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Disentangling the risks of stranded assets

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What role for fossil fuels in a decarbonising world?

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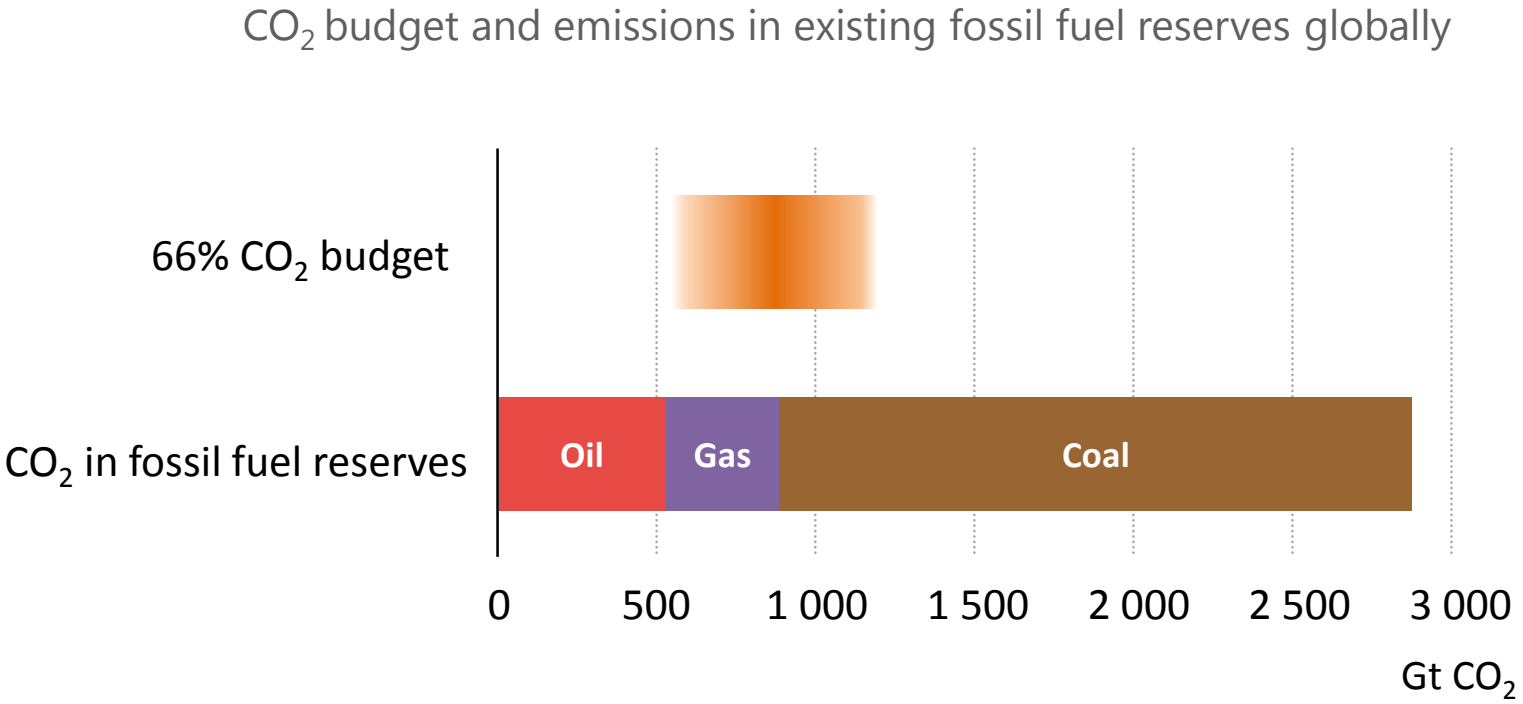
- **Key question: will the energy transition lead to severe losses for incumbent industries or can the transition be managed smoothly?**

- **Multiple strands to the 'stranded asset' debate. These are inter-related but are too often conflated:**
  - *Stranded volumes: reserves/resources not developed or produced because of climate policy ('Leave it in the ground')*
  - *Stranded capital: assets that fail to recuperate capital invested into them because of climate policy*
  - *Stranded value: vulnerability of reduced future revenues and company valuations because of climate policy*

The remaining CO_2 budget and fossil fuel reserves



CO_2 emissions in existing fossil fuels are around three times the remaining CO_2 budget. Fossil fuel resources are around 11 times larger…

