WORKSHOP: Key Results of International Cooperation on Semiconductors for European Economic Resilience

Analysis of the international economic landscape to identify cooperation opportunities

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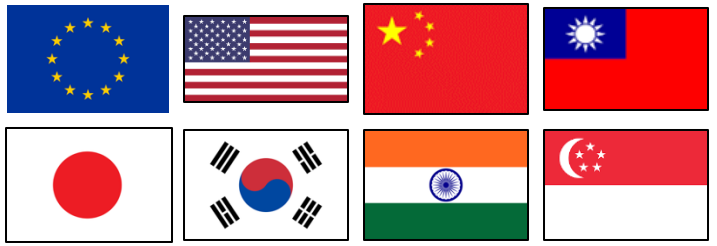
Economic analysis within the ICOS project – 2023/2024

Comparative Analysis of Semiconductor Ecosystems Worldwide, 2024

Ecosystems of 8 countries



- Market (by segment)
- Production (across the value-chain)
- trade
- Investments
- Policy strategies (chips acts)
- Strengths & dependencies
- Roadmap for cooperation (confidential)

Report “Monitoring Semiconductor Value Chains: Implications for International Cooperation”

- Published in July 2025
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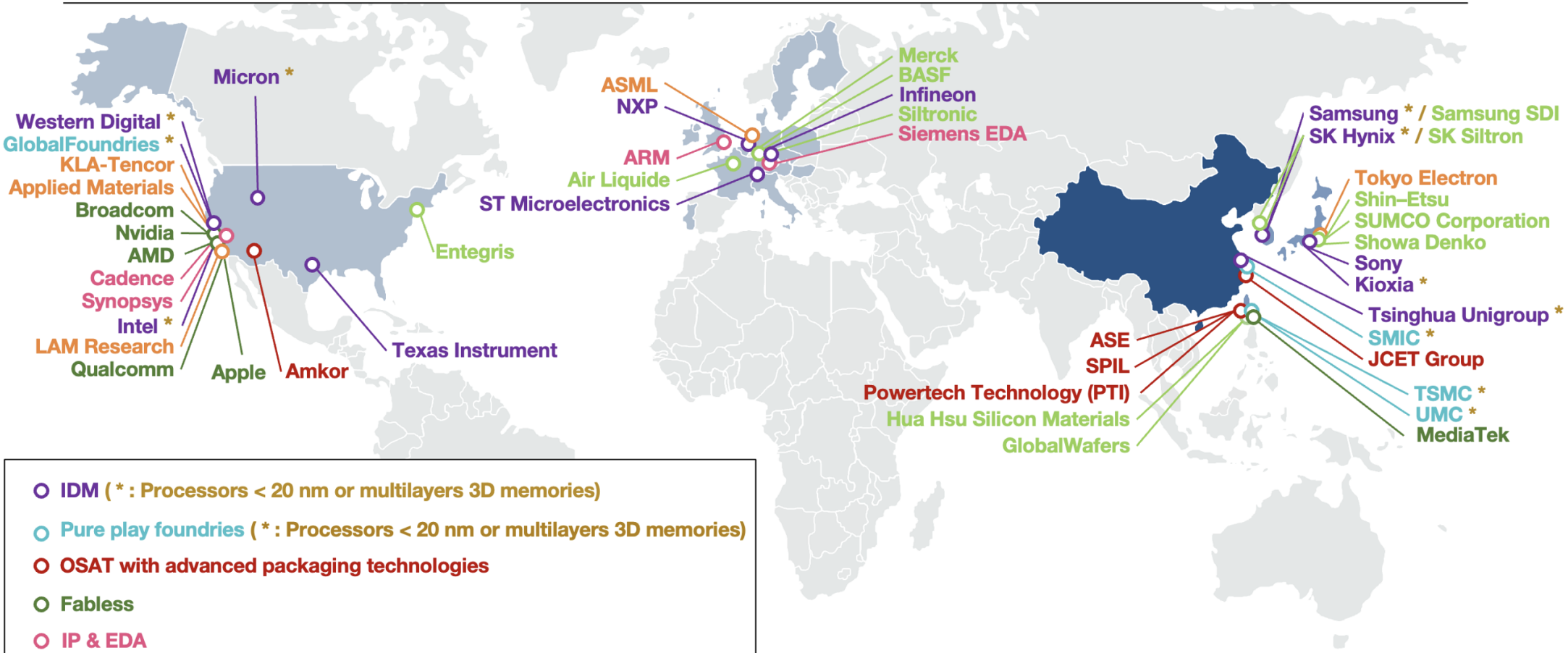
Semiconductor Landscape in 2024



