



a forecasted monthly return for each factor. We repeat this process for each month in the forecast period to generate a simulated return stream stretching across the entire period (a “simulation”). We then repeat this process to create multiple simulations. The relationships of 104 asset classes to these factors are estimated based on historical data and then applied to the simulated pathways, generating asset class returns for each simulation.

The first two scenarios ran were for Stagflation and Deglobalization. Stagflation is defined as a long term (decade of more) condition of slow global GDP growth, combined with high inflation. Events that could lead to this scenario include: aging demographics, declining global trade, low-growth government policies, and more dovish monetary policy. Deglobalization is defined as a specific condition where the post-World War II liberal democratic economic policy norms (free trade, limited protectionism, independent central banks, democratically elected governments, etc.) slowly erode, and are replaced by policies that are more inward looking (e.g., trade protections, industrial subsidies, coordinated fiscal and monetary policies, etc.).

The six climate scenarios we analyzed represented mixes of physical and transition risks. Physical risks describe the impacts of climate change on economies, generally through damage or disruption due to changes in precipitation and storms relative to history. Transition risks describe financial risks arising from changes in policy and behavior attempting to mitigate climate change. The scenarios vary from physical risk predominant (Current Policies, Nationally Determined Contributions “NDCs”) to transition risk predominant (Net Zero by 2050, Divergent Net Zero) as well as mixed scenarios (Delayed Transition, Below 2°C). In each case, the scenarios specify paths of macroeconomic variables and measures of physical climate change consistent with the specified amount of climate change and implementation of mitigation efforts.

In the climate analysis, we reviewed six different scenario sets from the Network for Greening the Financial System (“NGFS”), an international, intergovernmental organization made up of 121 national financial supervisory authorities and central banks sharing best practices for the development of environmental and climate risk management in the financial sector. The NGFS provides a suite of climate scenario assumptions covering different emission paths, transition strategies, and physical risk profiles. We modeled six of these scenarios, incorporating both transition and physical risk factors.



NGFS Scenario Summaries¹

	Scenario Name	Temp Target	Policy Reaction	Technology Change	CO ₂ Removal
Orderly	Net Zero 2050	1.4°C	Immediate & smooth	Fast	Medium-high use
	Below 2°C	1.6°C	Immediate & smooth	Moderate	Medium-high use
Disorderly	Divergent Net Zero	1.4°C	Immediate but divergent among sectors	Fast	Low-medium use
	Delayed Transition	1.6°C	Delayed	Initially Slow but then Fast	Low-medium use
"Hot House"	NDCs	2.6°C	Nationally-determined	Slow	Low-medium use
	Current Policies	3.0°C+		Slow	Low use

Geopolitical and Climate Modeling Results Discussion

The stagflation and deglobalization scenarios are both characterized by lower returns for growth-sensitive asset classes as well as by higher inflation and fixed income returns. Public and private equity returns decline in both scenarios, with a greater fall in a prolonged stagflation scenario than in deglobalization. Higher quality fixed income tends to perform more strongly in both scenarios. Impacts on credit are mixed, with stronger performance in a deglobalization context and weaker under stagflation. Real assets perform similarly in both scenarios, protecting more than equities but with lower returns than high quality fixed income. Although not directly observable, asset classes with more exposure to international securities generally perform more poorly in the deglobalization scenario than in a prolonged stagflation.

Scenario Impact on Average 20-Year Expected Return Versus Baseline (Select Policies and Asset Classes)

	Stagflation (%)	Deglobalization (%)	Legend
Global Equity	-2.4	-1.5	<-1%
Cash	0.0	0.6	0% - 1%
IG Bonds	0.5	2.4	>1%
TIPS	0.2	3.1	>1%
HY Bonds	-1.3	1.4	>1%
Direct Lending	-1.6	1.6	>1%
Private Equity	-4.5	-1.6	<-1%
Real Estate (Core Private)	-1.0	-1.1	<-1%
Infrastructure	-1.0	-1.2	<-1%
Alternative Risk Premia	-0.8	-1.2	<-1%
Commodities	3.7	2.7	>1%
CTAs	-0.1	-1.3	<-1%
Global Macro	-0.1	-1.1	<-1%

¹ "NGFS Scenarios for central banks and supervisors" presentation, September 2022.



	Climate: Current Policies (%)	Climate: Delayed Transition (%)	Climate: NDCs (%)	Climate: Below 2° (%)	Climate: Net Zero 2050 (%)	Climate: Divergent Net Zero (%)
Global Equity	1.2	0.4	0.0	-0.3	-0.3	-0.9
Cash	0.0	0.0	-0.1	0.0	0.0	0.0
IG Bonds	0.4	0.2	0.2	0.1	0.1	0.2
TIPS	0.2	-0.7	-0.3	-0.2	-0.4	-0.3
HY Bonds	0.3	-0.6	-0.3	-0.2	-0.9	-0.8
Direct Lending	0.4	-0.7	-0.4	-0.2	-0.9	-0.9
Private Equity	1.4	0.5	0.0	-0.4	-0.3	-1.1
Real Estate (Core Private)	-0.1	-0.1	-0.2	-0.1	-0.4	-0.7
Infrastructure	-0.4	-0.2	-0.3	-0.1	-0.3	-0.5
Alternative Risk Premia	0.0	-0.6	-0.3	-0.1	-0.7	-0.6
Commodities	-0.3	-1.3	-1.3	-0.2	-1.0	-1.6
CTAs	0.0	0.0	0.0	-0.1	0.0	0.0
Global Macro	0.2	-0.1	-0.1	-0.1	-0.1	0.0