Need distinguish between the fossil fuels when considering the CO_2 budget

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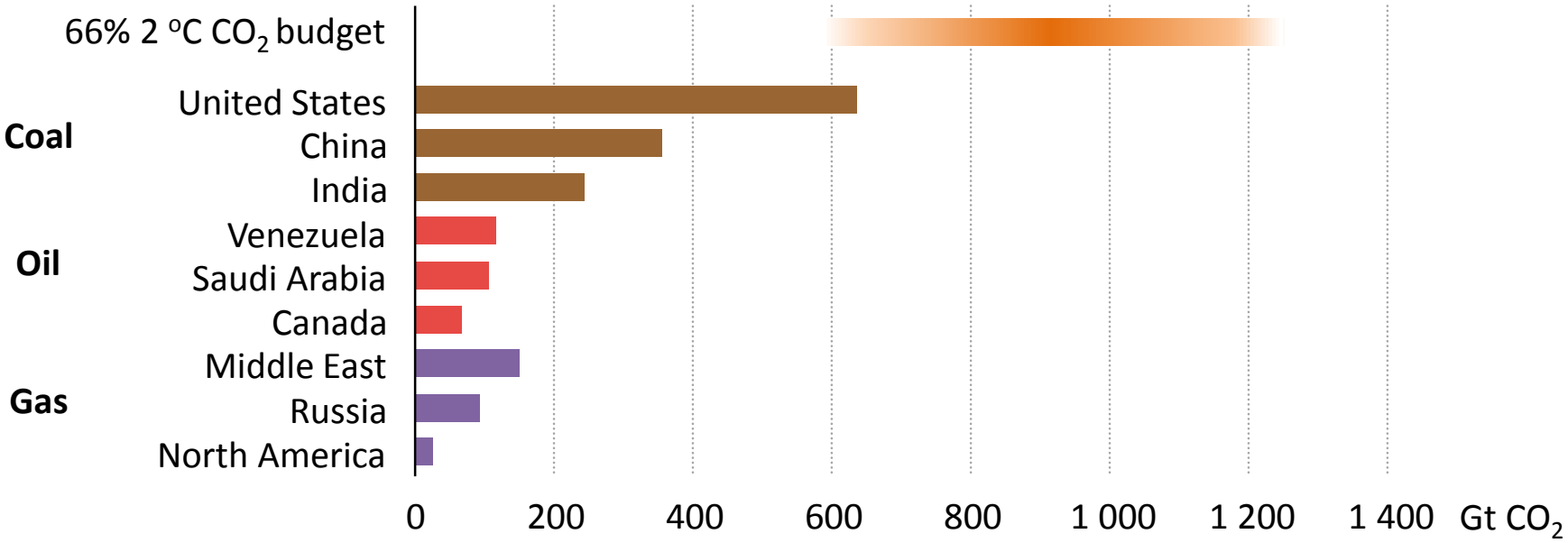
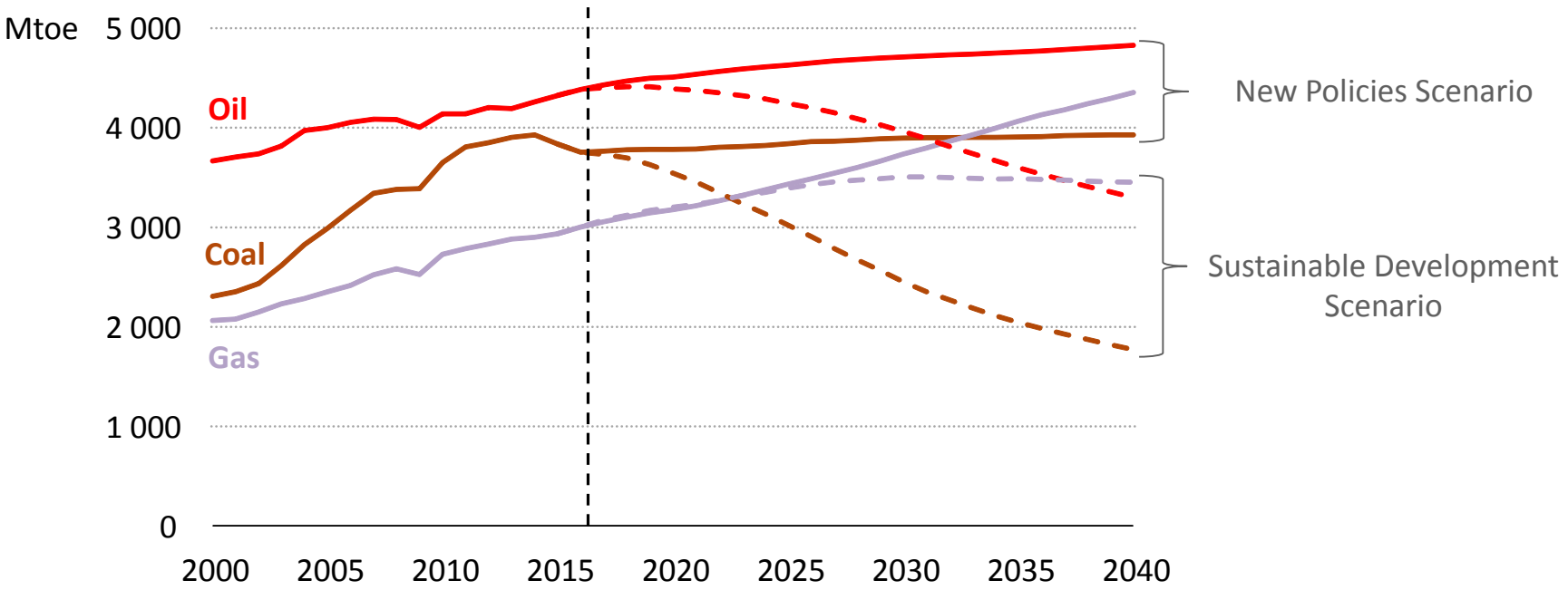
CO_2 budget in 2 °C scenario and emissions from fossil fuel reserves within countries



