



The European Chips Act

Brief overview

The context: we are in a crisis...

1

Severe shortage of semiconductor chips

In a context of...

- Accelerated digital transition
- Increased demand for semiconductors
- Concentration of production in Asia (Taiwan, Korea)

2

Security supply risk in the EU

Due to...

- Limited capabilities in manufacturing
- Insufficient expertise in manuf. at < 20 nm
- High entry fees / cost for new facilities
- Geopolitical tensions (e.g. South China Sea)

3

Detrimental effect across industries

Leading-edge semiconductor technology is central to...

- Competitiveness
- Security, safety and data protection
- Energetic performance of digital systems



*No single Member State can face these problems alone, need for:

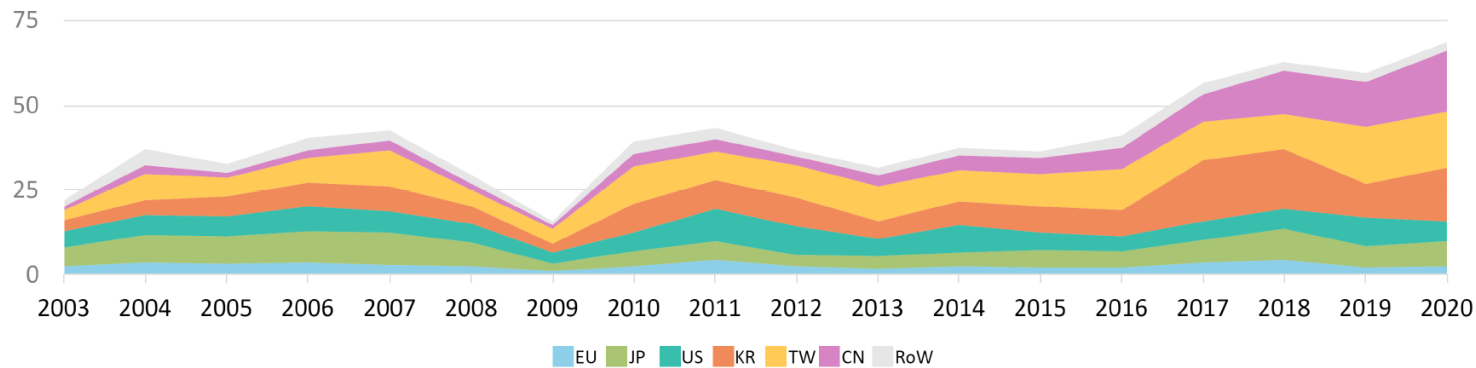
- **EU & international partnerships**
- **Public subsidies**



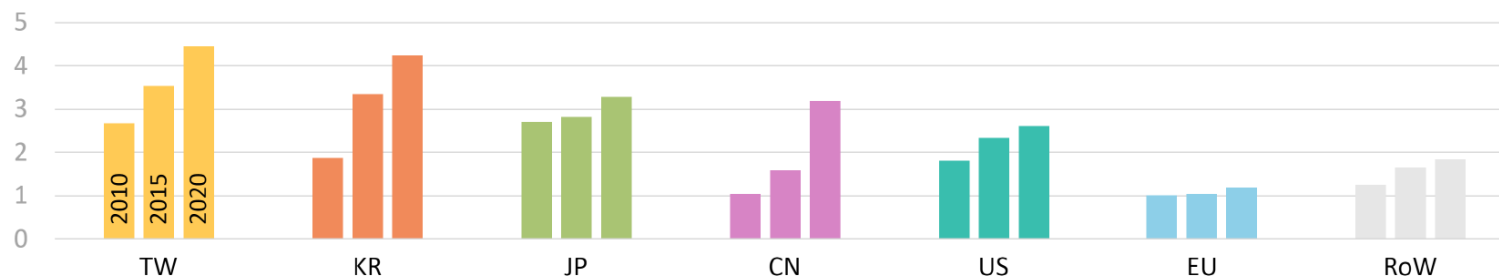
Minus 11 million cars produced globally and 23% drop in German car sales in 2021.

