



International  
Energy Agency

# REDRAWING THE ENERGY-CLIMATE MAP

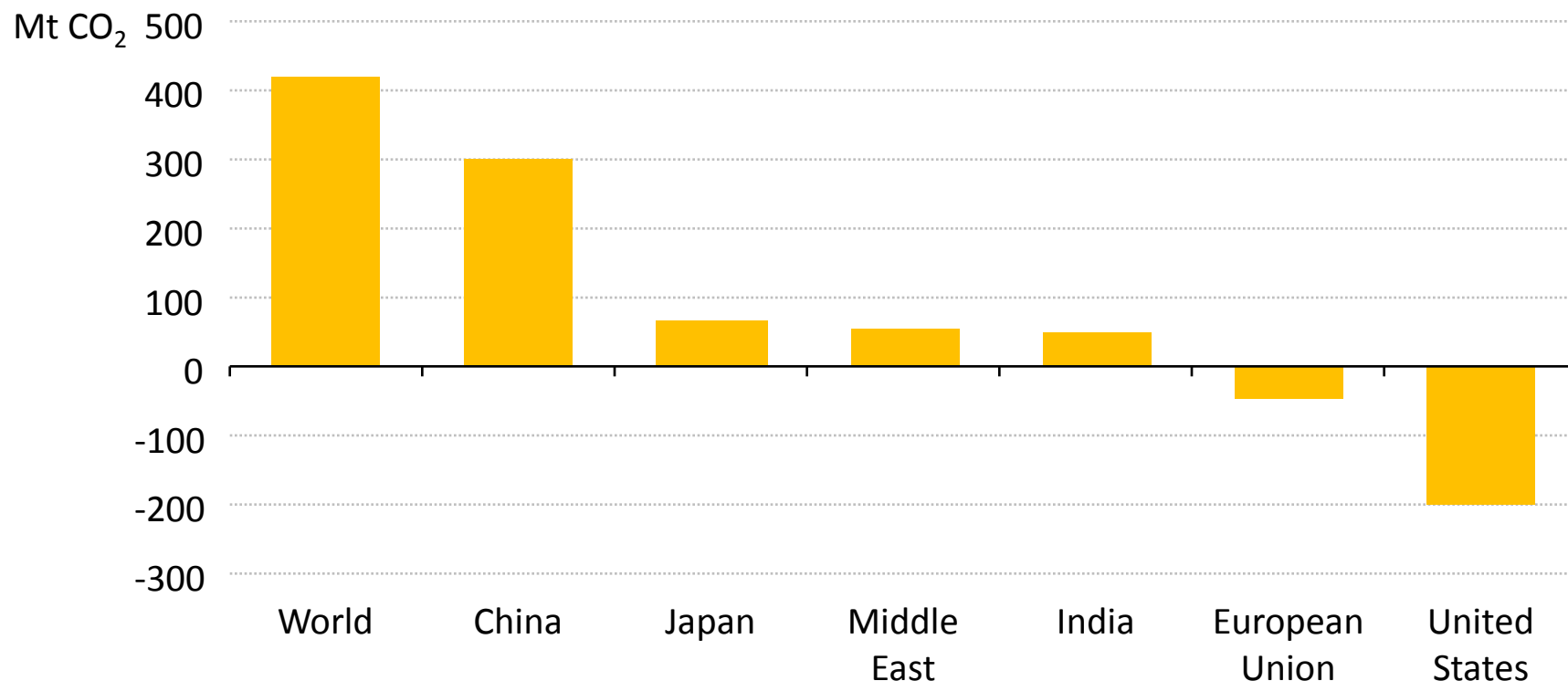
**London, 10 June 2013**

**World Energy Outlook Special Report**

- **Climate change is slipping down the policy agenda, even as the scientific evidence continues to accumulate**
- **Energy sector accounts for two-thirds of greenhouse gas emissions**
- **Mixed news on energy trends**
  - *Price dynamics between gas and coal support emissions reductions in some regions, but impede them in others*
  - *Renewables are on the rise, but investment slowed in 2012*
  - *Efficiency policies are gaining momentum in many countries*
  - *Nuclear is facing challenges and CCS still remains distant*

