The Inevitable Policy Response

Preparing financial markets for climate-related policy/regulatory risks
Financial markets are underprepared for climate-related policy risks

A forceful policy response to climate change within the near term is not priced into today's markets.

Yet it is inevitable that governments will be forced to act more decisively than they have so far, leaving investor portfolios exposed to significant risk.

The longer the delay, the more disorderly, disruptive and abrupt the policy will inevitably be.

In anticipation, PRI, Vivid Economics and ETA are building a pioneering forecast of the financial impact of this Inevitable Policy Response (IPR), including a Forecast Policy Scenario:

- How will it affect the economy?
- Which asset classes will be impacted?
- Which sectors are most at risk?
The setting: current policies fail to get even close 2°C let alone the Paris Agreement ambition of well-below 2°C.

Global yearly CO₂e emissions

Source: Climate Action Tracker, Dec 2018 update
Growing awareness and momentum on climate issues makes a near-term, forceful policy response more likely.

**Changing weather trends**

**Impacts on security**

The effects of a changing climate are a **national security issue**.

- US Dept. of Defense

**Cheaper renewable energy**

**FINANCIAL TIMES**

Europe ‘watershed’ as green energy set to overpower coal

JUNE 3, 2019

**New climate research**

Global warming report, an 'ear-splitting wake-up call' warns UN chief

**Civil society action**

**Stakeholders demanding clarity**

The catastrophic effects of climate change are already visible around the world. We need collective leadership and action across countries, and we need to be ambitious.
Investors acknowledge that there will be a policy response, and that it will be delayed and disruptive.

Which of the following scenarios is most likely?

- Disorderly policy response
- Climate breakdown / fail to transition
- Technology will save us / "Elon's got this"
- Orderly transition starting now

Source: UN PRI September 2018
The Paris Agreement’s “ratchet mechanism” increases the likelihood that governments will strengthen policy by 2025.

- **2015**: Countries submit their 1st round of climate pledges (NDCs)
- **2020**: Countries communicate their updated or 2nd round of climate pledges
- **2023**: Global stocktake on climate, mitigation and finance
- **2025**: Countries submit their 3rd round of climate pledges (NDCs)
- **2028**: Second global stocktake

*Policy announcements are expected to accelerate in 2023-2025*
The most likely policy levers to secure an accelerated and ‘just’ transition are starting to emerge

<table>
<thead>
<tr>
<th>Coal phase-out</th>
<th>ICE sales bans</th>
<th>Carbon pricing</th>
<th>CCS and industry decarbonisation</th>
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<tbody>
<tr>
<td>The UK has committed to phase out unabated coal use by 2025, and support for a just transition is starting to emerge</td>
<td>All new cars to be emissions-free in the Netherlands by 2030, and other countries have announced intentions</td>
<td>57 carbon pricing initiatives around the world cover 20% of global emissions and discussion of BCAs</td>
<td>Only two large scale CCS power projects in operation at the end of 2018, and no proven policies ready for ensuring scale-up</td>
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<th>Zero-carbon power</th>
<th>Energy efficiency</th>
<th>Land use-based greenhouse gas removal</th>
<th>Agriculture</th>
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<td>Nuclear, hydro, solar PV, wind and other renewables represented 36% of electricity generation globally in 2018</td>
<td>A coalition of 8 European cities have pledged to completely decarbonise their existing building stocks by 2050</td>
<td>National and bilateral payment systems trialled and planned to support nature-based solutions, including re/afforestation and bioenergy production</td>
<td>Historic rates of agricultural improvement very high, and large investment in agricultural technologies and infrastructure remains a priority</td>
</tr>
</tbody>
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Enabling a green economy

‘Just Transition’ lens to ensure social and political feasibility
Our forecast of an Inevitable Policy Response is based on a robust and strategic analytic process.

**Why?**
- Key Messages driving the IPR specification and its communication

**What and When?**
- Forecast specification defining and justifying the critical characteristics of the IPR and of comparator alternative scenarios

**How?**
- Macro-economic modelling of IPR impacts on overall economic system
- Energy system modelling tracing detailed system effects for all emitting sectors
- Land use system modelling tracing detailed system effects for land-use sectors

**Investor strategies**
- Asset-level value stream modelling estimating implications bottom-up using asset-level data across major asset classes
- Implications for investor strategic asset allocation and for regulatory requirements from November

Please see annex for further detail.
Our forecast of an Inevitable Policy Response provides an alternative to the IEA NPS as a business planning case for investors, corporates & regulators to consider.

