B7 Flash
Industry, Technology & Digital

Executive summary

The manufacturing industry is facing multiple and intense value chain shocks, mainly caused by tensions in the global economy, geopolitical conflicts and climate change. These factors contribute to the adoption of protectionist measures and the establishment of tariffs, which trigger a decline in foreign investment and, in general, undermine free access to markets. Achieving a new equilibrium and a competitive neutrality between public and private enterprises within G7 countries requires resolute and robust support for coordinated innovation aiming to maximize economic, social and environmental benefits.

In addition, making supply chains more resilient and equipped to complex global dynamics can help bolster and safeguard the drive towards open, free and multilateral trade. Adherence to the rules of competition, however, remains central to the achievement of this goal. Identifying what role public spending should play to support the profound industrial transformation mandated by the current economic, environmental and geopolitical conjuncture is an additional challenge the G7 are facing. Failing to implement the appropriate actions and countermeasures will most likely result in the erosion of capital linked with the presently outdated infrastructure.

Collaboration among G7 countries on digital technologies and Artificial Intelligence (AI) investment plans offers a real opportunity to improve economic competitiveness, increase productivity and promote long-term sustainable growth, with the added benefit of preserving the current technological advantage. At the same time, industrial processes and operating models must respond to the changing citizens and consumers' habits triggered by digitalization, while preserving shared ethical values.

The common commitment to which the G7 countries are called is, therefore, to take on as quickly and decisively as possible a leading role within the field of technological innovation and AI adoption, channeling targeted resources and actions and limiting bureaucratic constraints and inefficiencies. The expansion of AI requires common regulatory strategies, robust and resilient infrastructures for secure data connectivity management, alongside widespread backing of technical skills and ethical principles to ensure its responsible use. In order to effectively address these challenges and expand each of the opportunities that can help support our economies, industries and citizens, a timely, coordinated and synergic action between governments and business is imperative.

> Digitalization is critical for all industries, in both the private and the public sector: as B7 we will work to promote digital skills beyond the boundaries of businesses and reach out to public administrations as well, so as to strengthen the security of data access and provide those same businesses and citizens with more efficient and secure services.
>
> We are aware of the risks associated with AI and the G7 has committed to developing harmonized codes of ethics.
>
> This is a decisive step: the B7 is ready to develop the policy recommendations that will enable AI applications to unleash their full positive potential, making our countries' industries stronger and more competitive.

Emma Marcegaglia | B7 Chairwoman

> The challenges tied to digitalization and the associated technological, infrastructural and educational investments play a pivotal role in our age. The digital transformation and Artificial Intelligence have a revolutionary potential and an unprecedented speed of evolution that, if properly directed, will enable increased productivity and competitiveness in all sectors while fostering more inclusive growth. To take full advantage of the opportunities of this revolution and become its global leaders, it is necessary for businesses and institutions to work closely together, accompanying the G7 in the radical change that is taking place. As for Italy, much will depend on how we use the extraordinary resources that the Next Generation EU fund devotes to the digital transition, which represent a unique opportunity for the development of our country.
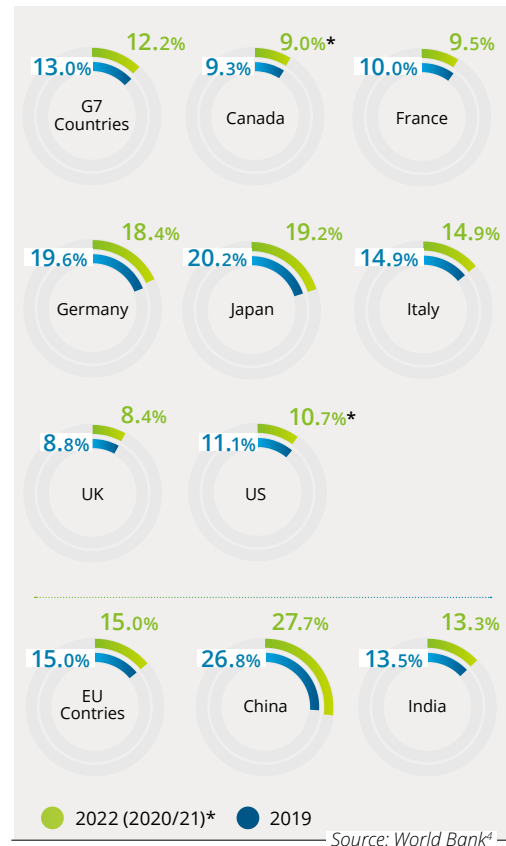
Fabio Pompei | CEO Deloitte

