The IEA Sustainable Development Scenario

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The IEA works around the world to support accelerated clean energy transitions that are

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supported by ANALYSIS

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World Energy Outlook 2018

Sustainable Development Scenario

Today's energy context

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- Mixed signals about the pace & direction of change in global energy:
  - Oil markets are entering a period of renewed uncertainty & volatility
  - Natural gas is on the rise: China's rapid demand growth is erasing talk of a 'gas glut'
  - Solar PV has the momentum while other key technologies & efficiency policies need a push
  - Our assessment points to energy-related CO_2 emissions reaching a historic high in 2018
  - For the first time, the global population without access to electricity fell below 1 billion
- Electricity is carrying great expectations, but questions remain over the extent of its reach in meeting demand & how the power systems of the future will operate
- Policy makers need well-grounded insights about different possible futures & how they come about. The *WEO* provides two key scenarios:
  - New Policies Scenario
  - Sustainable Development Scenario

An integrated strategy for energy & sustainable development

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The Sustainable Development Scenario reduces CO_2 emissions while also tackling air pollution, achieving universal energy access, and assessing implications for water

Benefits of the Sustainable Development Scenario

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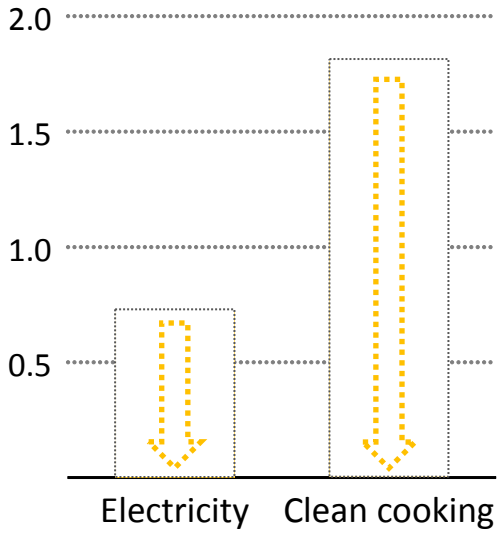
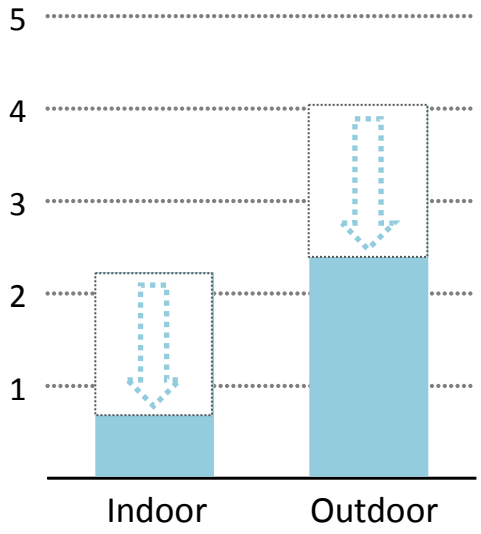
Outcomes of the Sustainable Development Scenario vs. New Policies Scenario

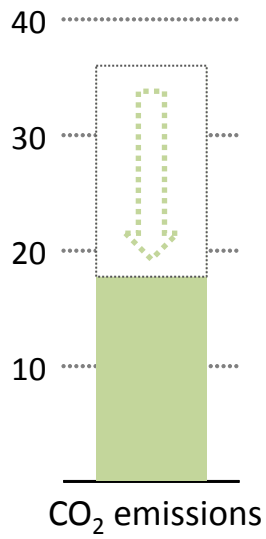
Population without access to modern energy (billion people, 2030)



Premature deaths related to air pollution (million, 2040)

