

# Sustainable Investment Task Force (SITF)

Panel Discussion

August 27, 2013

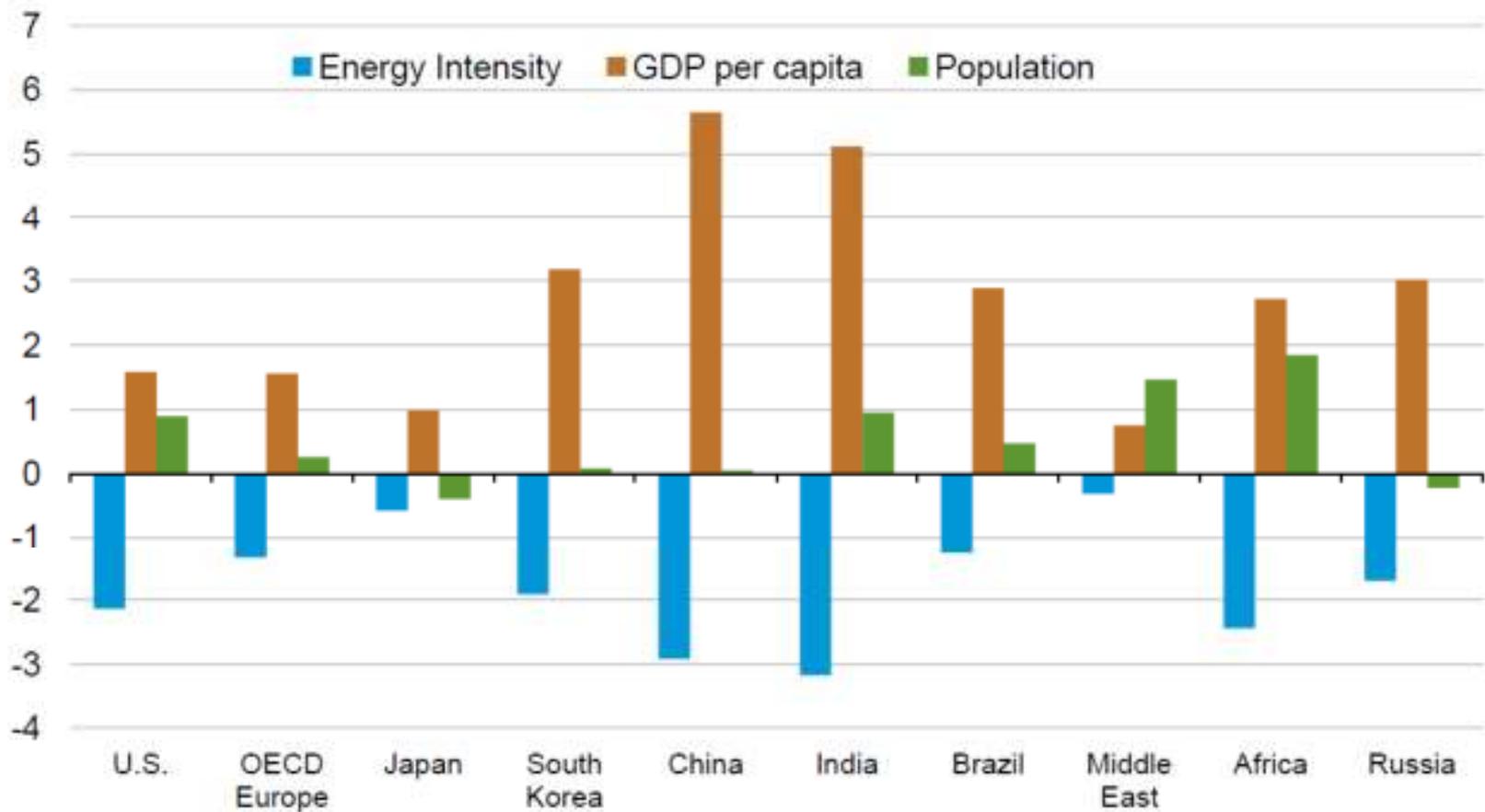
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# Global Growth