# CO<sub>2</sub> emissions at record high in 2012

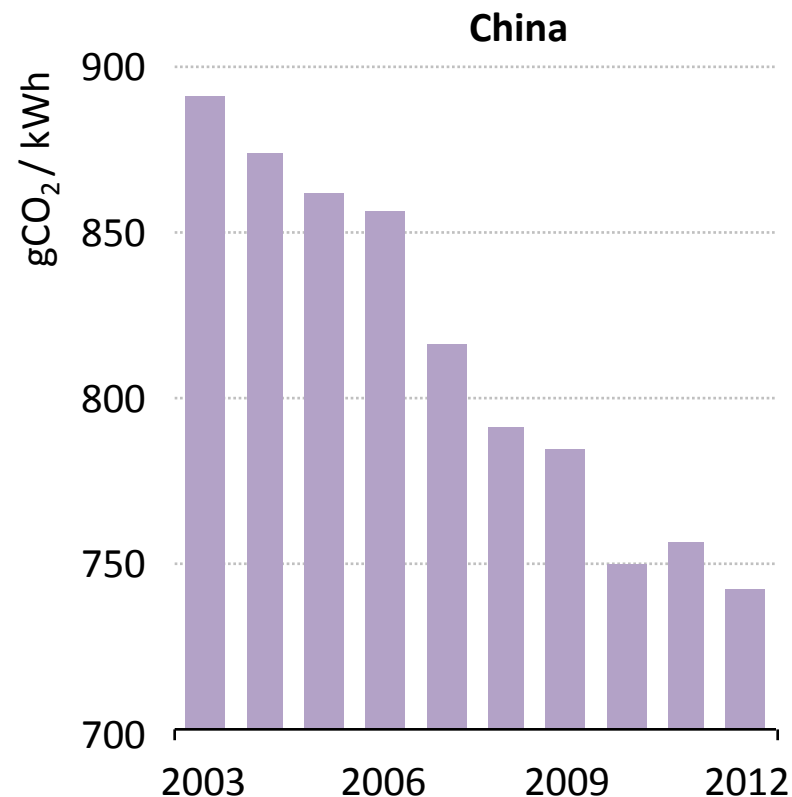
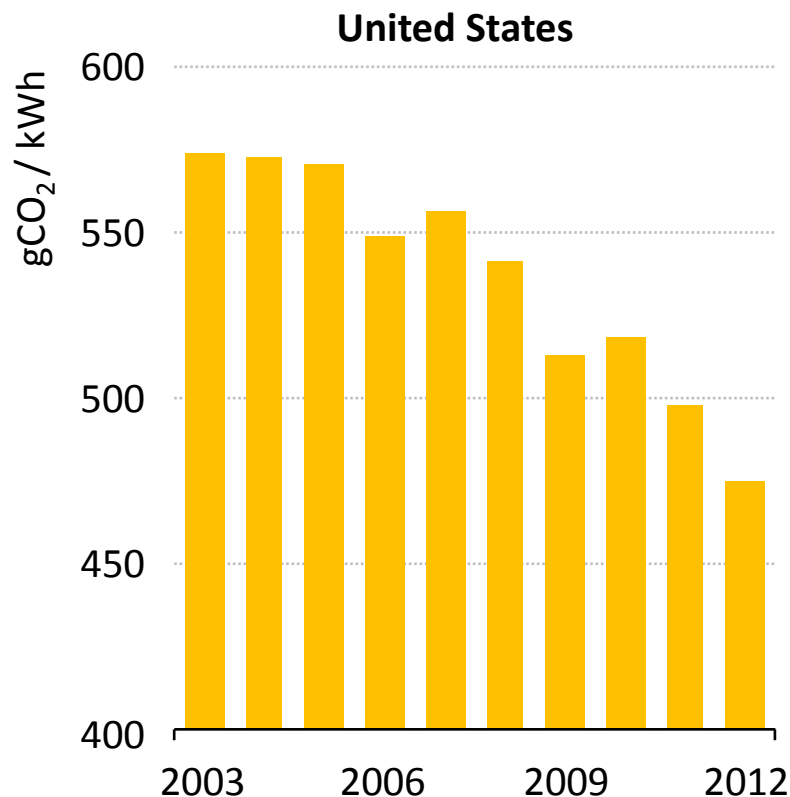
## Change in energy-related CO<sub>2</sub> emissions, 2012



***CO<sub>2</sub> emissions grew by 1.4% to reach 31.6 Gt in 2012, but trends vary by country***

# The two largest emitters make encouraging steps toward decarbonisation...

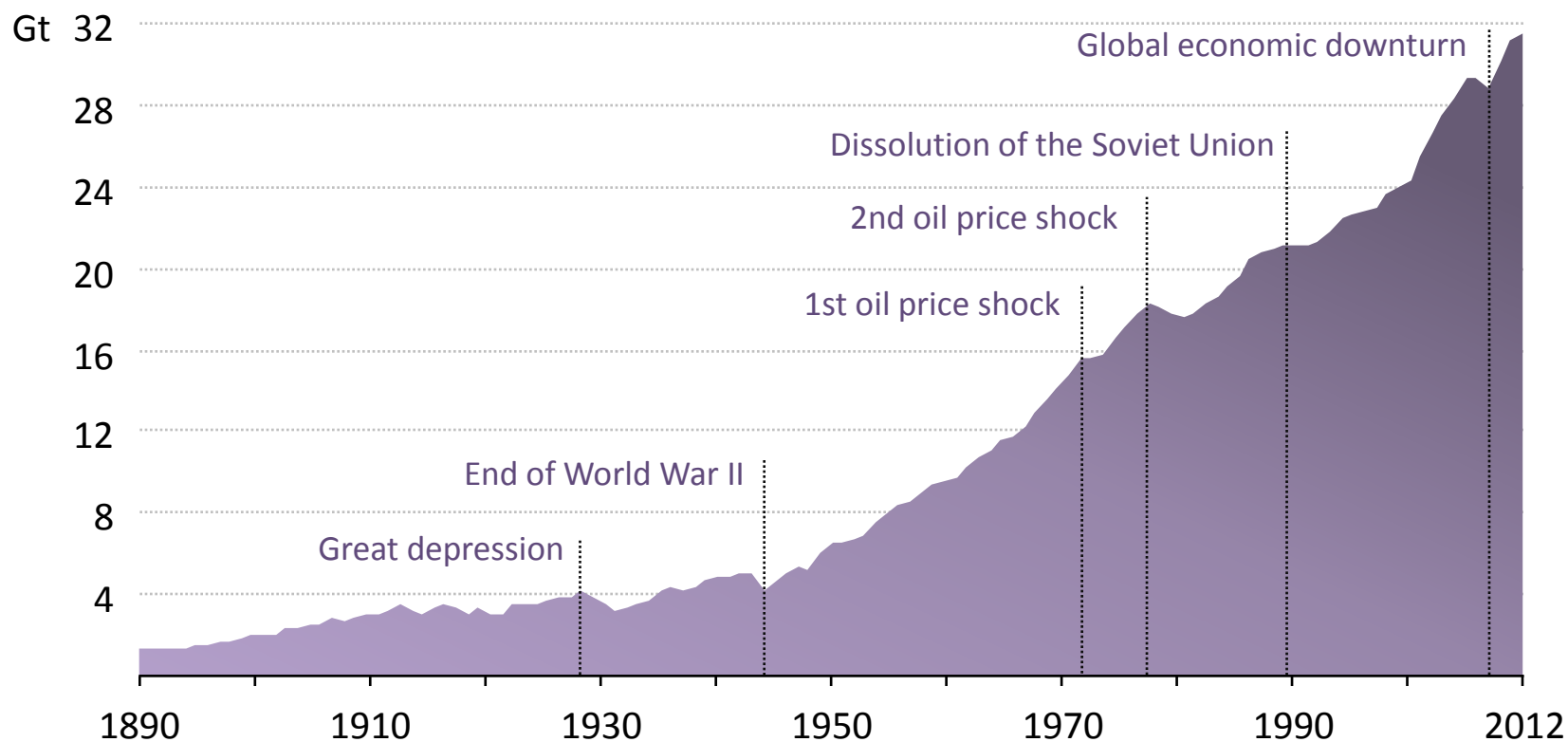
## CO<sub>2</sub> emissions per unit of electricity generation



