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ENERGY SUSTAINABILITY

Energy transition scenarios: Covid-19 effect on global warming short-lived

Thanks to the pandemic, we have recently seen the biggest drop in fossil fuel demand, but this is not enough to meet the Paris climate goals, leaving corporate decision-makers in the dark. Should businesses invest in mitigation strategies to prevent global warming or adapt? Stronger climate policies can counter this self-fulfilling prophecy



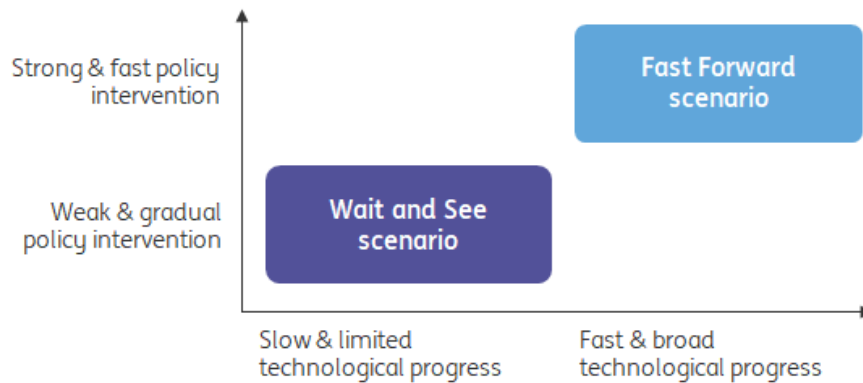
Source: Shutterstock

This is just one of the many conclusions from ING's scenario planning project on the global energy transition.

Scenario planning revealed that policy and technology are the main uncertainties for the global energy transition and the phasing-out of fossil fuels. They are not independent: policy drives the feasibility of technological advances.

We focus on two scenarios to explore the wide range of future outcomes for fossil fuel demand

Energy transition scenarios based on technology and policy trends



Source: ING Research

Source: ING

The **“fast-forward”** scenario represents a world of rapid change towards a more sustainable world in which technology and policy reinforce each other to phase out fossil fuels and limit global warming to 2°C.

The alternative to this is the **“wait-and-see”** scenario. This would see the majority of businesses continue to operate as normal, boosting emissions and global warming. If the world continues on its pre-Covid energy pathway, the physical risks of climate change are high and global warming could reach 3-5 degrees by the end of the century.

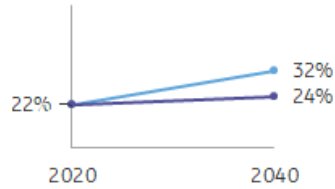
The speed at which energy-intensive sectors become greener by investing in green technologies set these two worlds apart.

Energy intensive sectors get greener faster in the Fast Forward scenario

Main technology trend per sector in the Fast Forward and Wait and See scenarios

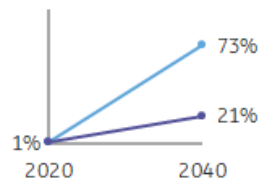
Manufacturing: more electrification

Share of electricity in energy mix



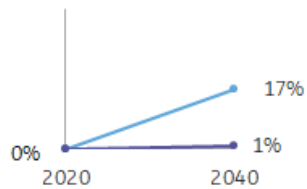
Cars: more electric vehicles

Share of electric vehicles in global car fleet



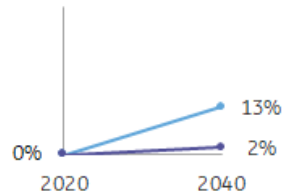
Trucks: more electric trucks

Share of electric trucks in global truck fleet



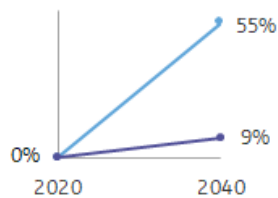
Shipping: more LNG vessels

Share of LNG vessels in global shipping fleet



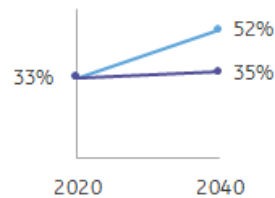
Aviation: more bio- and synthetic fuels

Share of bio- and synthetic fuels in aeroplane fleet



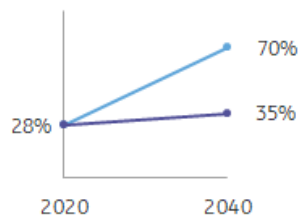
Real estate: more electrification

Share of electricity in energy mix real estate



Power sector: more renewables

Share of renewables in global power mix



— Fast Forward scenario
— Wait and See scenario

Source: ING Research

Source: ING

Major differences when considering the impact of the scenarios across sectors

Some key insights include:

