

!D



Künstliche Intelligenz für resiliente Lieferketten - Nachhaltigkeit strategisch denken

Alice Gumpfenberg & Marco Felsberger

Welcome



Marco Felsberger

Senior Advisor Supply Chain Resilience at Prewave

Head of Module and part-time lecturer at:

- FH Campus Wien
- FH Wiener Neustadt
- TH Deggendorf

Previously worked at:

- Global Head of Resilience, Security & Audit at Gebrüder Weiss
- Sub-Regional Head of Security at SAP SE

!prewave



BERTELSMANN



Lufthansa

FUJITSU



SCHOTT

SIEMENS

e.on

BRENNTAG

ZURICH



REHAU

KÄRCHER



SARTORIUS

FREUDENBERG
INNOVATING TOGETHER



PORSCHE

TOYOTA

MAGNA

wieland

2.000.000+
Suppliers

250+
Customers

230+
Employees



!D Ai

Supply chain superintelligence.

4.5 m Datapoints | Day



400+ Languages

2.1 m+ Suppliers

Ai Noise Canceling & Quality

Deeper Supply Chain

WHY?



Rana Plaza 2013

1.134 dead
2.500 injured

Warning signs

Major shift in **fashion**
supply chain +
regulatory Changes



Despite progress, child labour still affects 138 million children globally – ILO, UNICEF (2025)

A close-up shot of a protest sign made of brown cardboard. The sign is held by a person's hand, visible at the bottom. The text on the sign is printed in a bold, black, sans-serif font, arranged in three lines. The background is a blurred outdoor scene with green foliage and other people, suggesting a public demonstration.

**BAN GOODS
MADE WITH
FORCED LABOR**

>25 million people are engaged in forced labor

A photograph of an industrial facility, likely a power plant, under a clear blue sky. On the left, two tall, cylindrical smokestacks are visible; the one on the right is white and actively emitting a thick, white plume of smoke that drifts to the right. In the center and right, there are large, hyperboloid-shaped cooling towers with intricate metal scaffolding. A tall, orange lattice boom crane stands between the smokestacks and the cooling towers. The overall scene depicts industrial operations and greenhouse gas emissions.

Industry accounts for a major part of GHG Emissions leading to climate change

A perspective view of a two-lane road stretching into the distance, flanked by trees and a fence, with a bright light source at the horizon.

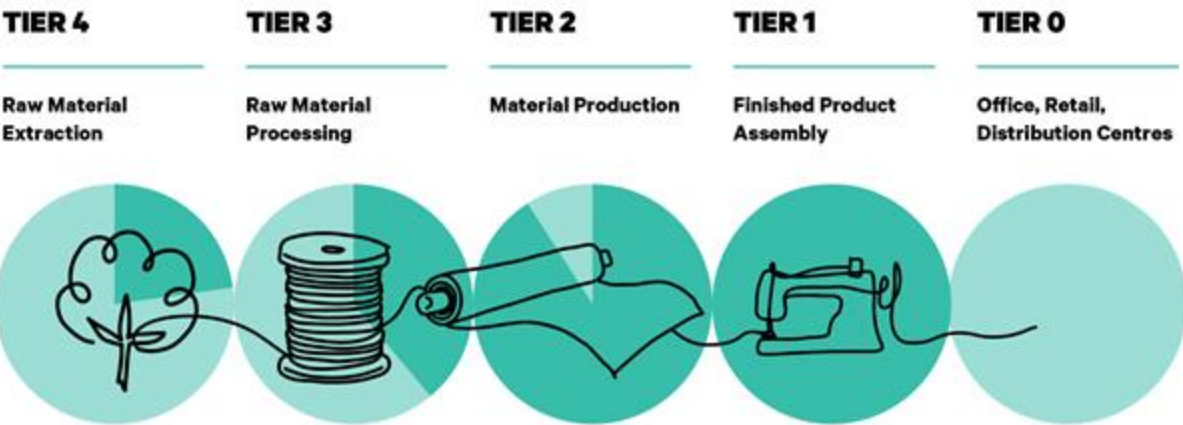
70% of companies lack visibility beyond tier-1 in the supply chain

Transformation through transparency and collaboration



100%

Since 2017, we have been providing 100% transparency in the supply chain by recording all preliminary phases of our textile and footwear suppliers.



Examples for good chemical management:



but it also led to an unexpected **VALUE CREATION...**

IMPROVED
RELATIONSHIPS
WITH SUPPLIERS



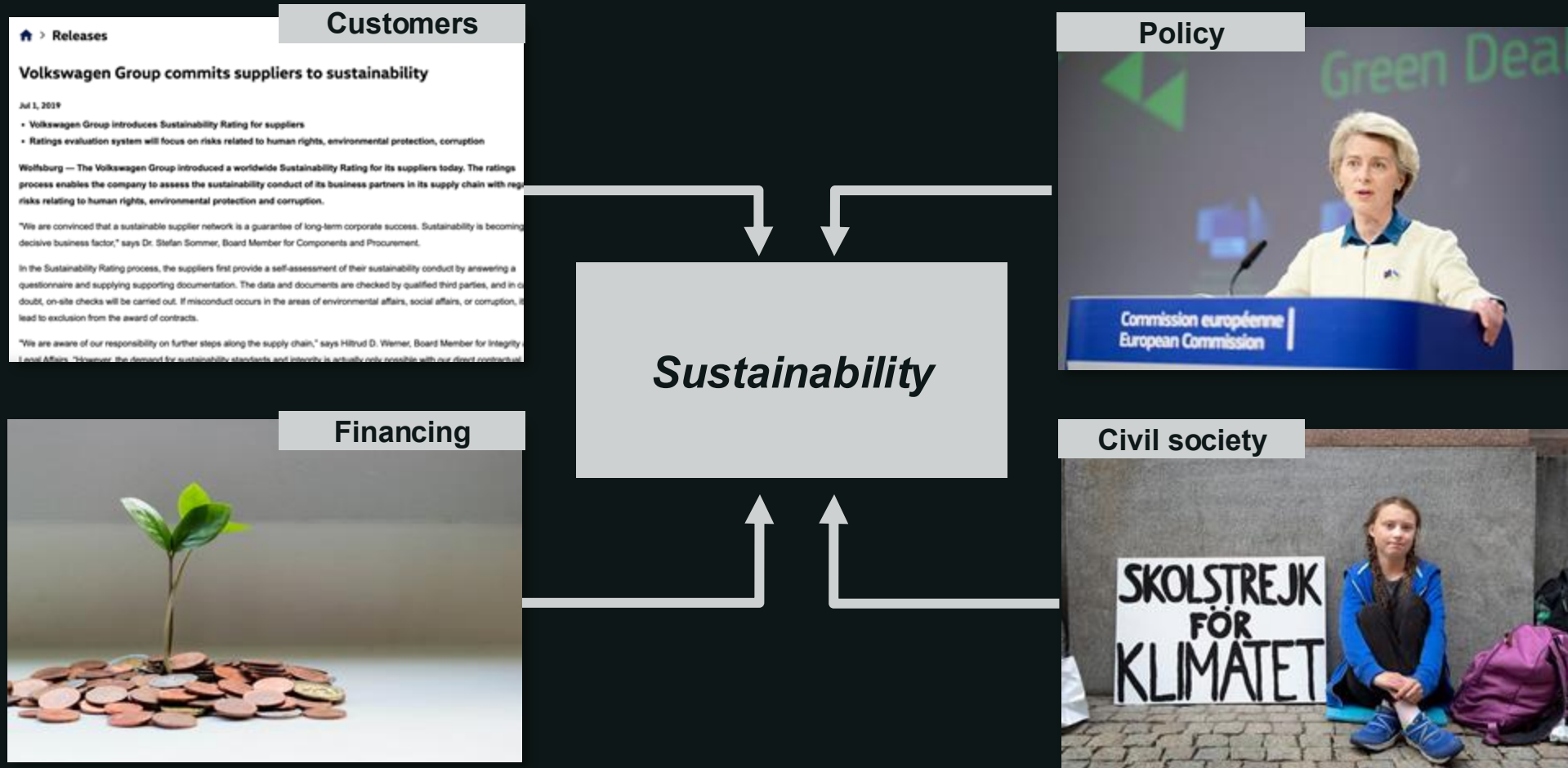
IMPROVED
SUSTAINABILITY



- LOWER PRICING
- BETTER QUALITY
- LEAD TIME IMPROVEMENT

30%
PROFIT INCREASE
in certain product categories

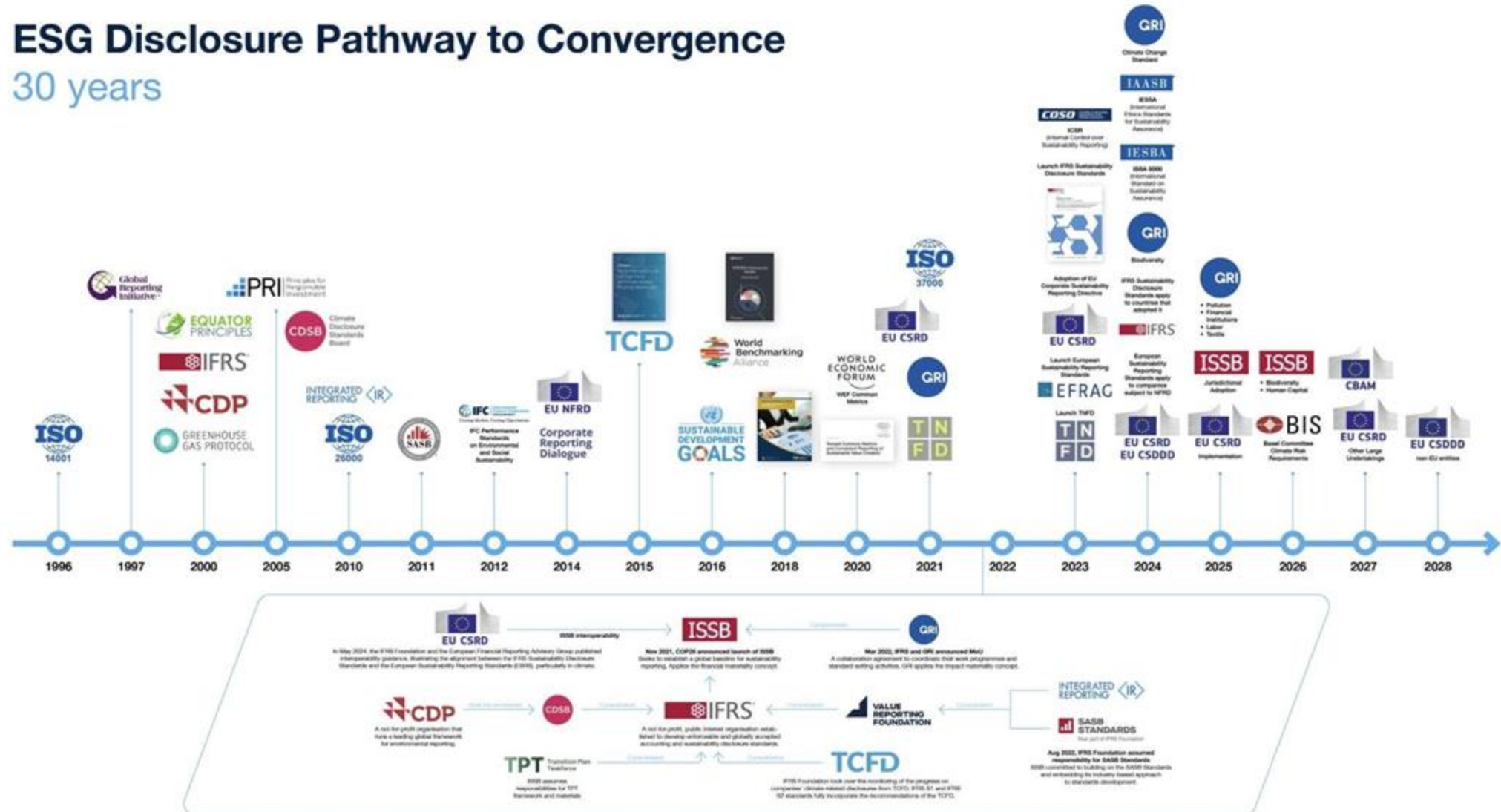
Now the demand for sustainability comes from many sources...