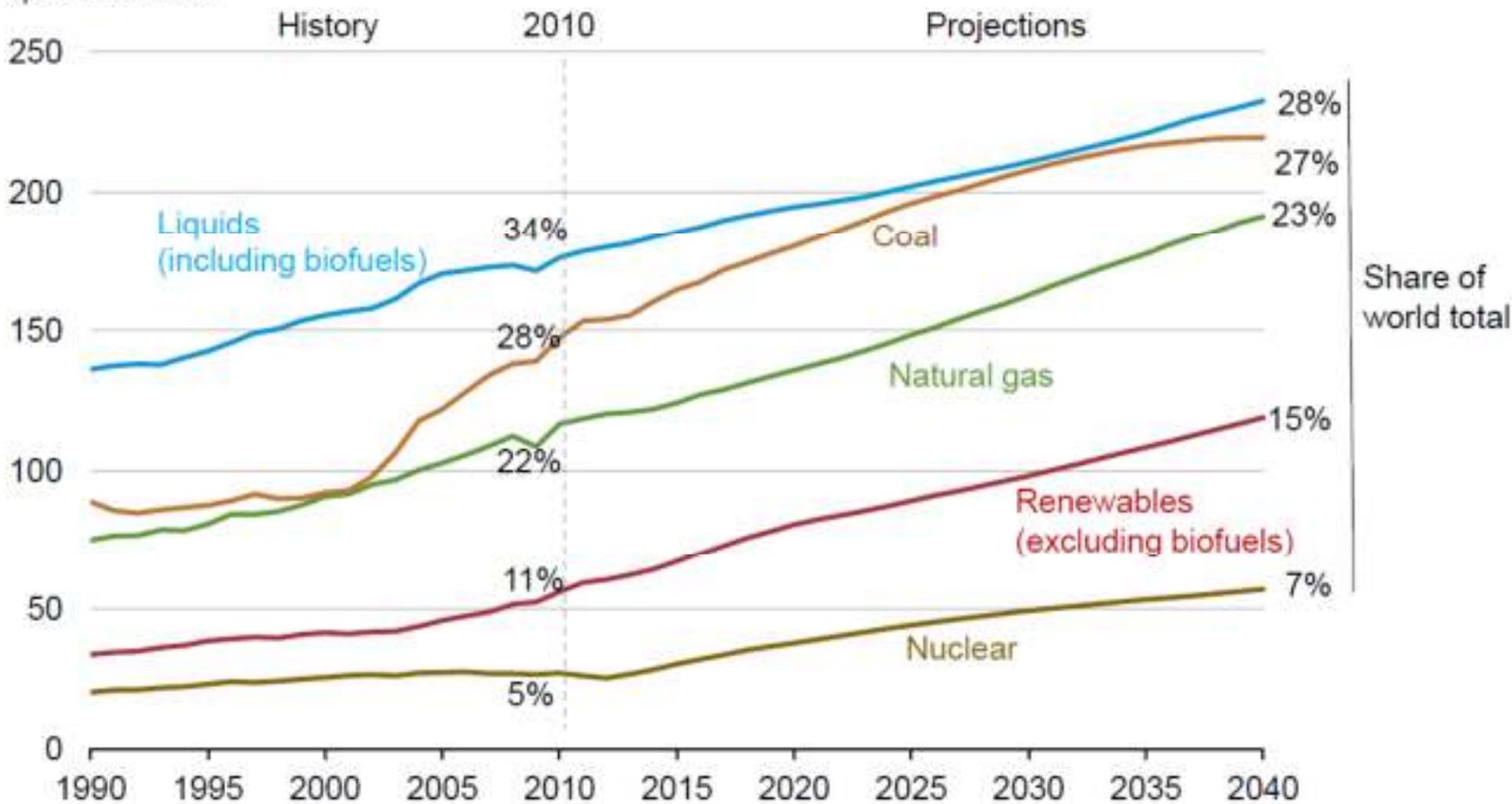
average annual change (2010-2040)  
percent per year