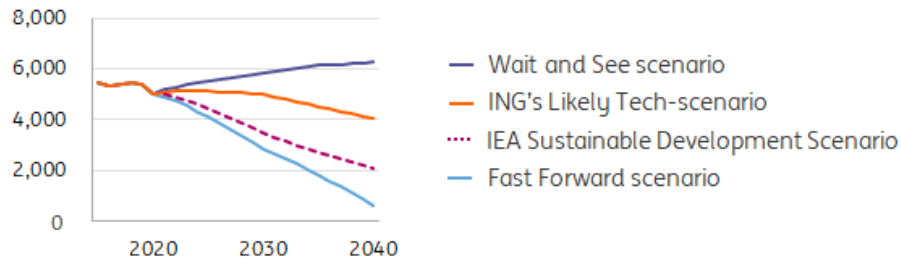
- **Light-duty vehicles:** Electric cars could set oil demand 75% lower by 2040 in the Fast Forward world where every new car sold in 2035 is an electric vehicle, compared to just one out of four in the “Wait and See” scenario.
- **Trucks:** electric and hydrogen trucks and the use of biofuels could set oil demand 35% lower, but trucks struggle to accommodate the energy transition as 72% of trucks still run on diesel, even in the “Fast Forward” world.
- **Shipping:** LNG could set oil demand 18% lower but this sector remains oil-heavy. There are few technologies available that can phase out oil in shipping, meaning that 82% of ships will still be run on oil by 2040 in the Fast Forward scenario.
- **Aviation** Oil demand for aviation continues to rise strongly towards 2040 in both scenarios. This has also to do with the fact that aviation came to a standstill after the outbreak of the Covid-19 pandemic. The use of bio- and synthetic fuels increases in both scenarios, but differing trends in energy efficiency set the scenarios apart.
- **Manufacturing:** energy demand is up +49% under the “Wait and See” scenario with green investments on hold. However electrification and the use of biofuels set fossil fuel demand lower in the “Fast Forward” world – and the greening of manufacturing assets become a core focus as the sector embraces green technologies such as hydrogen and electrolyzers.
- **Real estate:** energy demand in real estate increases in both scenarios as it is hard to increase the pace of energy efficiency in existing buildings and so many people at the bottom of the pyramid gain access to electricity. Reduced use of biomass and gas and increased use of electricity for heating and district heating set the scenarios apart.
- **Power sector:** electricity demand rises strongly in both scenarios as electrification is a key strategy to reduce fossil fuel demand in manufacturing, transportation and real estate. Renewables combined with technologies and grids to store electricity make the difference. Nuclear power is not a zero-carbon solution that the market provides on itself.

