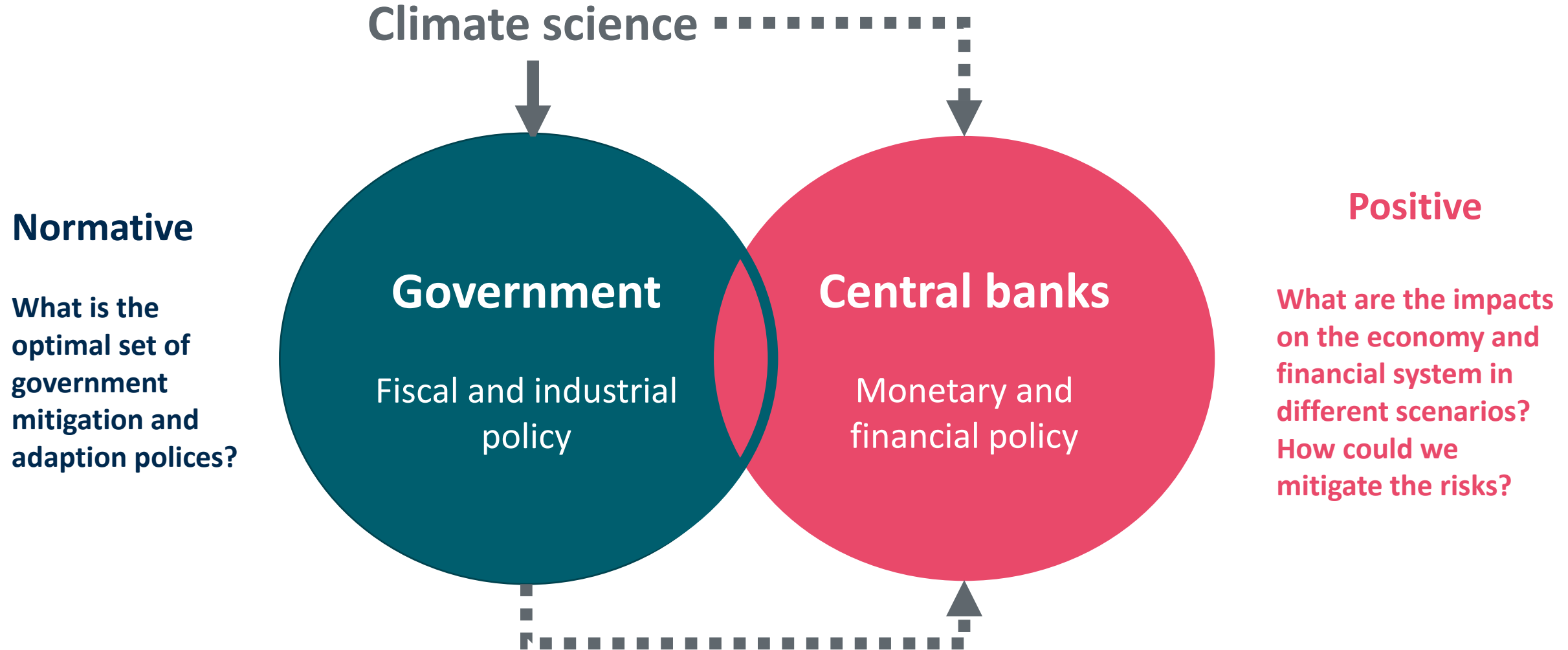# Perspectives from a central bank

Ryan Barrett
Climate Hub, Bank of England

Contrasting modelling objectives

What are we trying to assess?

… at least three things

Financial firms

Are firms managing the risks?

Financial stability

Will there be a financial crisis?

Economic impacts

Will inflation, growth, structure change?