Global energy-related CO₂ emissions, GtCO₂

- **2025: Paris Ratchet**
- **Baseline (IEA NPS & NDCs)**: c.2.7 – 3.5°C
- Policy impacts flowing into economies and financial markets

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PRI | Principles for Responsible Investment
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Investors need to act now

- The greater the delay in responding the greater the cost
- Early action is needed to manage portfolio risk and protect value

Board oversight of climate risks

Assess IPR implications for portfolio risk

Engage policymakers to act now

Prepare companies, investment chain and portfolio for IPR

Macro level model results release at UN Climate Week

Asset level model results release in November
Still aspire to the Paris Agreement..
Reaching a 1.5 degrees outcome is a far bigger challenge – but should remain the Aspiration

Global energy-related CO₂ emissions, GtCO₂

2025: Paris Ratchet

Baseline (IEA NPS & NDCs) c.2.7 – 3.5°C

Policy impacts flowing into economies and financial markets

1.5°C pathway (low overshoot P1)

IPR: Forecast Policy Scenario (FPS)
PRI’s ambition is to limit warming to 1.5°C

- Aiming for a 1.5°C target matters – it is a much better outcome for the world than 2°C.

- Stakeholders should aspire to 1.5°C – and that ideally, they would set targets to reach this goal including a second policy ratchet.

- However, in the interim they should proceed with realistic and transparent forecasts.

But our forecast tells that we will overshoot the 1.5°C target
Therefore, Policy makers need also to focus R&D spending on key areas of the “Known Unknowns” such as:

- Faster policy action – ACT NOW
- Negative Emission technologies for industry
  - Scale up of CCS enables bioenergy use with CCS (BECCS) and in industry, while we see negligible CCS deployment in fossil-fuel fired electricity generation.
  - Direct air capture
- More aggressive agricultural practices
  - Dietary Change leading to less beef usage
- AI and autonomous vehicles
- Hydrogen and bioenergy
- Consumer preferences
- Low-carbon materials
Appendix
Our model analyses the impact of climate-related policy and regulatory risks on the financial markets

ADVANTAGES OF OUR MODEL:

- **Transparency** – defining and justifying a realistic outline of future policy response
- **Implications at the company level** – estimating implications at the asset level for the first time
- **Completeness** – more accurately capturing the interaction between impacts of the macro economy, the energy system and the land use system

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**Value stream models (asset level)**

- **Predict revenues and profits**
  - Cost & competition model
    - Carbon cost competitiveness
    - Market power and cost pass-through
    - Market share
  - Demand destruction model
    - Change in market size in high-emissions sectors (e.g. O&G)
    - Price impacts
    - Market share
  - Clean tech market model
    - Change in market size in clean sectors (e.g. electric vehicles, renewable energy)
    - Product competitiveness and market share

- **Financial implications (asset level)**
  - Asset class
  - Listed equity
    - \(\Delta\) market capitalization
  - Private equity
    - asset value
  - Corporate debt
    - \(\Delta\) bond yields, credit ratings
  - Sovereign debt
  - Infrastructure
    - asset value
  - Real estate
    - asset value
  - Commodities
    - \(\Delta\) price
  - Disclosable metrics at asset or portfolio level
  - Uniform metrics across business

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**Economic system models**

- **Macroeconomic (G-cubed)**
  - Production activity, emissions, and abatement costs – in general equilibrium
  - Monetary, fiscal and financial adjustments

- **Land use (MAgPIE)**
  - Production activity, emissions, and abatement costs
  - Carbon prices
  - Bioenergy prices and demand

- **Energy (TIAM)**
  - Production activity, emissions, and abatement costs
  - Carbon prices
  - Changes to service demand

**Outputs**

- Economic activity (by sector, country)
- Price changes (by product)
- Energy use (by fuel and carrier)
- Clean tech deployment (by type)

**Forecasting**

- Forecast of macroeconomic impacts of transition across major regions
- Forecasts of price and quantity metrics for key commodities/products

Coming in November
Project partners

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