Source: DECISION Etudes & Conseil, SEMI

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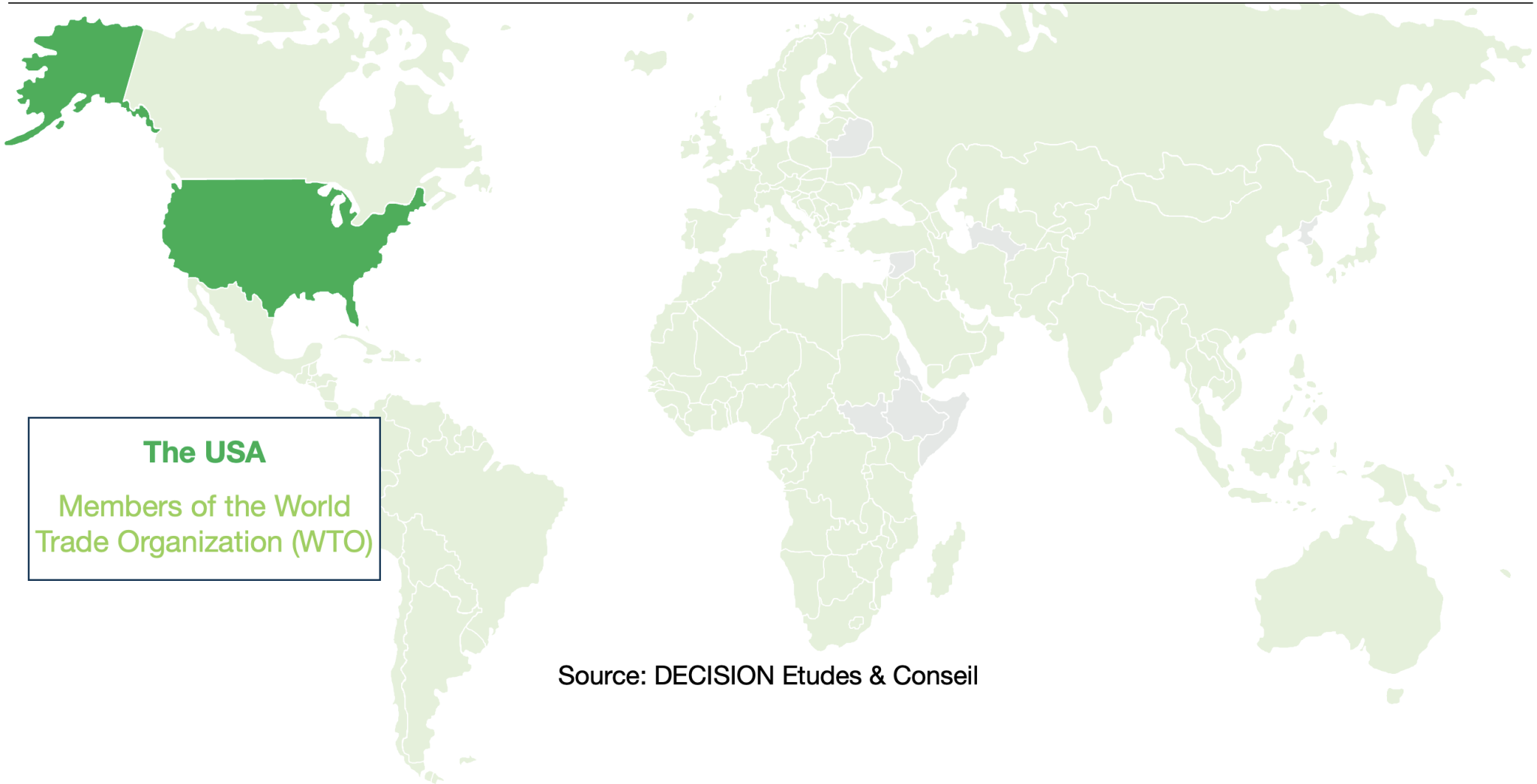
27 years of globalization in a unipolar World (1991-2018)



