COMMON INVESTMENT MEETING
Public Session

THE CITY OF NEW YORK
OFFICE OF THE COMPTROLLER

November 15, 2017

MERCER
Consultant Presentation

NEW YORK CITY RETIREMENT SYSTEMS CLIMATE CHANGE STRATEGY

BEST PRACTICES REVIEW AND INTRODUCTION TO SCENARIO ANALYSIS

NOVEMBER 15, 2017

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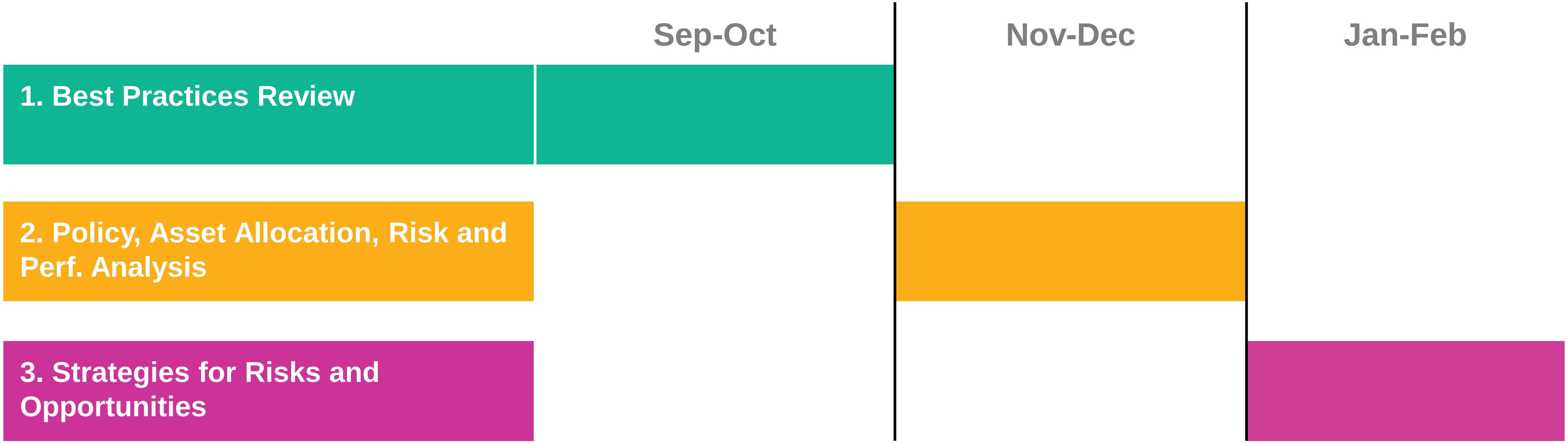
AGENDA

- Project Overview
- Best Practices Review
- Introduction to Climate Scenario Analysis
- Next steps

SCOPE OF WORK

- **Step 1: Conduct a best practice review among peer pension funds** on integrating consideration of climate change risks in investment policy and strategy, asset allocation, manager evaluation and selection and risk measurement and management
- **Step 2: Provide detailed and comprehensive analysis and recommendations** on integrating consideration of climate change risks in investment policy and strategy, asset allocation, manager evaluation and selection and risk measurement and management
- **Step 3: Advise on investment strategies addressing risks and opportunities** created by climate change across asset classes

