

THE PARIS AGREEMENT, MANAGED DECLINE OF FOSSIL FUELS AND IMPLICATIONS FOR GAS

Lorne Stockman – Research Director





A BRIDGE TOO FAR:
 HOW APPALACHIAN BASIN
 GAS PIPELINE EXPANSION WILL
 UNDERMINE U.S. CLIMATE GOALS

JULY 2016



SEPTEMBER 2016

THE SKY'S LIMIT

WHY THE PARIS CLIMATE GOALS REQUIRE A
 MANAGED DECLINE OF FOSSIL FUEL PRODUCTION



SEPTEMBER 2016



THE SKY'S LIMIT

WHY THE PARIS CLIMATE GOALS REQUIRE A
MANAGED DECLINE OF FOSSIL FUEL PRODUCTION

OILCHANGE
INTERNATIONAL

PUBLISHED IN COLLABORATION WITH

350.org



aycc

BOLD ALLIANCE



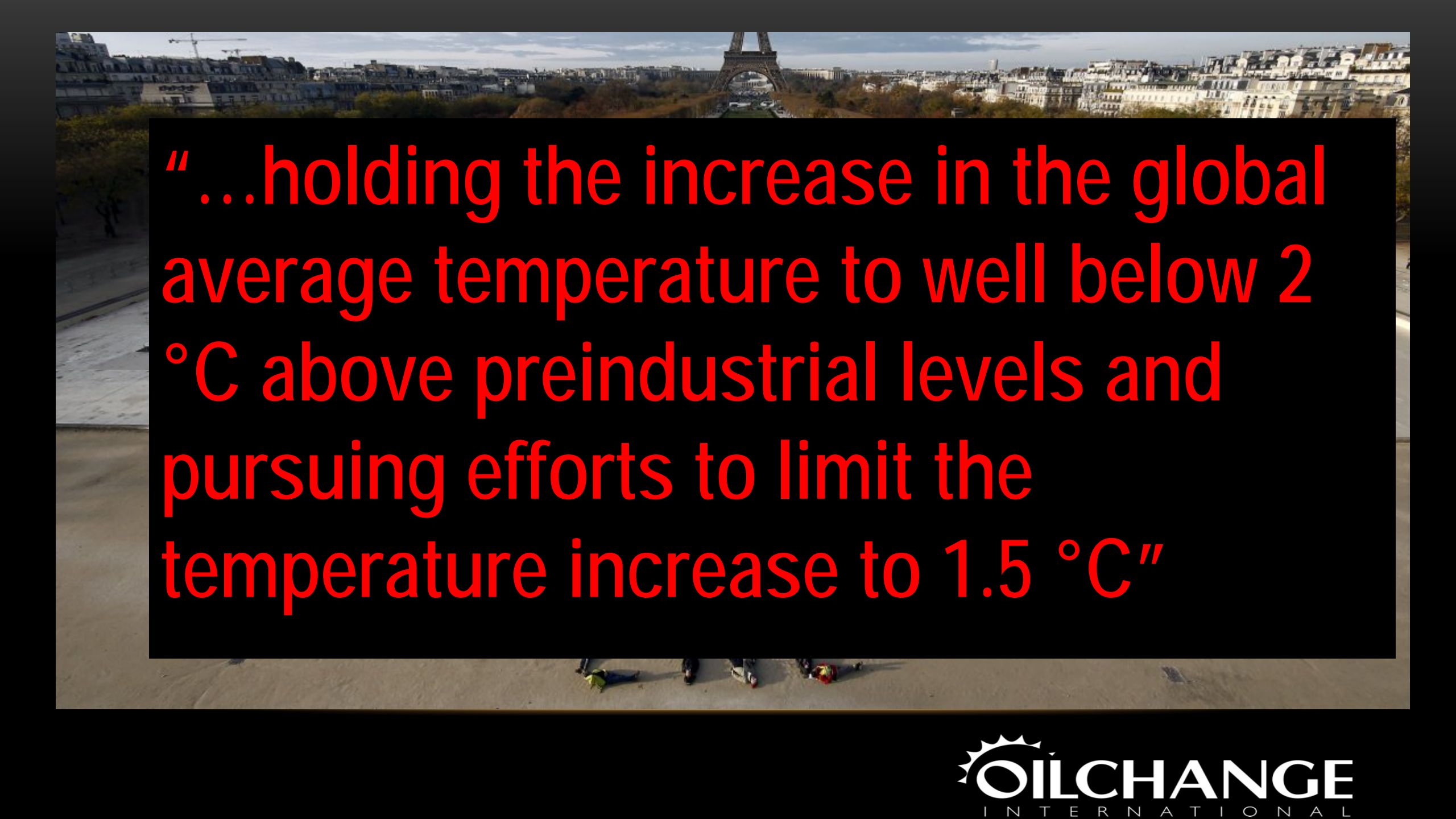
équiterre



IndyACT



STAND
earth

A wide-angle photograph of the Paris skyline, featuring the Eiffel Tower in the center. The city buildings and trees are visible under a clear sky. A black rectangular box is overlaid on the image, containing red text.

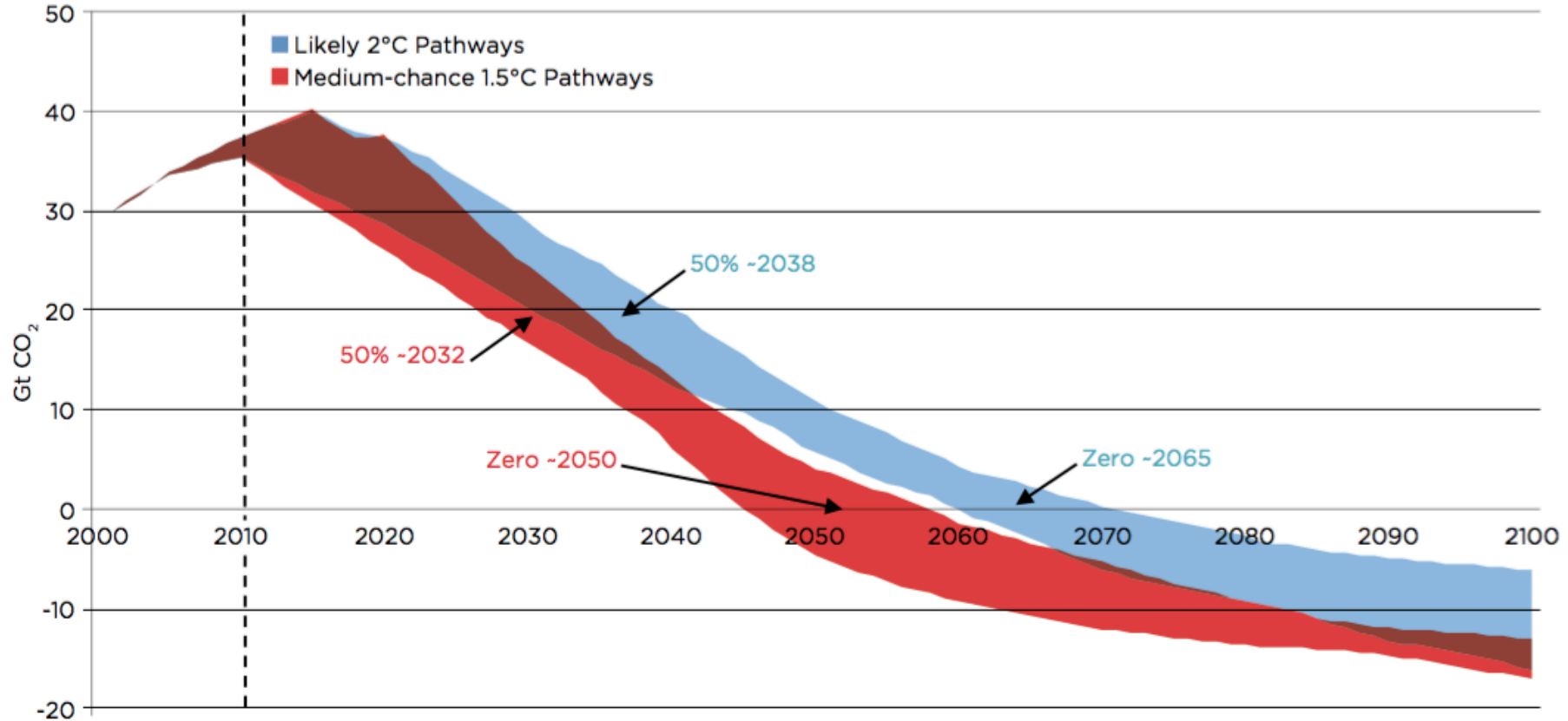
“...holding the increase in the global average temperature to well below 2 °C above preindustrial levels and pursuing efforts to limit the temperature increase to 1.5 °C”