No single fossil fuel reserve exceeds the 2 °C CO_2 budget. But not all fossil fuels are equal. Exceeding the 'limits' on one implies restraint elsewhere

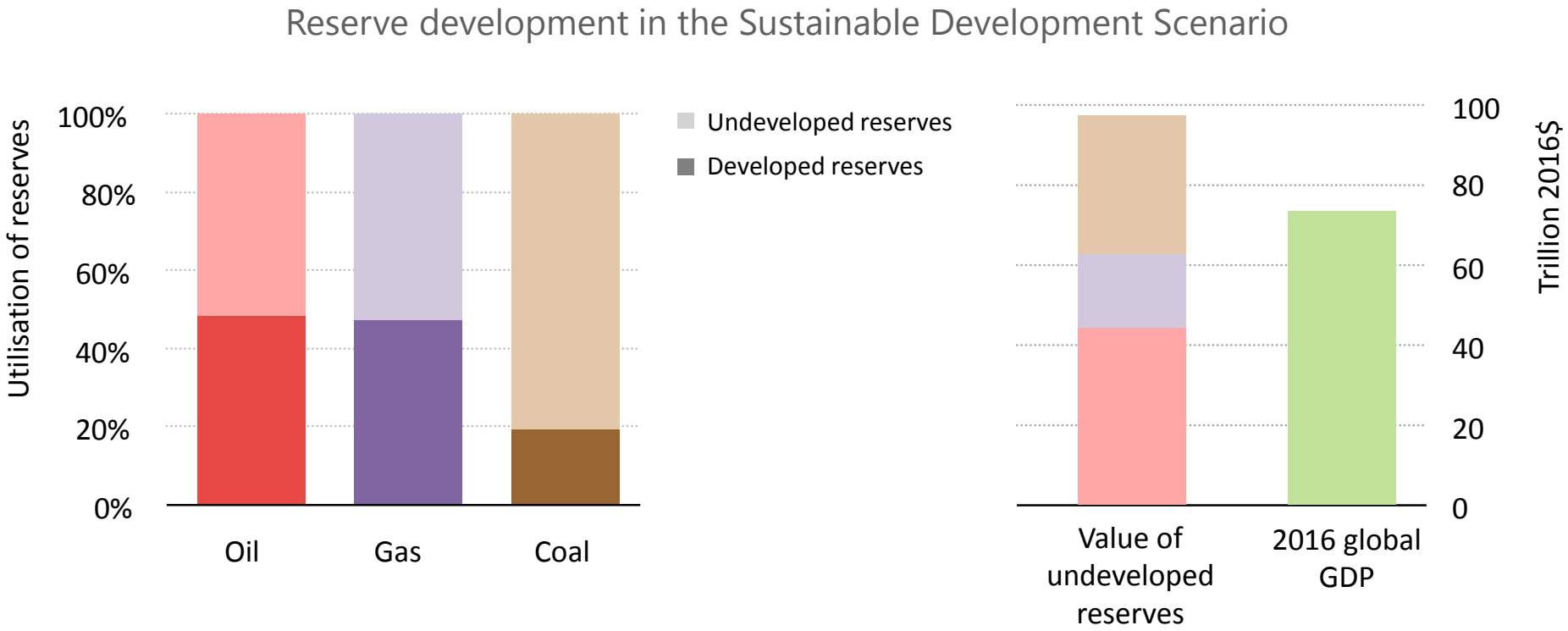
Fossil fuels in the Sustainable Development Scenario