HIGH-LEVEL WORK PLAN

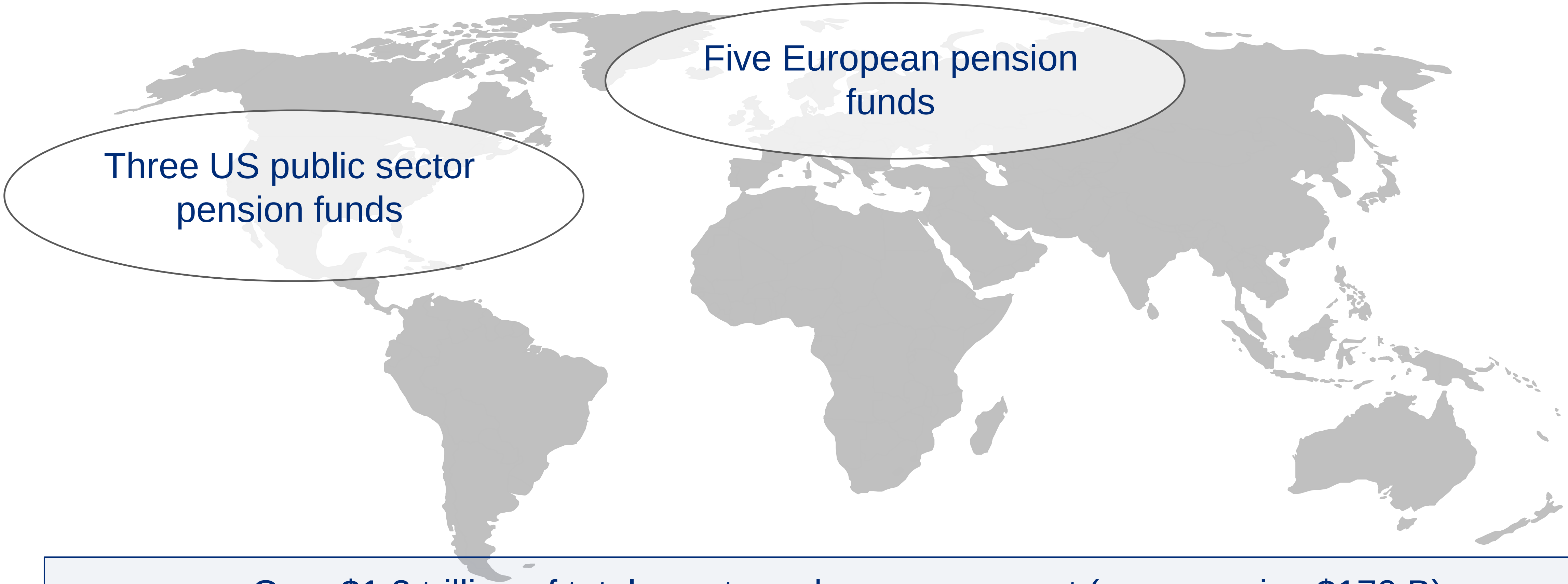


A proactive and consultative approach to working with NYC

BEST PRACTICES REVIEW

KEY FINDINGS

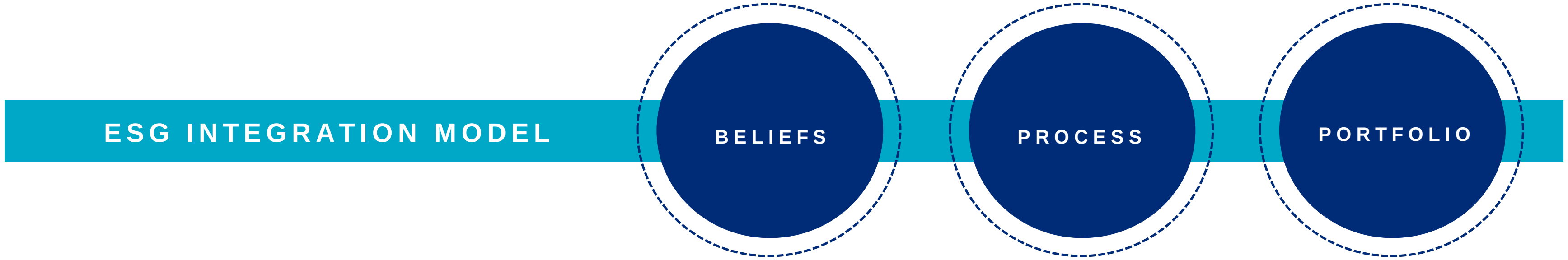
PEER GROUP



Over $1.3 trillion of total assets under management (average size $170 B)
Range of $4 billion to $300+ billion

BEST PRACTICE REVIEW
PEER SELECTION CRITERIA

- Selection of suggested peers based on following criteria:
  - **Climate Leadership**: Peers selected rated AA or AAA in AODP Global 500 Climate Index, representing leadership in the area of climate change investing
  - **Type of Fund**: A defined benefit public pension plan
  - **Size**: Fund's relative size compared to NYCRS collectively or individual plans
  - **Governance Structure**: Fund's board determines asset allocation and utilizes a centralized investment team shared by other funds (e.g. NYC Comptroller BAM)
  - **Investment Approach**: Portfolio uses external fund management
- Questionnaire based on Mercer's ESG governance framework with input from BAM