*In 2012, total CO<sub>2</sub> emissions in the US were back at the level of the mid-1990s, while total CO<sub>2</sub> emissions growth in China was one of the lowest in the last decade*

# ...but the world is still moving in the wrong direction

## Global energy-related CO<sub>2</sub> emissions



***CO<sub>2</sub> emissions trends point to a long-term temperature increase of up to 5.3 °C***

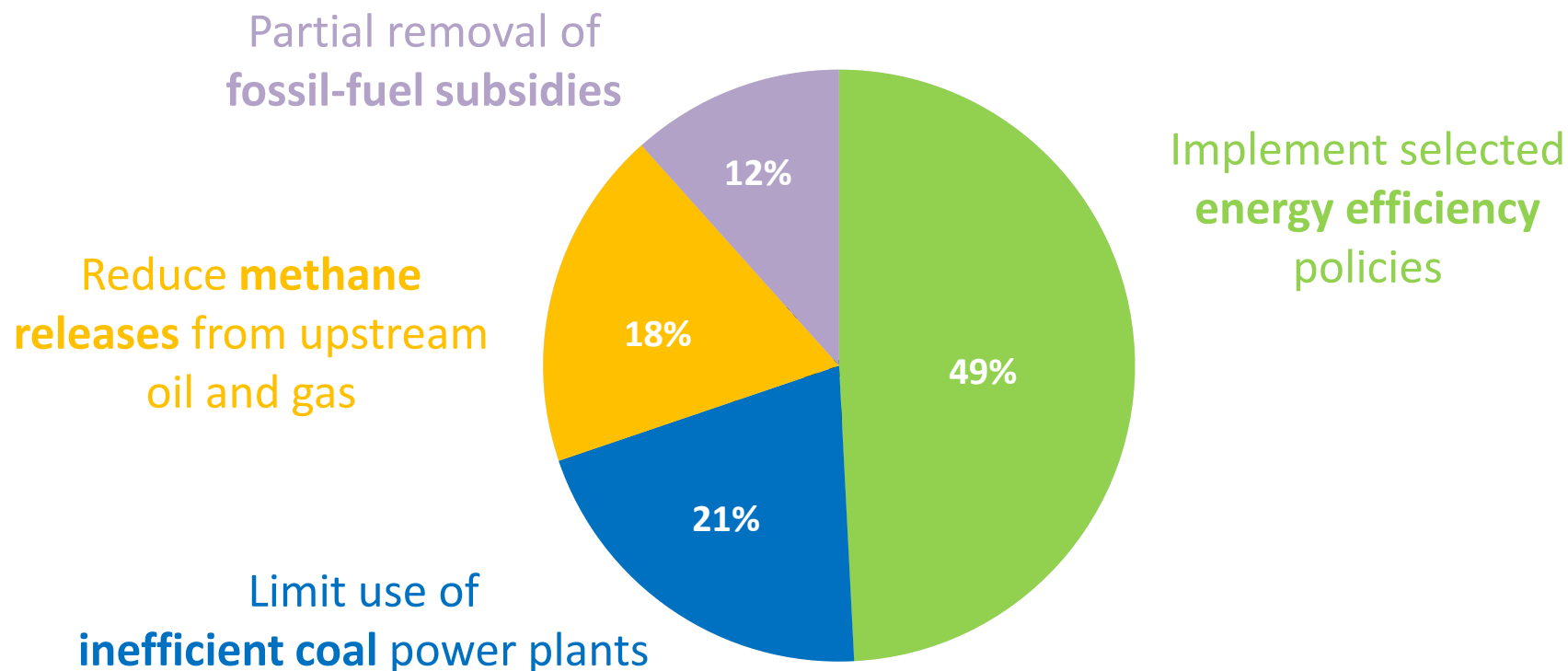
# Four measures to keep the 2 °C target alive

- **National efforts in this decade need to buy time for an international agreement, expected to come into force in 2020**
- **Measures to 2020 should meet key criteria:**
  - *Significant near-term emissions reductions*
  - *No harm to countries' economic growth*
  - *Reliance only on existing technologies and proven policies*
  - *Significant national benefits other than climate change mitigation*
- **Our 4-for-2 °C Scenario proposes four measures that meet these criteria**



