

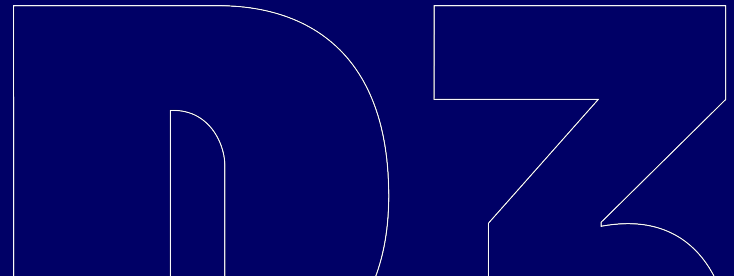
# Bayerischer Halbleiterkongress 2023

Insights by P3

The “Bayerischer Halbleiterkongress 2023” was organized by the Bavarian Ministry of Economy Affairs, Regional Development and Energy. Representatives from established companies, entrepreneurs, and scientists focused their discussions on the following topics:

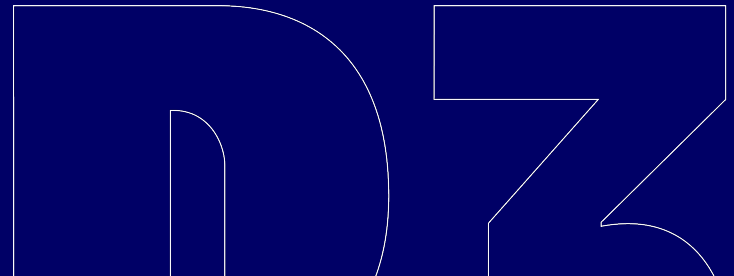
- **Resilient value chains** for small and medium-sized enterprises.
- **Global location factors for Bavaria** as a center of innovation

A team of P3 semiconductor experts attended the conference. The following slides include our key take aways as well as interesting facts and figures.



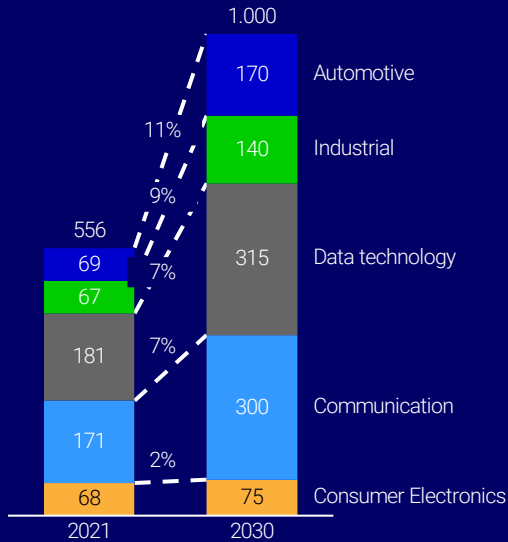
# Management summary

1. The semiconductor market will reach an **overall revenue of USD 1tn p.a. by 2030**
2. Nearly **75% of the fab capacities are in Asia** (China, Taiwan, South Korea, Japan)
3. Worldwide **governmental funding programs** nearly match the **expected industry revenue of 2030**.
4. Market maturity of new materials (e.g. SiC) play an essential role in the shifts towards a green energy ecosystem.

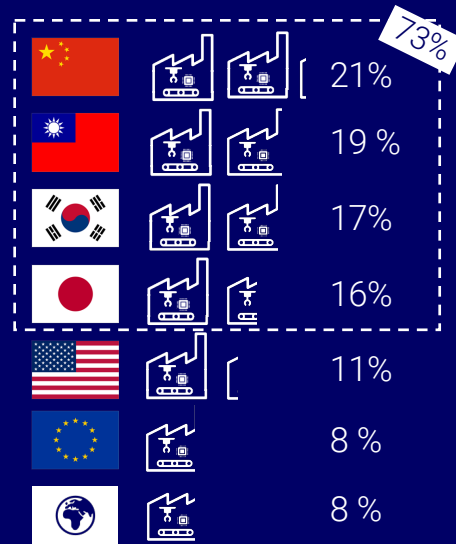


# Market update: reaching 1tn USD by 2030

Semiconductor market growth in \$USD bn (2021-2030)



Semiconductor production capacities (2023)