MERCER FRAMEWORK FOR BEST PRACTICE REVIEW
17 QUESTIONS POSED TO PEERS

POLICY

BELIEFS

PROCESSES

PORTFOLIO

Board education

Investment Beliefs

Definition of climate risk

Climate change reflected in investment policy

Governance & proxy voting guidelines

Manager selection and monitoring

Resources dedicated to climate change

RISK ASSESSMENT

*Total portfolio

*Asset class

*Industry sectors

RISK REDUCTION

*Portfolio Allocation

*Carbon risk reduction

*Asset class guidelines

*Engagement

- Managers and companies
- Policymakers

BELIEFS

- Developing a climate change strategy is **consistent with fiduciary duty**
- Most peers have documented **investment beliefs** on climate change
- For most peers, the development of a climate change strategy was driven by a **mandate from the board**
- Climate risk management focuses more on **transition risk** than physical risk

Pension Fund	Beliefs	Processes	Portfolio	Overall
Peer A				
Peer B				
Peer C				
Peer D				
Peer E				
Peer F				
Peer G				
Peer H				

Peer B fundamentally reviewed the role of the fund and its approach to investing after the global financial crisis.

Peer D provides its board with regularly scheduled education on climate

Methodology: Green - leading approach among peers. Orange - moderate approach among peers. Red – Limited approach among peers

PROCESS

- As many peers view climate change as a key risk to the long-term returns of the fund, it is often explicitly referenced in the **core investment policy**
- **ESG surveys** are used to assess capabilities and approach of external managers
- Peers communicate the fund's climate change strategy to **external managers**
- Collaboration is key for both **engagement efforts** and shared learning

Pension Fund	Beliefs	Processes
Peer A		
Peer B		
Peer C		
Peer D		
Peer E		
Peer F		
Peer G		
Peer H		

Peers A, B and D will adopt the TCFD Recommendations

Peer D requires external managers to agree to its Investment policy (covering climate change)

Peers F and G have internal sustainable investment committees

Methodology: Green - leading approach among peers. Orange - moderate approach among peers. Red – Limited approach among peers

PORTFOLIO

- **Top-down climate risk assessment** and modelling is new and evolving
- Five of the eight peers have established a **decarbonization goal**
- **None of the peers** have pursued a full fossil-fuel divestment approach
- All peers have invested in **sustainable themed investments**
- **Engagement** plays a critical role in climate change strategy

Pension Fund			Portfolio	Overall
Peer A				
Peer B				
Peer C				
Peer D				
Peer E				
Peer F				
Peer G				
Peer H				

Peers A and D are aligning their portfolios with a 2°C scenario

Peer B is using scenario analysis to assess how changes in market pricing of climate change may impact the portfolio

Peer E has made corporate engagement the core element of its decarbonization strategy

Methodology: Green - leading approach among peers. Orange - m

PORTFOLIO
TYPES OF PORTFOLIO ACTIONS USED BY PEERS

	PORTFOLIO			ENGAGEMENT	
	Integrate	**Decarbonize**	**Invest**	**Capital Market**	**Company**
Definition	Integrate a consideration of climate related risks and opportunities into investment analysis, decision making, monitoring and reporting.	Tilt portfolio away from carbon intensive holdings, fossil fuel reserve owners and laggards on climate strategy.	Allocate to climate related sustainability themes (e.g. renewable energy, energy efficiency, water, waste, agriculture, timber).	Engage with regulators, policy makers, and other industry bodies to promote policies and standards which encourage/require disclosure and enable the efficient allocation of capital in the context of climate change.	Exercise voting rights and undertake public and/or private company engagement to promote the effective management of climate related risks and opportunities.
Main Objective	Enhance risk-adjusted returns through broader perspective on investing.	Hedge against impacts of climate policies and regulations (e.g. stranded asset risk).	Improve long-term growth and/or achieve a positive environmental or social impact.	Create more effective capital markets regarding the disclosure, pricing, and management of climate related risks and opportunities.	Protect and enhance value within investee companies (public and private).