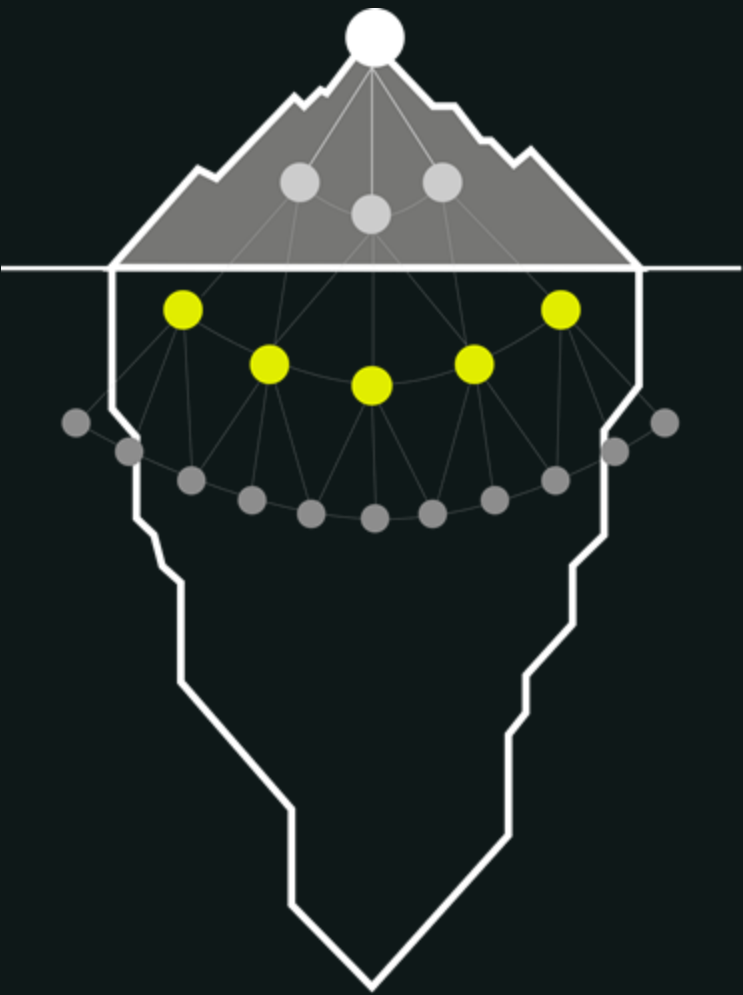
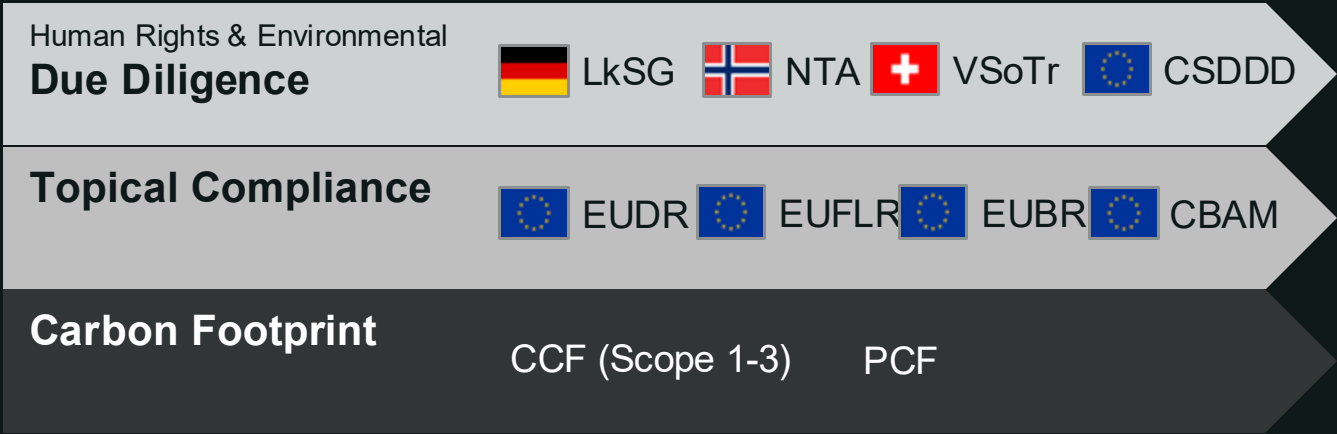
... resulting in various (mandatory) sustainability requirements

ESG Disclosure Pathway to Convergence

30 years



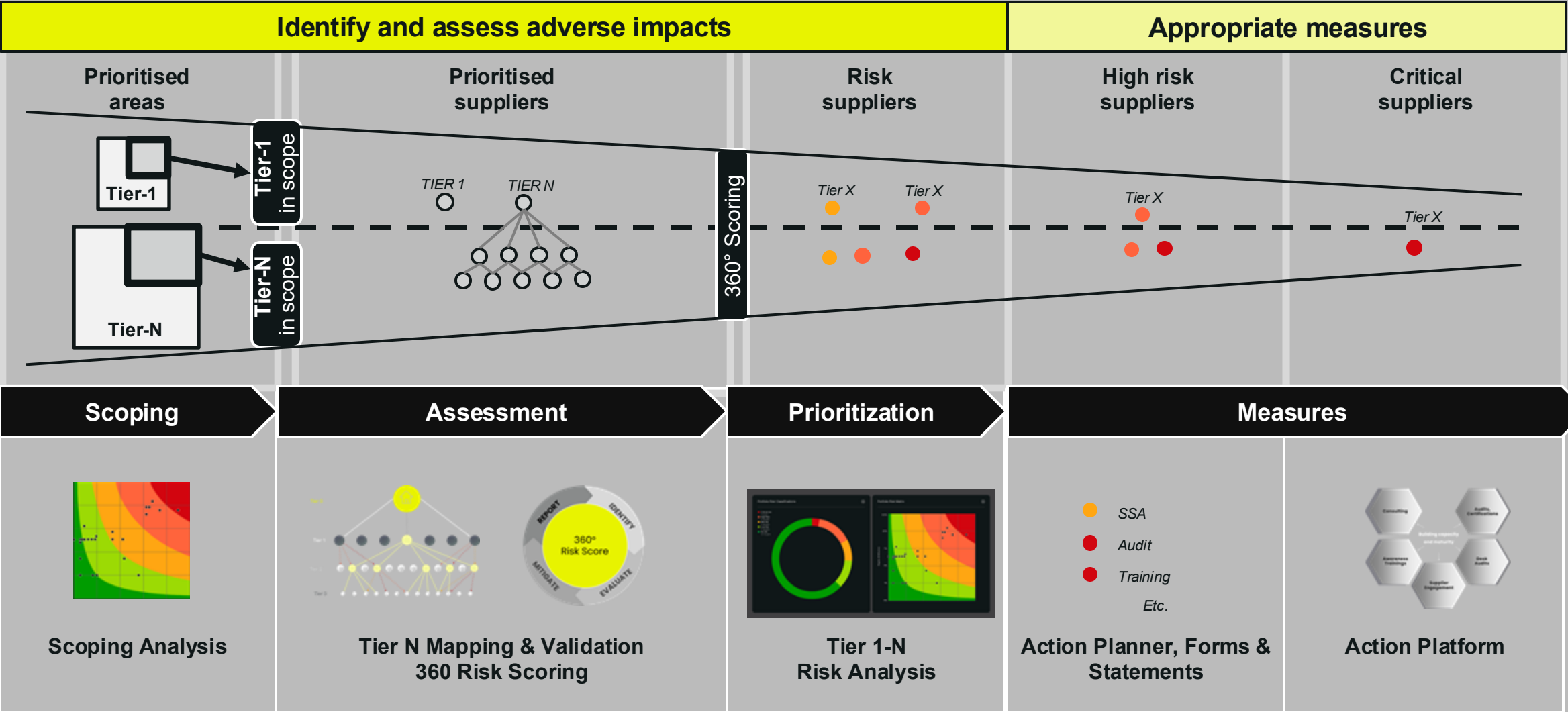
All directives require data collection in the value chain