2°C VS. 1.5°C

- 2°C now recognized as point at which catastrophic impacts can occur, rather than safe level.
- Heat extremes would become both more frequent and of longer duration.
- Wheat yields would be reduced by 15% at 2°C compared to 9% at 1.5°C in a best estimate; the reduction could be as bad as 42% at 2°C versus 25% at 1.5°C.
- Reduced African maize yields at 50% compared to 1.5°C of warming
- The difference between 1.5°C and 2°C is likely to be decisive for the survival of tropical coral reefs.

EMISSIONS PATHWAYS FOR PARIS GOALS

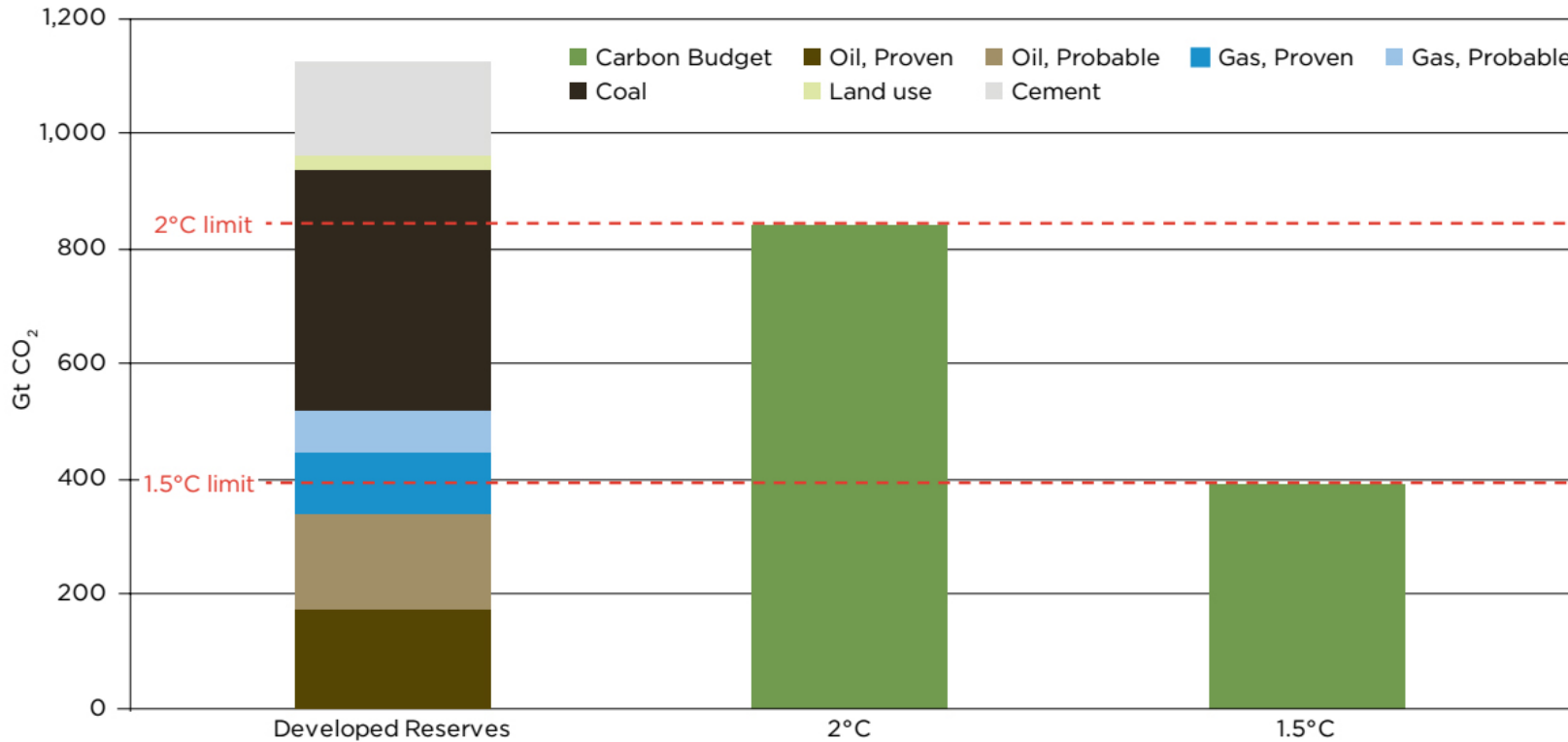
Figure 1: Range of Global Emissions Pathways in Scenarios Consistent with Likely Chance of 2°C or Medium Chance of 1.5°C¹⁸



