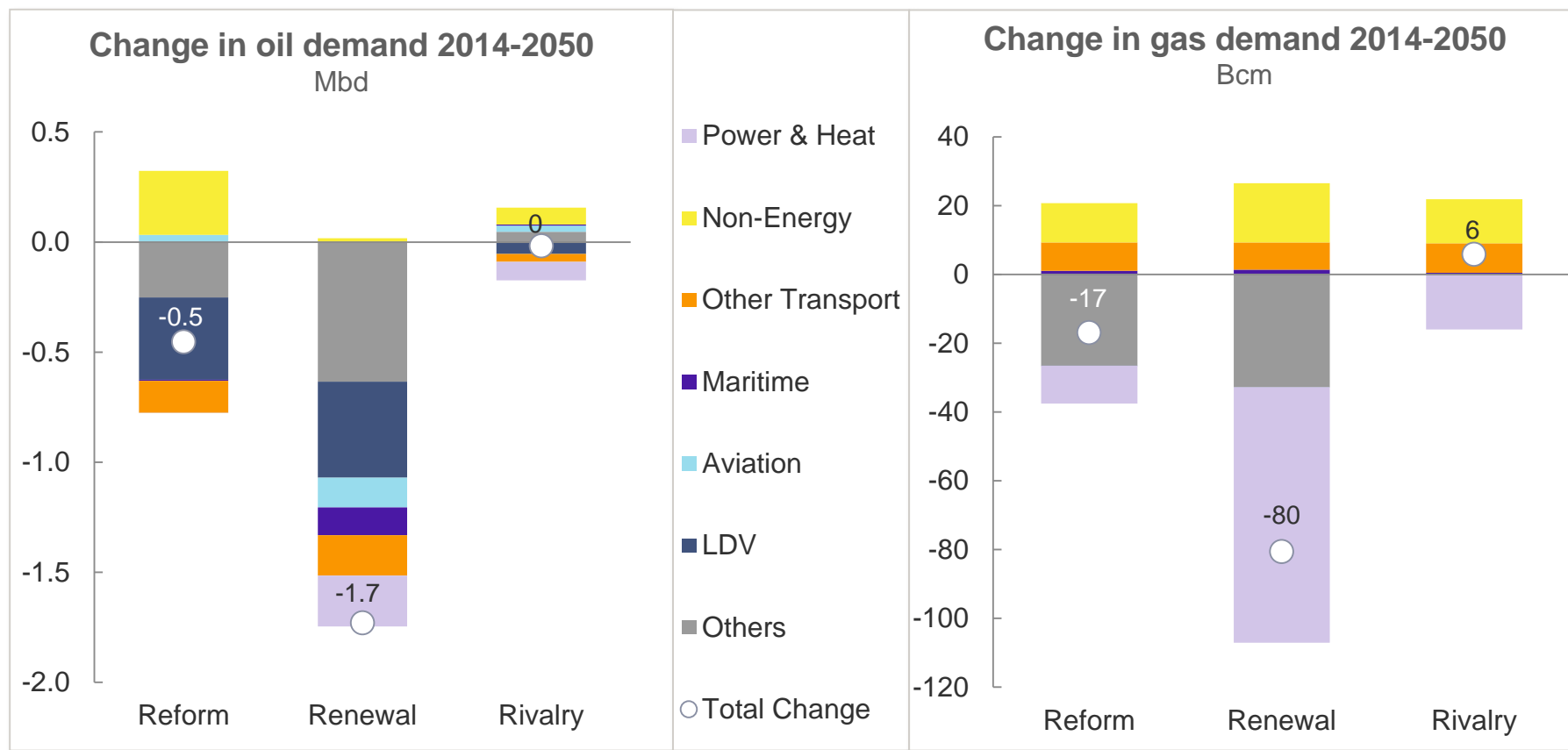


Source: IEA (history), Statoil (projections)