KEY TAKEAWAYS FROM BEST PRACTICE REVIEW

BELIEFS	PROCESS	PORTFOLIO
• Develop **climate change investment beliefs** to establish shared understanding and formal strategic approach • Establish **scheduled board education sessions** on climate risk • **Board driven mandate** on climate change	• Reflect approach to climate risk & opportunity in **formal policies** • Dedicate **resources / time** to climate change strategy • Communicate climate change strategy to **existing and potential managers** • Use **ESG surveys or analysis** to assess external managers' approach to climate change • Require **managers to report** on - Voting and engagement approaches to climate change - Carbon footprint results • Join **collaborative initiatives** • Report in line with **TCFD recommendations**	• Conduct top-down and bottom-up portfolio-wide scenario analysis, including a **2°C scenario** • Develop a **decarbonization strategy** • Develop **objectives for investments** in climate solutions • Show **preference for managers** that integrate climate analysis into process • Establish **climate related voting/engagement strategy** • Publicly demonstrate **support for public policy** to address climate change

OVERALL

- There is no ‘**one size fits all**’ or ‘right way’ to address climate risk
- Most leading funds have been working on their approach over a **number of years**
- Progress has often been **slowest where external managers** are involved
- **Ambition, creativity and a shared enthusiasm** to make progress among board members and management has proven to be a critical element in success

Pension Fund	Beliefs	Processes	Portfolio	Overall
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Methodology: Green - leading approach among peers. Orange - moderate approach among peers. Red – Limited approach among peers

INTRODUCTION TO MERCER TRIP CLIMATE RISK FACTOR FRAMEWORK

SCENARIO ANALYSIS

PORTFOLIO RISK ASSESSMENT METHODS

TOP-DOWN

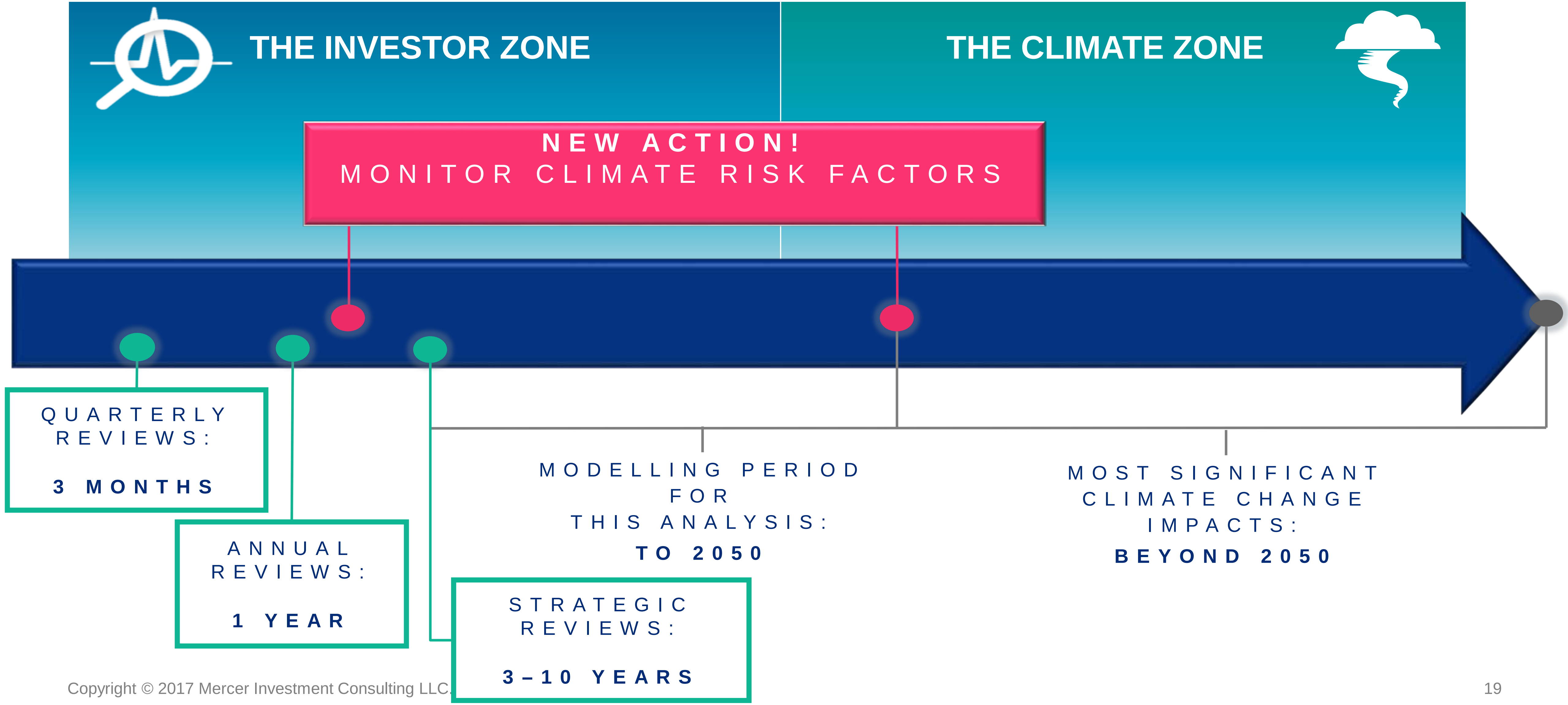
- Asset-Liability Modeling
- Manager Monitoring / Selection Process