The manufacturing industry: a worldwide comparison

Overview of manufacturing in the G7, the EU, China and India

The growing adoption of new technologies in manufacturing requires coordinated initiatives which promote innovation and growth, such as targeted industry subsidies and tax incentives. It is crucial to develop resilient supply chains which support open, multilateral trade, while confirming that participating countries abide by competition rules.

The value of the global manufacturing sector reached USD 16.2 trillion in 2022[1], with an average expected annual growth rate of 3.6% (2024-2028)[2] and an average weight of 16% on world GDP, despite having fluctuated in recent years (-3% in 2020, +18% in 2021, +1% in 2022)[3]. This trend can be attributed to disruptions in supply chains, rising interest rates, skilled labor shortages, and the pressure to meet internationally set transition and sustainability goals. However, in the coming years, the industrial sector may benefit from the adoption of new technologies such as the AI, robotics and Internet of Things (IoT), as they have the potential of increasing the efficiency, productivity, resilience and sustainability of production systems, as well as cutting their costs.

% Manufacturing sector on GDP *(%)*

G7 Countries 13.0% / 12.2%	**Canada** 9.3% / 9.0%*	**France** 10.0% / 9.5%
Germany 19.6% / 18.4%	**Japan** 20.2% / 19.2%	**Italy** 14.9% / 14.9%
UK 8.8% / 8.4%	**US** 11.1% / 10.7%*	
EU Contries 15.0% / 15.0%	**China** 26.8% / 27.7%	**India** 13.5% / 13.3%

● 2022 (2020/21)*   ● 2019

Source: World Bank[4]

The manufacturing sector is a critical GDP and export driver for G7 countries (especially for Germany, Japan and Italy). In 2022, Germany's manufacturing exports reached USD 1,632 billion (automotive, pharmaceutical, machinery), Japan's

USD 751 billion (automotive, integrated circuits, industrial machinery)[5], whilst Italy's amounted to USD 623 billion (pharmaceutical, machinery and automotive)[6].

Digitalization of supply chains and production processes

Digitalization accelerates the globalization of value chains and raises significant challenges in terms of competitiveness, especially for small and medium-sized enterprises (SMEs) and industrial districts. Developing common strategies that take into account the proximity of the connecting hubs is essential in preventing supply chain disruptions and promoting sustainability.

Digitalization induced by new technologies is becoming increasingly strategic for most industries. In 2022, 69%[7] of manufacturing companies in Europe (incl. the UK) implemented advanced technologies. This number grows to 98% when considering the average between Germany, Japan, the United Kingdom and the United States[8]. Moreover, in 2023 digitally mature companies registered on average a 6% higher EBIT then the less mature ones[9]. This draws attention to the benefits that investments in digital technologies bring to productivity and growth.
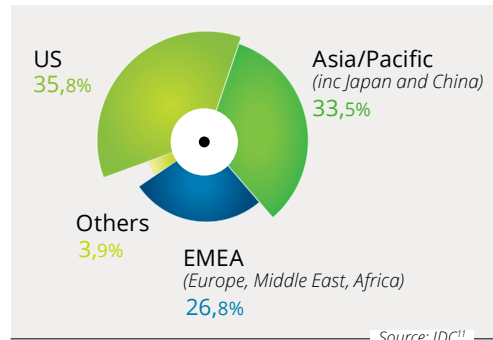
Digitalization helps integrate and globalize value chains, making them more resilient, competitive, and transparent, and makes way for innovative business models that are software-driven and guided by digital technologies. However, this evolution in value chains leads to a growing need to protect the competitiveness of SMEs and industrial districts. The proximity of trading hubs has to be also taken into consideration when optimizing supply chains' designs, as doing so prevents the risk of supply chain disruptions and promotes greater sustainability by containing the negative mobility-related environmental impacts.