Fossil fuel demand in the New Policies Scenario & Sustainable Development Scenario



Coal & oil demand drop in the Sustainable Development Scenario. Gas is the largest fossil fuel in 2040 while low-carbon technologies & improvements in efficiency expand rapidly

Analytical pitfall: estimating stranded volumes & value



Converting unused volumes to values by multiplying by market prices generates large estimates but reveals little about the true risks

Location and magnitude of stranded capital varies by fuel

- **What and where are the main types of capital investments that could be stranded by climate policy?**
- **Coal – downstream**
  - *Coal-fired power plants*
- **Gas – midstream**
  - *Liquefied Natural Gas (LNG) terminals and pipelines*
- **Oil – upstream**
  - *Exploration costs of fields not developed in Sustainable Development Scenario*
  - *Investment into high cost or long-lived production assets*
- **But if climate policies are well sign posted, no intrinsic need for stranded assets to arise, especially for future investments**

Continued investment needed into fossil fuel supply

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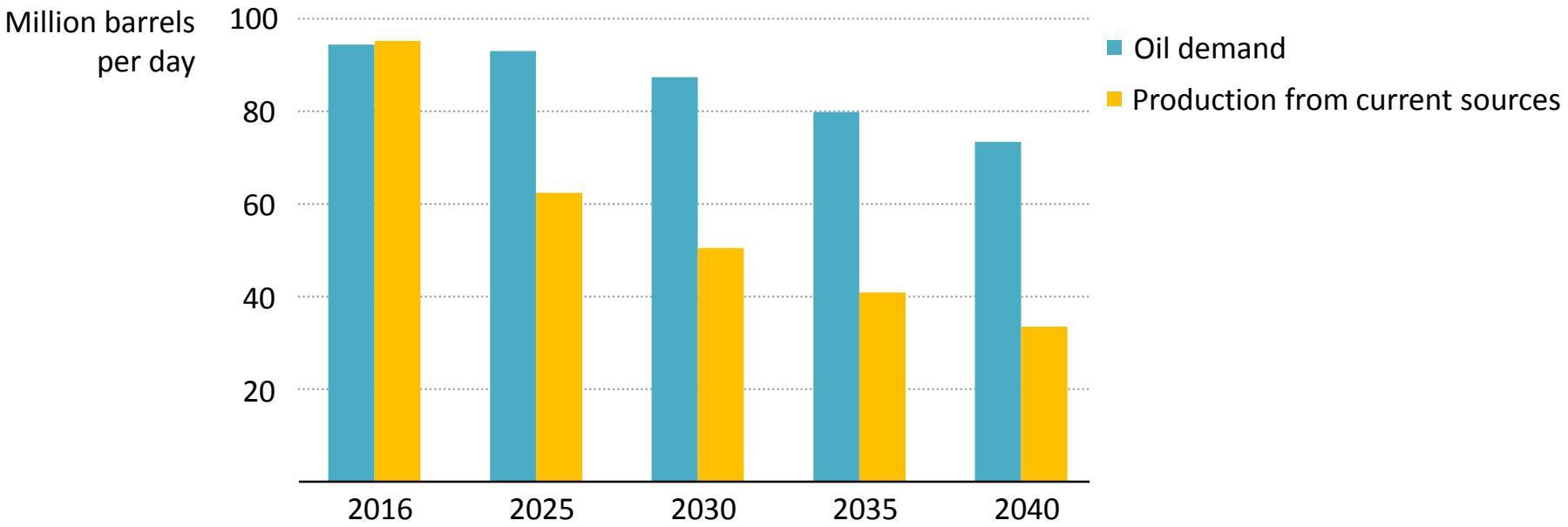
Oil demand trajectory and supply outlook from currently producing and new fields