Sources: Joeri Rogelj et al

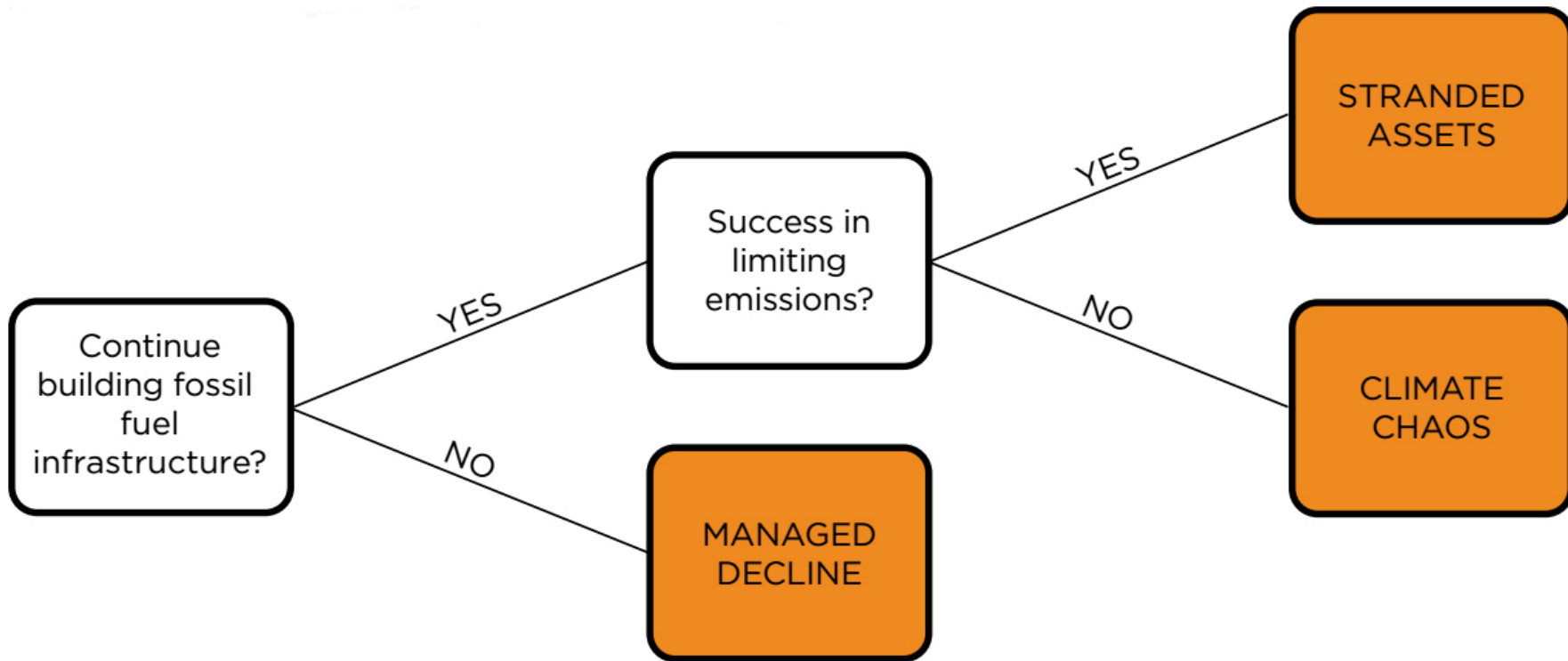
MORE THAN ENOUGH RESERVES IN PLAY TODAY

Figure ES-1: Emissions from Developed Fossil Fuel Reserves, Plus Projected Land Use and Cement Manufacture



Sources: Rystad Energy, International Energy Agency (IEA), World Energy Council, Intergovernmental Panel on Climate Change (IPCC)

LOGIC TREE



Source: Oil Change International

3 SCENARIOS

⊗ **Managed Decline:** No further extraction infrastructure is developed, existing fields and mines are depleted over time, and declining fossil fuel supplies are replaced with clean alternatives to which energy workers are redeployed, thus preventing dangerous climate change.

⊗ **Stranded Assets:** Companies continue to develop new fields and mines, governments are eventually successful in restricting emissions, and the resulting reduction in demand causes many extraction assets to become uneconomic and shut down, causing destruction of capital and large job losses.

⊗ **Climate Chaos:** Companies continue to develop new fields and mines, none are stranded, and the resulting emissions take us well beyond 2°C of warming, with resulting economic and human catastrophe.