Source: EIA, International Energy Outlook 2013

# World Energy Consumption

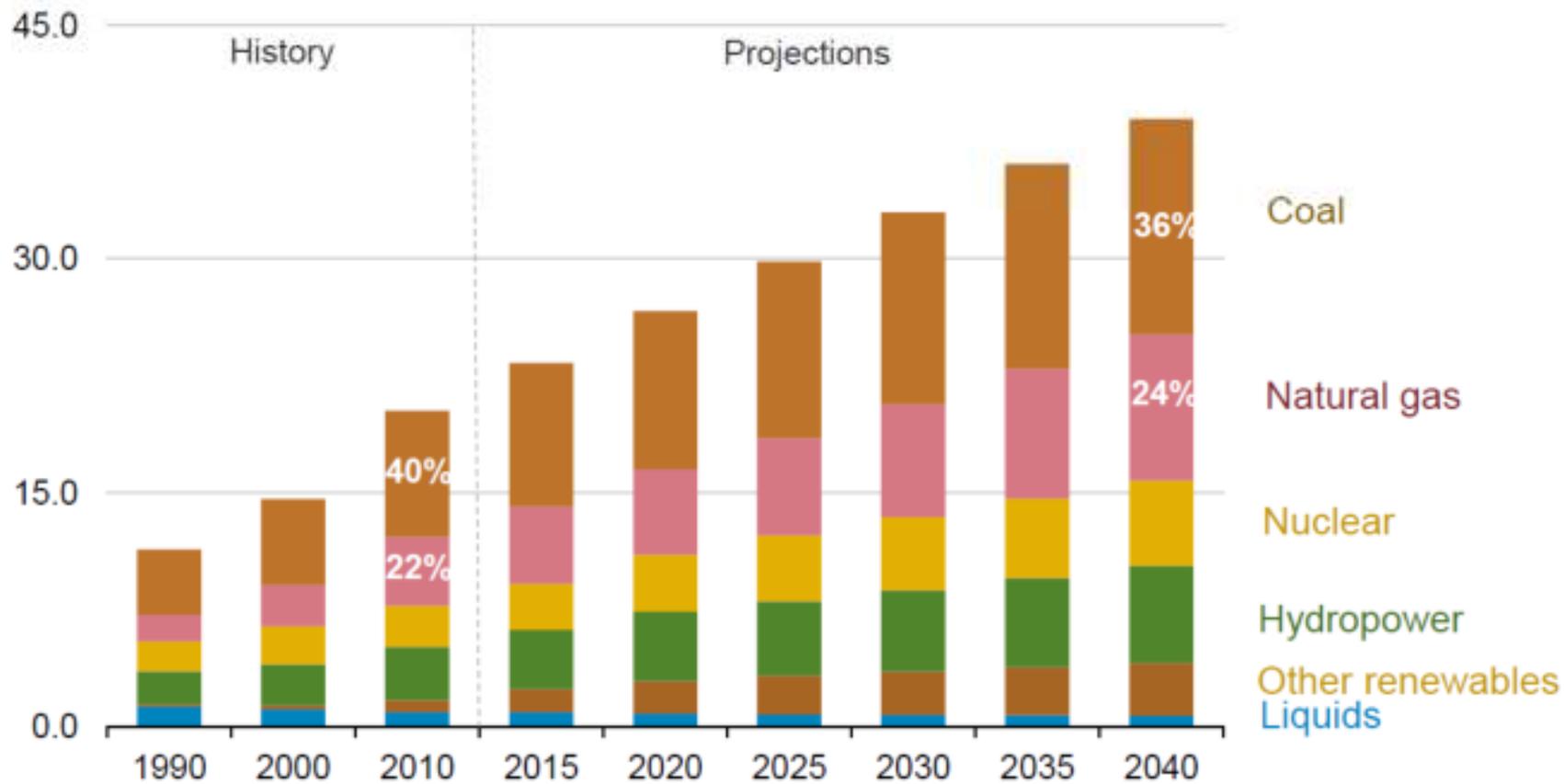
world energy consumption by fuel  
quadrillion Btu