Transparency eventually flows into **key reports**, available to stakeholders



An automated risk analysis helps you to focus where its needed the most and where you can make the largest impact:

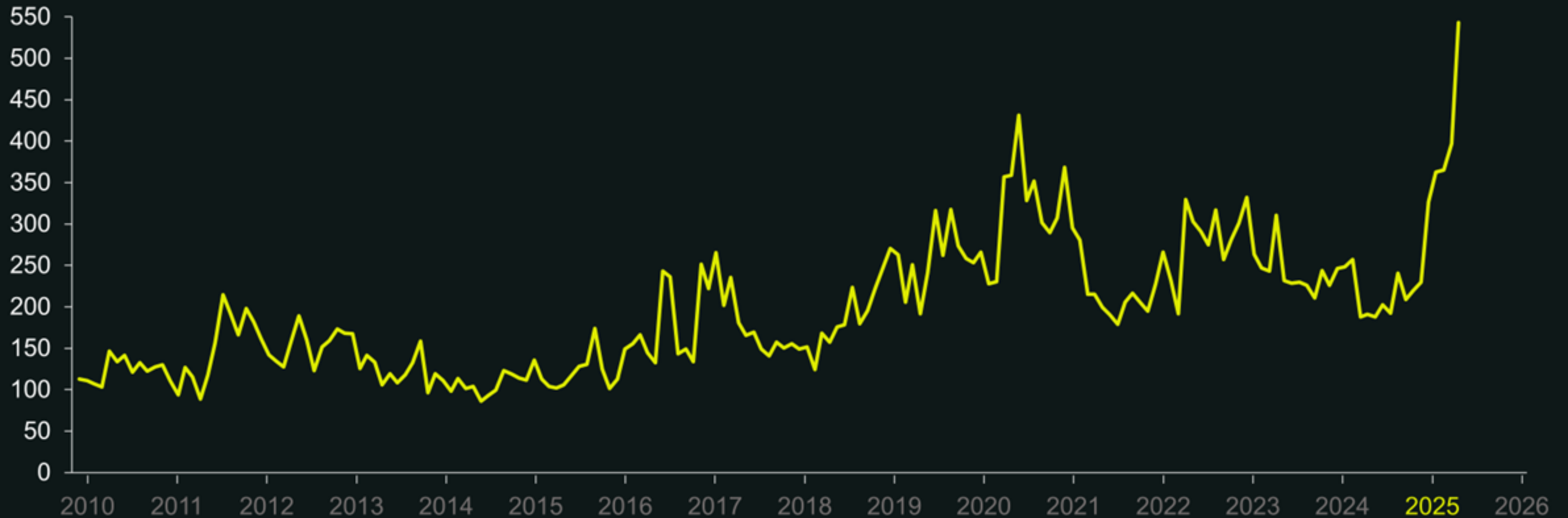


BUT WE WANT TO SHOW YOU HOW RISK MANAGEMENT AND SUSTAINABILITY
CAN BE TACKLED TOGETHER AND HOW AI WILL HELP YOU TO

BUILD UP A STRATEGIC RESILIENCE STRATEGY

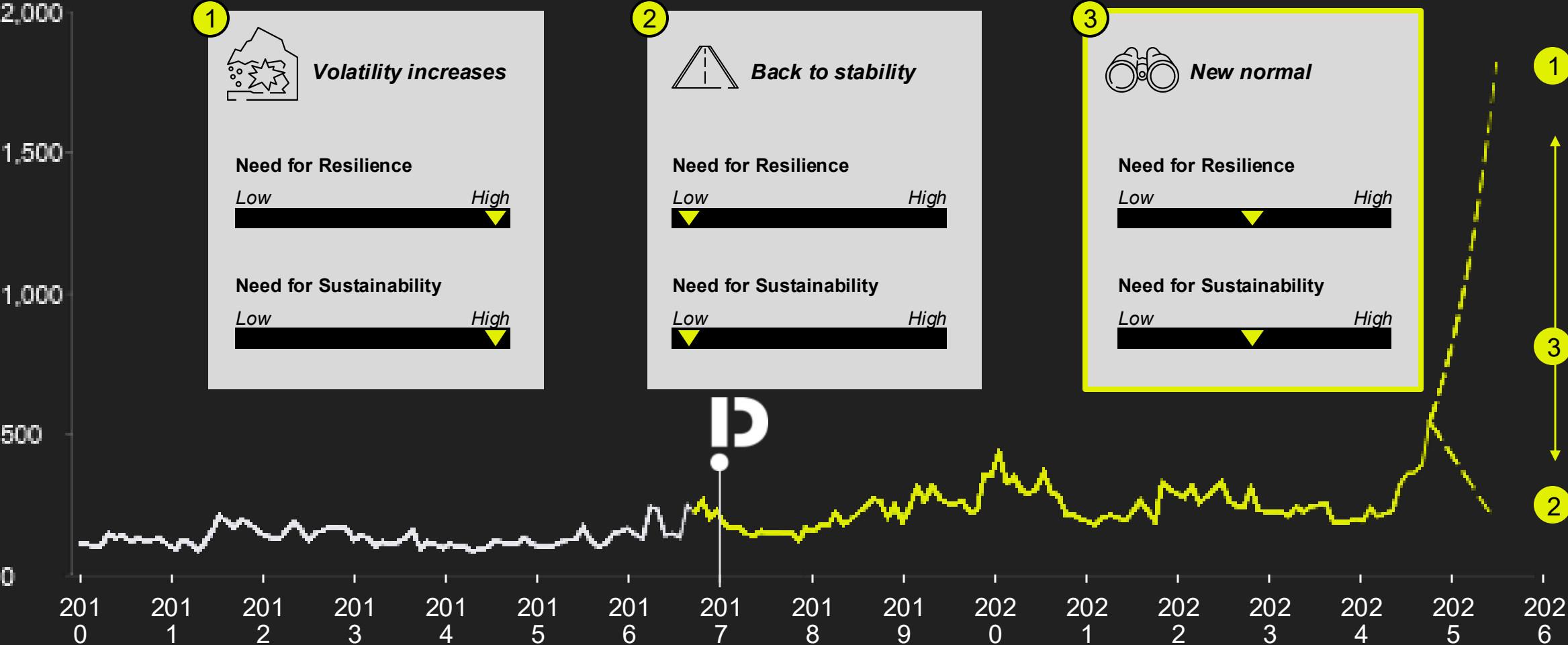
Global policy **uncertainty** is at its peak

Global Economic Policy Uncertainty



Source: Davis, S. J., "An Index of Global Economic Policy Uncertainty," Macroeconomic Review, EY (2023); ECB (2021)

What's next?