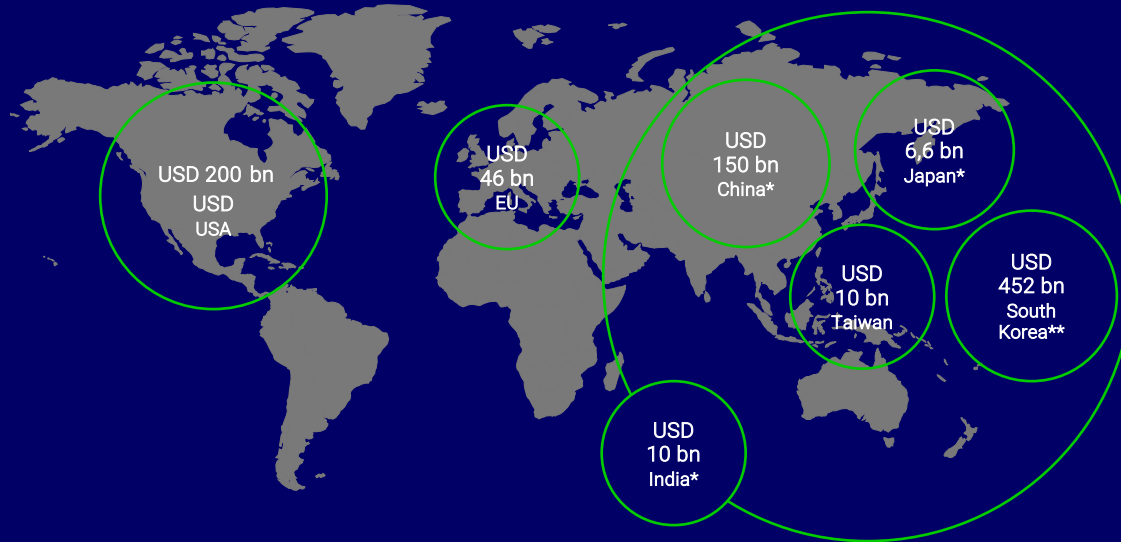
Interpretation by P3

- Industrial and automotive industries are driving growth until 2030
- Whereas Asia is the leading region for semiconductor manufacturing, the USA holds most of the IP (intellectual property)
- China leading in semiconductor demand (~30%)

Legend:  
 CAGR (Compound Annual Growth Rate)

# USD 961,6 bn funding for a USD 1.000bn market in 2030

## Governmental investment programs in the domestic semiconductor industry



\* Differences in the calculation method  
 \*\* Also includes private investments

## Interpretation by P3

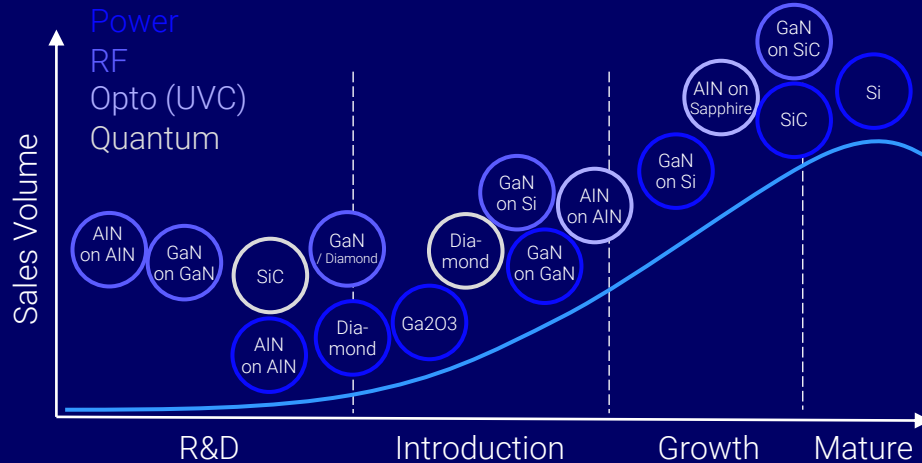
- The motives for all governmental funding programs are decoupling and reshoring. However, the semiconductor industry is highly differentiated which makes it impossible to realize full scope local for local value chains.
- The size of South Korea's funding program is highly motivated by being an alternative for Taiwan.

### Deep dive Europe:

- + European Chips Act aims to increase European share of semiconductor manufacturing from 8% to 20% by 2030
- In contrast to the European Chips Act, currently a ban of PFAS (Per- and polyfluoroalkyl substances) materials is being discussed. A ban would be a major competitive disadvantage.