Market analysis

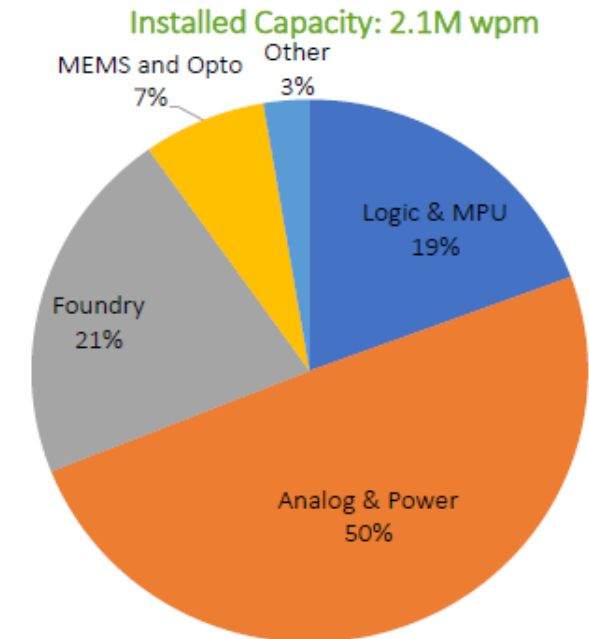
Equipment Spending by Region and Year
[sales in US\$ billion]



Total Wafer Capacity by Region (2010, 2015, 2020)
[million wafers per month]



Capacity by Product Type in Europe, 2019



Source: World Fab Forecast Report, March 2019, SEMI

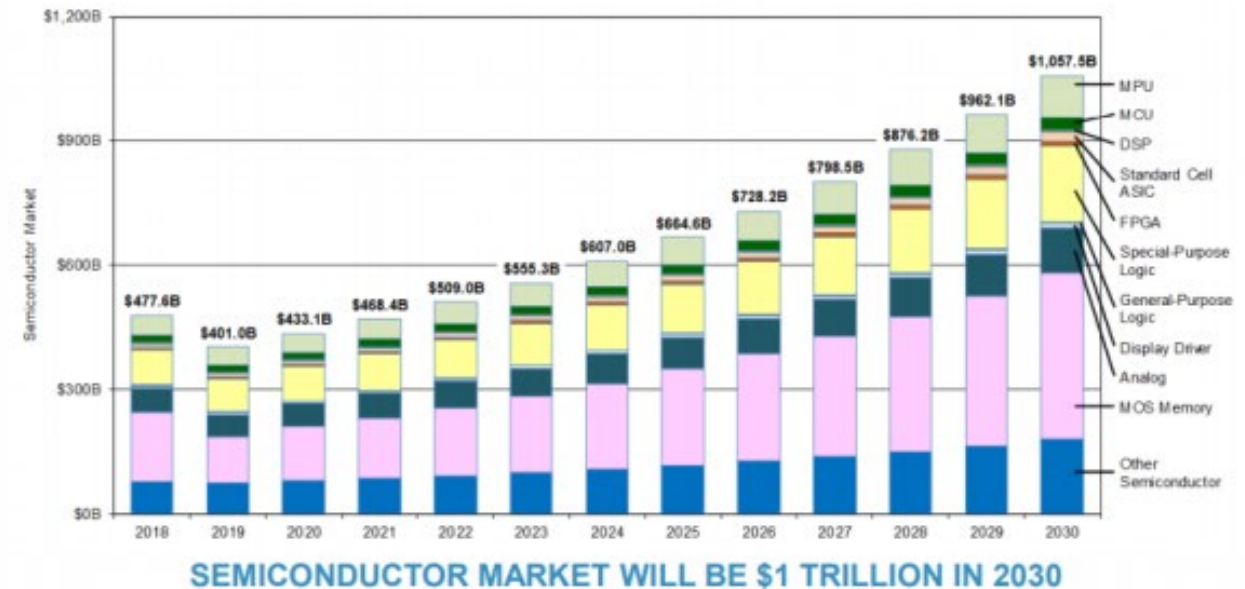
Europe has not increased its investments, therefore its capacity has not grown as in other regions, and its market share has decreased from 11,7% in 2005 to 7.2% in 2020, with little presence in more advanced nodes, necessary for digital applications

Market forecast

Market	2019 market size (\$bn)	2024 market opportunity (\$bn)	CAGR (%)
Smartphone	106	155	7.9%
Personal computing	86	99	2.8%
Consumer electronics	42	61	7.7%
Automotive	41	65	9.5%
Industrial electronics	49	71	7.8%
Wired and wireless infrastructure	34	45	5.5%
Servers, datacenters and storage	61	102	10.6%
	419	598	7.3%

ASML Annual Report, Feb 2021

Semiconductor Market by Product



IBS, SEMI, 2021

The market is forecast to exceed USD 1 Trillion by 2030

Europe must develop capabilities in digital design and advanced node production to capture opportunities in edge computing, automotive, industrial electronics, etc