Investment Risk Management Strategy

BOTTOM-UP

- Company, Sector, and Geographic Analysis
- Direct investment process

TIMELINE CHALLENGE
FOR INVESTORS



SCENARIO ANALYSIS
A RANGE OF POTENTIAL OUTCOMES

Optimistic (green scenario) — **Pessimistic (brown scenario)**

Scenarios	**Transformation**	**Coordination**	**Fragmentation**
Mitigation response	Strong	Substantial	Limited
Change in temperature vs. pre-industrial era (2100)	<2°C	~3°C	>4°C
Emissions peak	2020	2030	2040
% fossil fuel in energy mix (2050)	<50%	75%	85%

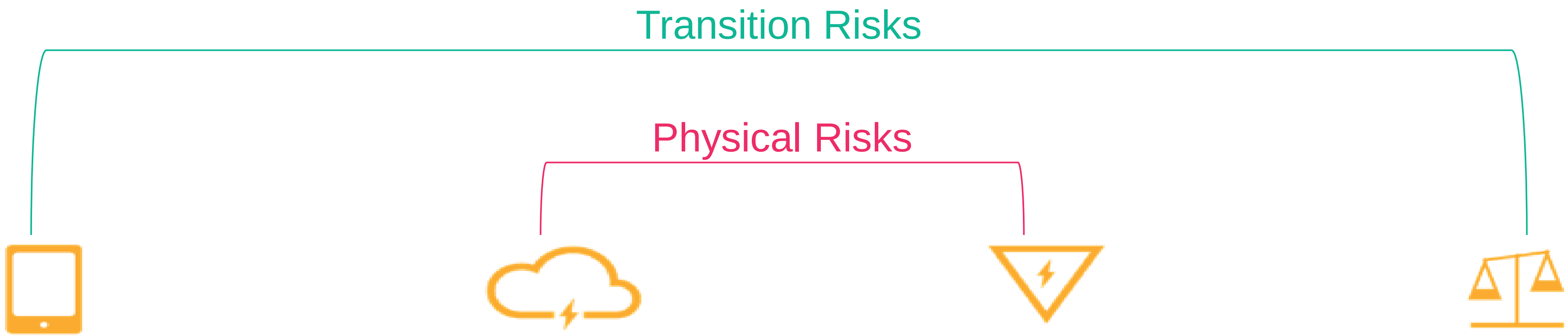
← **More Transition Risk**

- Controlled yet aggressive change
- Major short term impact but reduced long-term impact

More Physical Climate Risk →

- Uncontrolled change
- Limited short-term impact but major long-term impact

TRIP CLIMATE RISK FACTORS



Technology	Resource Availability	Impact of Physical Damages	Policy
The rate of progress and investment in technology supporting a transition to a low-carbon economy.	The impact of chronic weather patterns (long-term changes in temperature or precipitation) on resource production and availability.	The impact of acute weather risk (that is, extreme or catastrophic events) on physical assets and supply chains.	Regulations meant to reduce the risk of further climate change from human-induced greenhouse gas emissions.

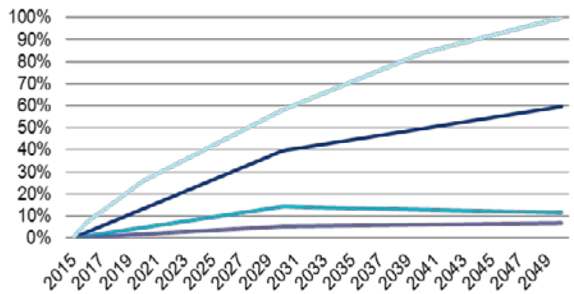
TRIP RISK FACTOR SENSITIVITIES BY ASSET CLASS