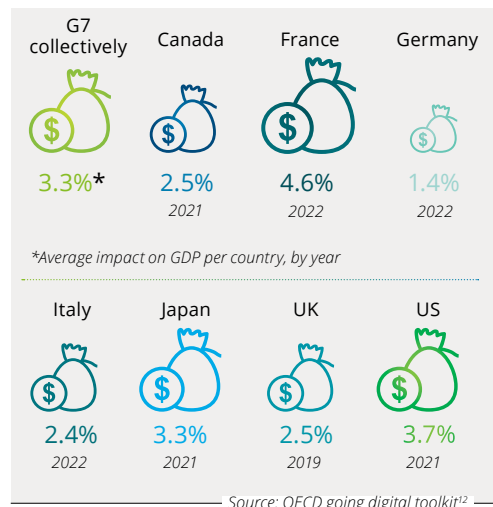## Public and Private Investments in Digital Technologies and AI

The G7 faces the challenge of identifying what the role of public stimulus should be in supporting the profound industrial transformation imposed by the current economic, environmental, and geopolitical context. Failure to adequately address these challenges through appropriate actions and countermeasures is expected to precipitate the erosion of capital tied to the existing outdated infrastructure.

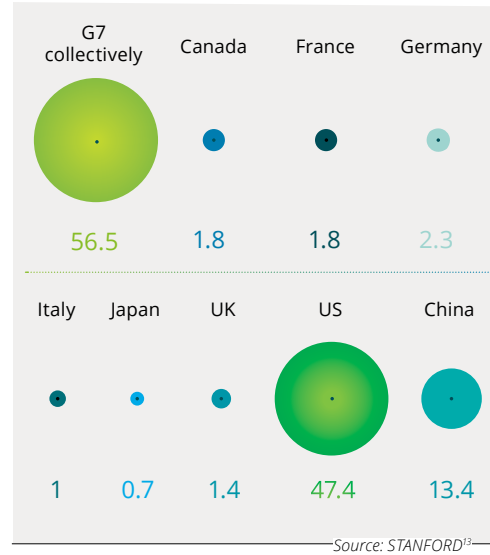Global investments in digital transformation are expected to reach USD 3.4 trillion by 2026, with a CAGR of 16.3% from 2023[10].

Geographic distribution of spending in digital trasformation *(% - 2023)*

US 35,8%

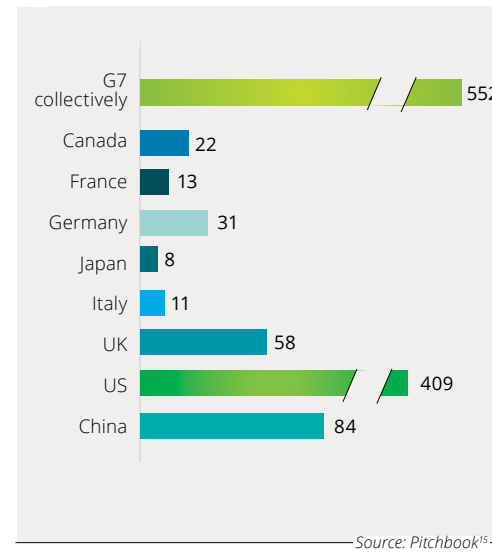Asia/Pacific *(inc Japan and China)* 33,5%