Source: EIA, International Energy Outlook 2013

# Electricity Generation by Fuel Source

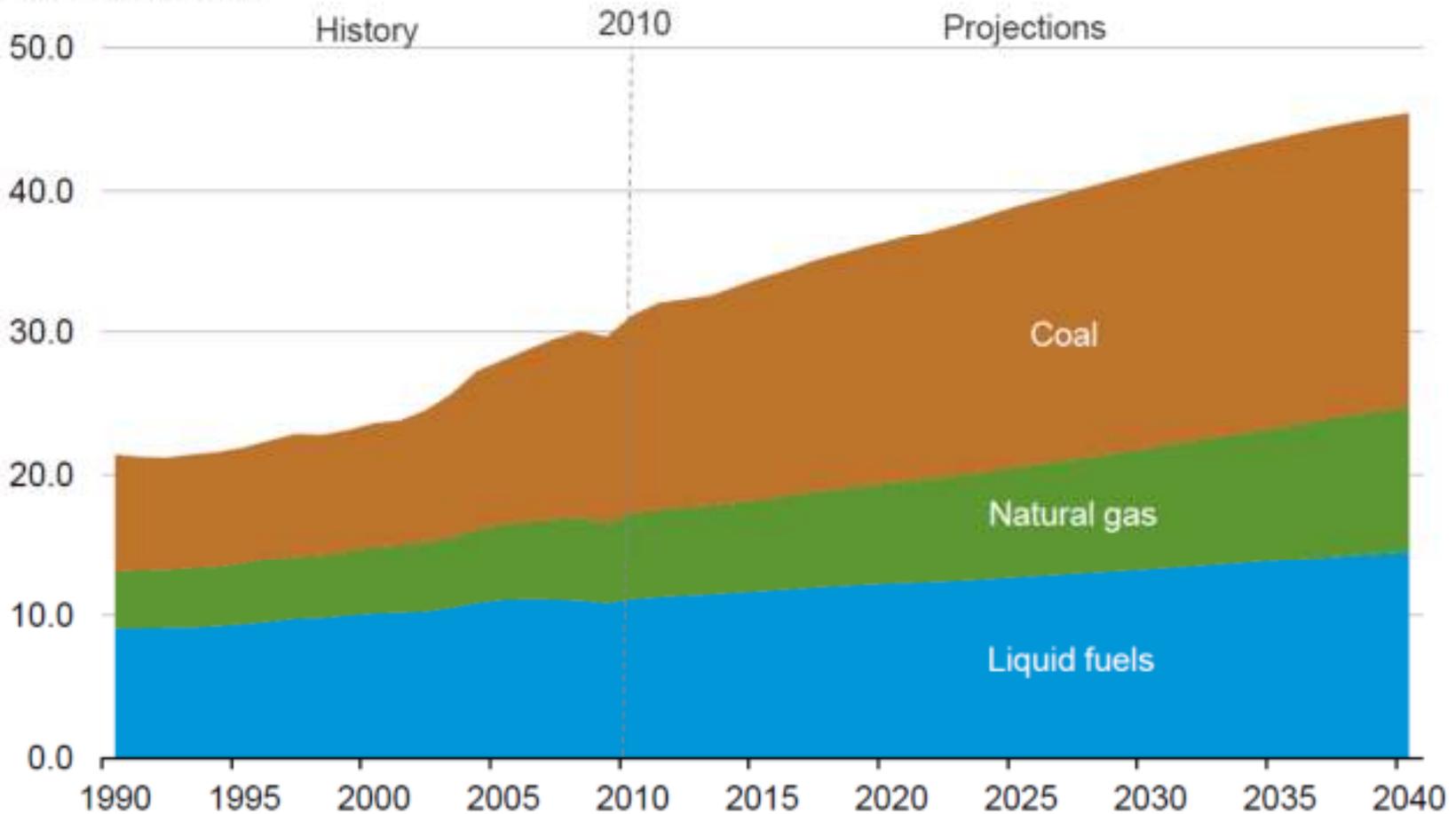
world electricity generation by fuel  
billion kilowatthours



Source: EIA, International Energy Outlook 2013

# World Energy-Related CO<sub>2</sub> Emissions

world energy-related carbon dioxide emissions by fuel  
billion metric tons



Source: EIA, International Energy Outlook 2013

# Is this sustainable?

- World energy-related carbon dioxide emissions rise from 31.2 billion metric tons in 2010 to 45.5 billion metric tons in 2040—an increase of 46% over the projection period.
  - Using a back-of-the-napkin average – this BAU scenario estimates global accumulative CO<sub>2</sub> emissions from 2010 – 2040 will be on the order of 1150 billion metric tons.
  - Can the planet (and us) handle this?

# What is the global “Carbon Budget”?

- Global warming is driven by increases in atmospheric levels of greenhouse gases (GHGs), primarily carbon dioxide (CO<sub>2</sub>) from the burning of fossil fuels.
  - the cumulative annual emissions over any particular period will determine the change in atmospheric CO<sub>2</sub> concentration, and therefore the amount of warming.
  - this means that for any particular rise in temperature, there is a budget for emissions of greenhouse gases, including CO<sub>2</sub>, which cannot be exceeded in order to avoid temperature rising above a target threshold.

