

The semiconductor industry in the AI era

Innovating for tomorrow's demands

Organizations anticipate surging semiconductor demand

Downstream industries estimate demand for semiconductors to increase at double the rate of the semiconductor industry's expectation

Expected semiconductor demand increase in two years to the end of 2026

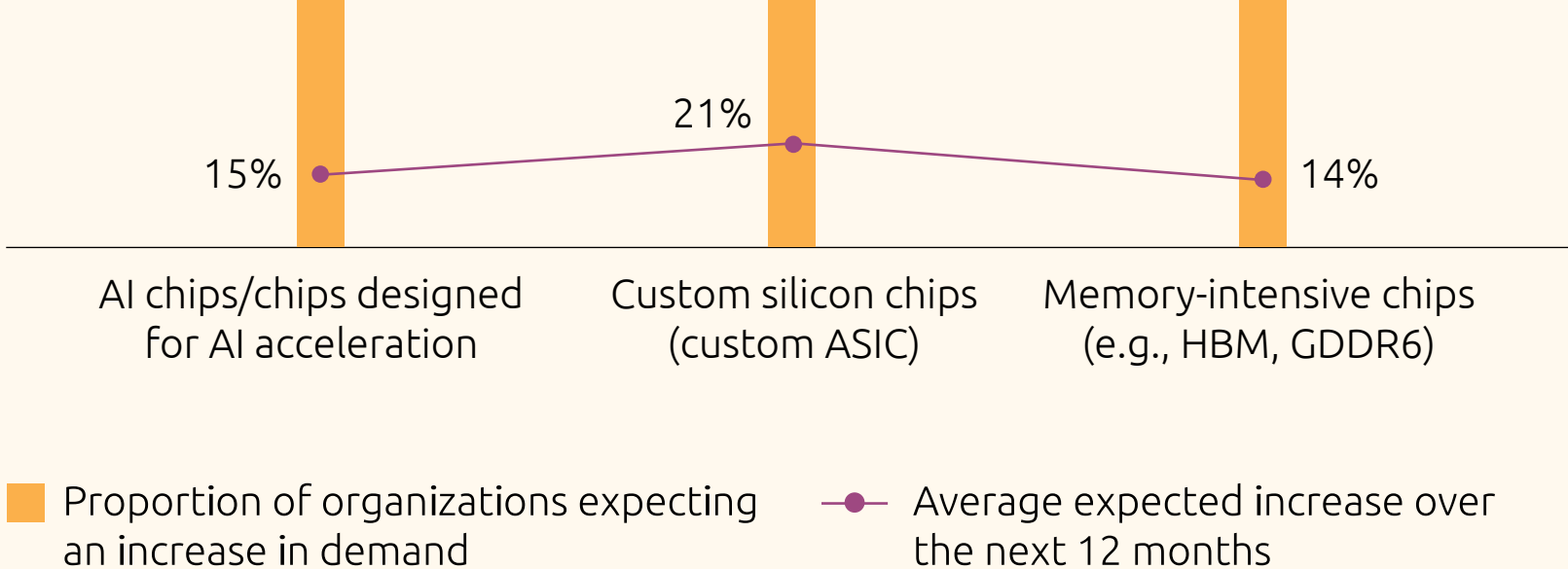


Source: Capgemini Research Institute, Semiconductor survey, November 2024, N = 190 semiconductor industry organizations (includes IDMs, fabless design firms and foundries), N = 800 downstream organizations. Downstream industries are those that rely on semiconductors for their products or services and operations.

Due to Gen AI adoption, nearly three in five semiconductor organizations are seeing increased demand for NPUs, high-performance GPUs, and memory-intensive chips.

Nearly four out of five downstream organizations anticipate increased demand for AI chips, custom silicon chips, and memory-intensive chips over the next 12 months

Expected demand for chips



■ Proportion of organizations expecting an increase in demand — Average expected increase over the next 12 months

Source: Capgemini Research Institute, Semiconductor survey, November 2024, N = 800 downstream organizations.