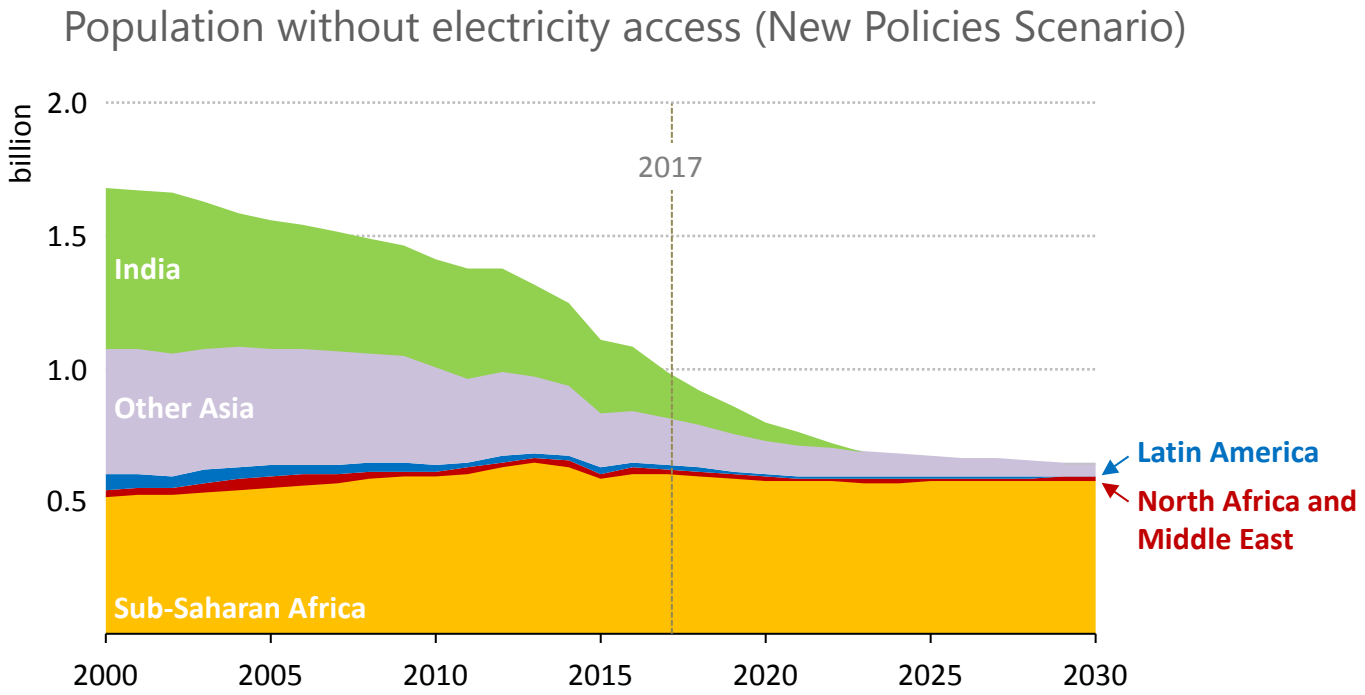


Carbon dioxide emissions ($Gt\ CO_2$, 2040)



In an integrated approach, universal energy access can be reached while also achieving climate goals and reducing air pollutant emissions, at little extra cost

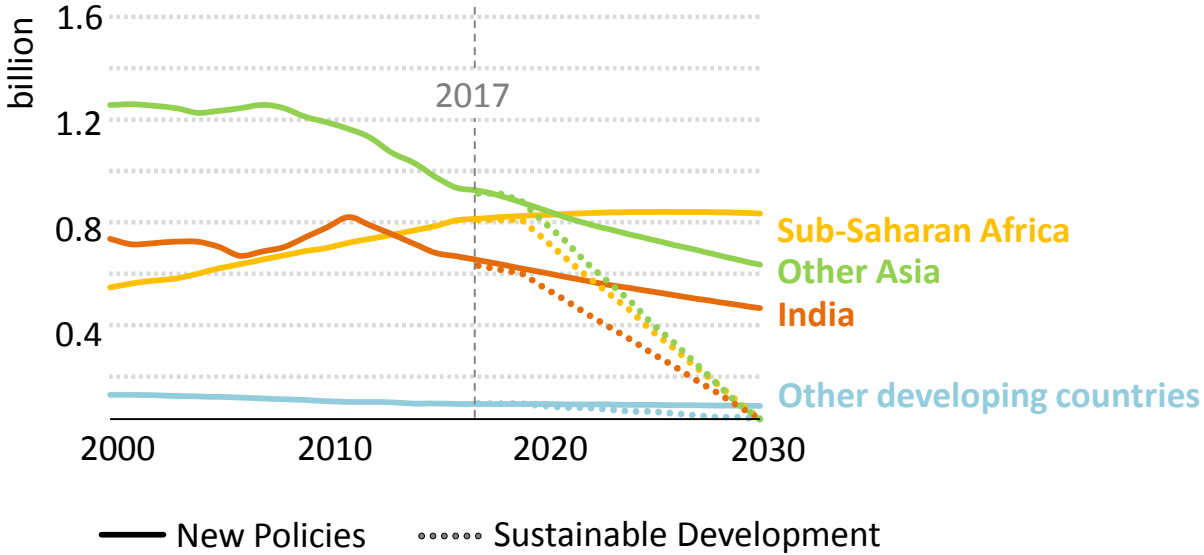
Progress and outlook for electricity access



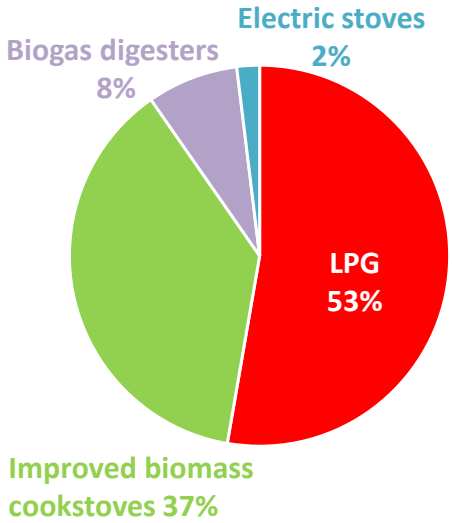
The world population without electricity access fell below 1 billion in 2017, led by India; but despite recent progress, efforts in sub-Saharan Africa need to redouble