Lever 1: Enhancing risk management

Lever 2: Financial system regulation

Lever 3: Monetary policy
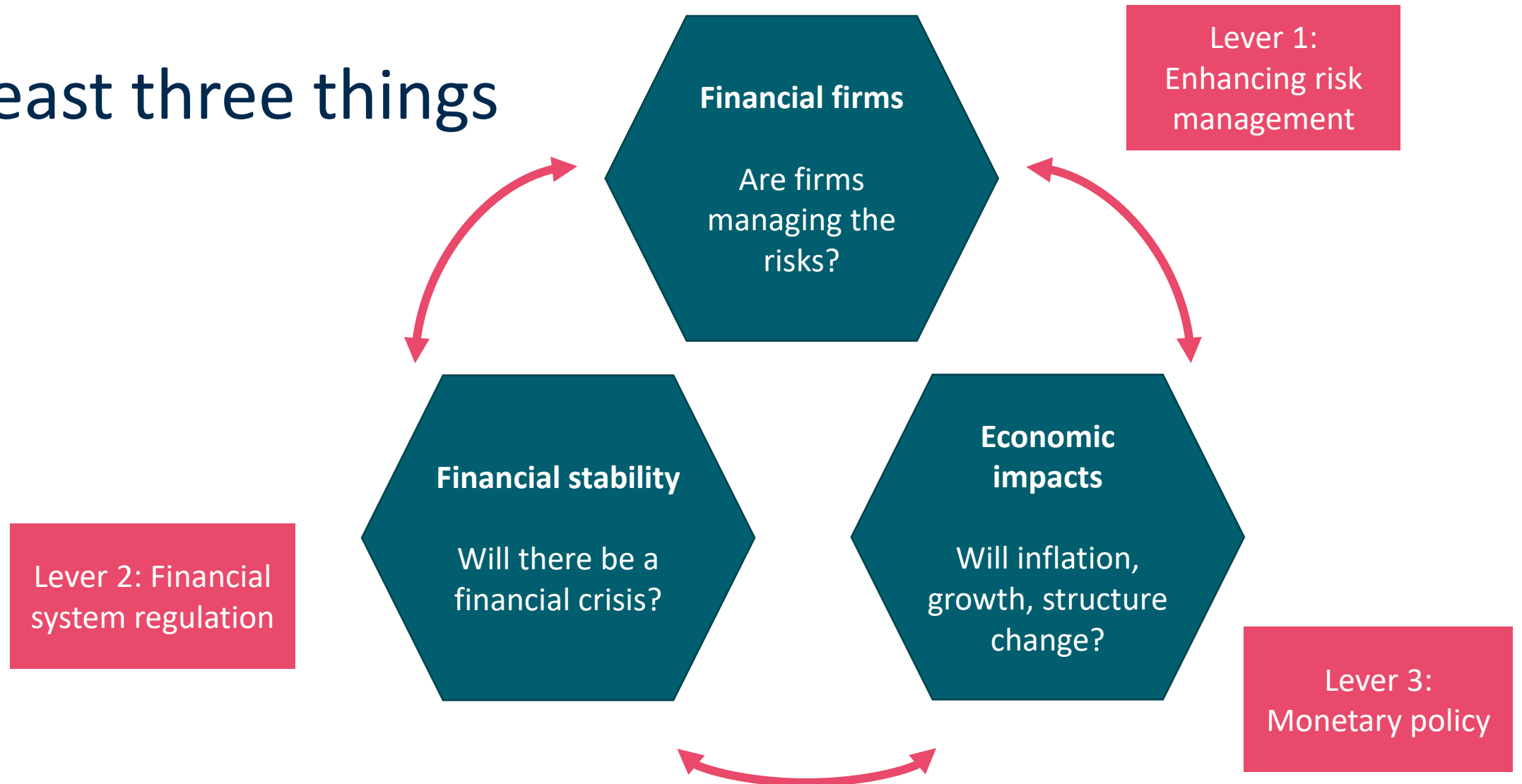
Time horizon

Over both short and long time horizons

- Monetary policy
- Financial risks
- Business cycle
- Long-term drivers (e.g. potential output)