Source: DECISION Etudes & Conseil

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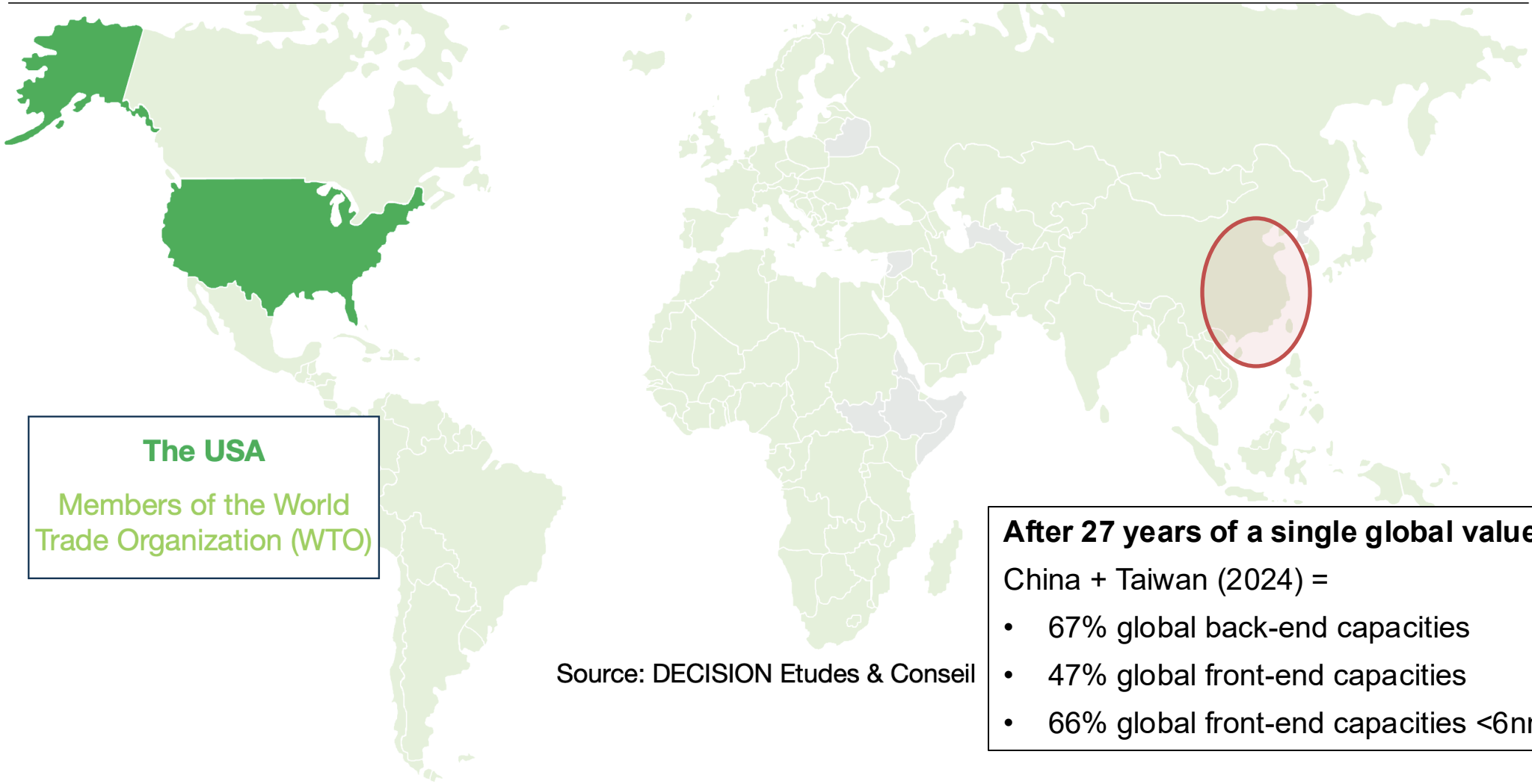


The USA

Members of the World Trade Organization (WTO)

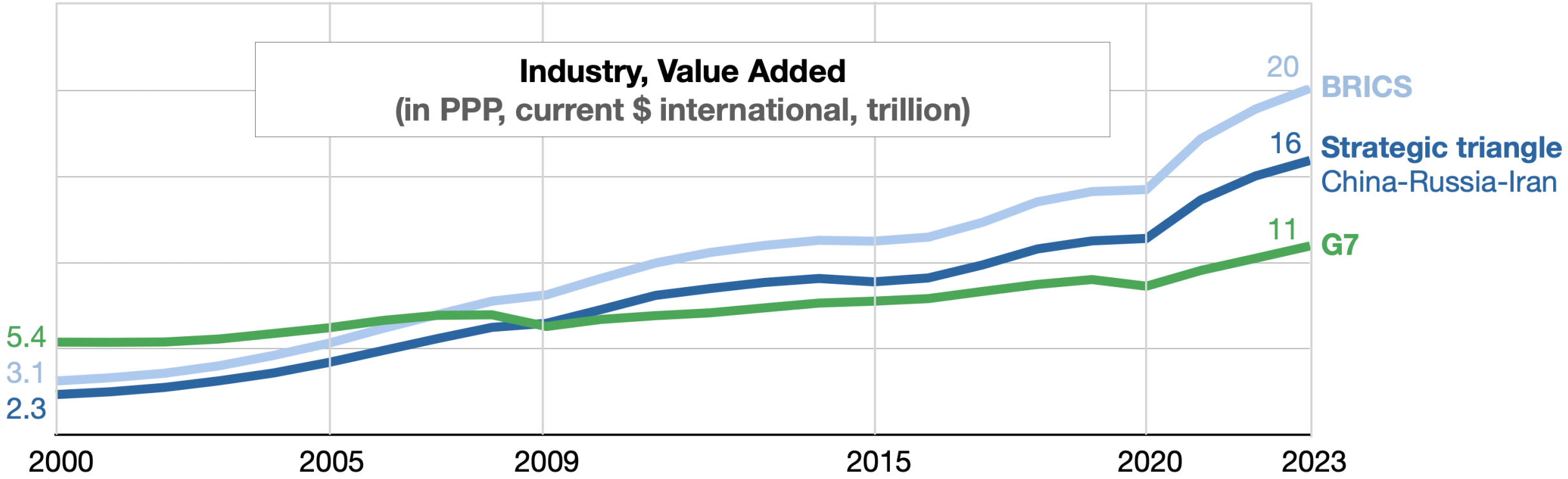
Source: DECISION Etudes & Conseil

After 27 years of a single global value chain

China + Taiwan (2024) =

- 67% global back-end capacities
- 47% global front-end capacities
- 66% global front-end capacities <6nm

The Road to Multipolarity (2000-2023)