Clean cooking for all: planned effort lags behind

Population without access to clean cooking



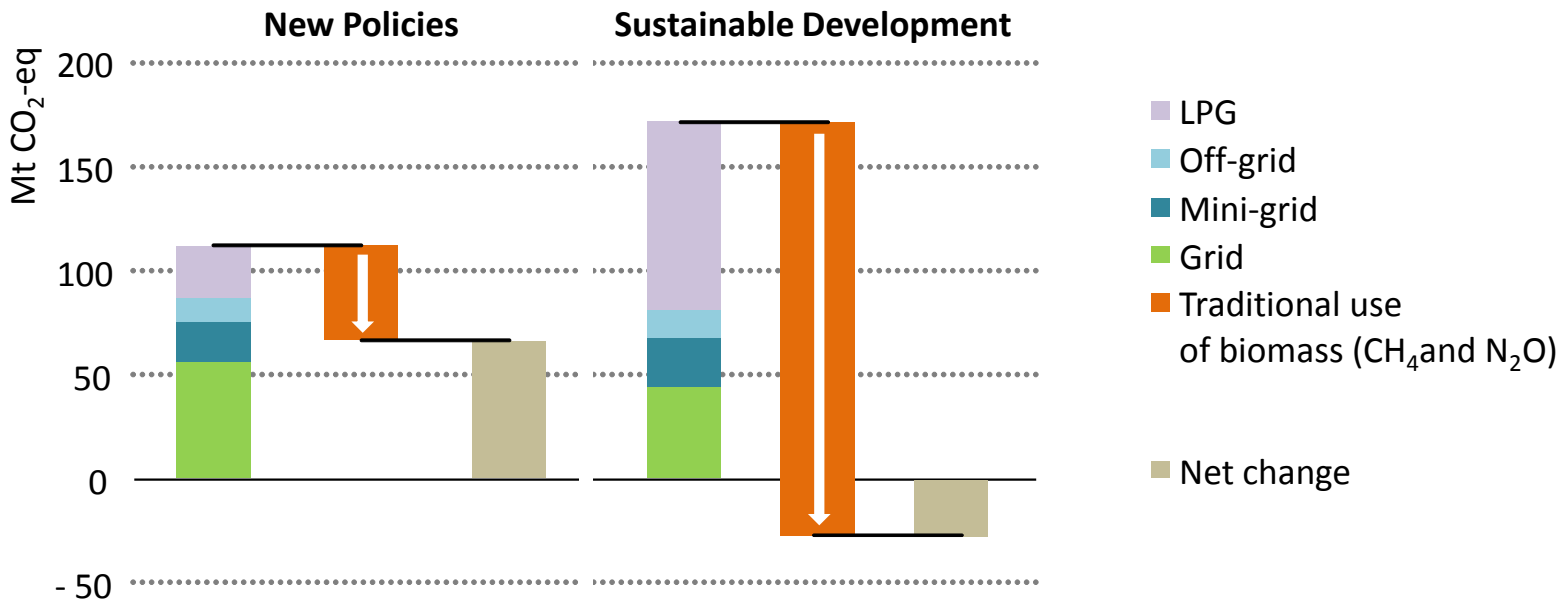
Population gaining access to clean cooking in the Sustainable Development Scenario, 2018-2030



Clean cooking access is best achieved through LPG and improved biomass cookstoves, and could significantly lower annual premature deaths related to household air pollution