JULY 2016

A BRIDGE TOO FAR: HOW APPALACHIAN BASIN GAS PIPELINE EXPANSION WILL UNDERMINE U.S. CLIMATE GOALS



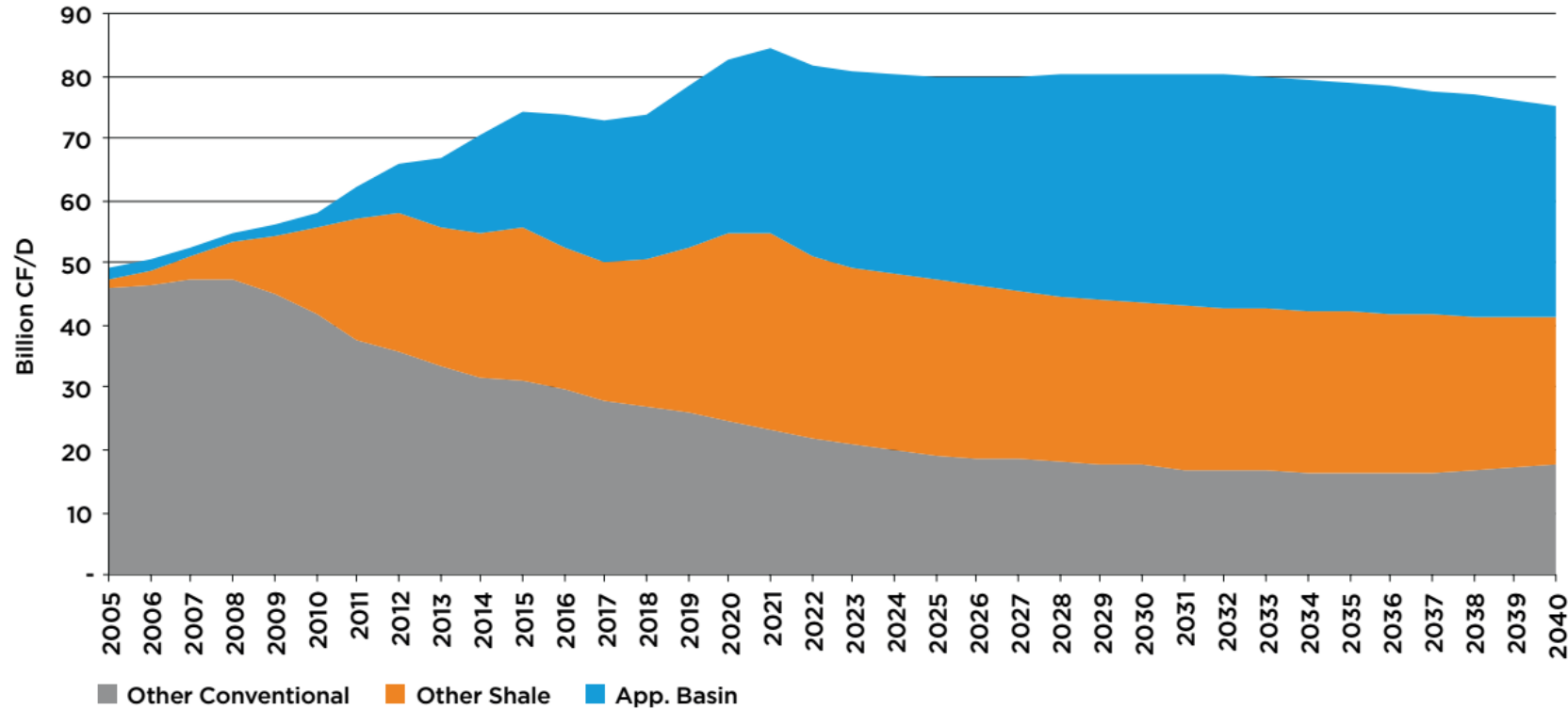
PROTECT OUR WATER, HERITAGE,
RIGHTS (VIRGINIA & WEST VIRGINIA)