Asset Class	T	R	I	P
US Large / Medium Cap Equity	0.2	-0.2	-0.2	-0.2
US Small Cap Equity	0.22	-0.22	-0.22	-0.22
EAFE Equity	0.2	-0.2	-0.2	-0.2
Emerging Market Equity	0.2	-0.25	-0.5	0.1
Private Equity	0.2	-0.2	-0.25	-0.2
Hedge Funds	0	0	0	0
Opportunistic Fixed Income	0	0	0	0
High Yield Fixed Income	0	-0.12	-0.15	-0.12
Opportunistic Real Estate	0.1	0	-0.75	0.1
US Treasuries (20 year +)	0	0	0	0
US Treasuries (Intermediate)	0	0	0	0
Mortgages- Inv. Grade	0.06	-0.06	-0.06	-0.06
Credit- Investment Grade	0.06	-0.06	-0.06	-0.06
TIPS	0	0	0	0
Core Real Estate	0.1	0	-0.75	0.1
Infrastructure	0.25	-0.2	-0.5	0.1
Bank Loans	0.06	-0.06	-0.06	-0.06

Negative Positive

ESTIMATING CLIMATE IMPACT ON RETURN
CALCULATING MODEL OUTPUTS

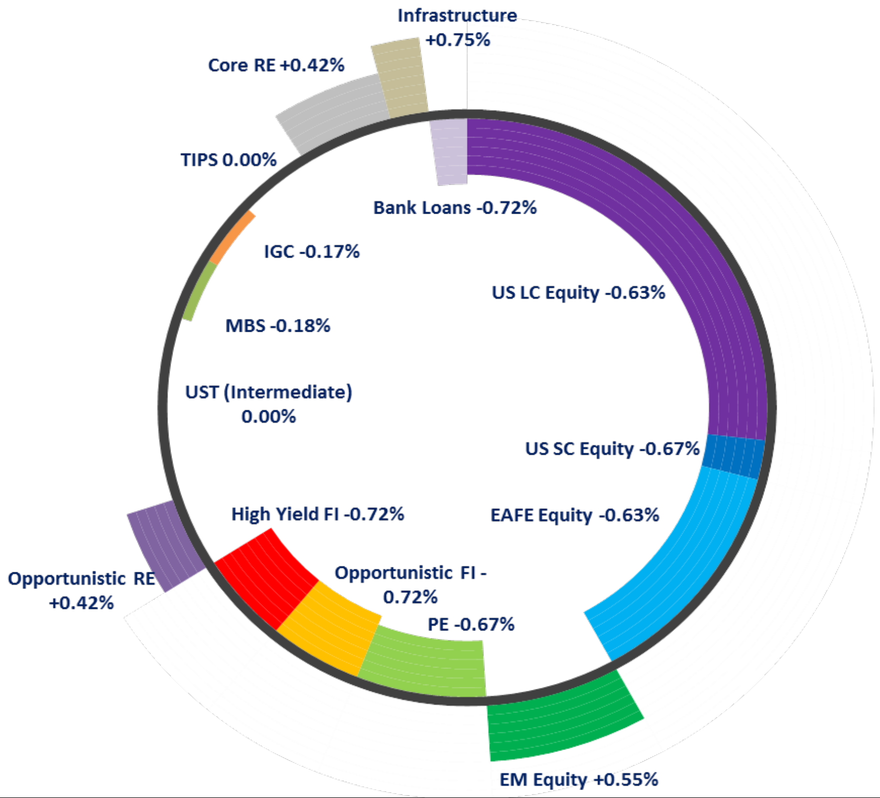
CLIMATE SCENARIOS X **CLIMATE RISK FACTORS** = **INVESTMENT IMPACTS**



T	R	I	P
-0.25	-0.75	-0.75	-0.75
-0.50	-0.75	-0.75	-0.75
<0.25	-0.50	-0.75	<0.25
-0.50	-0.75	-0.75	-1.00
0.50	-0.25	-0.25	1.00
0.50	-0.75	-0.25	0.50