# Russia:

## Oil and gas demand decline varies

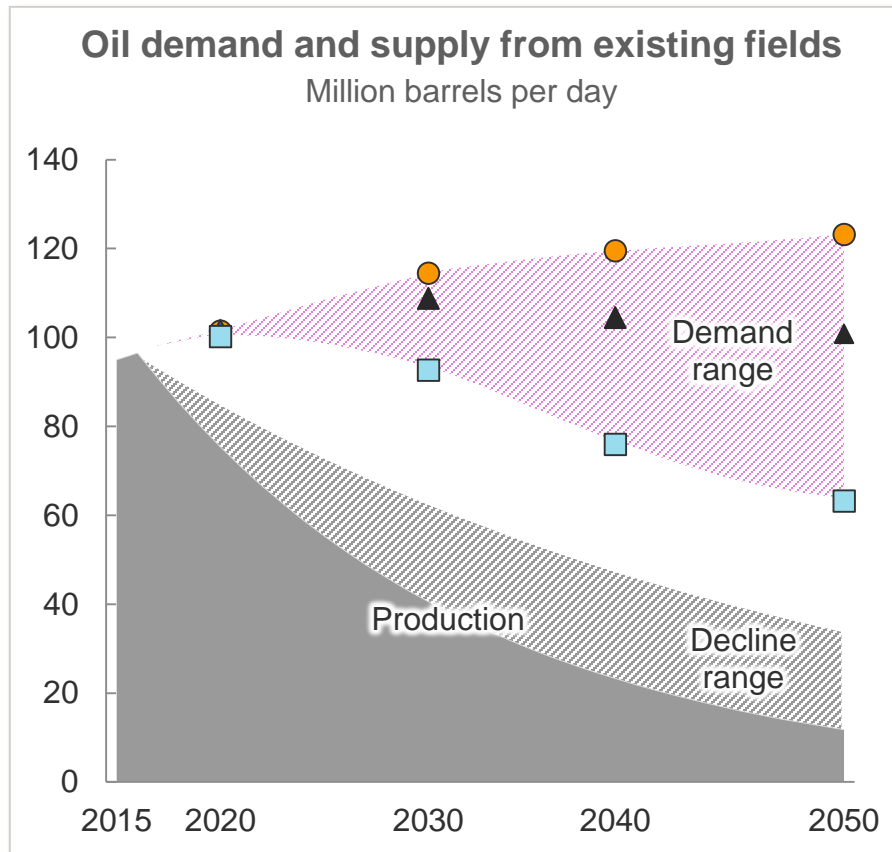
Depending on scenario – but non-energy demand growth is significant



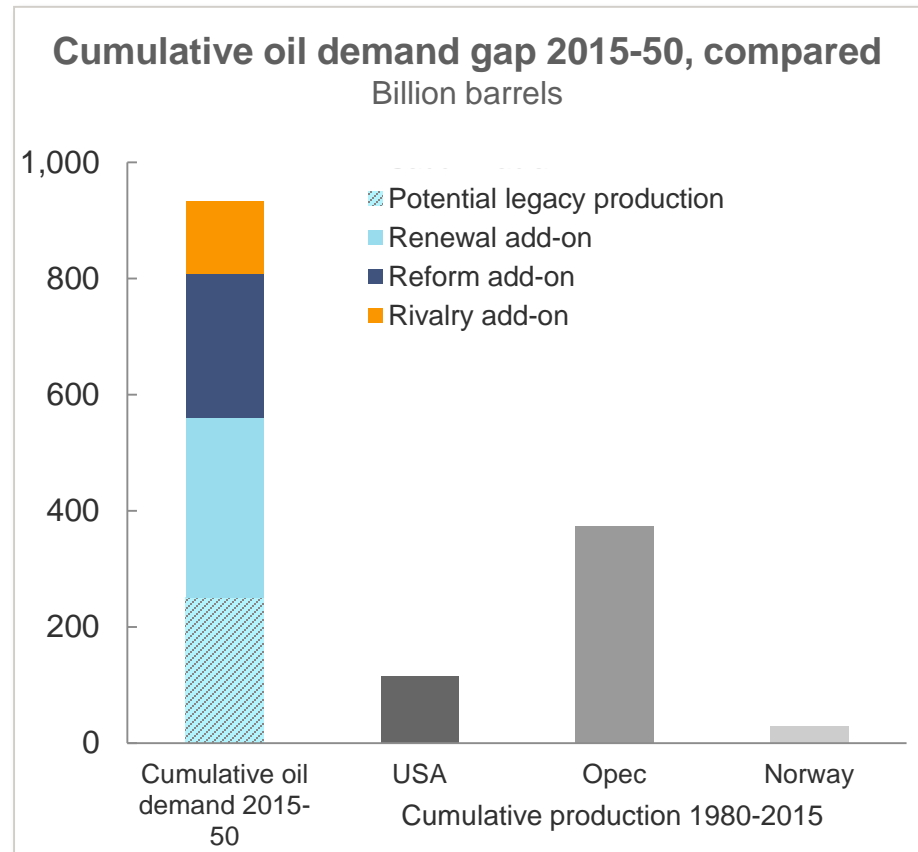
Source: IEA (history), Statoil (projections)