SIERRA CLUB
WEST VIRGINIA



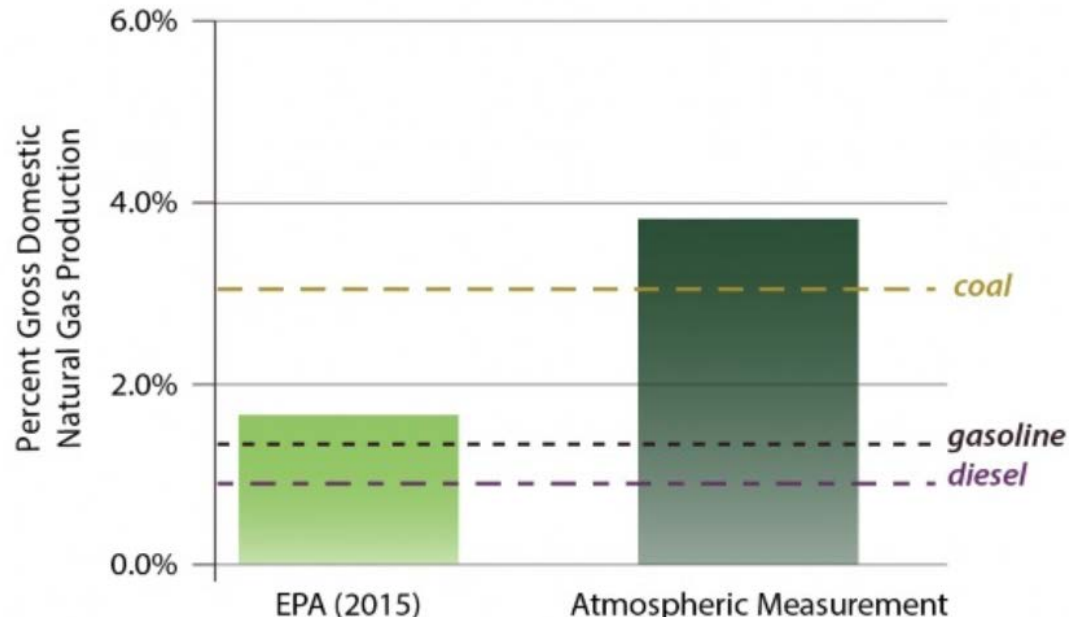
APP. BASIN WILL DRIVE U.S. GAS GROWTH

Figure 2: The Increasing Role of the Appalachian