Synergies between energy access and GHG mitigation

Energy access-related GHG emissions in 2030 compared to today by scenario

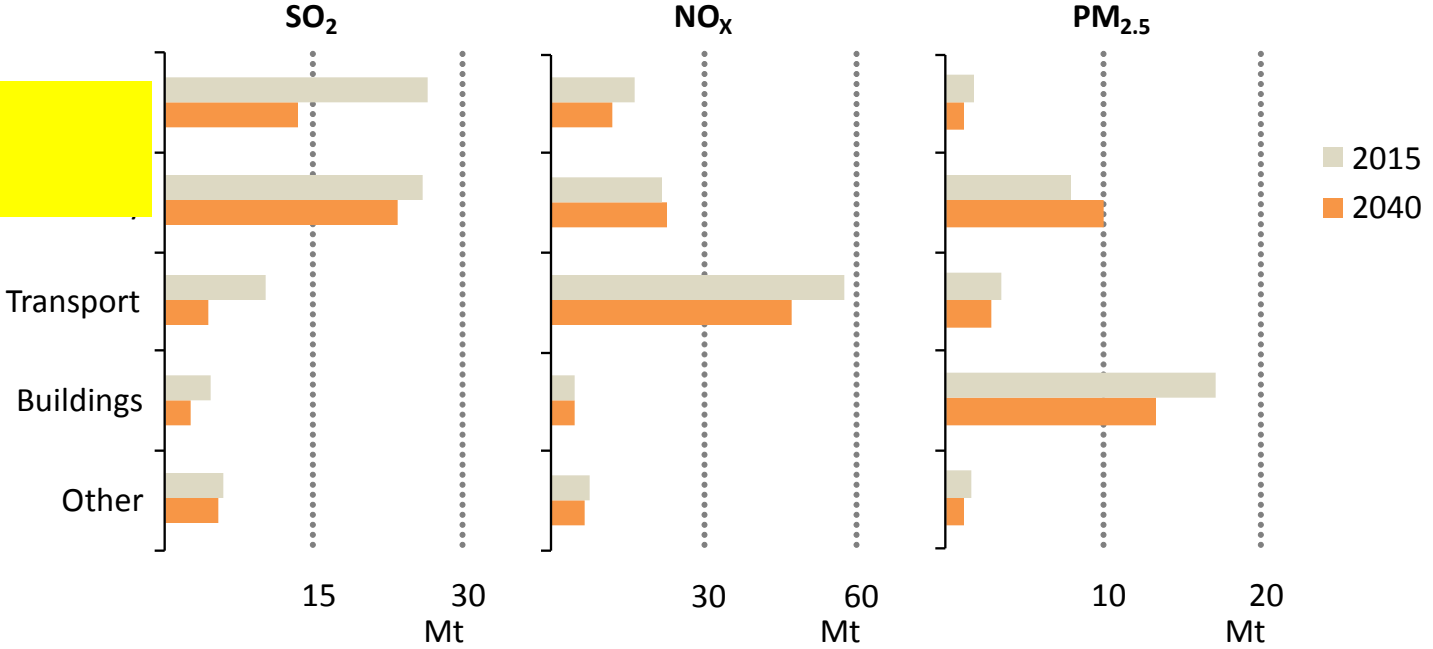


Higher CO_2 emissions from increased fossil fuel consumption for access are more than offset by a reduction in other GHGs from avoided traditional use of biomass

Air pollution outlook

REPLACE with Olivia's slide

Air pollution emissions by sector in the New Policies Scenario, 2015 and 2040



Pollutant emissions fall in the New Policies Scenario, but not enough to make premature deaths due to air pollution stop from increasing

The SDS is fully in line with the Paris agreement

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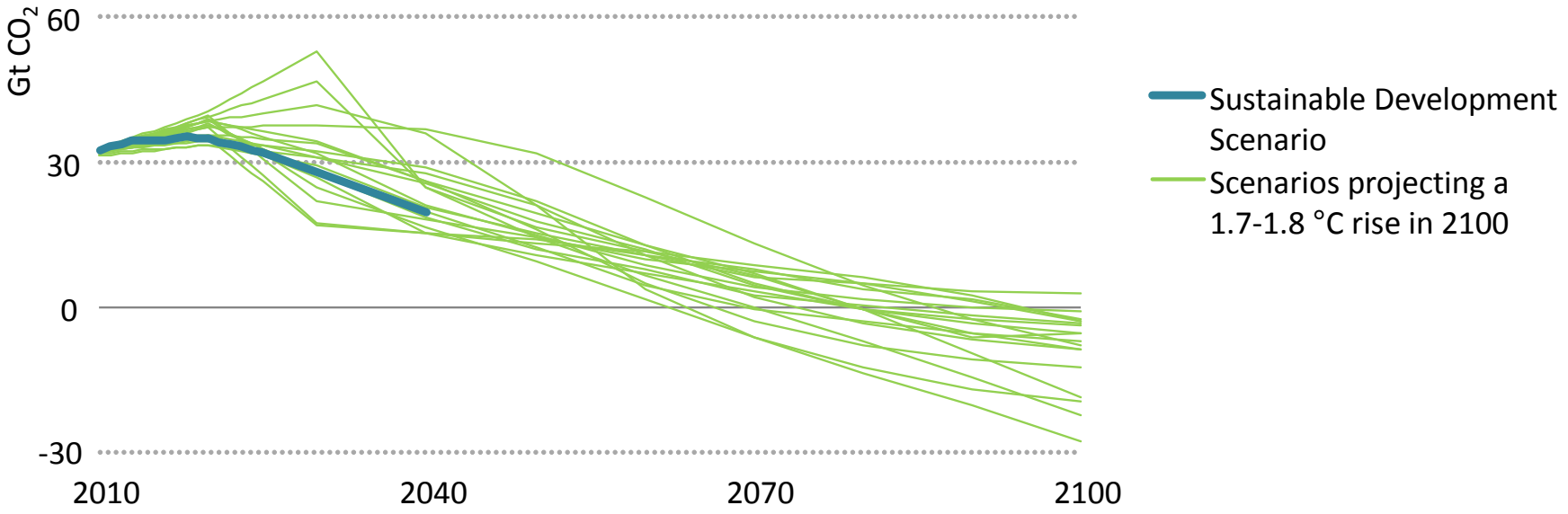
CO_2 emissions in the Sustainable Development Scenario and other "well below 2 °C" scenarios



The CO_2 emissions trajectory to 2040 in the SDS is at the lower end of a range of scenarios projecting a global temperature rise of 1.7-1.8 °C in 2100