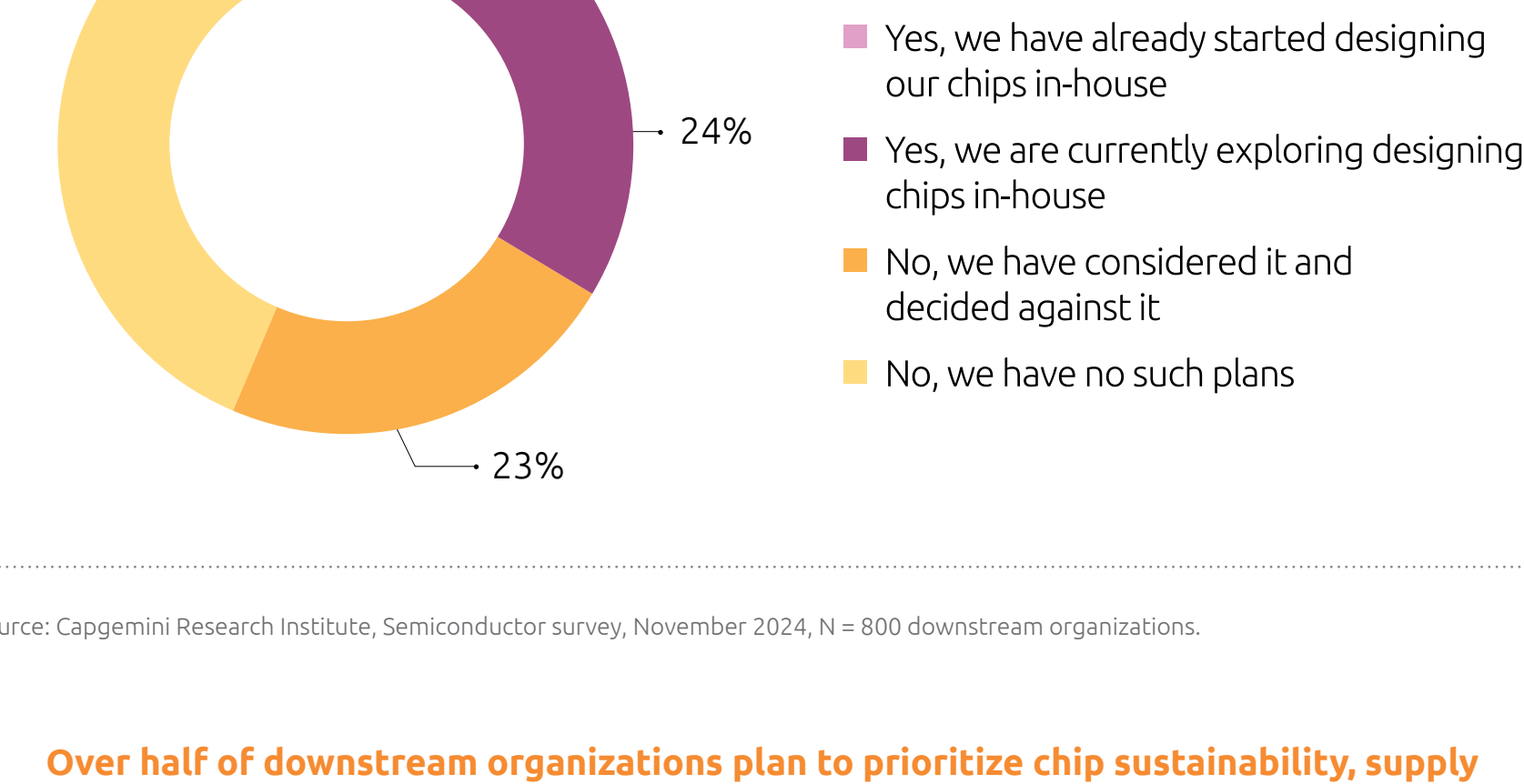
Downstream industries express concerns over semiconductor supply

Fewer than three in ten downstream organizations believe chip supply is sufficient.

Nearly half of downstream organizations are looking for enhanced customization and more comprehensive APIs and SDKs

One in three downstream organizations is designing chips in-house (or currently exploring the option)

Has your organization considered/been considering designing your own semiconductor chips?