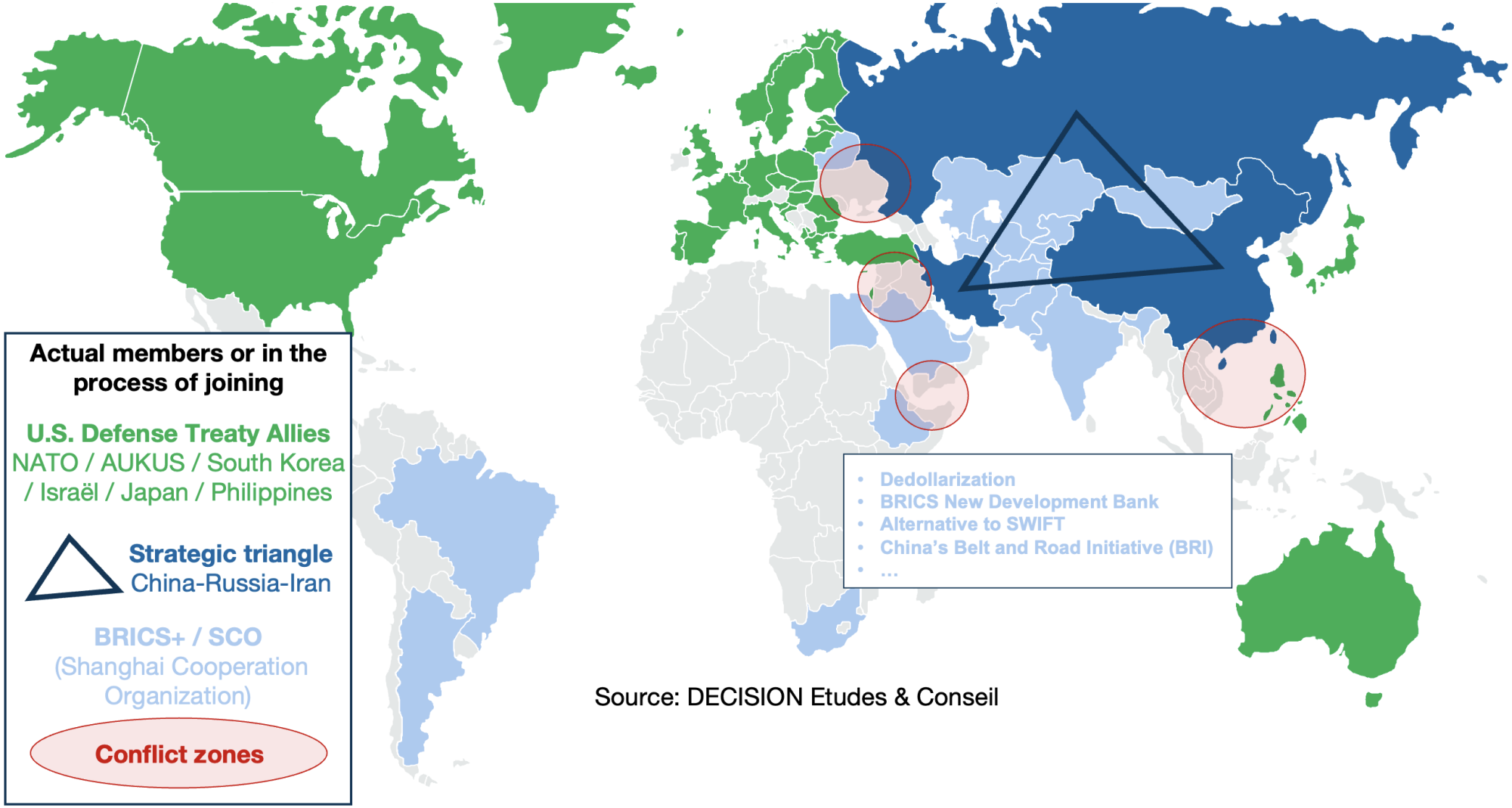


1 **2001**
Creation of the Shanghai Cooperation Organization

2 **2014**
Annexation of Crimea by Russia
New Development Bank of the BRICS

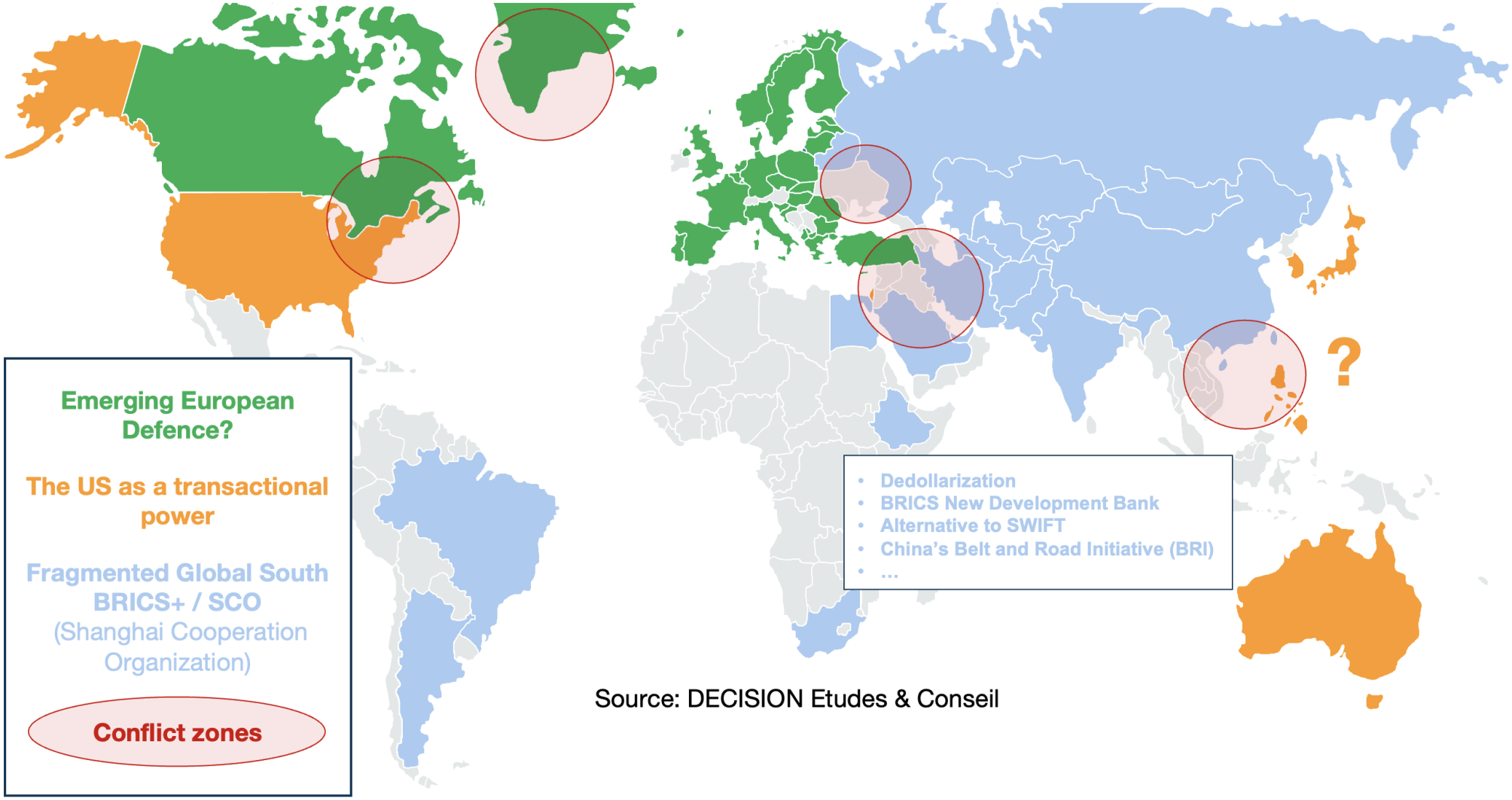
3 **2019**
U.S. Blockade of the
WTO Appellate Body

(2018-2024)
Towards a logic of blocks? The West versus the Rest?



Source: DECISION Etudes & Conseil

Since 2025 – A World of Fragmentation & Multipolarity



Source: DECISION Etudes & Conseil

The Road Ahead - Regionalization and Progressive Decoupling of the Semiconductor Value Chain

- **Export control, export bans, tariffs…**
- Since 2015-2020, companies start implementing **local-for-local manufacturing strategies**
  - ➢ At least for the U.S. and Chinese markets
  - ➢ Sometimes for each country
- **From Just-in-Time production to**

  Teams dedicated to supply chain analysis & management (BOM)
  - ➢ Multi-sourcing strategies
  - ➢ Strategic inventories
  - ➢ Long-term supply agreements

  More costly but ensuring supply chain resilience

The Road Ahead - Regionalization and Progressive Decoupling of the Semiconductor Value Chain