Emissions savings in the Sustainable Development Scenario

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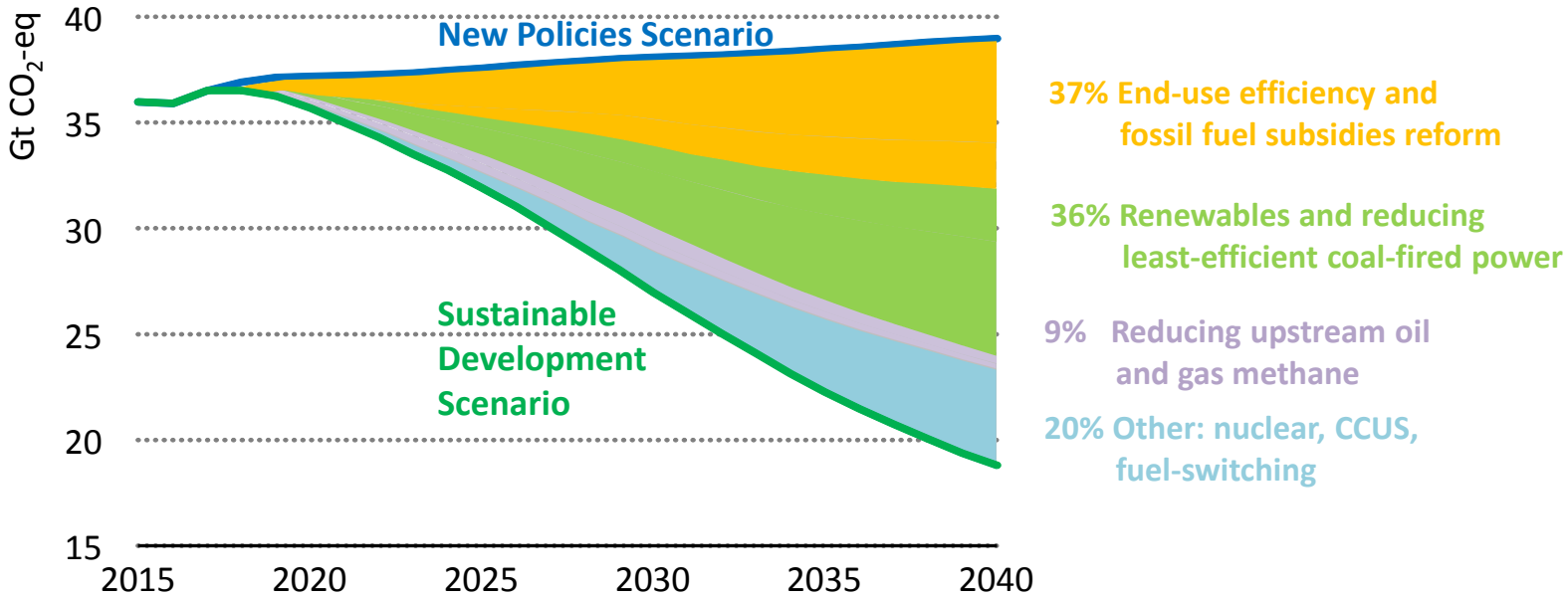
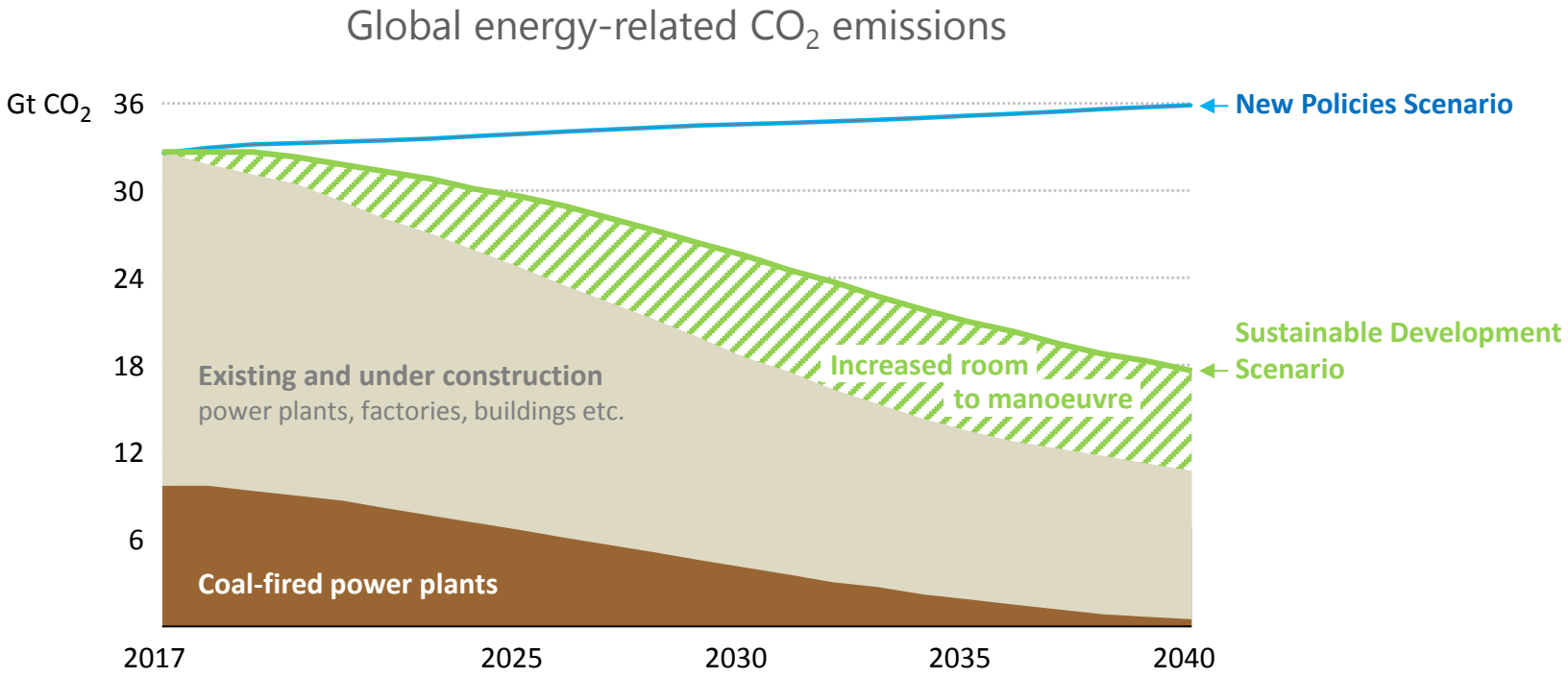
Global CO_2 and CH_4 emissions in the New Policies and Sustainable Development scenarios