# Huge investments needed in oil in all scenarios

...to replace production and satisfy demand



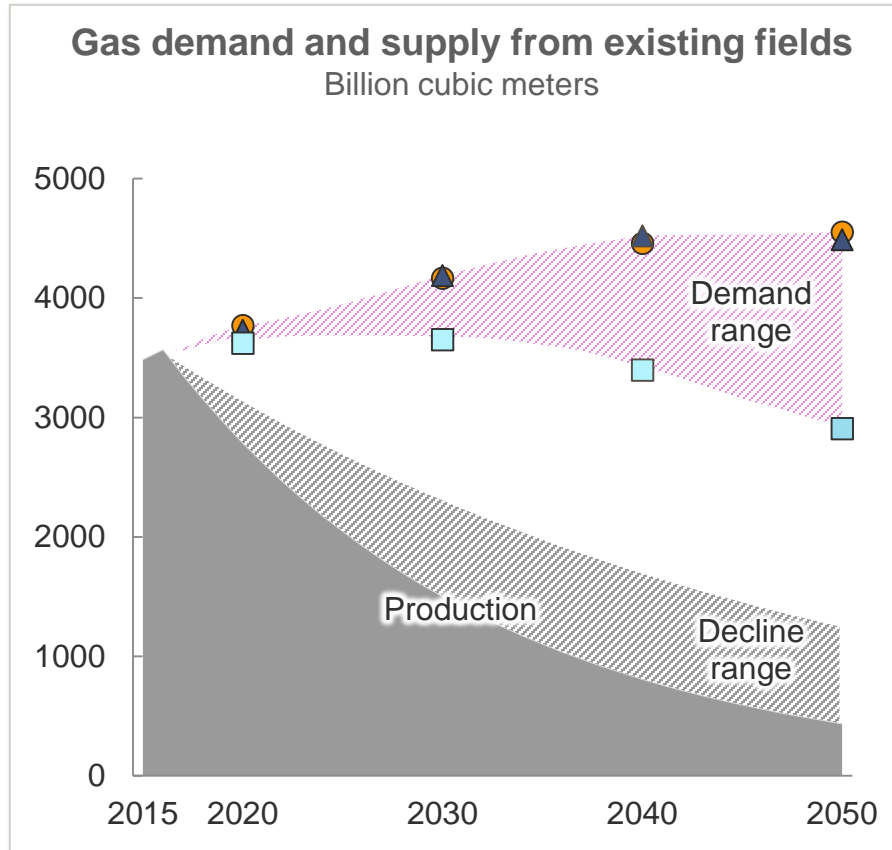
Source: Statoil



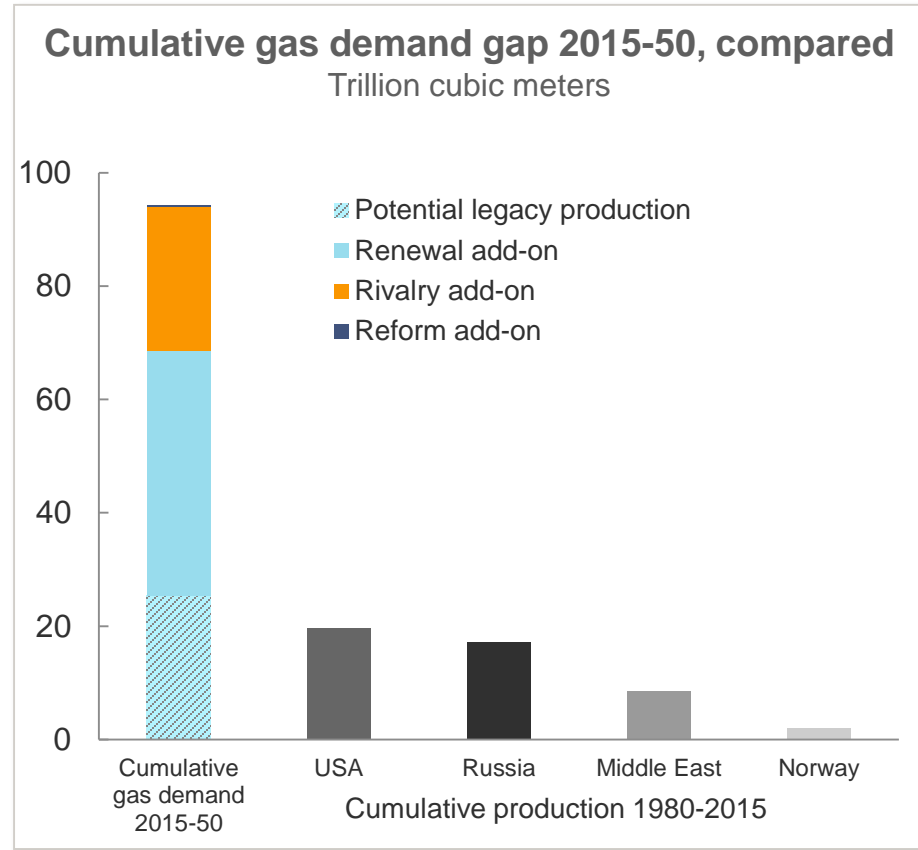
Source: Statoil (projections), BP statistical review of world energy (history)