# Four measures can stop emissions growth by 2020

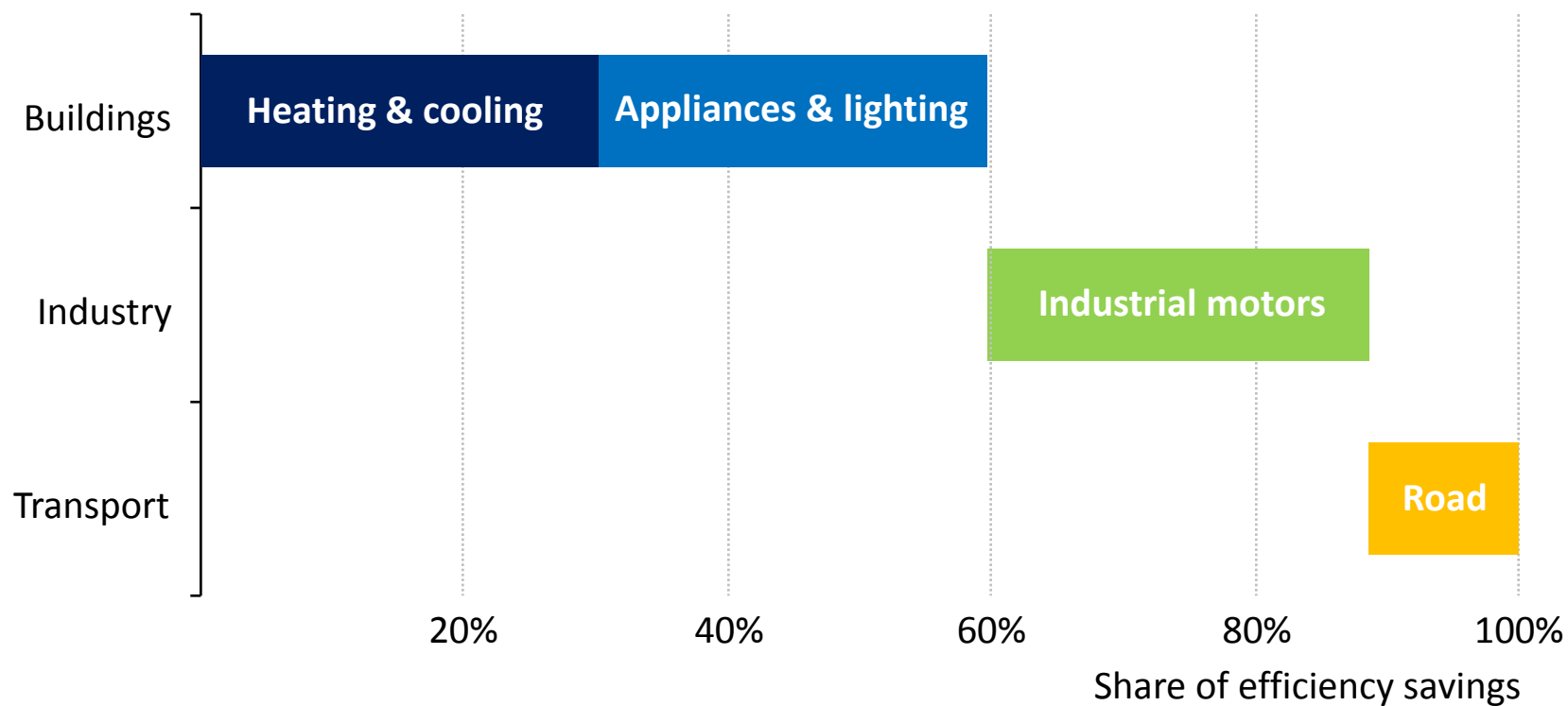
## Emissions savings in the 4-for-2 °C Scenario, 2020



***Four measures can stop the growth in emissions by 2020 at no net economic cost, reducing emissions by 3.1 Gt, 80% of the savings required for a 2 °C path***