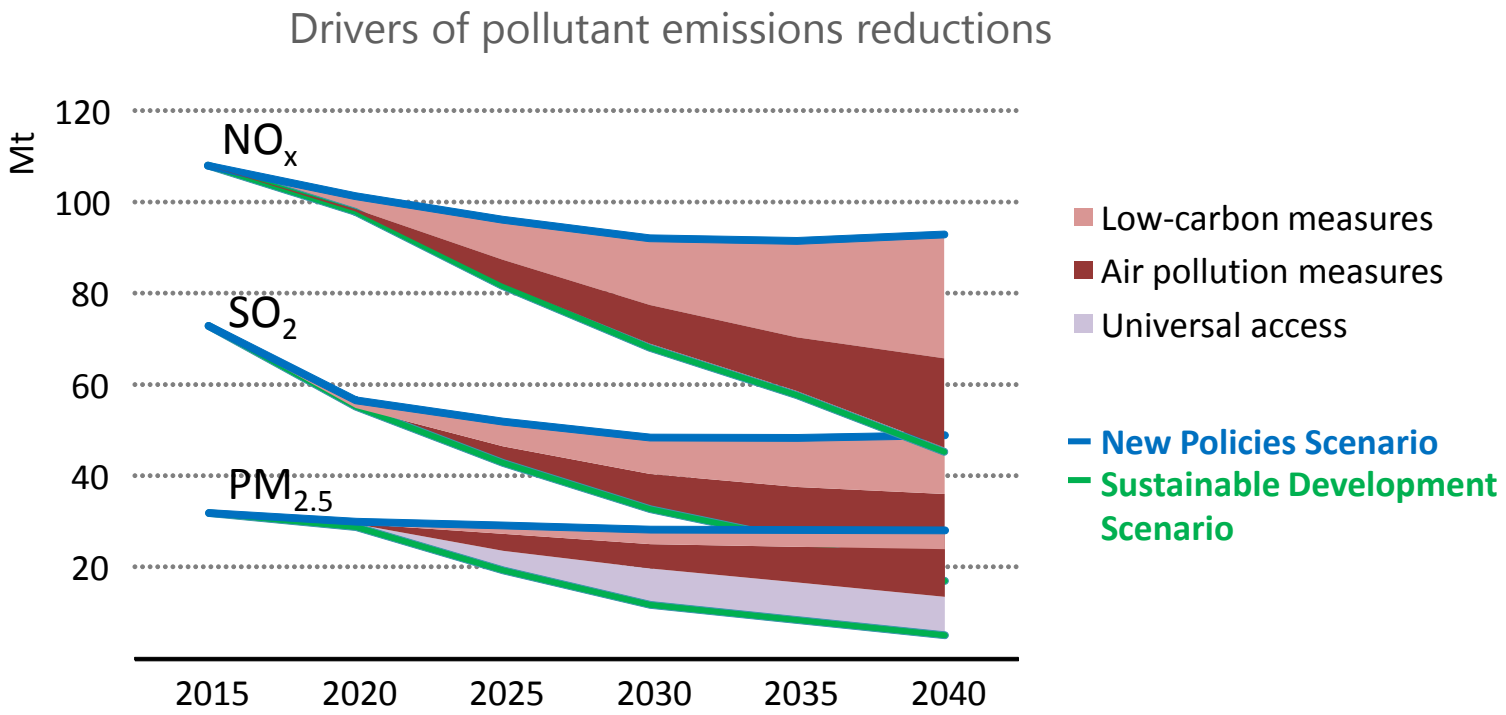
Energy efficiency and renewables remain key to achieving the emissions reductions needed in the SDS