- **U.S. relocating manufacturing outside Taiwan to weaken its Silicon shield** (US Chips act, ITSI, OECD, tariffs…)
  - Taiwan silicon shield will remain at least up to 2035
  - China & Taiwan could re-unify somewhere between 2040-2060?
- **Towards at least 2 value-chains (US versus Chinese)**
  - In both cases, south-east Asia and India are the main beneficiary of these diversification strategies (Malaysia, Philippines, Vietnam, Thailand, Indonesia).
- **Several countries adopt strategies to be less reliant on both the US and China**
  - Japan
  - South Korea Strategy on AI chips 2024-2029
  - India

  -> Should the EU adopt similar strategies, in cooperation with these countries?

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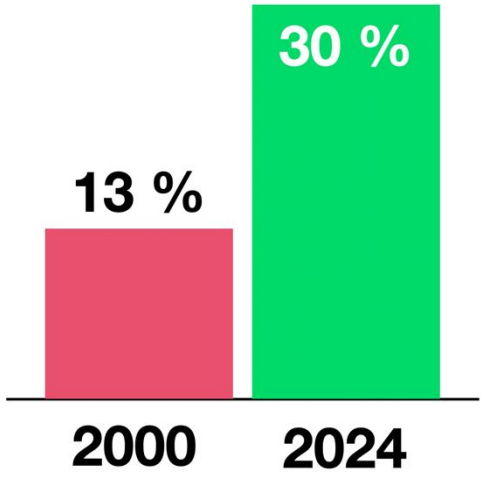
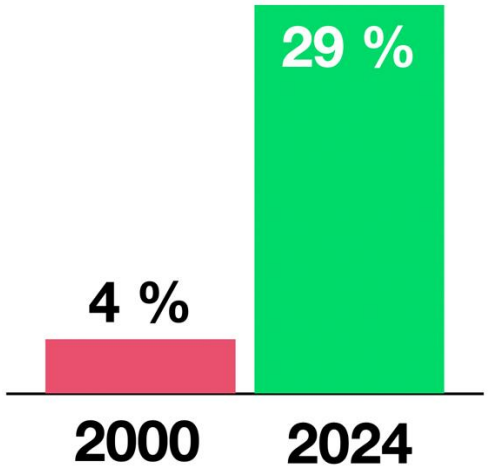
Semiconductor: The rise of China

In **2015**, China published its plan "**Made in China 2025**" where it officially announce for the first time its willingness to master the complete value chain of semiconductor.