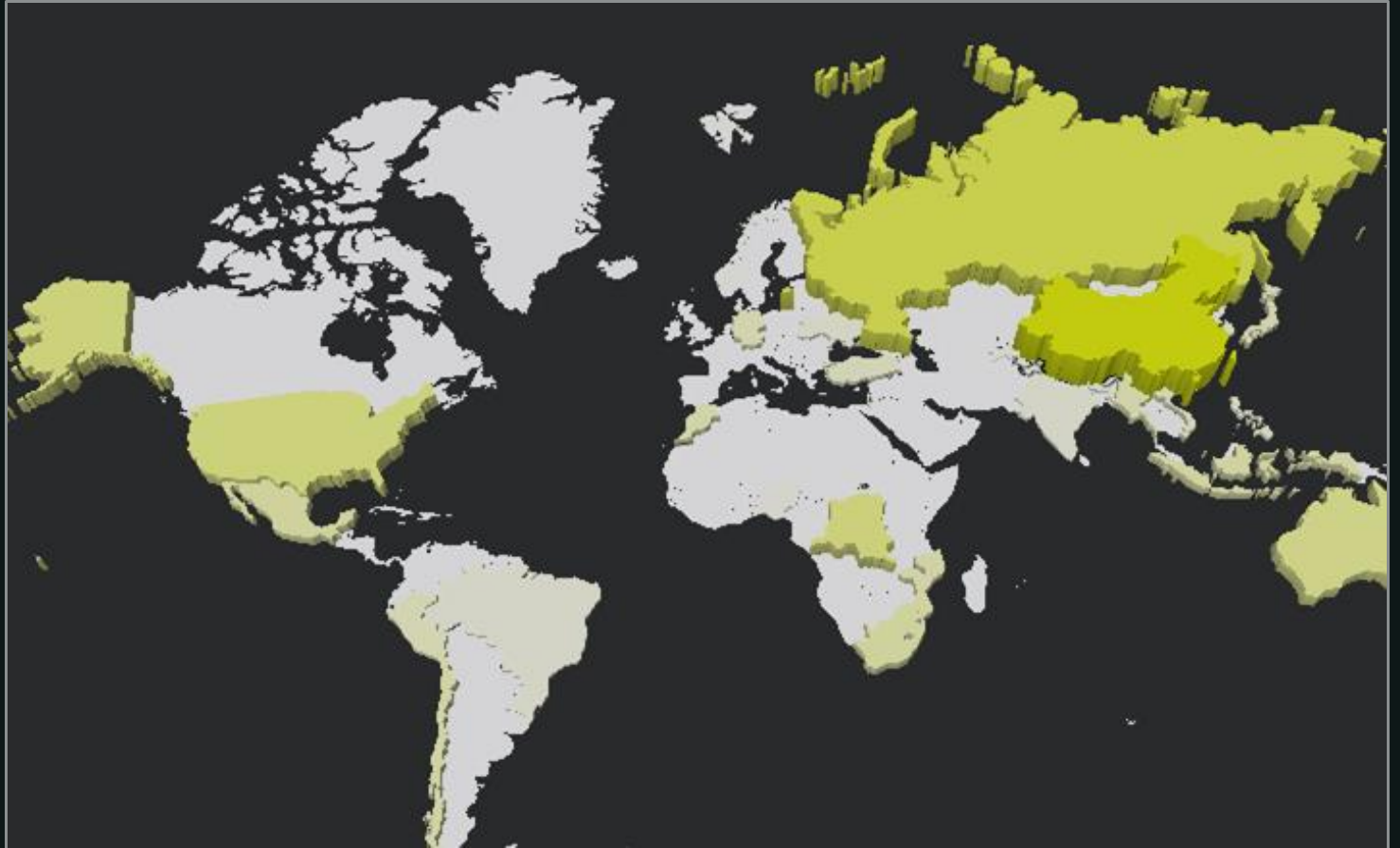
Source: Davis, S. J., "An Index of Global Economic Policy Uncertainty," Macroeconomic Review, EY (2023); ECB (2021)

Critical Raw Material Concentration

Based on research for
23 **critical raw materials**:

High dependency on:

1. China
2. Russia
3. Democratic Republic of Congo
4. Chile
5. Australia
6. North-America
7. South Africa



Source: World Bank

Gallium Supply Chain

Recycled Gallium

- Japan
- Germany
- United States
- South Korea
- China

Recycling from
GaAs / GaN

01

Raw Material Mining

Primary Gallium Exporters

- China
- Russia
- Germany
- Japan

02

Electronics, LED, PV

03

Semiconductors,
Defense & Comms

04

Gallium Compound Exporters (GaAs, GaN)

- China
- Japan
- Germany
- United States
- Canada

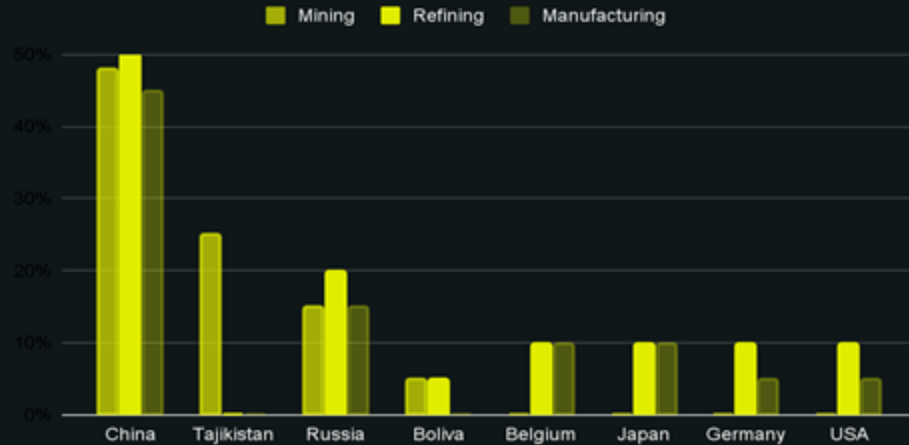
High-Purity Gallium Exporters

- China
- Japan
- Germany
- United States
- Canada

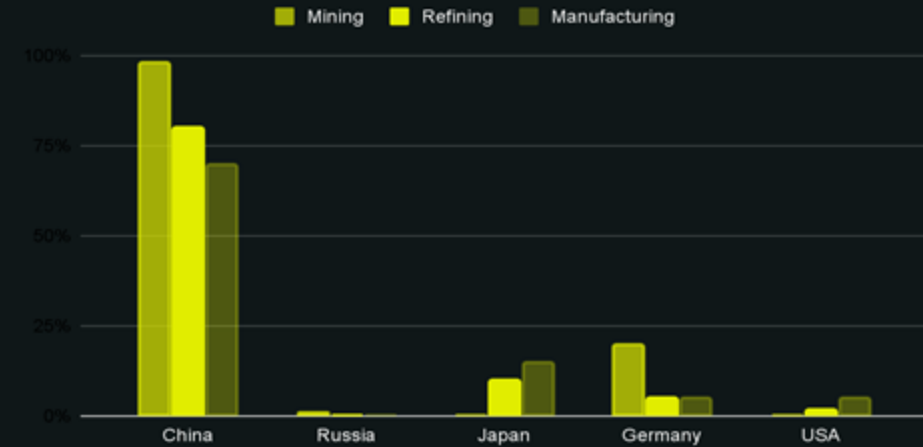
Top Exporters (worldwide)