Avoiding “lock-in” from existing infrastructure



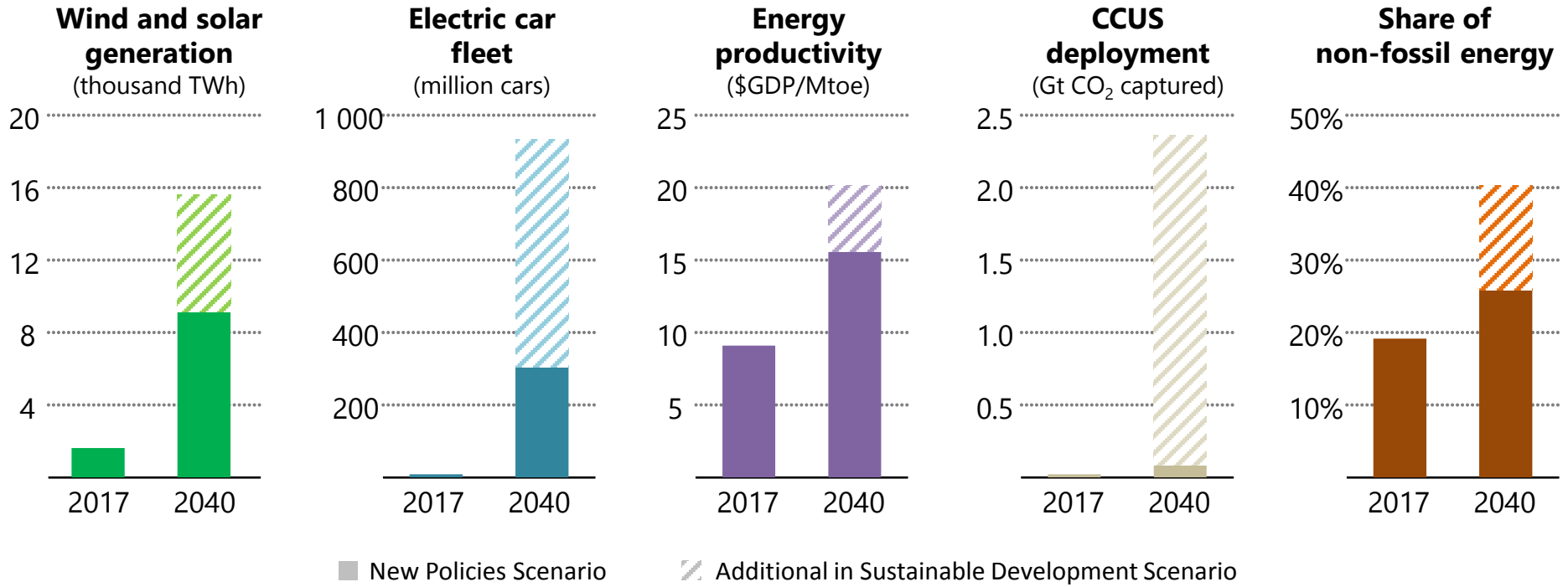
Coal plants make up one-third of CO_2 emissions today and half are less than 15 years old; policies are needed to support CCUS, efficient operations and technology innovation

Synergies: low-carbon measures reduce air pollution



Low-carbon measures rather than measures specific to air pollution account for 57% of NO_X and 40% of SO_2 emissions reductions