Legend

- <-0.5%
- 0.5% – 0%
- 0% - 0.5%
- >0.5%

Across climate scenarios, outcomes tend to vary by departure from the current climate status quo as well as by the volatility of policy changes, with greater changes from the status quo and more policy volatility leading to more negative outcomes. Policies closer to current policies (Current Policies, Delayed Transition, NDCs) generally exhibit stronger equity returns, while fixed income performance is mixed. The most extreme downside outcomes across asset classes generally occur in scenarios with less coordinated climate policies (Divergent Net Zero, NDCs, Delayed Transition). Scenarios with greater degrees of climate change mitigation (Net Zero scenarios) trend towards lower outcomes versus the baseline. The impact of climate transition risk tends to dominate, although the contribution of physical risks is relatively higher in several asset classes, notably real estate, farmland, and infrastructure.

Although individual asset class returns can vary substantially within each scenario, the impacts on well-diversified asset allocation policy portfolio are less pronounced.

Scenario Impact on Average 20-Year Expected Return Versus Baseline (Policy Options)

	Stagflation (%)	Deglobalization (%)
Current Policy	-1.8	-0.7
Recommended Policy	-1.7	-0.7
Policy 2	-1.7	-0.6
Policy 3	-1.7	-0.6
Policy 4	-1.6	-0.5

Legend

- <-1%
- 1% – 0%
- 0% - 1%
- >1%



	Climate: Current Policies (%)	Climate: Delayed Transition (%)	Climate: NDCs (%)	Climate: Below 2° (%)	Climate: Net Zero 2050 (%)	Climate: Divergent Net Zero (%)
Current Policy	0.7	0.2	0.0	0.0	-0.3	-0.7
Recommended Policy	0.7	0.2	0.0	-0.1	-0.3	-0.7
Policy 2	0.6	0.2	-0.1	-0.1	-0.3	-0.7
Policy 3	0.6	0.2	-0.1	-0.1	-0.3	-0.7
Policy 4	0.6	0.1	-0.1	-0.1	-0.3	-0.7

Legend

- <-0.5%
- 0.5% – 0%
- 0% - 0.5%
- >0.5%

On an absolute basis, a near-term, prolonged stagflationary scenario appears to present the greatest risk to long terms returns. Among climate scenarios, scenarios which have later transitions (Current Policies, Delayed Transition) appear to benefit the proposed portfolios, while more ambitious mitigation efforts (Net Zero 2050, Divergent Net Zero) present greater transition risks and more scope for negative outcomes. More middling scenarios, with modest climate change mitigation goals and modest degrees of policy coordination, impact the proposed portfolios to a lesser degree.

Despite variation in the absolute impact of each scenario on expected return versus a baseline forecast, the **degree of equity exposure is the predominant driver of relative proposed policy returns**. The Current Policy has the highest combined exposure to public and private equity and, consequently, has the weakest return impact relative to the other policies in negative growth scenarios. By contrast, the Current Policy performs well in scenarios where equities rise.

The Stagflation and Deglobalization scenarios demonstrate the largest sensitivities to reduced equity exposure, with annual expected returns dropping by a range of 0.5% to 1.8% from the policy with the highest equity allocation (Current Policy) to the one with the lowest (Policy 4). Although those amounts appear modest, when compounded over a long-term planning horizon on a large portfolio, like CalSTRS', the amounts are significant. The climate scenarios show less impact from asset allocation, generally being clustered within a relatively tight window of expected returns, supporting CalSTRS' focus on addressing climate risks at the portfolio implementation level.

Conclusion and Follow-On Considerations

Staff's recommended asset allocation policy is based on a broad set of analyses, in which Staff evaluates risks and returns from a variety of perspectives. Once the Investment Committee decides on an appropriate asset allocation, there will be several follow-on considerations for the Committee over the next several meetings:

- *Approving target ranges around each target:* In addition to asset allocation targets, the Committee adopts ranges around the target that provide guidance to Staff when rebalancing asset classes over time. Staff would intend to recommend target ranges at the July meeting.
- *Approving an implementation/transition plan:* Presuming the new asset allocation policy differs from the current one, Staff would be recommending a transition and implementation plan. This plan would be presented to the Committee over the next several meetings.



→ *Modifying asset class policies:* With or without a revised asset allocation policy, there are likely to be structural changes that Staff would recommend within certain asset classes to reflect the ALM analysis. For example:

- **Fixed income:** inclusion of a meaningful target allocation to Private Debt strategies.
- **SISS:** new policies to define SISS' role within the asset allocation framework, and a potential Opportunistic asset class (with a 0% target).
- **RMS:** Potential changes to the underlying allocation targets for the four components of RMS.
- **Inflation Sensitive:** Potential changes to the underlying allocation targets for the components of Inflation Sensitive.
- These policy recommendations are likely to come before the Committee over the next year.

While asset allocation policy is the most impactful decision the Investment Committee will make, the Committee will need to turn its attention to implementation issues afterwards. Staff is aware of each of the implementation requirements and will be reviewing them with the Committee over time.

Staff's process for developing its asset allocation recommendation to the Investment Committee has been robust and represents an industry best practice in asset allocation policy development. Staff has been responsive to Meketa's feedback during the process and has considered each of the issues that Meketa surfaced. The recommendation in front of the Committee represents the best thinking of Staff and Meketa.

After independently evaluating of Staff's proposed changes, Meketa concurs with Staff's recommended changes to CalSTRS' asset allocation policy.

If you have any questions, please feel free to contact us at (760) 795-3450.

SPM/SBS/AE/EW/jls