0   2   4   7   20+

Years
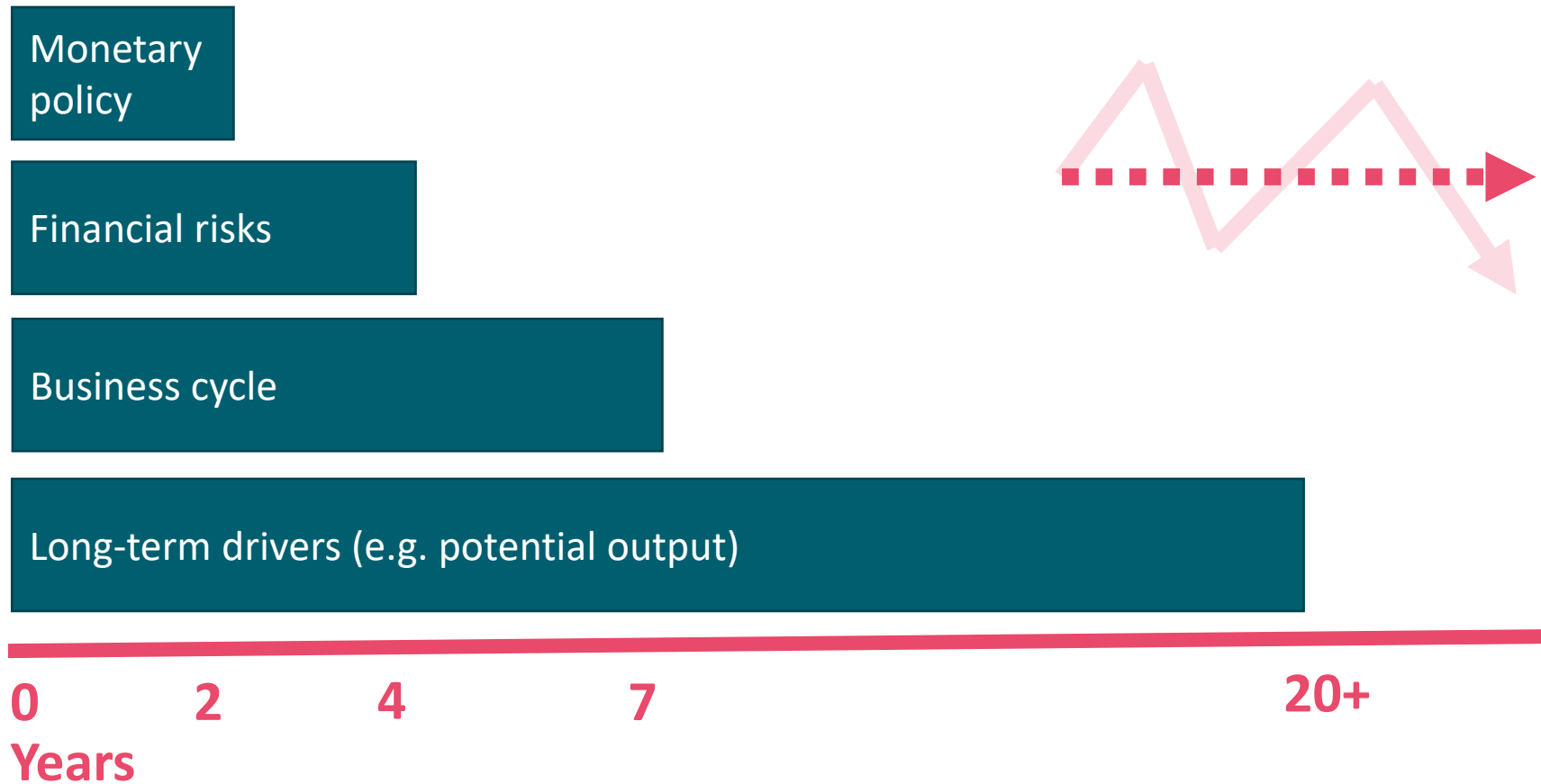
Suitability of IAMs for macro-financial decision-making

- ✓ **Energy and land-use** output granularity

- ✓ **Standardisation** of climate outcomes and modelling framework

- ✓ **Communication** of the key scenario drivers and policy recommendations

Suitability of IAMs for macro-financial decision-making

✖ **Economic resolution and narrative:**
- **Sectoral granularity** – impact on gross value added, structural shifts in economy
- **Range of outputs** – impact on capital, labour, technology, business investment, consumer spending, government spending, natural rate of interest
- **Integration of transition and climate impacts**
- **Effects of fiscal and monetary policy** on outcomes