Basin in U.S. Dry Gas Production Source: Rystad Energy AS



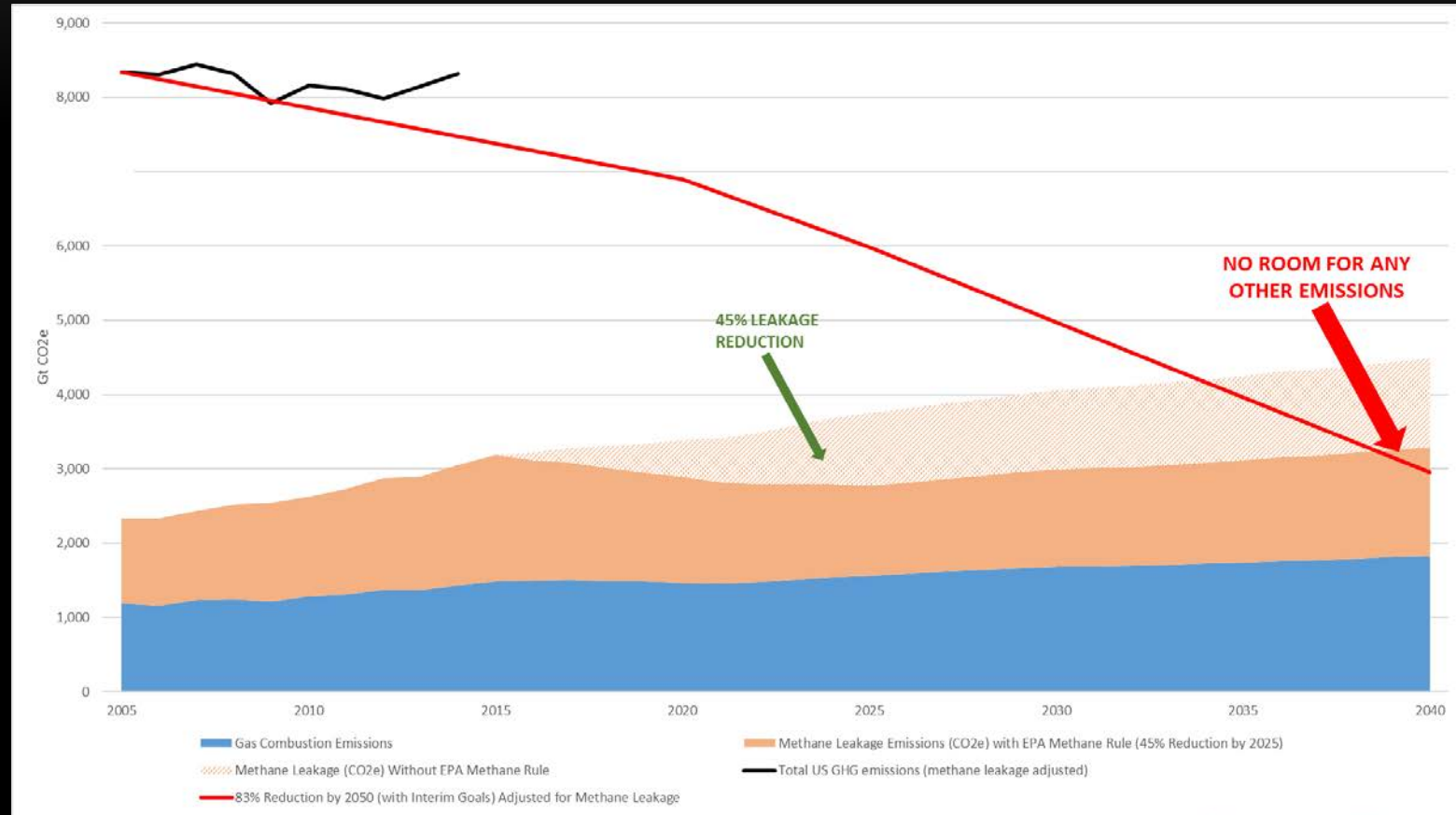
METHANE LEAKAGE DESTROYS ANY EMISSIONS ADVANTAGE OF GAS