# Measure 1: Improve energy efficiency

## Emissions savings in the 4-for-2 °C Scenario, 2020

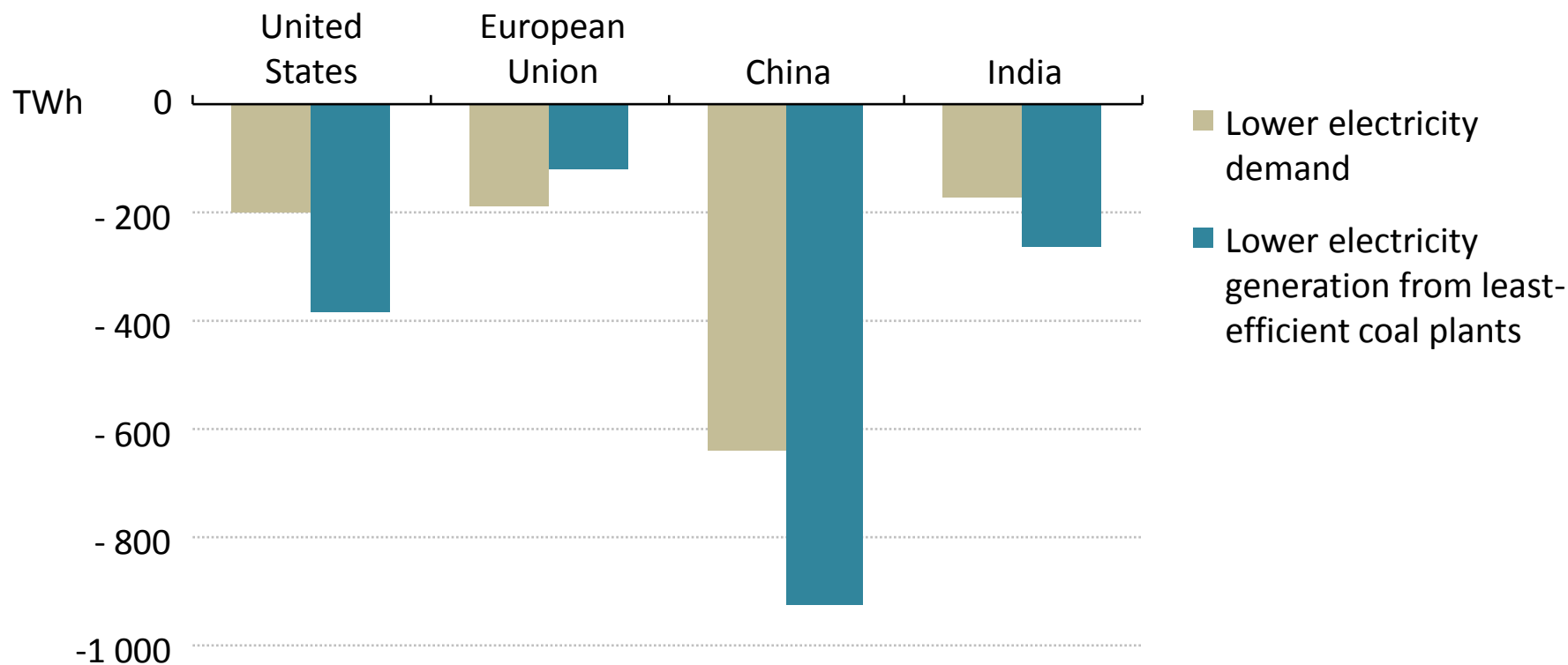


***Energy efficiency reduces emissions by 1.5 Gt, led by minimum energy performance standards – additional investment is more than offset by fuel bill savings***



# Measure 2: Limit the use of inefficient coal power plants

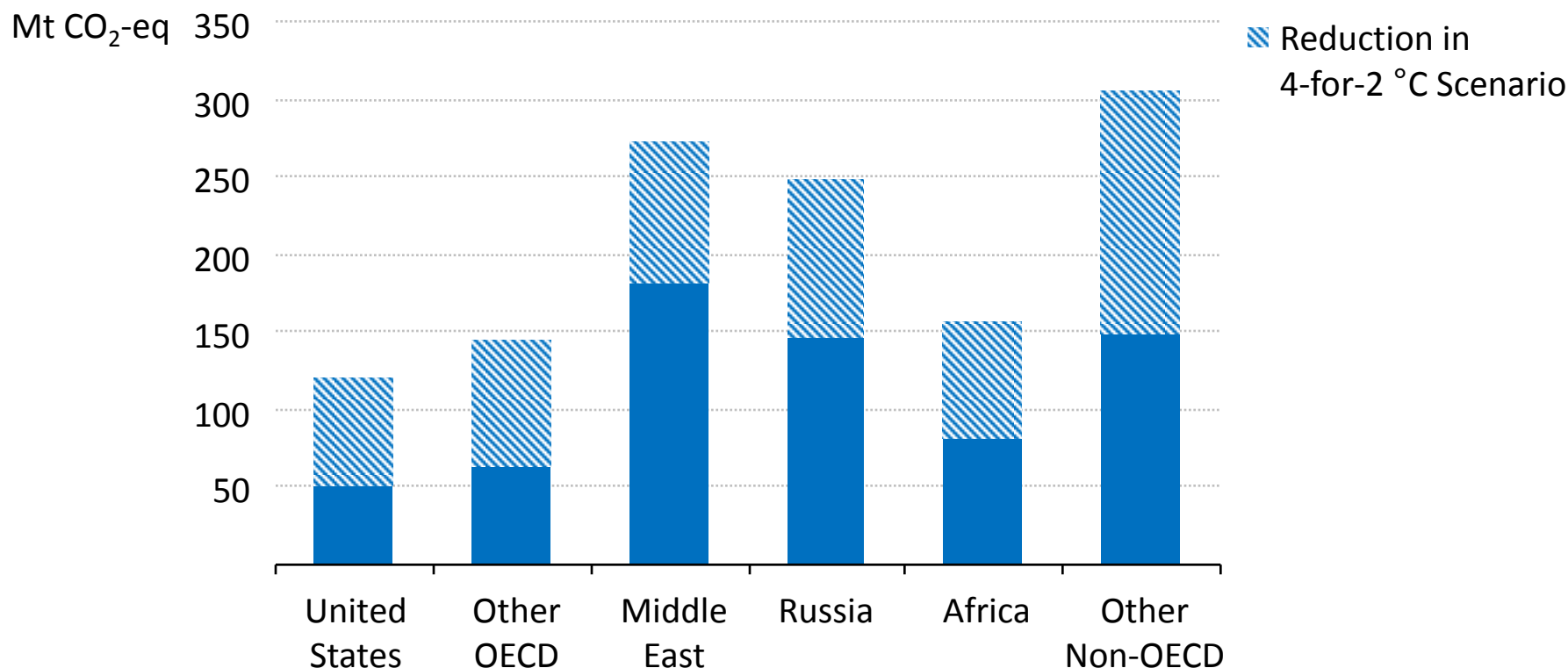
## Change in electricity demand & coal-fired electricity generation from the least-efficient plants, 2020



***Energy efficiency and reducing the role of the least-efficient coal power plants have important co-benefits for local air pollution***