Semiconductor market China % World



Installed capacity of semiconductor (Front-end) China % World



Across the entire semiconductor value chain in 2022

Sources: DECISION Etudes & Conseil, WSTS, SEMI

US attempts to contain China's rise

US industrial policy tools to contain China's rise

- **FCPA (Foreign Corrupt Practices Act) (2008↑)**: The use of foreign corrupt practices to weaken key non-US companies and eventually purchase them.
- **Export bans - BIS Entity list (2016 ↑)** : Entities and products placed under extra-territorial embargo.
- **FIRRMA (Foreign Investment Risk Review Modernization Act) / CFIUS (2018)** to monitor and control foreign investments, including in semiconductors: Qualcomm, Aixtron, Lattice Semiconductor, Siltronic, Western Digital, Lumileds…
- **FDPR (Foreign Direct Product Rules) (2020)**: Expands U.S. export controls to foreign-made products if they use U.S. technology, software, or equipment (example: TSMC restricted from selling advanced chips to China).
- **Inflation Reduction Act (IRA) (2022).** $369B by 2031 public funding, requiring domestic content ranging from 40% to 100% for different components and sectors to qualify for full subsidies and tax incentives.
- **Export control measures expansion (CCL, EAR, MEU) (2022 ↑)**
- **Universal tariff of 20% on all Chinese imports (March 2025)**
- **"Affiliates Rule" – BIS or MEU lists 50% ownership rule (29 September 2025)**
  - Nexperia crisis
- **Suspension of the Affiliates Rule (10 November 2025)** One-year suspension of the rule as part of a temporary U.S.–China trade arrangement; potential reactivation in November 2026.

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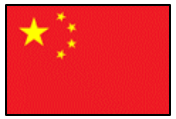
Status of trade in semiconductor in this changing environment

- **Global trade** flattening since 2024
- **Semiconductor trade** flattening since 2024
  - **US-China trade** declining since 2018
  - **EU-China trade** growing above the average since 2015
- **+€10B EU trade balance along the semiconductor value-chain**
  - -€10B for semiconductor products
  - +€20B for equipment & tools
- **Main EU trading** partners (accounting for 70% of EU semiconductor trade)

1. China
2. The USA
3. Taiwan
4. Malaysia (strong EU back-end manufacturing base)
5. South Korea
6. Japan

Status of trade in semiconductor in this changing environment

- **Main dependencies** 
  - Equipment & tools
  - EDA
  - Advanced processors
  - Mainstream chips (>6.5B€ EU27 sales 2024)

- **Main dependencies** 
  - Optoelectronics (Diodes, LEDs)
  - Rare earths
  - Gallium, Germanium
  - PCB
  - Mainstream chips (risk)