Updated Technology Warming Potentials (TWP)² using the most recent IPCC findings³ indicate an emission limit of 2.8% of natural gas production for conversion from coal. Loss rates above 2.8% negate any near-term climate benefit associated with lower carbon dioxide emissions during fuel combustion.



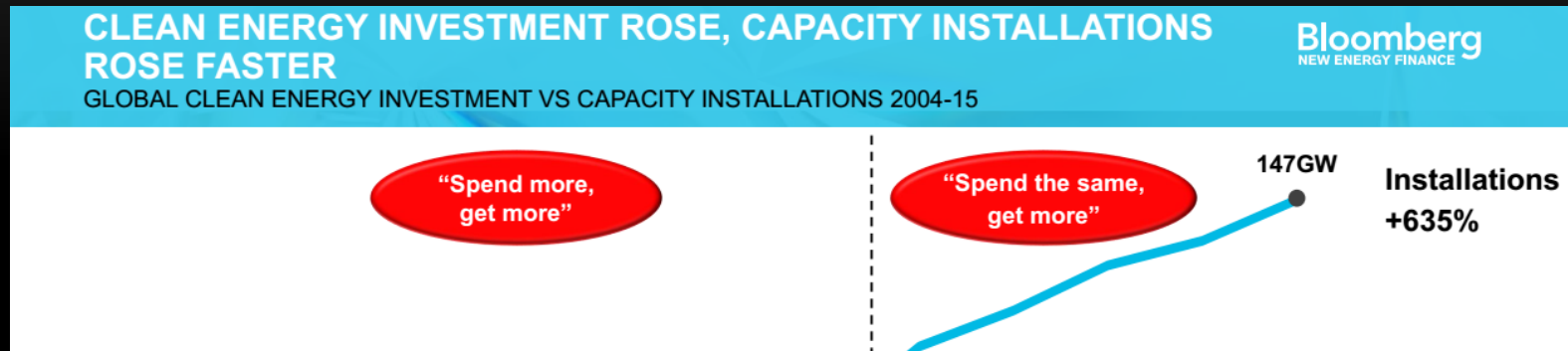
Source: PSE Healthy Energy - Science Summary Nov. 2015

EIA GAS DEMAND PROJECTION WOULD OVERSHOOT US CLIMATE TARGET BEFORE 2040



Source: OCI – Bridge Too Far using EIA, EPA, PSE.

CLEAN ENERGY INVESTMENT GROWING BUT DOLLARS NOW BUYING MORE ENERGY



By around 2027, new wind and solar gets cheaper than running existing coal and gas generators (...) This is a tipping point that results in rapid and widespread renewables development.

BNEF New Energy Outlook 2016.

CONCLUSIONS

- Meeting climate goals with minimal disruption to economy and livelihoods means planning now for the end of fossil fuel – Managed Decline.
- The alternatives are either climate chaos or stranding fossil fuel assets with associated economic and social chaos.
- The rush to gas will undermine climate goals as emissions savings are either non-existent or insufficient.
- We must plan now for zero emissions.
- Look ahead for economics of zero emissions, not recent past or near future.