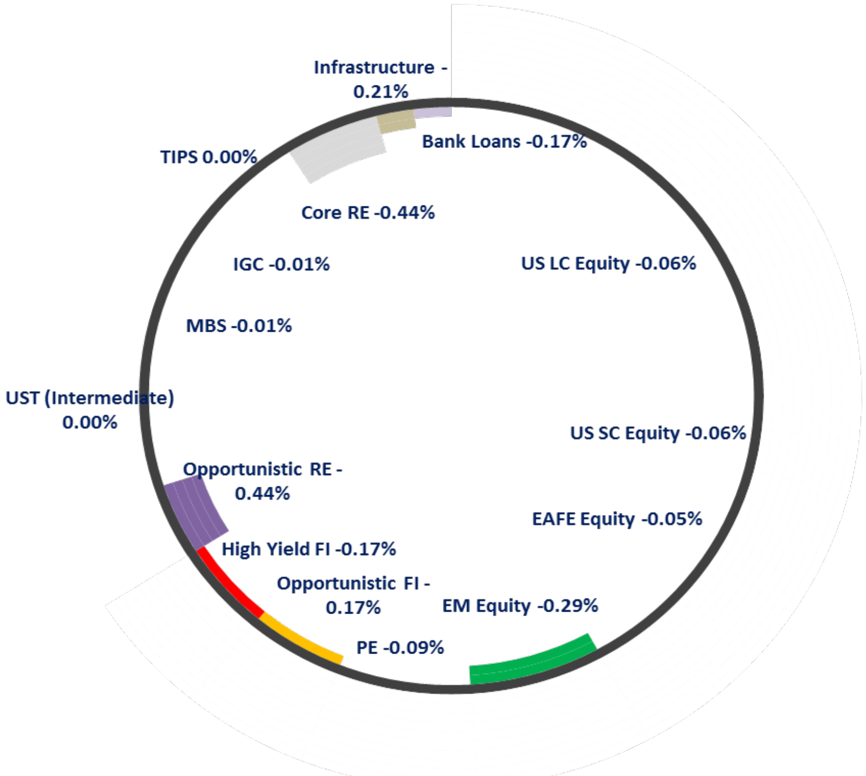
SAMPLE FUND
CLIMATE SCENARIO RESULTS SUMMARY

TRANSFORMATION (2ºC) – 10 YEAR RETURN IMPACT



Metric	SAA	vs. Base Case
Return	6.55%	-0.30%
Risk	14.06%	0.18%

FRAGMENTATION (4ºC) – 10 YEAR RETURN IMPACT



Metric	SAA	vs. Base Case
Return	6.74%	-0.11%
Risk	13.91%	0.03%

SAA = Strategic Asset Allocation

NEXT STEPS

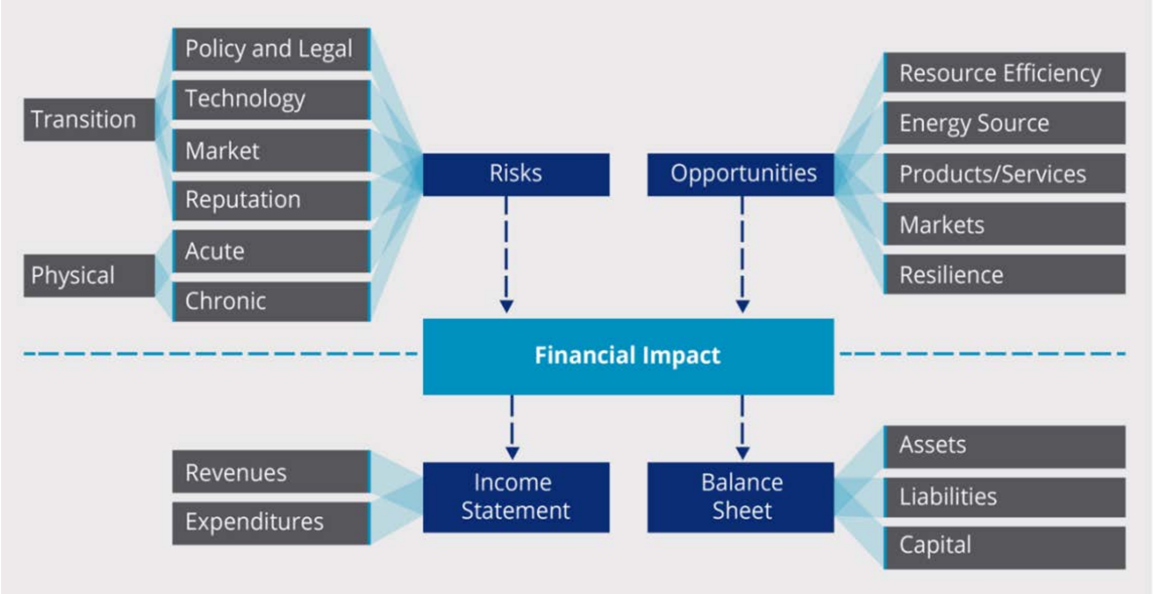
- Mercer to work with BAM (and the boards as appropriate) to identify **alternate strategies to model**
- Mercer to **update climate risk assessment** with the alternate investment strategies
- Mercer to provide a **climate risk assessment report with recommendations** on integrating consideration of climate change risks covering:
  - investment policy and strategy
  - asset allocation (including potential new allocations)
  - manager evaluation and selection
  - risk measurement and management
  - portfolio performance benchmarks
  - standards for measuring performance of investment managers
  - benchmarks and timelines at the fund level for monitoring and achieving progress on mitigating climate risk in the portfolio
- Mercer to **present the above** at an upcoming Common Investment Meeting