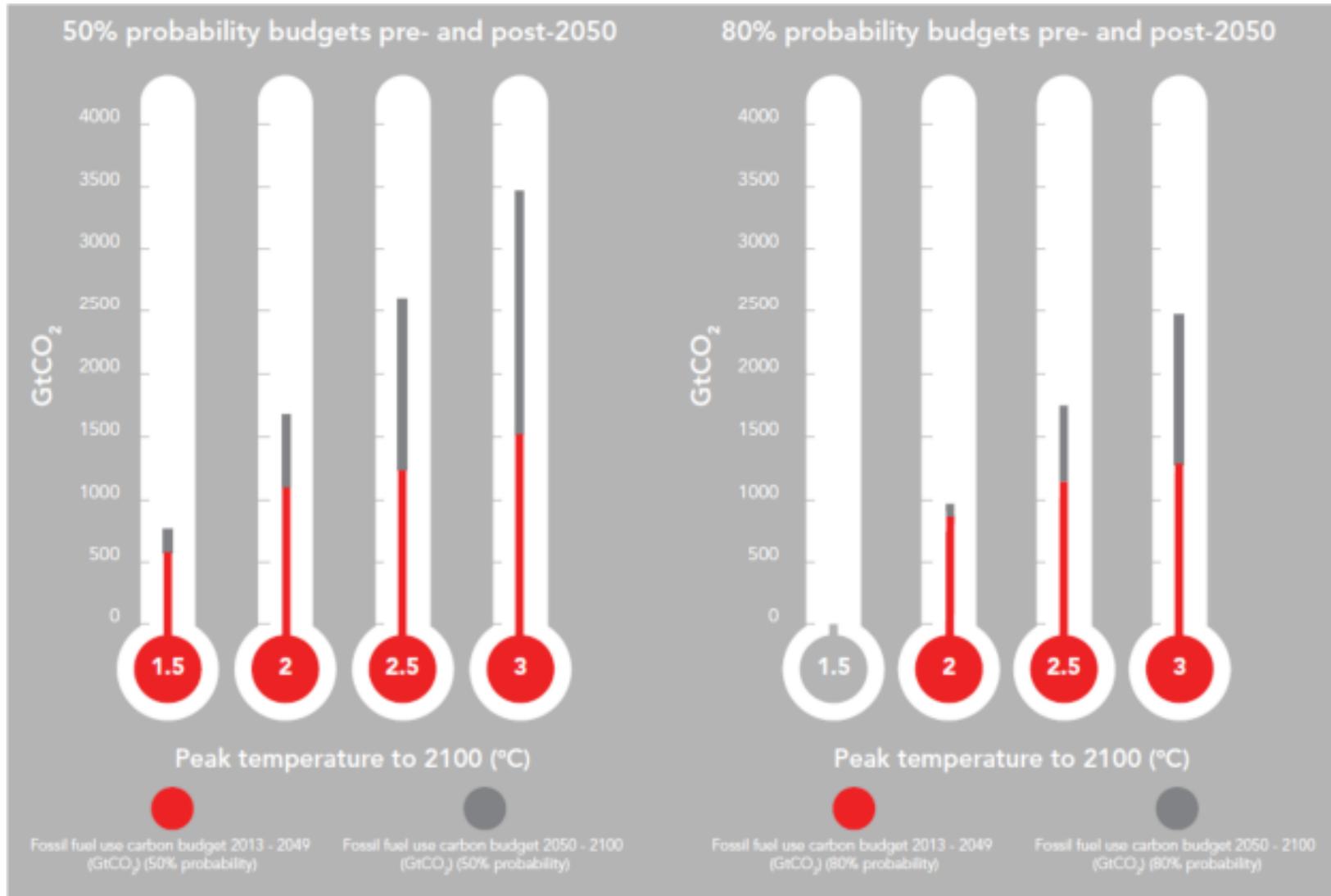
# Carbon Budgets

- In 2010, governments agreed at the UN climate change conference that emissions should be reduced to avoid a rise in global average temperature of more than 2°C above pre-industrial levels (1750), which corresponds to an atmospheric CO<sub>2</sub> concentration of 450 ppm.

Maximum temperature rise (°C)	Fossil fuel carbon budget 2013-2049 (GtCO <sub>2</sub> )	
	50%	80%
Probability of not exceeding temperature threshold		
1.5	525	-
2.0	1075	900
2.5	1275	1125
3.0	1425	1275

Maximum temperature rise (°C)	Total Carbon budget 2050-2100 (GtCO <sub>2</sub> )	
	50%	80%
Probability of not exceeding temperature threshold		
1.5	25	-
2.0	475	75
2.5	1175	650
3.0	1875	1200