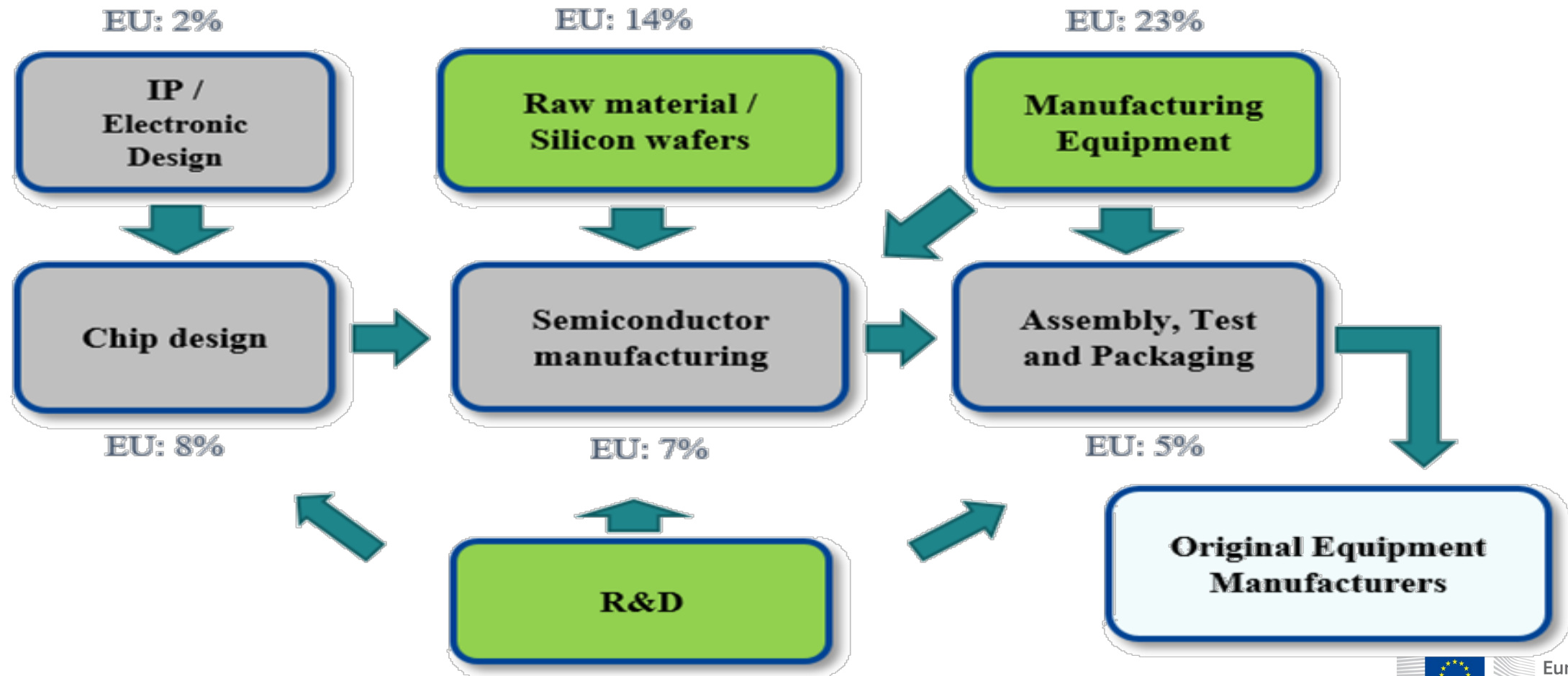
Digital Decade target: doubling of market share by 2030

Doubling of demand by 2030

**Emerging market opportunities: AI,
edge computing, digital transformation**

**Technological change: miniaturisation
reaches its limits**

Semiconductors value chain in Europe



Europe needs a Chips Act!

“*Our aim is to jointly create a state-of-the-art European chip ecosystem, including production. We need to link together our world-class research, design and testing capacities. We need to coordinate EU and national investment along the value chain. This is not just a matter of our competitiveness. This is also a matter of tech sovereignty.*

Commission President Ursula von der Leyen set the vision for Europe's chip strategy for the digital decade in her state of the Union speech of 15 September 2021:

Europe's objectives are:

- **To strengthen its research and technology leadership**
- **To build and reinforce its own capacity to innovate in the design, manufacturing and packaging of advanced chips**
- **To put in place an adequate framework to increase substantially its production capacity by 2030**
- **To address the acute skills shortage**
- **To develop an in-depth understanding of the global semiconductor supply chains**

Three pillars of the Chips Act

European Semiconductor Board (Governance)

Pillar 1

Chips for Europe Initiative

- Initiative on infrastructure building in synergy with the EU's research programmes
- Support to start-ups and SMEs

Pillar 2

Security of Supply

- First-of-a-kind semiconductor production facilities

Pillar 3

Monitoring and Crisis Response

- Monitoring and alerting
- Crisis coordination mechanism with MS
- Strong Commission powers in times of crisis

Chips for Europe Initiative

Pillar 1

Chips for Europe Initiative: Why do we need an Initiative?