# ...and the same is the case for gas

...to replace production and satisfy demand

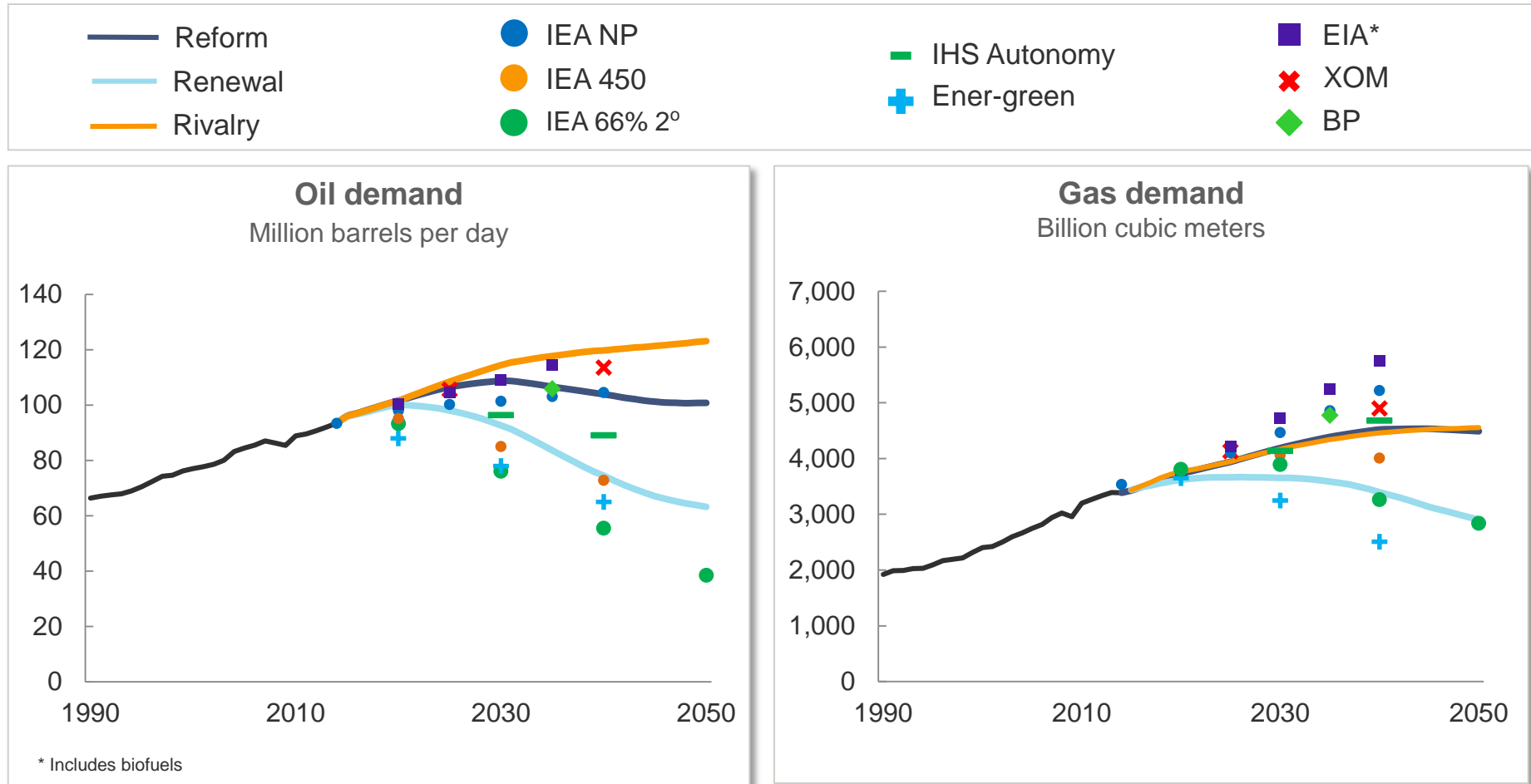


Source: Statoil



Source: Statoil (projections), BP statistical review of world energy (history)

# Wide outcome space for oil and gas demand



Source: History (IEA), projections (Statoil EP17, IEA WEO16, EIA AEO16, IHS Energy-Wide Perspectives 2017, XOM 2017 Outlook for Energy, BP EO17, Enerdata 2017 - Understanding our Energy Future)

# Statoil. The Power of Possible

[www.statoil.com/energyperspectives](http://www.statoil.com/energyperspectives)

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