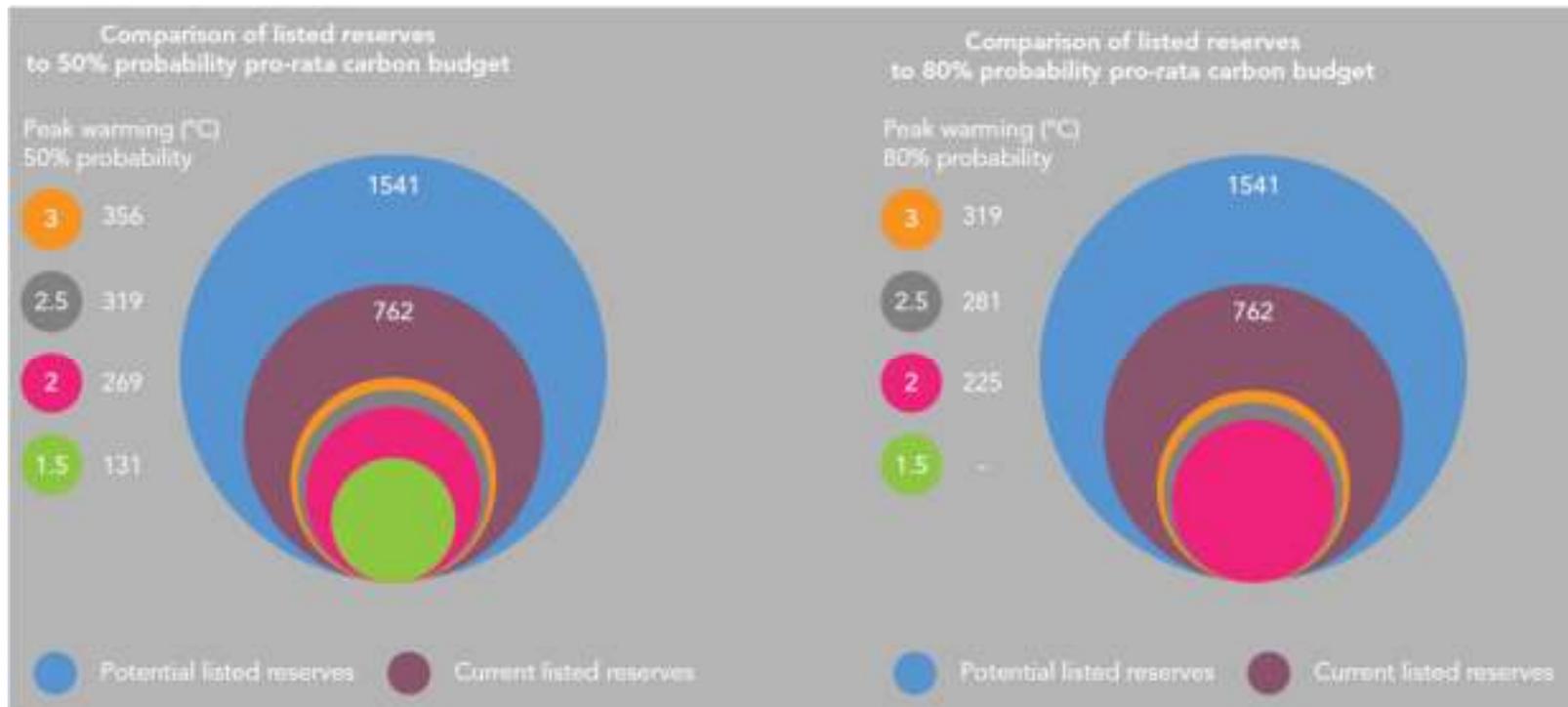
# Carbon Budgets



Source: Carbon Tracker Initiative; Grantham Institute on Climate Change and the Environment, London School of Economics

# Listed Reserves vs. Budgets

- According the World Energy Outlook 2012 (IEA) the total reserves including state-owned assets are equivalent to 2860 GtCO<sub>2</sub> – enough to take us beyond 3°C of warming.
  - Of that, 762 GtCO<sub>2</sub> are held by companies listed on the world’s stock exchanges and if we include those potential reserves that companies are seeking to develop, this number jumps to 1541 GtCO<sub>2</sub>.



Source: Carbon Tracker Initiative; Grantham Institute on Climate Change and the Environment, London School of Economics