For banned minerals by China (Antimony, Gallium, Germanium)

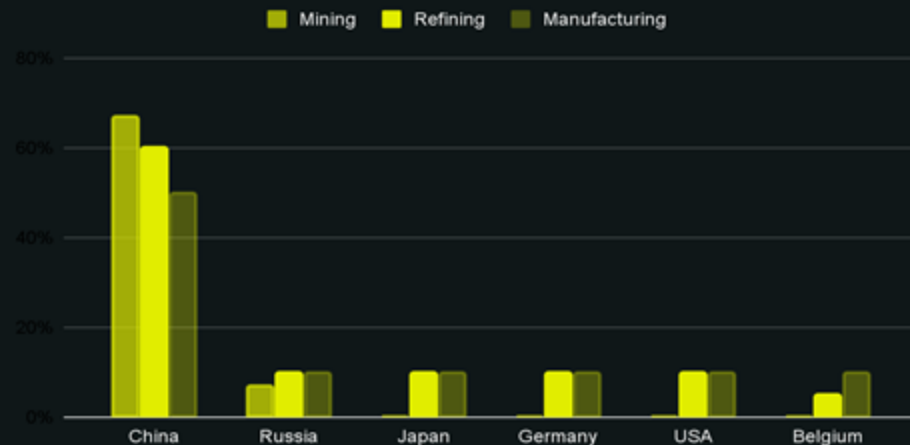
Antimony Supply Chain



Gallium Supply Chain



Germanium Supply Chain



Top U.S. Importers

5N Plus Inc.

Indium Corporation

Teck Resources Limited

Top Chinese Exporters

China Minmetals Corporation

Zhuzhou Smelter Group Co., Ltd.

China Tin Group Co., Ltd.

Prewave Risk Library for **Exposure Analysis**

All-in-One

Supply Chain Risk Intelligence



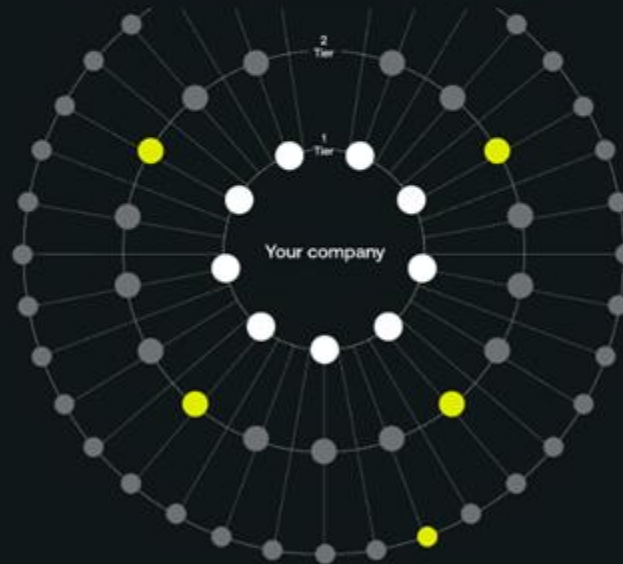
= Holistic view of all risks | react faster and better

Tier-N transparency is in the intersection of **resilience & sustainability**

RESILIENCE & BUSINESS CONTINUITY



TIER-N TRANSPARENCY



SUSTAINABILITY & COMPLIANCE



Supply Chain Mapping with Prewave

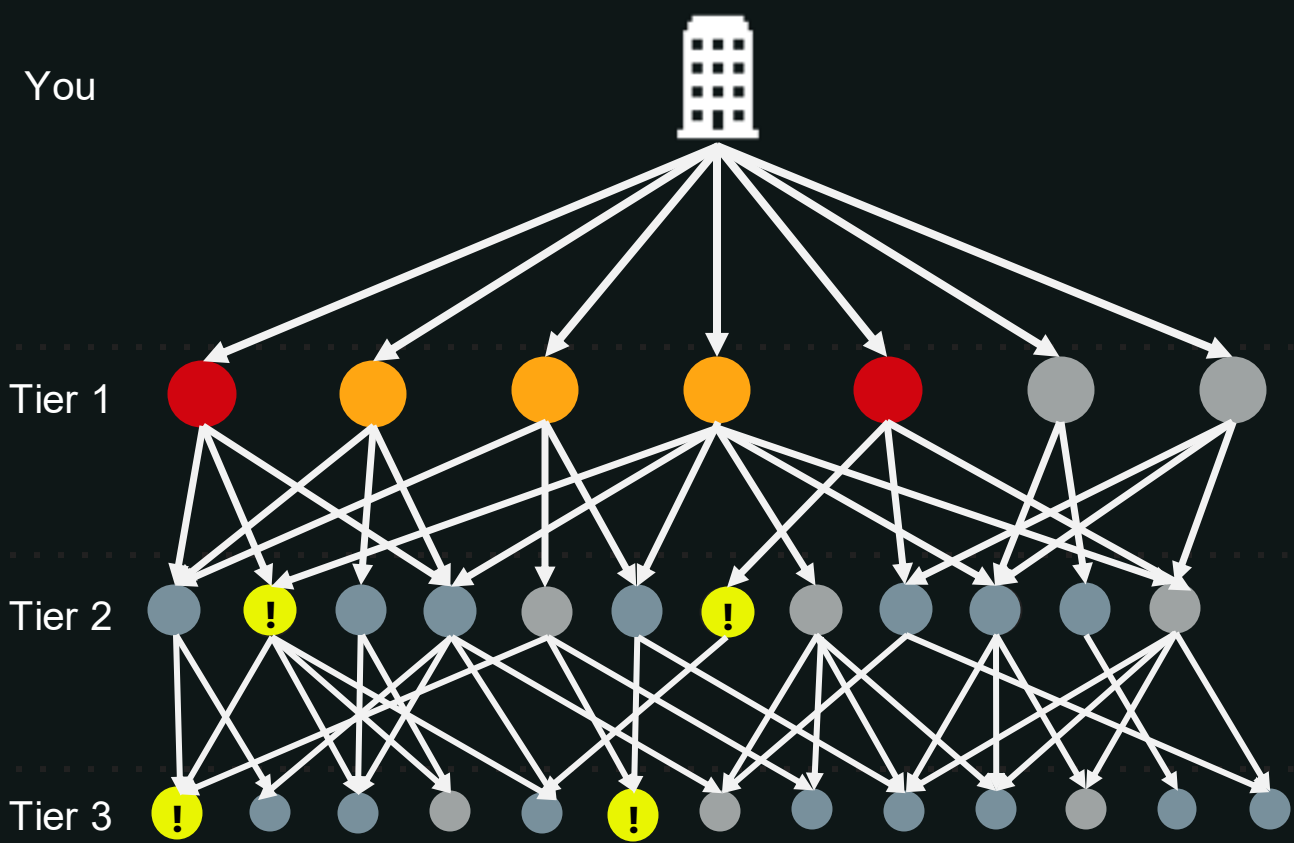
With same methodology, automatically extending the analysis for deeper Tiers