Our scenario outcomes show a highly uncertain future for fossil fuels

Global demand of fossil fuels up to 2040

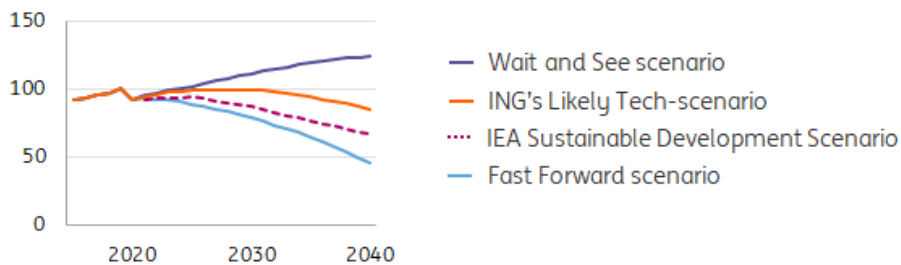
Coal

Million ton coal equivalent per year



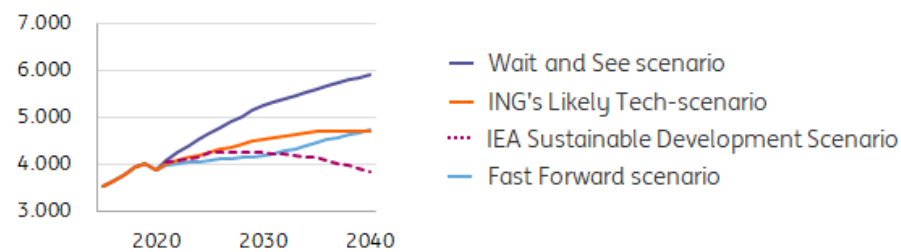
Oil

Million barrels per day



Gas

Billion cubic meters (bcm) per year



Source: ING Research

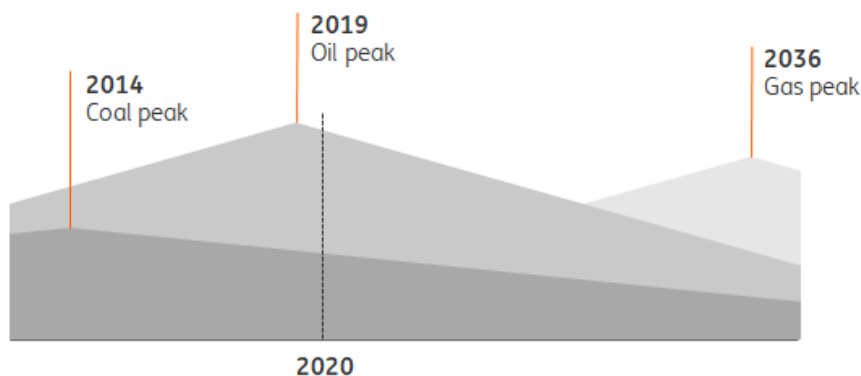
Source: ING

While the 'fast-forward' and 'wait-and-see' scenarios indicate the boundaries of the wide range of possible future outcomes for fossil fuel demand, they do not indicate what is the plausible outcome.

ING's "likely-tech" scenario does just that and indicates that coal has already peaked, oil won't reach its pre-coronavirus level and gas is likely to peak around 2036. This plausible scenario is however not enough to set the world on the path towards the Paris Agreement goals.

We believe coal and oil have peaked and gas will peak by 2035

Schematic overview of global fossil fuel use



Source: ING Research

Source: ING

Covid-19 is like a drop in the ocean

Despite Covid-19 causing the biggest drop in fossil fuel demand in history, it makes little difference in the world's efforts to progress towards the Paris Agreement goals.

First, the size of the global economy is only reduced temporarily. By 2040 the economy is expected to be two thirds bigger. Second, although Covid-19 is likely to have a long-lasting impact on preferences, like business trips by aeroplane, its impact on total sector demand is relatively small. Third, Covid-19 has not yet led to greener policies and it could cause a delay in this field. Lastly, many companies are currently in survival mode and have cut back on green investments. Overall, the coronavirus dip is like a drop in the ocean, sustained progress needs to come from technology and policy.

Technology needs viable business cases...

With enough policy in place, technological advances can lower fossil fuels enough to limit global warming. Although electric vehicles and renewables have the largest potential to phase out fossil fuels, every technology is needed and every sector has to contribute. As such it requires immense investments, mostly by companies and to a lesser degree by governments. For those corporate investments to take place, viable business cases for clean technologies are needed soon.

...but it remains uncertain if policy will be enough

If we take the Paris Agreement goals seriously, we must assume policymakers all over the world are willing to change course drastically within a couple of years. We will either end up in a world with a lot of policy, making fossil fuels unattractive and green technologies attractive. The energy transition will be in full swing and climate change is limited. Or we are likely to end

up in a world with little policy and many of the needed technologies not being commercially viable. In this world, the chances of runaway climate change are high, increasingly enforced by tipping points.

Carbon pricing provides guidance for corporate decision-makers

Uncertainty about the future outcome leaves corporate decision-makers in the dark. Should they invest in mitigation strategies to prevent global warming, or should they invest in adaptation strategies to protect the business from climate risks? If the chances of effective mitigation strategies diminish, it becomes rational to invest in adaptation measures to cope with, rather than prevent, climate risks. A shift in focus from mitigation to adaptation might put the energy transition at risk: a self-fulfilling prophecy as companies hesitate or only make 'no regret' investments. Stronger and coordinated climate policy measures across the globe, notably on carbon pricing, clear the clouds on the future path of the energy transition and provide more viable business cases. That's a prerequisite to unlock corporate investments once companies have put behind their Covid-19 worries. Regained confidence in governments, confident policymakers and global coordination would be necessary to bring about real change to the future of energy. Heat waves, forest fires, floods and loss of biodiversity seem more likely to be the burning issues to achieve this than Covid-19 currently is.

Author

Gerben Hieminga

Senior Sector Economist, Energy
gerben.hieminga@ing.com

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