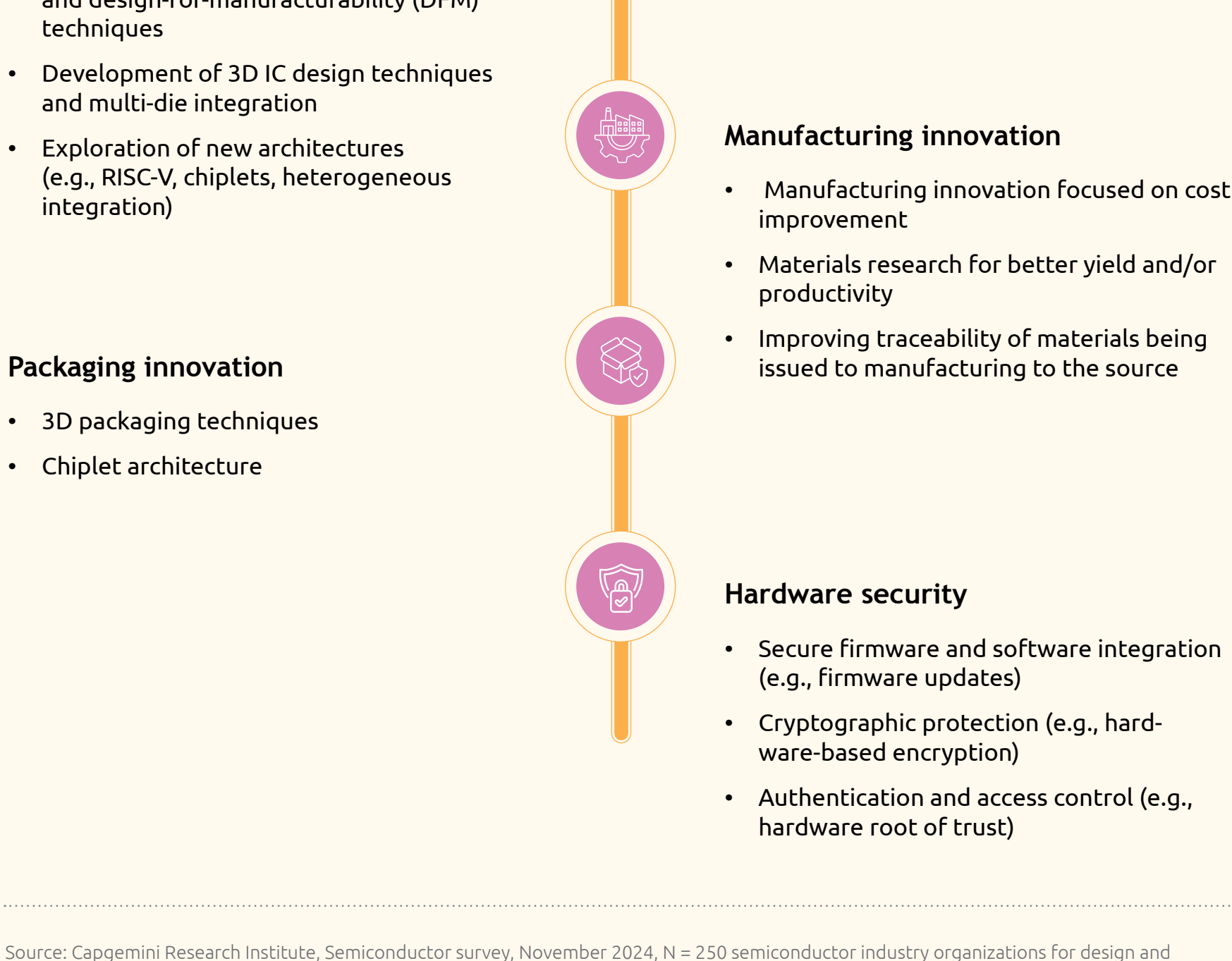


Source: Capgemini Research Institute, Semiconductor survey, November 2024, N = 800 downstream organizations.

Over half of downstream organizations plan to prioritize chip sustainability, supply chain resilience, and cybersecurity features in the next two years.

The semiconductor industry is innovating but softwarization remains a challenge

Focus areas for the semiconductor industry



Source: Capgemini Research Institute, Semiconductor survey, November 2024, N = 250 semiconductor industry organizations for design and manufacturing innovation; N = 149 IDMs and OSAT firms for the top statement and N = 197 IDMs, fabless design firms, OSAT firms and EDA firms for the bottom statement; for packaging innovation; N = 167 IDMs, fabless design firms and EDA firms for hardware security.

While nearly half of IDMs and fabless design firms are actively developing software-centric solutions, monetization of software remains a challenge for three in five semi-conductor organizations.