Example

Level	Source	Customer: Site Groups and Sites
Tier-1	Customer Input	100
Tier-2	Customs	10,000
	Predictions	2,000
	Media	200
	Total Tier-2	12,200
Tier-3	Customs	100,000
	Predictions	20,000
	Media	1000
	Total Tier-3	121,000

*Numbers represent a hypothetical but realistic case

...but the question remains - "How am I affected **beyond Tier-1?**"



● Directly affected tier-1 supplier ● Indirectly affected tier-1 supplier ! Exposed company

Exposure analysis

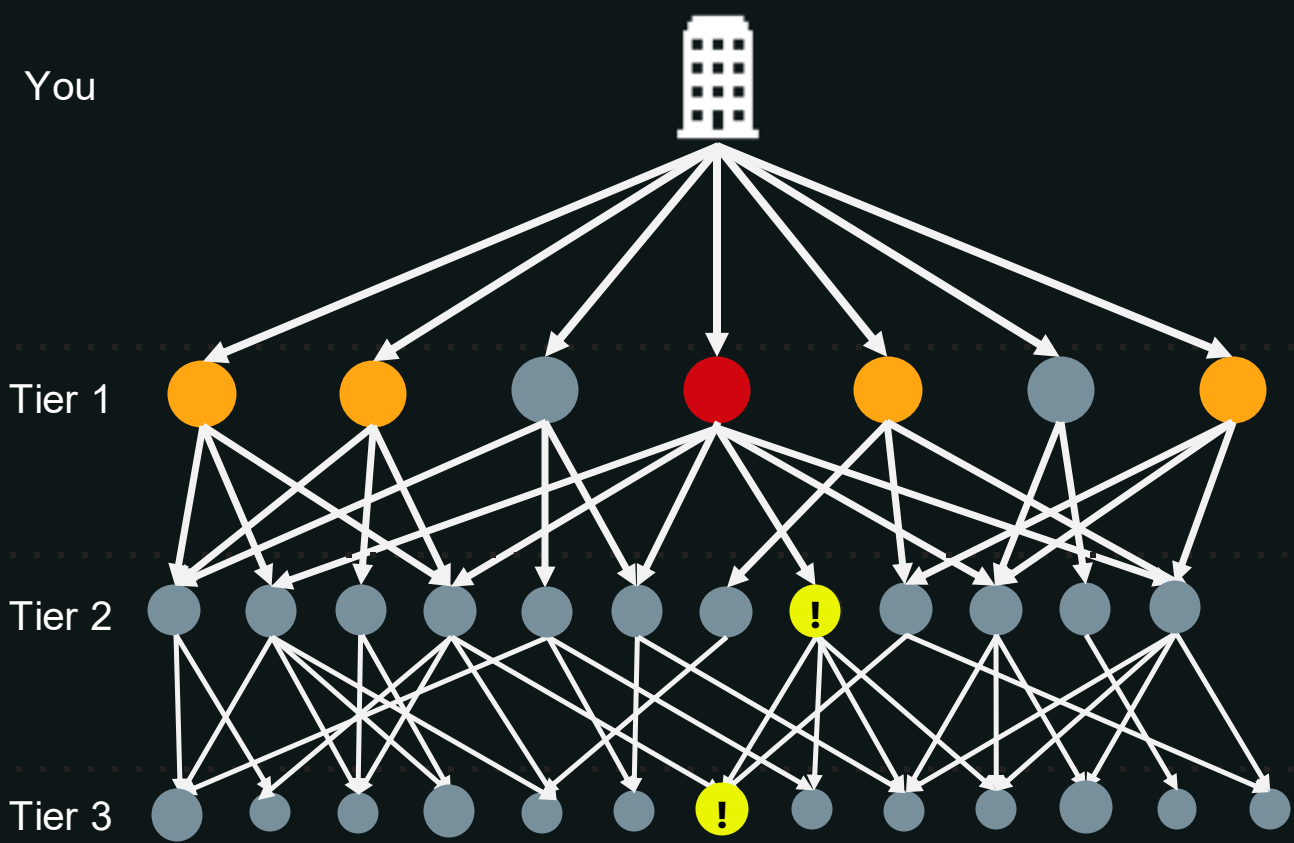
UFLPA

U.S. Customs and Border Protection (CBP) Uyghur Forced Labor Prevention Act Enforcement Statistics June FY2022 to FY2024 to date			
Enforcement Metrics			
Total	Denied	Released	Value (USD)
8,465	3,375	3,858	\$3,328

Instability in South Korea

Rare Earth Export Ban

...but the question remains - "How am I affected **beyond Tier-1?**"



 Directly affected tier-1 supplier  Indirectly affected tier-1 supplier  Exposed company