# Measure 3: Reduce methane releases into the atmosphere

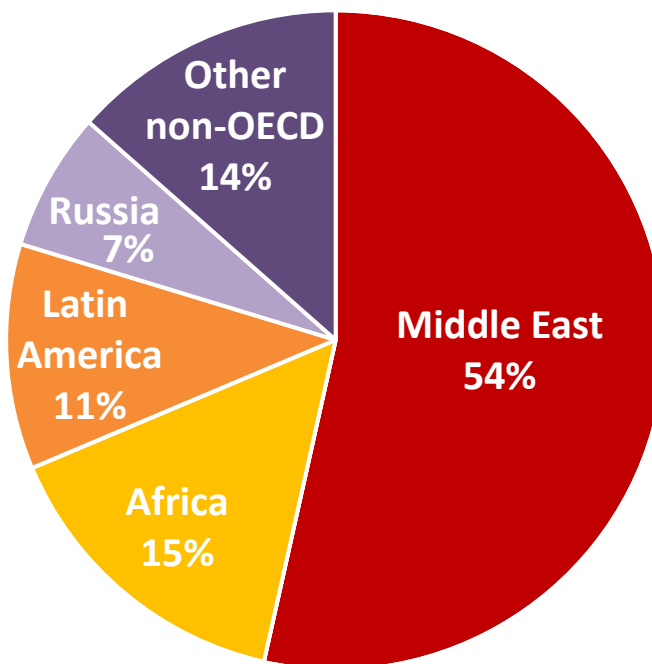
## Methane emissions from the upstream oil and gas industry, 2020



***In 2010, methane releases were 1.1 Gt CO<sub>2</sub>-eq;  
halving the level in 2020 would save twice the gas production of Nigeria today***

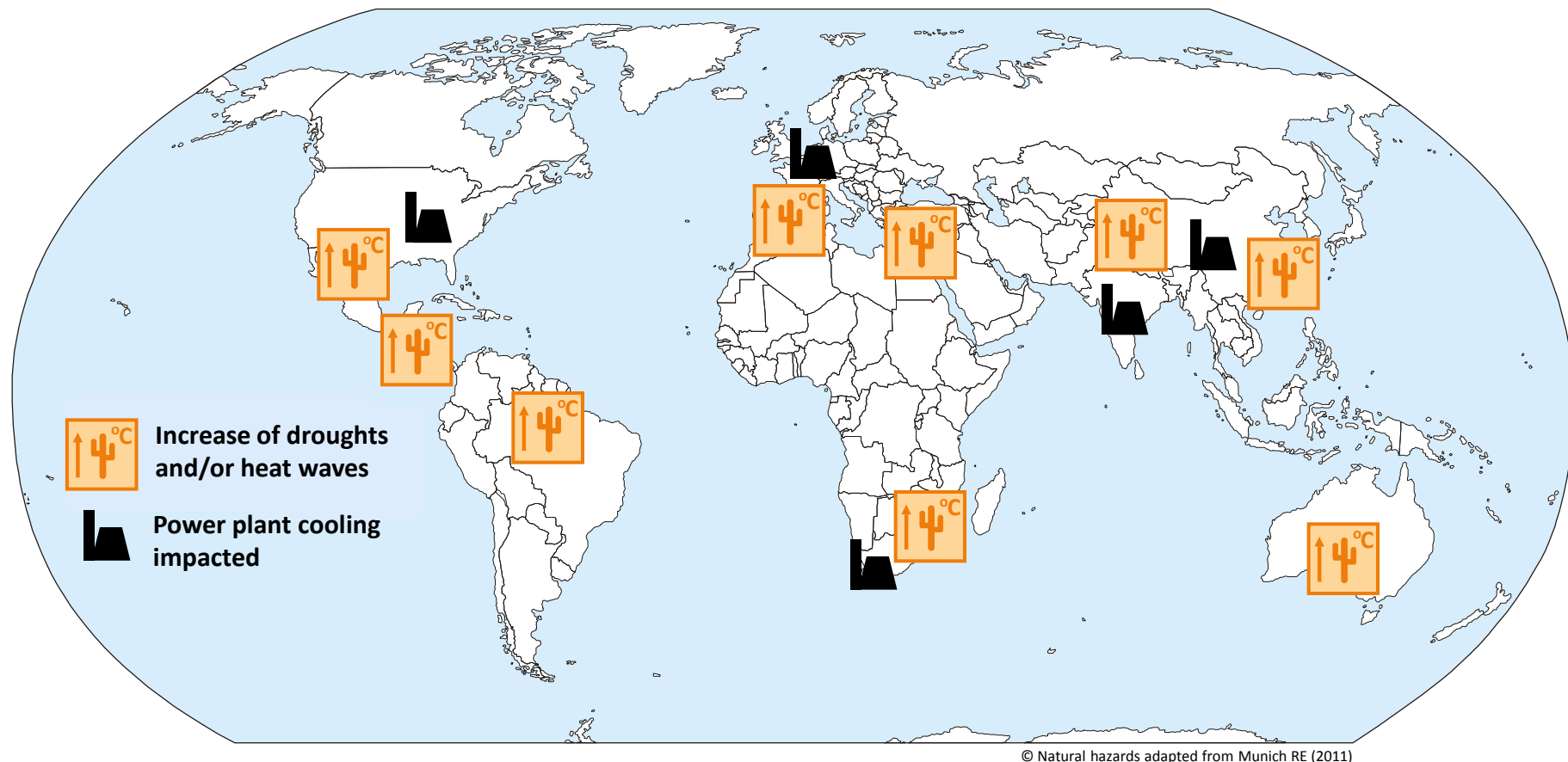
# Measure 4: Phase out fossil-fuel subsidies