✖ **Disorderly pathways:** policy fragmentation, delayed responses, imperfect information, frictions (e.g. unemployment, capital stranding, business and consumer confidence, inflation)

✖ **Regional granularity**
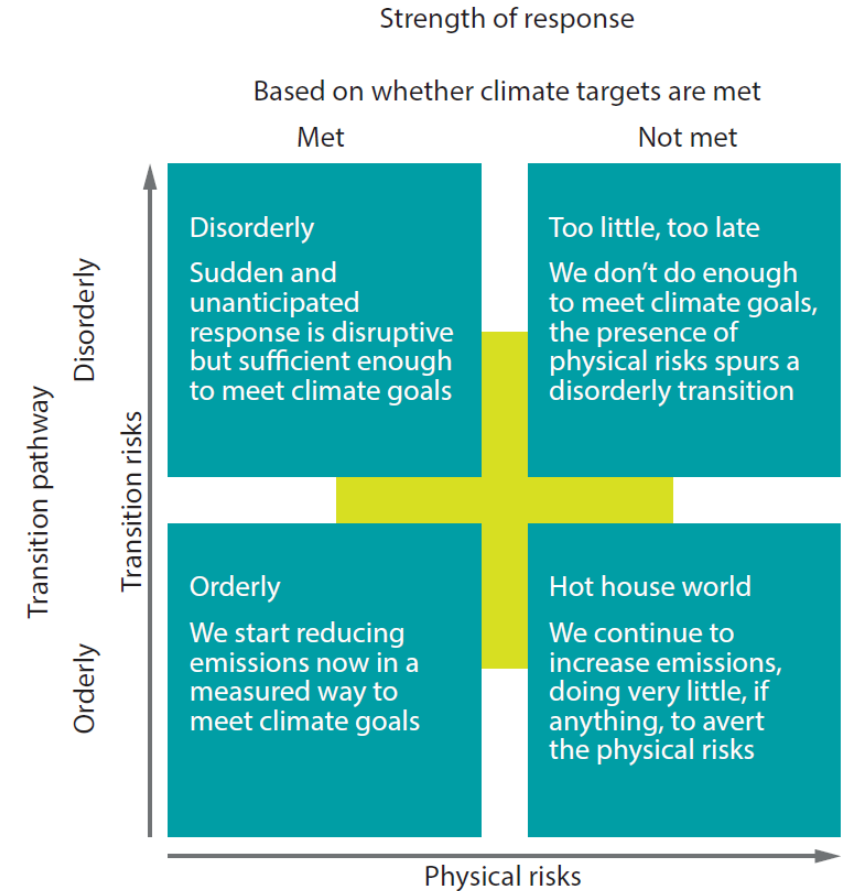
Legitimacy of using climate models

- **Model uncertainty** – there may be 'high agreement' in results but is it because models make similar structural assumptions (policy coordination, market clearing, investment constrained by savings)?

- **Parameter uncertainty** – carbon price or GDP impact may be shown given likelihood of reaching temperature target, but is it shown for different technology price assumptions?

- **Understanding of outputs** – some outputs like carbon prices are misunderstood and misapplied

- **Transparency of model assumptions** – sometimes difficult to understand what is driving results. Need something in between a high level summary for policy makers and digging into 300 pages of model equations

Network for Greening the Financial System (NGFS)

The NGFS is working with an academic consortium to produce new scenarios that are more suitable for macro-financial analysis

Phase I – will deliver a set of existing scenarios aligned with the NGFS matrix

Phase II – will expand the macroeconomic modelling and downscale for more regions

Strength of response

Based on whether climate targets are met

Met | Not met

Disorderly
Sudden and unanticipated response is disruptive but sufficient enough to meet climate goals

Too little, too late
We don't do enough to meet climate goals, the presence of physical risks spurs a disorderly transition

Orderly
We start reducing emissions now in a measured way to meet climate goals

Hot house world
We continue to increase emissions, doing very little, if anything, to avert the physical risks

Transition pathway / Transition risks — Disorderly / Orderly

Physical risks

Thank you