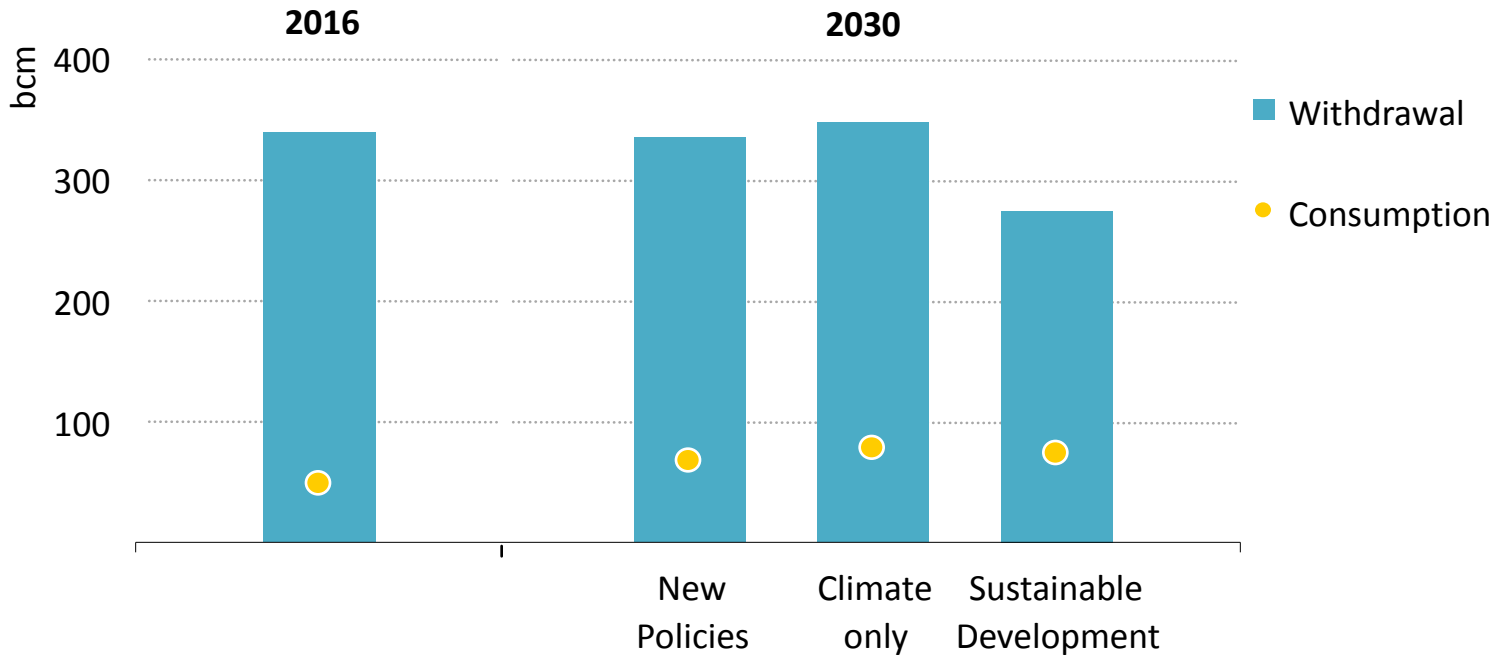
Energy Sector Transformation in the SDS



Delivering the energy transformation in the SDS requires 13% more energy sector investment than the NPS, due particularly to ramped up demand-side investment

The energy sector requires water

Global water use by the energy sector by scenario



A focus on an integrated approach rather than just a decarbonisation approach results in the lowest level of water withdrawals in 2030

Conclusions

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- Energy-related CO_2 emissions continue to rise and will hit record highs in 2018
- Progress is being made towards the SDGs, but under current trends goals on climate change, air pollution and universal access will not be met
- Our strategy for sustainable energy shows that concerted action to address climate change is fully compatible with global goals on universal access & air quality
- There is no single solution to turn emissions around: renewables, efficiency & a host of innovative technologies, including storage, CCUS & hydrogen, are all required
- Our global scenario can be drilled down into regional and country trends to provide a benchmark for companies seeking to align with SDG outcomes

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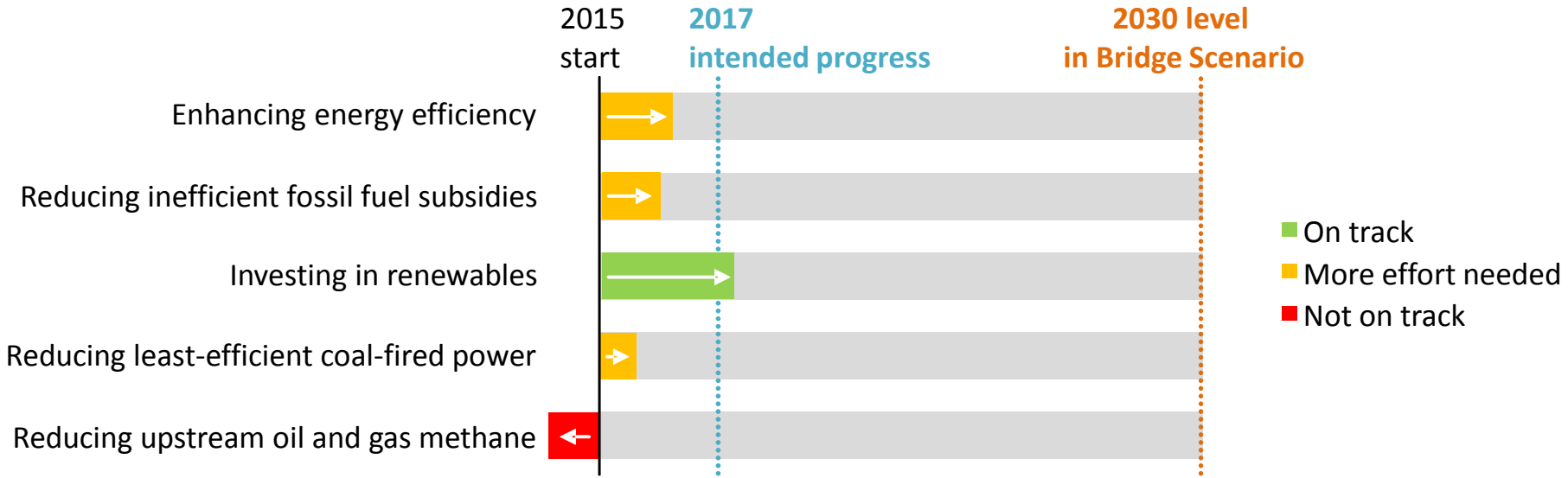
Greenhouse gas reductions: mixed progress on key cost-effective measures

Progress on Bridge Scenario measures for an early peak



Investment in renewables in power generation is on track with the Bridge Scenario, but more efforts on other measures are required