Savings in the 4-for-2 °C Scenario: 360 Mt



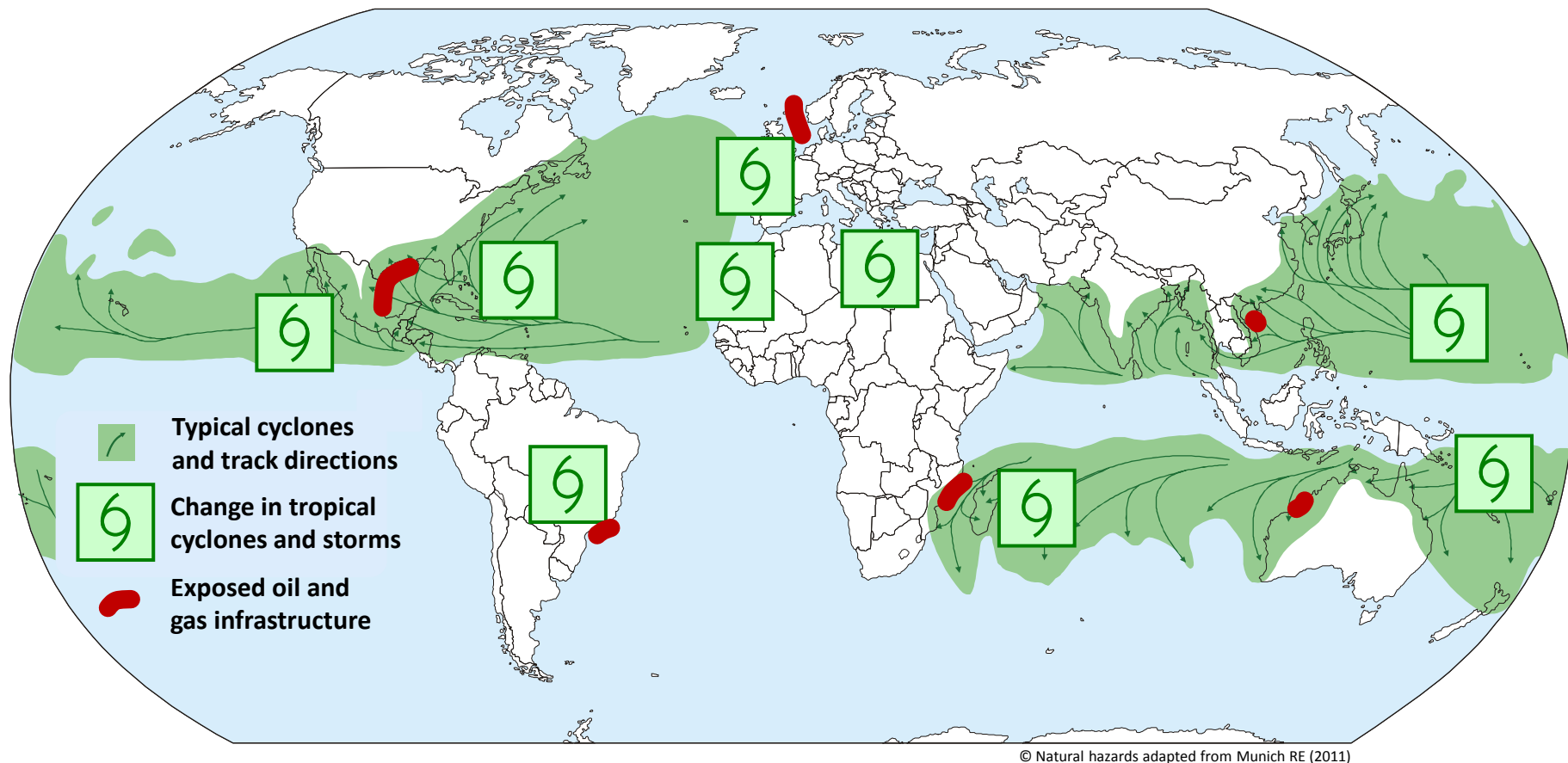
*Fossil-fuel subsidies in 2011 were equivalent to an incentive of \$110 per tonne of CO<sub>2</sub>*

# The energy sector needs to adapt to climate change



***The energy sector needs to increase its resilience to the physical impacts of climate change***

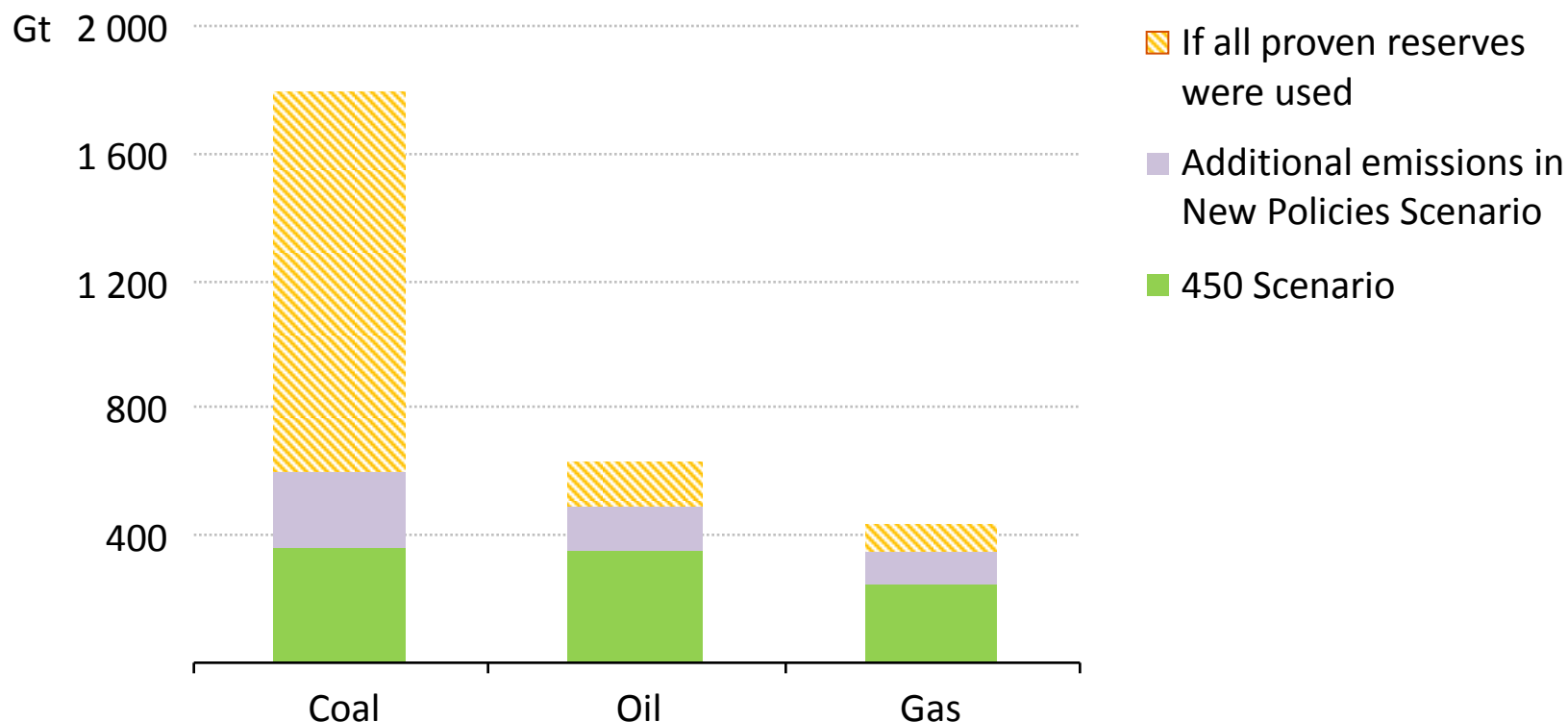
# The energy sector needs to adapt to climate change