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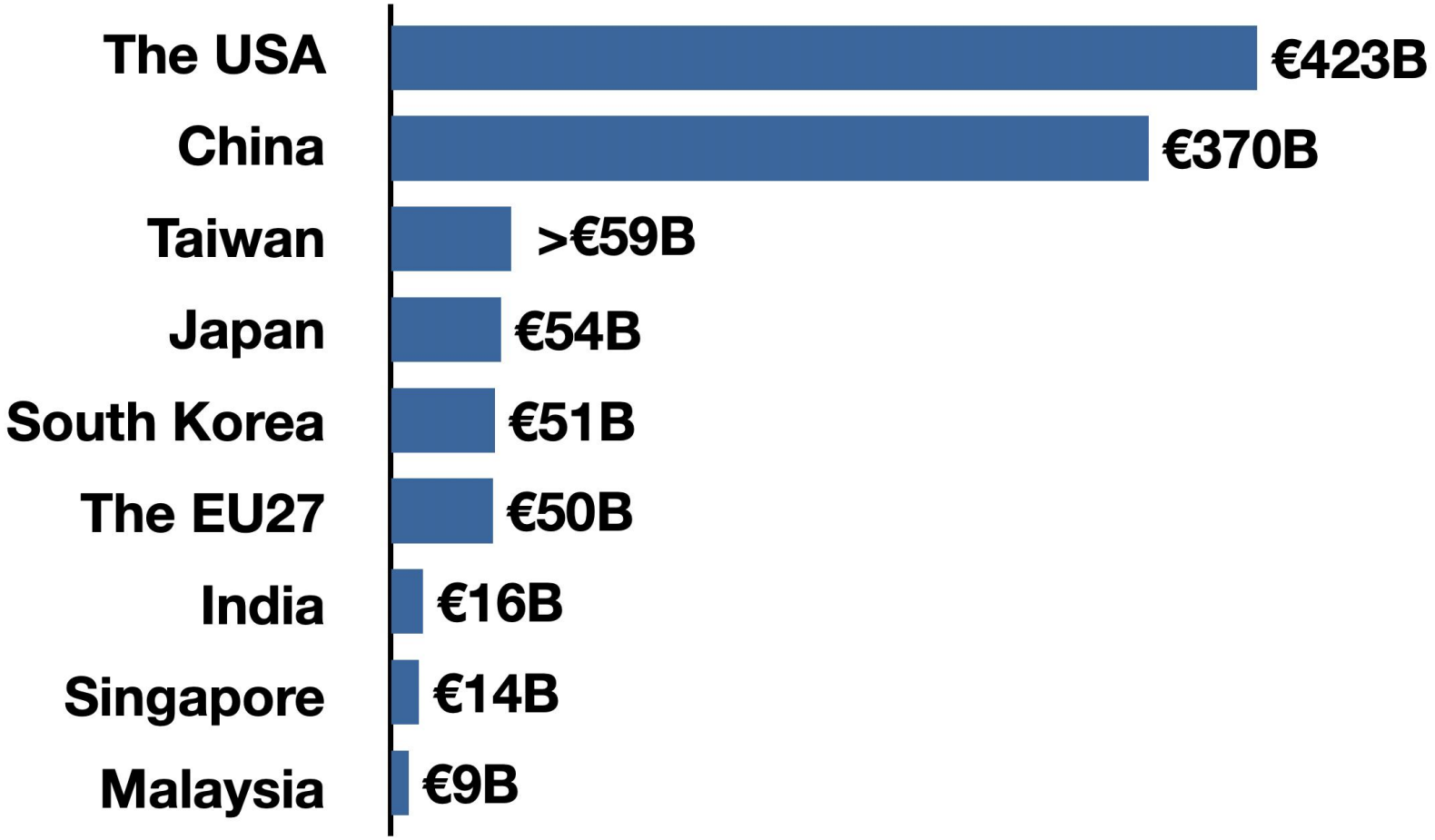
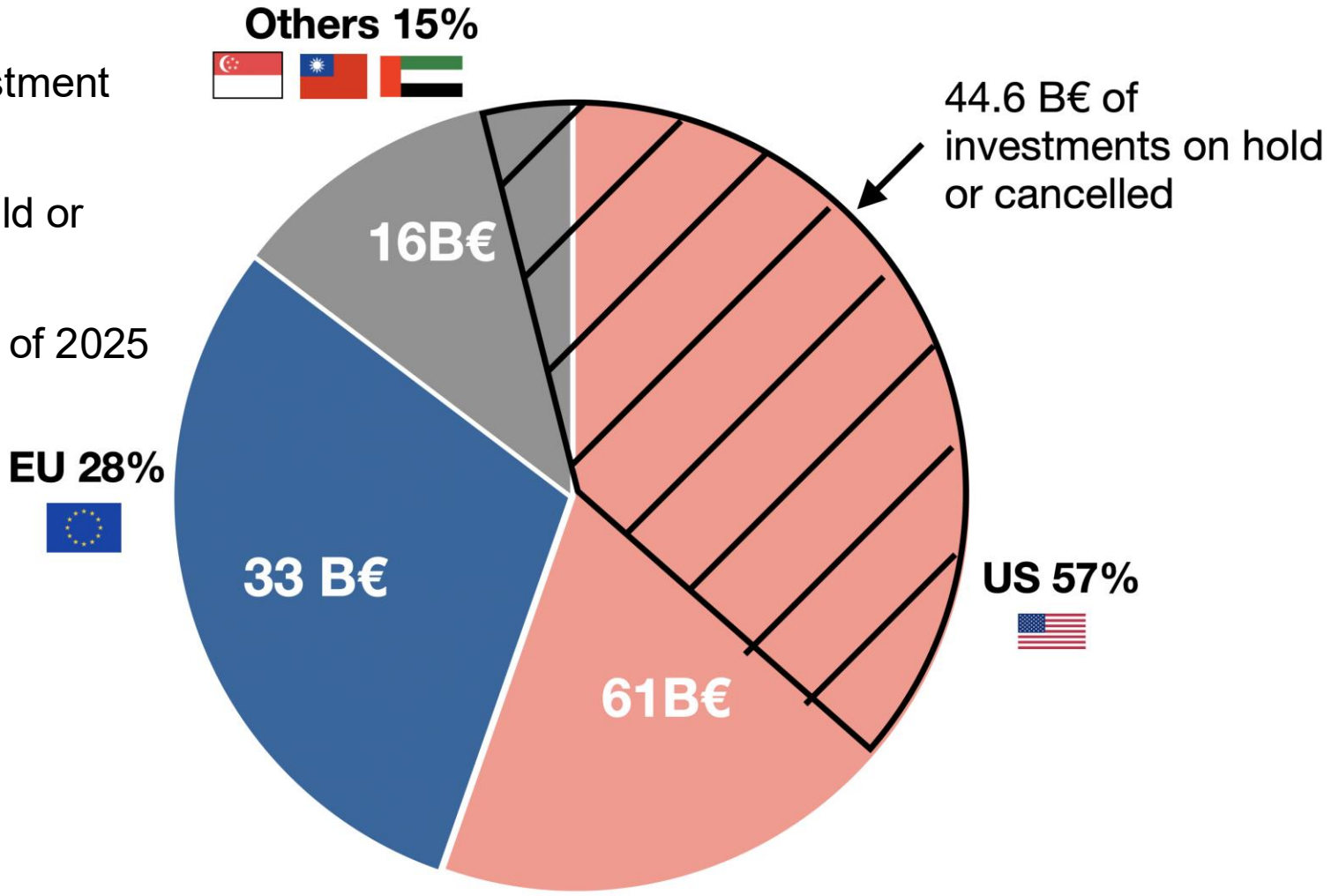
Confirmed Semiconductor Investments Along the Value Chain Exceeding €1 Billion by Country/Region – May 2025