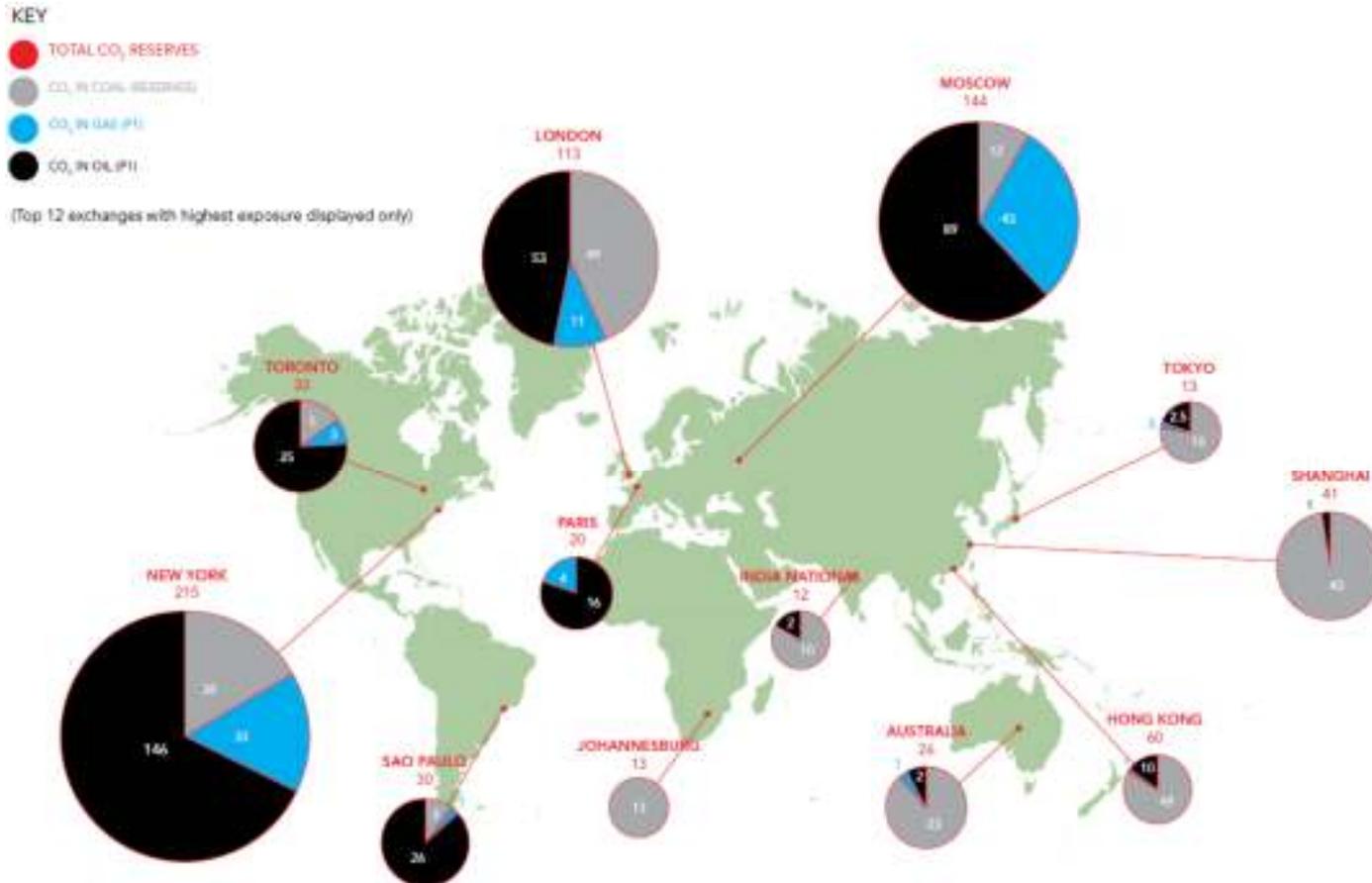
# “Stranded Assets”

- If we are to limit warming to the lower ranges with high likelihood, then an estimated 65-80% of listed companies' current reserves cannot be burned unmitigated.
- These assets become stranded within the carbon budget.