Exposure analysis

UFLPA



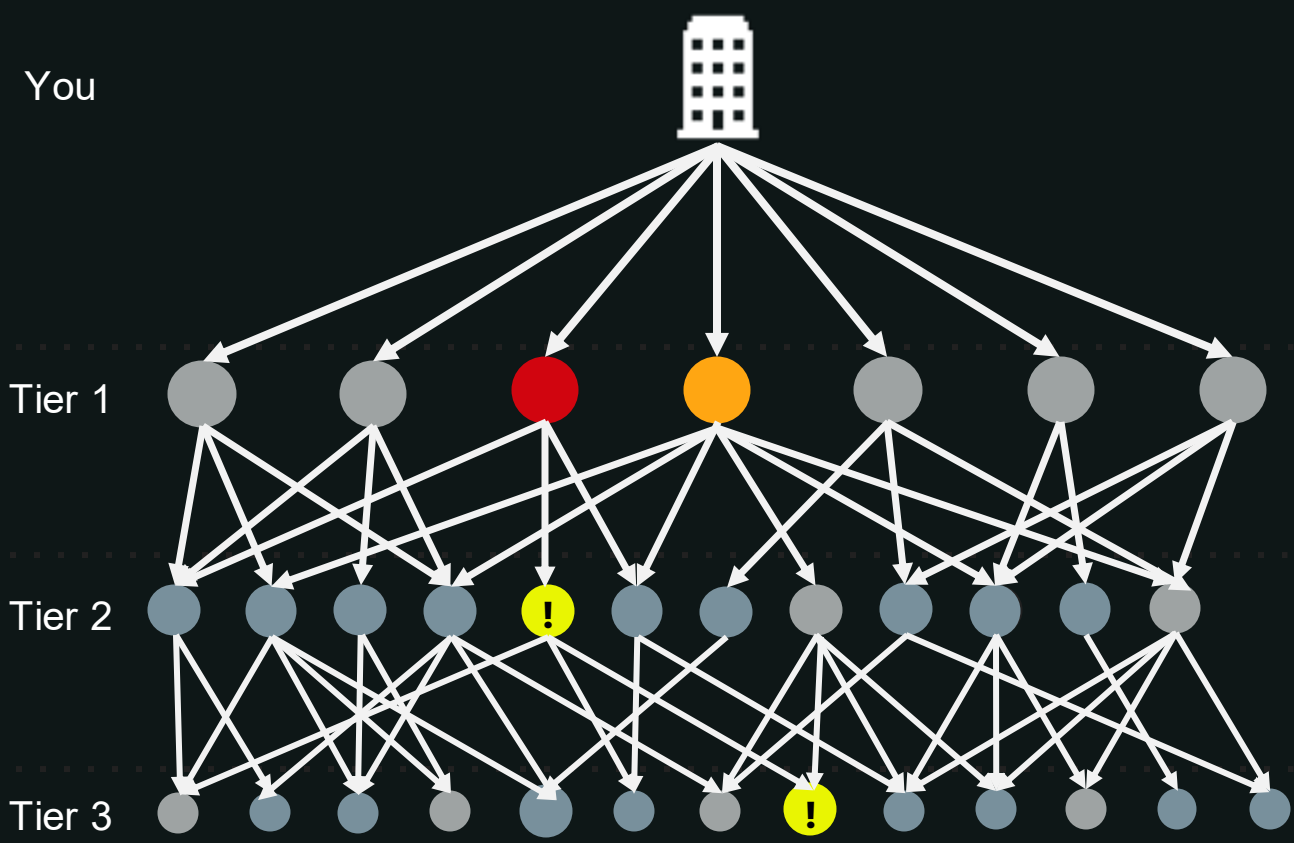
Instability in South Korea



Rare Earth Export Ban



...but the question remains - "How am I affected **beyond Tier-1?**"



● Directly affected tier-1 supplier ● Indirectly affected tier-1 supplier ! Exposed company

Exposure analysis

UFLPA



Instability in South Korea



Rare Earth Export Ban





Scenario analysis example: Escalating US-China Trade War

New Tariffs US-China 50%

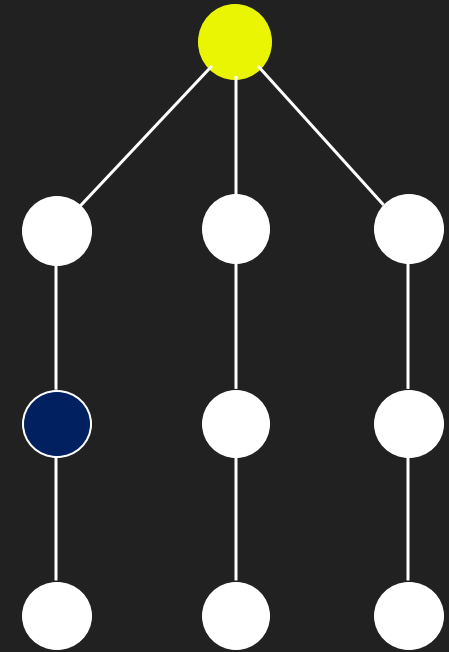
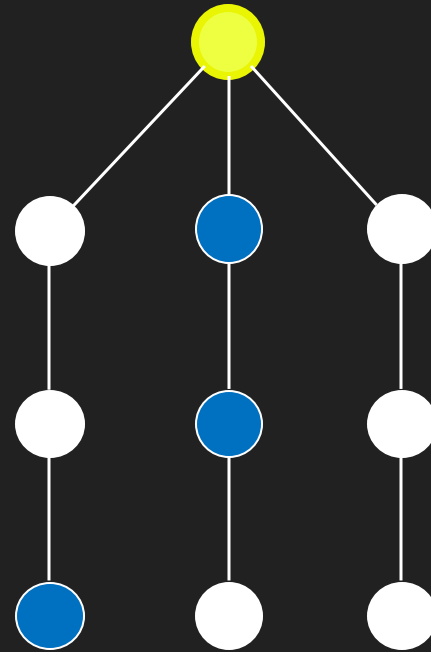
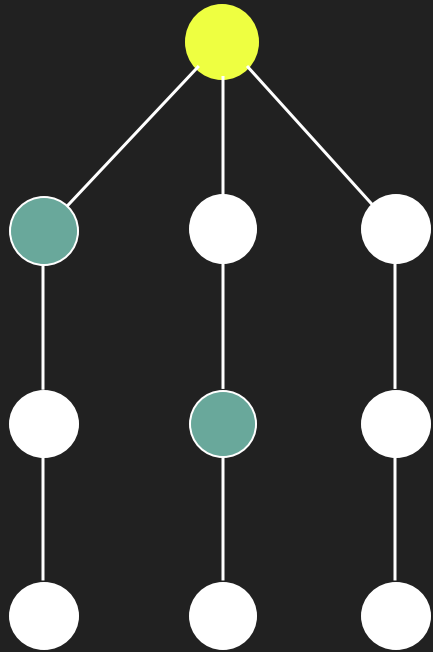
Export Ban Rare Earths

Military conflict Taiwan

Tier-1

Tier-2

Tier-3



Prewave Situation Reports

Latest Report



Trump Trade War

Previous Reports



U.S. Port Strike



Situation Report

Impact Assessment

Cross-Industry Insights

Supply Chain Analysis
(incl. Transportation)

Risk Assessment /
Outlook

Actionable Decision
Support

- Ningbo Port Explosion
- US Port Strikes + Updates
- Hurricane Milton
- Typhoon Kong-Rey (Taiwan)
- Canadian Port Strikes

... and many more.

Scan & Subscribe (free).

KEY TAKEAWAYS

- 1. Have a holistic overview of your supply chain beyond tier 1, helps you to build up a resilience strategy**
- 2. Even if Omnibus is shaking up the sustainability regulations, they (or at least some) will come and tier n transparency is needed.**
- 3. KI supports sustainable and resilient supply chains - gaining quicker insights.**
- 4. Reactive and Proactive Resilience is needed to address a volatile world.**

Q&A

THANK YOU!

For further information, please contact:

marco.felsberger@prewave.ai



One platform
for resilience,
sustainability &
compliance.

!prewave