Source: DECISION Etudes & Conseil, May 2025 (China estimated)

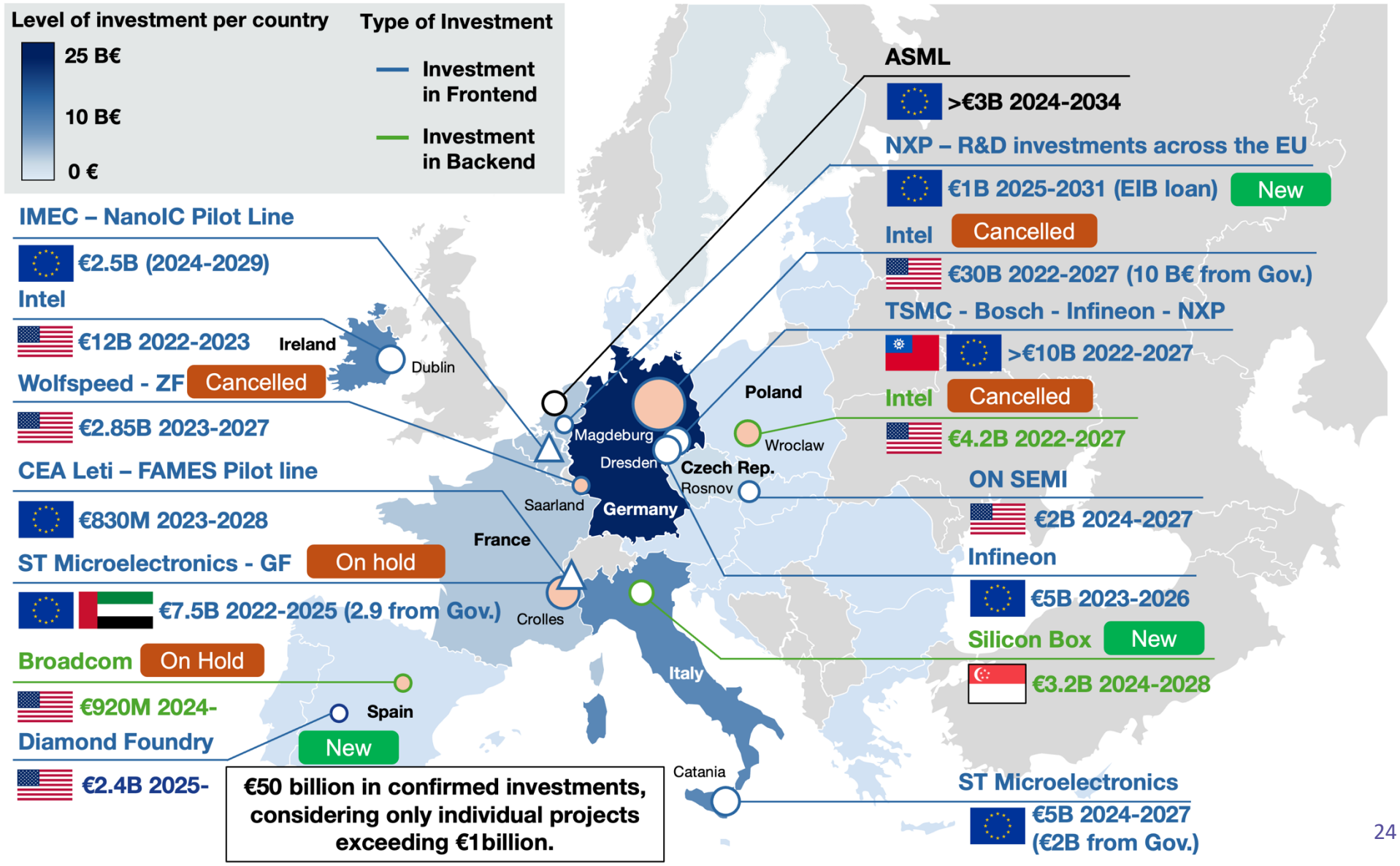
EU Chips Act – Investment Overview

- €106B in public and private investment was planned as of early 2024
- €44.6B has since been put on hold or cancelled
- €63B in confirmed investment as of 2025



Source: DECISION Etudes & Conseil

EU Chips Act - Key investments in the EU (>1B€) in 2025



Recommendations for international cooperation

- **Strategic goal**
  - **Diversify the EU semiconductor value chain beyond the US and China**
    - Main countries weaponizing trades of semiconductors
    - Both countries have -or are building- full-chain capabilities, creating inherently asymmetric dependencies for partners
  - **Key partner countries for diversification**
    - Japan
    - Republic of Korea
    - India
    - Southeast Asia: Vietnam, Thailand, Indonesia
    - Canada
    - Brazil...

For more insights into the chip ecosystem, Explore the ICOS reports

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Thank you for your attention

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