MERCER

MAKE TOMORROW, TODAY

CLIMATE-RELATED DISCLOSURE
ASSET OWNER RECOMMENDATIONS

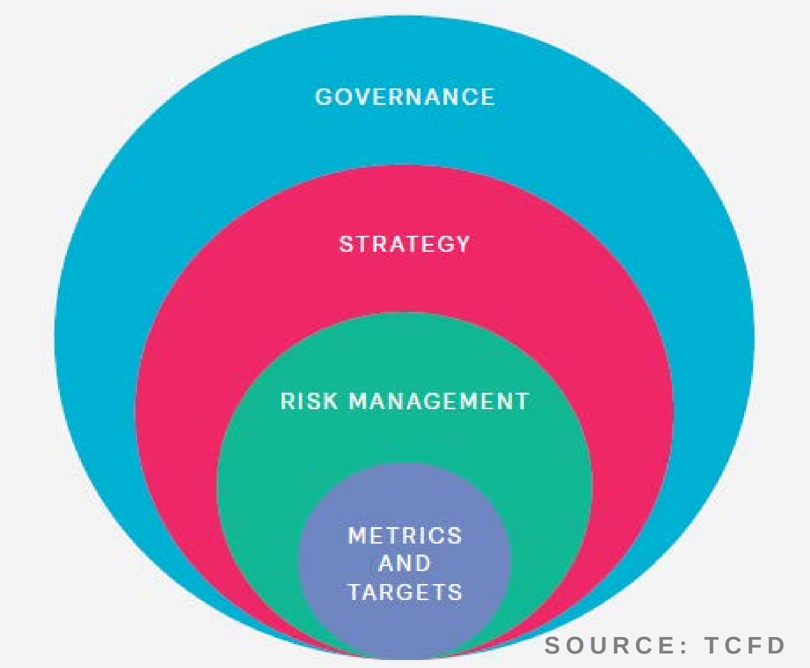
- The Task Force on Climate-Related Financial Disclosures (TCFD) published its final recommendations for **companies, asset managers** and **asset owners** in June 2017.
  - TCFD was initiated by the Financial Stability Board and is a 32-member industry group, chaired by Michael Bloomberg, and includes Mercer's Jane Ambachtsheer. The recommendations already have strong business and industry support.
- **Key challenges being addressed**
  - Climate change will create **material economic risks**, driven by **physical impacts** and the **low-carbon energy transition** (see chart).
  - It is difficult for the financial sector to anticipate, model and react to climate risk due to the **lack of good quality, market-wide information**.
- **Aims of the disclosure framework**
  - Improve the quality and availability of company-level climate-related data.
  - Increase the focus on climate change by companies, asset managers and asset owners.
  - Enable more informed investment, credit, and insurance underwriting decisions.



SOURCE: TCFD

CLIMATE-RELATED DISCLOSURE
ASSET OWNER RECOMMENDATIONS

- Recommendations apply to **companies**, **asset managers** and **asset owners** and are focused on **managing risks and identifying opportunities.**
  – Asset owner disclosures should be included in **annual beneficiary reporting**.
- We encourage our asset owner clients to consider the following questions in order to prepare:
  – **Governance:** Who has oversight of climate-related risks and disclosures (board / management)? Is this documented?
  – **Strategy:** Have you considered climate related risks and opportunities for inv. strategy? Different climate scenarios?
  – **Risk Management:** Have you established risk assessment and reduction processes, including engagement with managers and low-carbon allocations?
  – **Metrics & Targets:** Have you assessed your portfolio carbon emissions (carbon footprinting) and considered targets for improvements?



SOURCE: TCFD

*Note, for Principles of Responsible Investment (PRI) signatories, TCFD disclosure will be included in the **2017 reporting requirements.***

QUESTIONS?