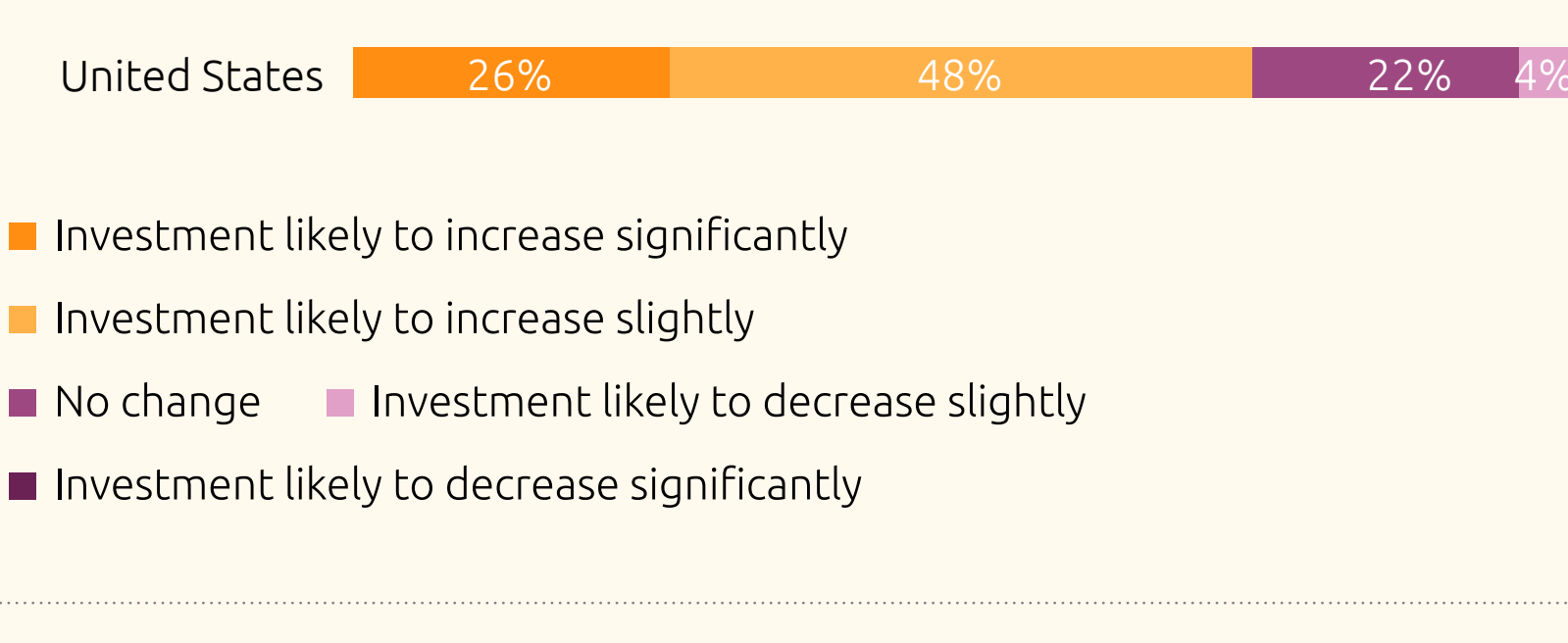
Resilience and sustainability gather momentum

Organizations turn to onshoring and friendshoring to enhance resilience

Semiconductor industry anticipates domestic sourcing to improve by 17% over the next two years

Source: Capgemini Research Institute, Semiconductor survey, November 2024, N = 202 IDMs, foundries, OSAT firms, capital equipment firms, material and subsystem organizations.

Investment will focus on the US and the EU over the next two years



■ Investment likely to increase significantly ■ Investment likely to increase slightly ■ No change ■ Investment likely to decrease slightly ■ Investment likely to decrease significantly

Source: Capgemini Research Institute, Semiconductor survey, November 2024, N = 250 semiconductor industry organizations.

The industry is making strides with various sustainability initiatives

Top three initiatives currently being deployed in each category



Source: Capgemini Research Institute, Semiconductor survey, November 2024, N = 182 IDMs, foundries, OSAT firms and semiconductor capital equipment firms.

How the semiconductor industry can capitalize on emerging opportunities



Source: Capgemini Research Institute analysis.

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