Current production declines much faster than the decline in demand, creating a gap that must be filled with new investments

Risks multiply with inconsistent policies

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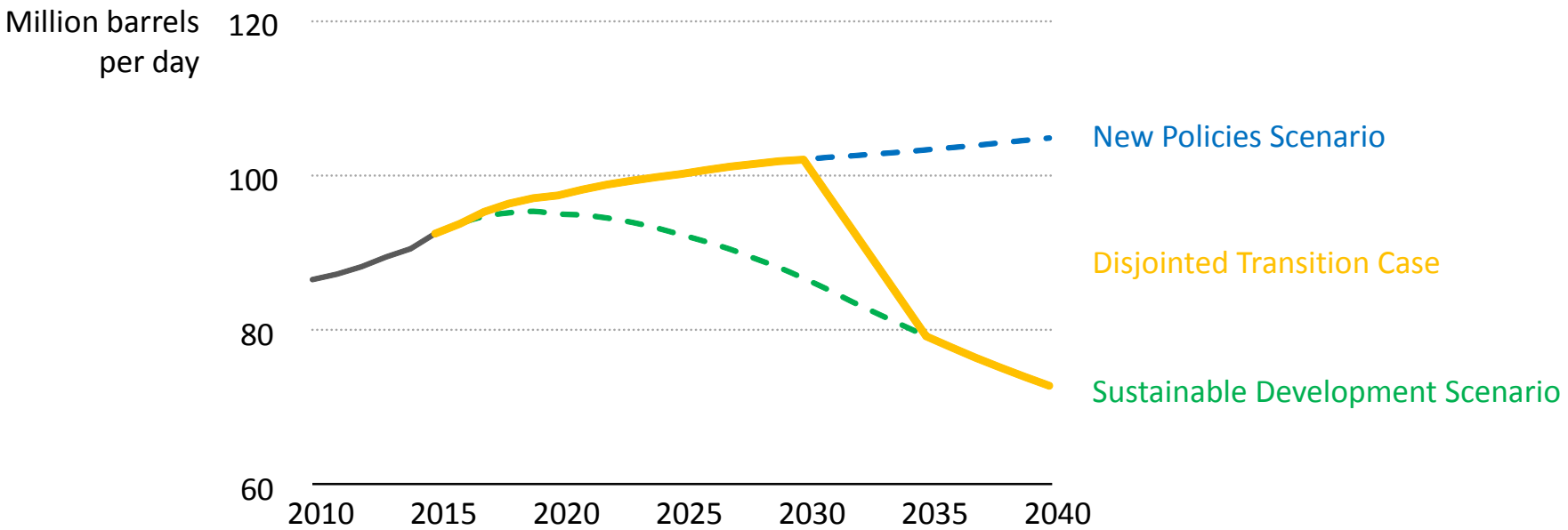
Global oil demand in a Disjointed Transition Case



Stranded upstream oil investments in the Sustainable Development Scenario are limited, but a disjointed transition would increase the risks sharply

Demand side stranded assets

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- For supply side assets, costs and revenues occur within the energy sector simplifying the process of estimating stranded capital or stranded value
- Revenues associated with demand-side assets are harder to quantify. Demand-side stranded asset analysis therefore tends to focus on stranded capital
- The economic lifetime of many end-use technologies is short, so, if policies are known in advance, demand-side stranded capital should be limited
- Need to distinguish between stranded capital and decarbonisation costs; upgrading a building's efficiency may incur cost but the building is not stranded
- Demand-side stranded assets can be calculated at the firm level e.g. plant building internal-combustion engines or intellectual property

Conclusions

- Critical to be clear what is being discussed with stranded assets: differentiate between stranded volumes, stranded capital, and stranded value
- Investments into fossil fuel supply required even under a steep decarbonisation scenario reducing risk of stranded assets
- But risks increase with inconsistent climate policy making or companies misreading the impact of policies/technologies
- Increasing interest in demand side stranded assets; but the short economic lifetime of end-user technologies reduces the risk of stranded capital
- Industry needs to be ready to justify its investments and strategies against risks arising from climate change

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