# Market maturity of semiconductor materials

## Market growth 2021-2030

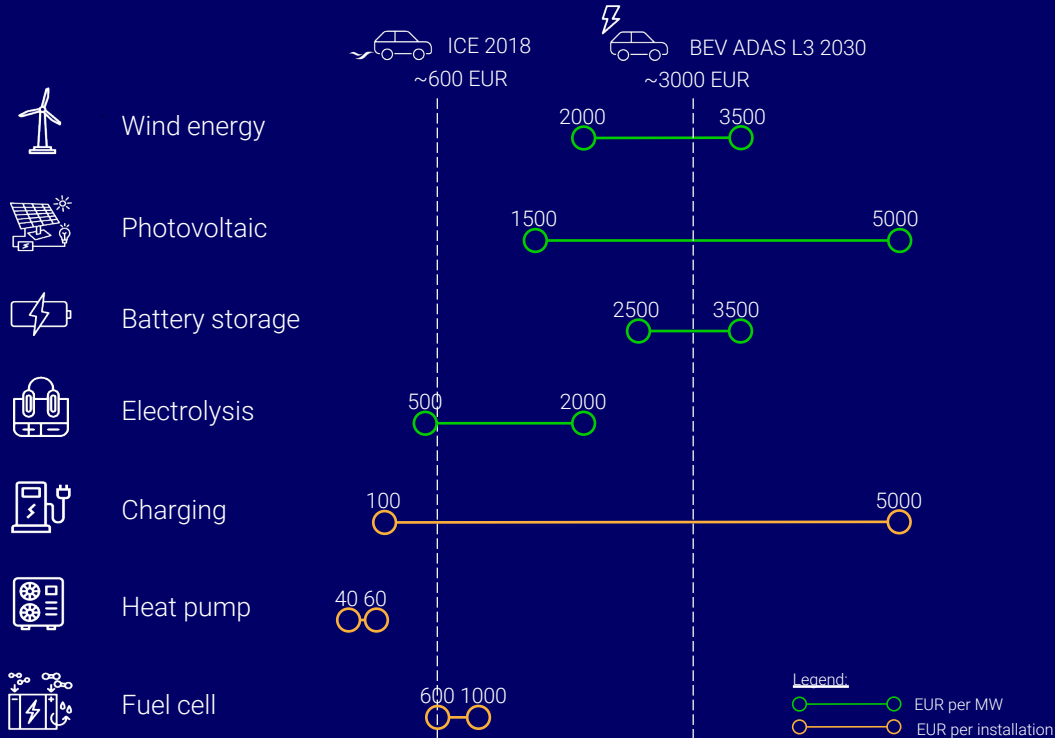


## Interpretation by P3

- Silicon is the traditional raw material for all semiconductor applications.
- SiC has advantages in the high-voltage applications (e.g. switching frequency, less heat generation). Therefore, the automotive industry is widely introducing SiC applications within e-powertrain of battery electric vehicles (BEVs). The pioneer to introduce SiC was Tesla's model 3 in 2018.
- GaN presents even higher switching frequencies but is not ideal for high-voltage applications. Therefore, current applications are more frequent in consumer electronics (e.g. laptop chargers).

# Semiconductor share on energy-related application

## Monetary share of semiconductors



## Interpretation by P3

- The wide monetary range for charging is caused by the different applications (e.g. AC-wallbox vs. super-charger)
- Smart energy ecosystem (e.g. BEV + photovoltaic + battery storage + heat pump) facilitates energy-wise-independence for single homes.
- 90% of all solar panes are manufactured with silicon

# P3's services in semiconductor management

## Strategy

### Purchasing strategy

- Semiconductor database
- Contract management
- Inventory management
- Risk-monitor
- Market trend analysis
- Real dual-source (e.g. dual-fab)
- Organizational benchmark
- Vertical integration – definition of supply chain processes

### Development strategy

- Design guidelines
- Modular semiconductor portfolio
- Redesign governance process
- Technology trend analysis

### Partnership strategy

- Create win-wins within the supply chain (e.g. OEM & Semiconductor manufacturer)
- Mediation & negotiation playbook

## Operations

### Task force management

- Short-term supplier tracking
- Plant allocation management
- On-site process optimization
- Escalation governance to semiconductor manufacturers

### Supplier management

- Supplier selection (Longlist / Shortlist)
- Supplier evaluation (e.g. on-site)
- Supplier risk monitoring
- Escalation management

### Redesign project management

- Best practice decision metric (incl. monetary evaluation)
- Standardized project management tools

## Technology

### Cost breakdown

- PCBA-level (printed-circuit-board)
- Component level

### Technology benchmark

- Semiconductor-level
- Component level (e.g. inverter)

### Manufacturing concepts

- Machinery selection
- Supplier selection

## Contacts



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