Situation today

- Strong in R&D, RTOs and in manufacturing equipment
- EU and Member States spend ~4 B€ in research and in part of the supply chain development in MFF programmes

What is the EU missing today

- Industrial capabilities in advanced production notably in leading edge nodes
- Design capabilities for leading-edge nodes
- Capability for translating R&D know-how into industrial innovation
- Market pull



EU + MS programmes address the above to a very limited extent

Basic
Research

Applied
Research

Prototyping

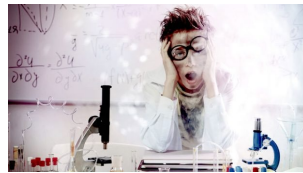
Pilot lines

Production

Chips for Europe Initiative: What are the objectives?

Bridge the gap *from lab to fab*
Create *large innovation capacity* and *a resilient and dynamic* semiconductor ecosystem

- Build up **large-scale design innovative capacities** for integrated semiconductor technologies
- Enhance existing and developing new **pilot lines**
- Build advanced technology and engineering capacities for accelerating the development of **quantum chips**
- Create a network of **competence centres** across Europe
- Establish a **Chips Fund** to facilitate access to loans and equity by start-ups, scale-ups and SMEs and other companies in the semiconductor value chains



Basic
Research

Applied
Research

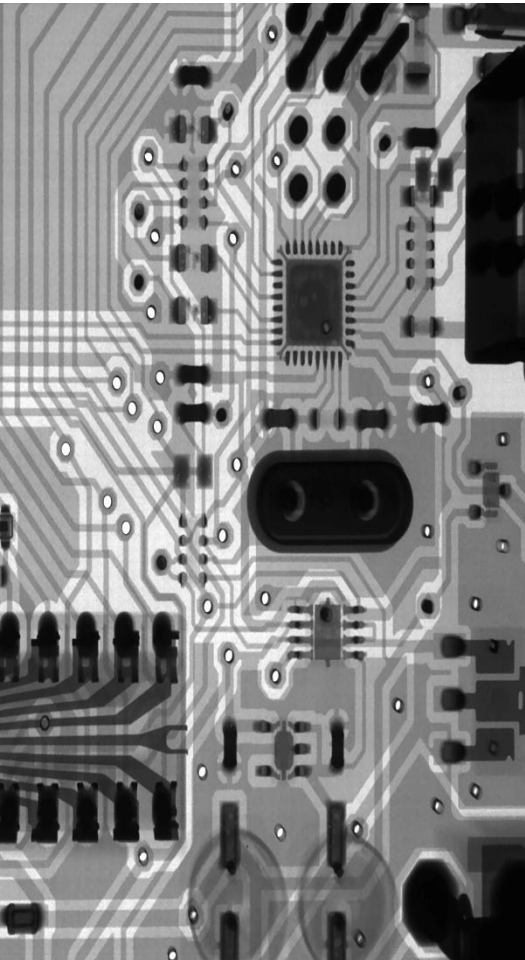
Prototyping

Pilot lines

Production

Security of Supply Pillar 2

Definition of first-of-a-kind facilities



“**First-of-a-kind:** an industrial facility capable of semiconductor manufacturing, including front-end or back-end, or both, that is not substantively already present or committed to be built within the Union, for instance with regard to the technology node, substrate material, such as silicon carbide and gallium nitride, and other product innovation that can offer better performance, process innovation or energy and environmental performance

1

Integrated Production Facility (IPF)
vertically integrated first-of-a-kind facility

2

Open EU Foundry (OEF)
First-of-a-kind facility that offers **production capacity** to unrelated undertakings

Criteria:

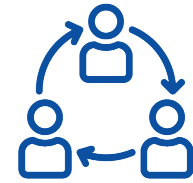
- ✓ **Qualification as first-of-a-kind facility**
- ✓ **Clear positive impact on the value chain (security of supply and qualified workforce)**
- ✓ **Security of supply:** guarantee not to be subject to extraterritorial application of public service obligations of third countries in a way that undermines the ability to accept priority rated orders
- ✓ **Clear commitment to invest in the next generation of chips**

Monitoring and Crisis response Pillar 3

Coordination mechanism

Recommendation

- **Recommendation** asks Member States to coordinate in a **European Semiconductor Expert Group**
- Coordinated assessment of crisis response measures and information gathering to enable a Union risk assessment and monitoring



Regulation

- **European Semiconductor Board** continues its work and becomes the **central coordination and exchange platform** under the legislative act



- The Chips Act should result in additional public and private investments of more than €15 billion.
- These investments will complement:
- *existing programmes and actions in research & innovation in semiconductors (Horizon Europe, Digital Europe Programme)*
- *announced support by Member States.*
- In total, **more than €43 billion** of policy-driven investment will support the Chips Act until 2030, which will be broadly matched by long-term private investment.

Thank you!