*The energy sector needs to increase its resilience to the physical impacts of climate change*

# Some fossil-fuel reserves remain underground

## Potential CO<sub>2</sub> emissions from proven fossil-fuel reserves to 2050

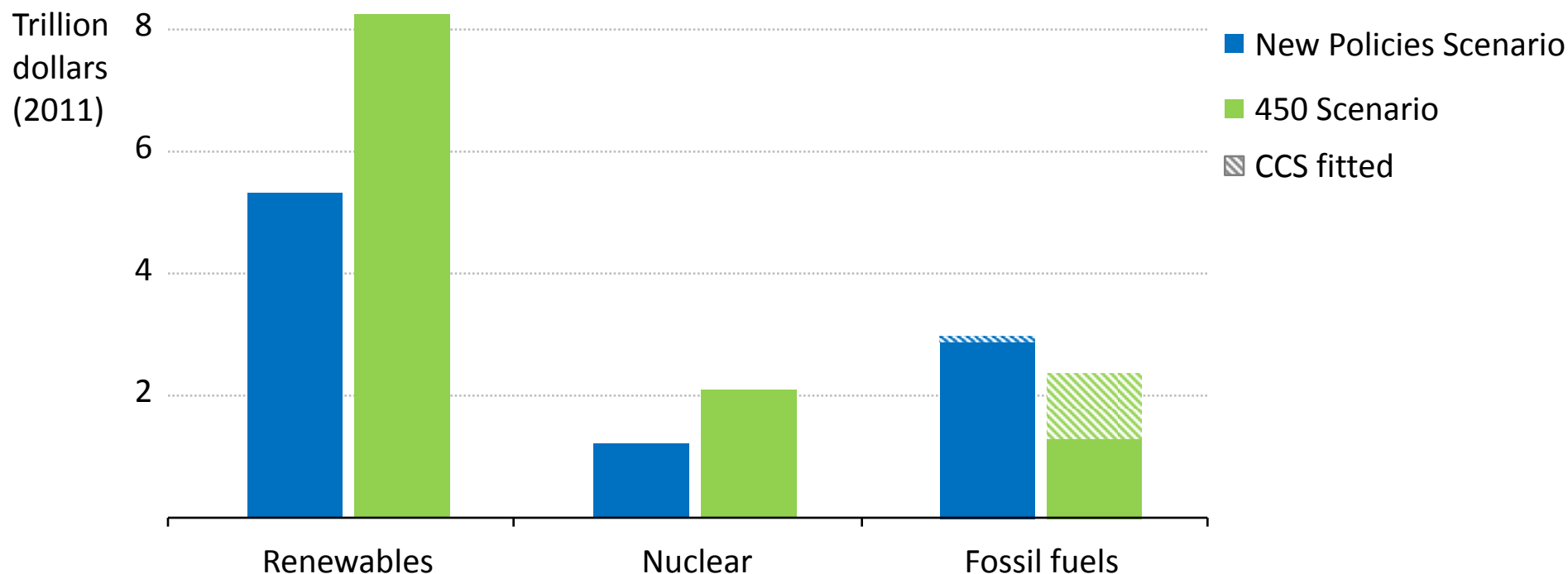


***On today's trends, half of the proven fossil-fuel reserves would be left undeveloped to 2050 – stronger climate action would increase the share***



# A diverse portfolio matters in the power sector

Net revenues for new power plants by scenario, 2012-2035



***Under a 2 °C path, total net revenues for new power plants are \$3 trillion higher – CCS is an effective protection strategy for fossil fuel assets***

# Key messages

- Despite encouraging steps in some countries, global emissions keep rising and the scientific evidence of climate change increases
- Early national action is required while negotiating towards a global deal in Paris in 2015 that then comes into force by 2020
- Four measures can stop emissions growth by 2020 and keep the 2°C target alive, without harming economic growth
- There is a need for parallel action to deploy critical low-carbon technologies at scale after 2020, including CCS
- The energy sector must adapt to climate change, both in the resilience of its existing assets and in future investment decisions

# REDRAWING THE ENERGY-CLIMATE MAP

[www.worldenergyoutlook.org/energyclimatemap](http://www.worldenergyoutlook.org/energyclimatemap)

World Energy Outlook Special Report