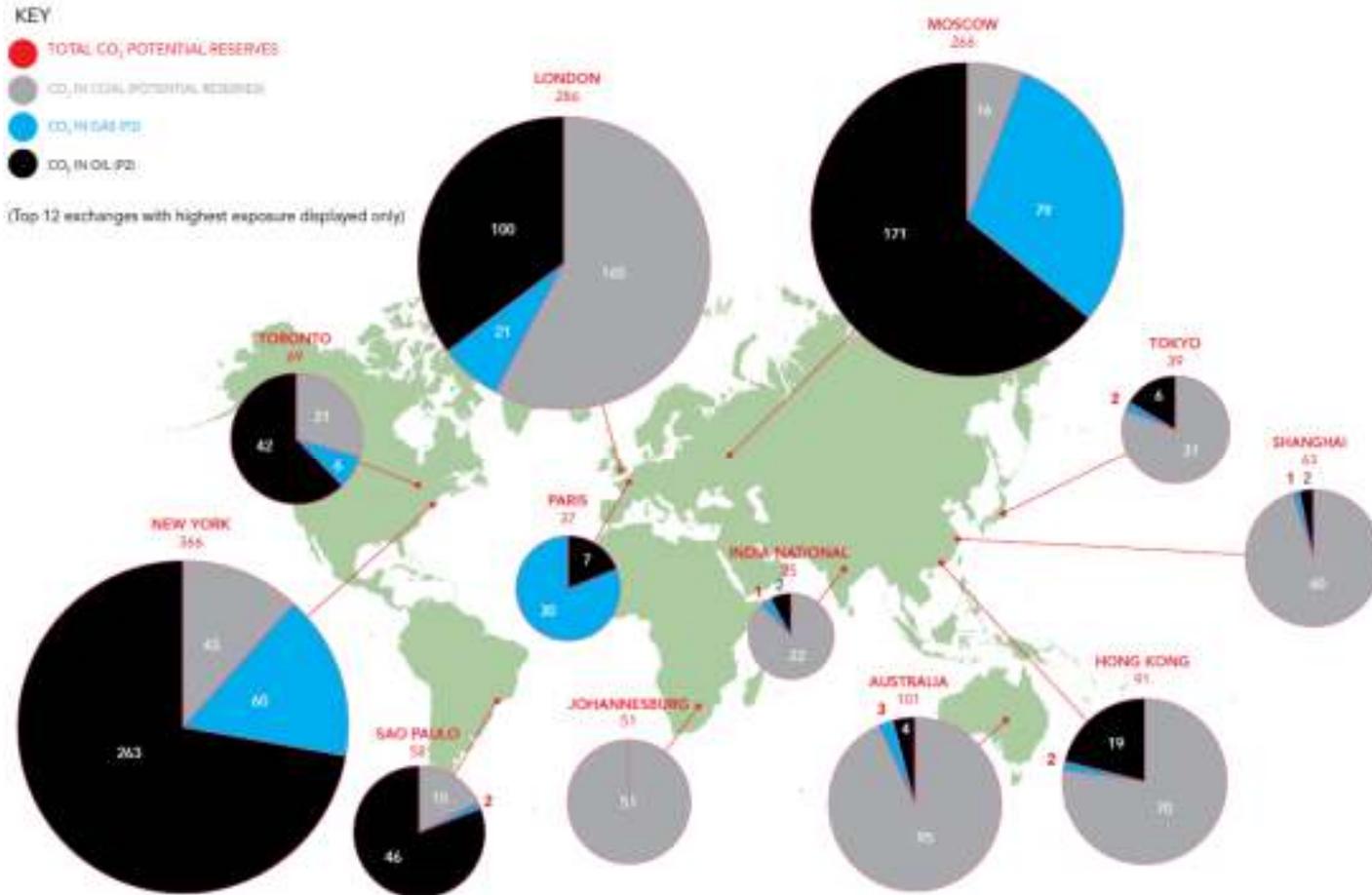
# Capital Expenditures

- Over the past 12 months, the top 200 listed coal, oil, and gas companies devoted \$674 billion toward the development of reserves.
  - The majority (\$593 billion) devoted to oil & gas, given the higher capital costs in the industry.
    - Exploration, production, and refining
  - If this pace continued over the next decade, over \$6 trillion of capital would be allocated to the development of reserves that are likely to become unburnable.
  - In contrast, these same companies paid \$126 billion in dividends to their shareholders over the past 12 months.

# Distribution of Coal, Oil, and Gas Assets across Stock Exchanges



# Distribution of Coal, Oil, and Gas Assets across Stock Exchanges



Source: Carbon Tracker Initiative; Grantham Institute on Climate Change and the Environment, London School of Economics

# Index Intensity

Indices	Current reserves intensity of index (GtCO <sub>2</sub> / US\$ trillion mkt cap)
MICEX Index (Moscow)	213.39
Athens Stock Exchange General Index	101.44
FTSE MIB INDEX (Italy)	40.89
FTSE 100 (London)	35.86
Budapest Stock Exchange Index	29.95
Bovespa Sao Paulo Stock Exchange Index	24.55
Hong Kong Hang Seng Index	24.16
Vienna Stock Exchange Traded Index	23.38
BSE Sensex 30 Index (India)	21.21
S&P/TSX Composite Index (Canada)	19.59

Source: Carbon Tracker Initiative; Grantham Institute on Climate Change and the Environment, London School of Economics

# Divergent Scenarios

- If we make commitments to keep warming below 2°C, or we continue to emit CO<sub>2</sub> unabated, then the risk paths are dramatically different.
  - If we continue to emit, the fossil-fuel sector will thrive, but climate-sensitive sectors such as agriculture, property, infrastructure, forestry, water, and those that rely on these sectors through supply chains will experience the opposite fortunes.

# Climate Change

- Climate change represents additional supply-chain risk – it is a risk multiplier – these risks become more probable as we continue to emit.
- Institutional investors cannot take a head-in-the-sand approach to these risks.
  - They need to articulate their strategies to manage this risk and what assumptions they are making on probabilities of different pathways.