Others 3,9%

EMEA *(Europe, Middle East, Africa)* 26,8%

Source: IDC[11]

ICT investments on GDP *(%)*

G7 collectively	Canada	France	Germany
3.3%*	2.5%	4.6%	1.4%
	2021	2022	2022

*Average impact on GDP per country, by year

Italy	Japan	UK	US
2.4%	3.3%	2.5%	3.7%
2022	2021	2019	2021

Source: OECD going digital toolkit[12]

Private investments in AI *(USD Mld - 2022)*

G7 collectively	Canada	France	Germany
56.5	1.8	1.8	2.3

Italy	Japan	UK	US	China
1	0.7	1.4	47.4	13.4

Source: STANFORD[13]

These investments highlight the importance of digitalization in both the public and private sectors. It follows that collaborative industrial plans, which bring together public and private actors (including SMEs, startups, research projects, etc.), are central in developing ecosystem solutions which maximize the value of these investments and of the associated industrial and social benefits. China has announced a public investment plan in AI of USD 10 billion per year until 2030. In addition, it is estimated that about 6% of China's projected GDP for 2022-2026 will be devoted to ICT investments[14].

New AI Enterprises *(Num - 2022)*

G7 collectively	552
Canada	22
France	13
Germany	31
Japan	8
Italy	11
UK	58
US	409
China	84

Source: Pitchbook[15]

It is estimated that 24 million jobs around the world, including 6.4 million for young people, will be created by 2030 if governments and business invest in the universal deployment of advanced technologies and infrastructure, starting with broadband[16].

Smart Factory, Industry Automation and Digital Twins

The introduction of innovative solutions aimed at optimizing production systems is underscoring the growing need for a highly skilled workforce and lifelong learning.

The concept of the Smart Factory, which is to say the integration of digital technologies (e.g., IoT, AI) and hardware (e.g., advanced robotics) to help optimize and streamline processes (including resource utilization), is becoming increasingly popular due to the gains in flexibility, production quality and efficiency. The Smart Factory is the evolution of Industry 4.0 programs, and its global market is expected to reach USD 165 billion in 2026 with an annual growth of 20.6%[17]. As for the other important innovations in manufacturing, Industrial Automation is expected to reach a global market value of USD 200 billion in 2024[18] and Digital Twins (virtual replicas of physical products) will see their market reach a value of USD 6.7 billion by 2025[19].

Source: [10]IDC, Link | [11] IDC, Link | [12] OECD, Link | [13] N.Maslej, L. Fattorini, E. Brynjolfsson, J. Etchemendy, K. Ligett, T. Lyons, J. Manyika, H. Ngo, J. C. Niebles, V. Parli, Y. Shoham, R. Wald, J.Clark, and R. Perrault, "The AI Index 2023 Annual Report," AI Index Steering Committee, Institute for Human-Centered AI, Stanford University, Stanford, CA, April 2023 | [14] Deloitte based on IDC, Link | [15] Deloitte based on Pitchbook, Link | [16] ILO, Link | [17] Markets And Markets, Link | [18] Statista, Link | [19] WEF, Link

Artificial Intelligence in the production system

Overview of the main technologies in use

The growth of the AI market highlights the challenge the G7 are facing in promoting a robust and resilient infrastructure for connectivity and data management, and capable of supporting the secure and efficient collection, storage, and data analysis. This objective should require broad support for both technical and ethical core competencies to help drive the responsible use of AI.

AI is the one technology that, in the coming years, will mainly enable efficient production and resource utilization, as well as cost reduction, through automation, decision making support deriving from accurate and timely analyses of large amounts of data.

Global market AI *2024* USD 373 Bn
by 2030 USD 946 Bn

more in detail

USD 528 Bn — Machine Learning

USD 207 Bn — generative AI

USD 37 Bn — Applications to robotics

Source: Statista[20]

The availability of Big Data is driving the use of AI: its increasing strategic importance will mean its market value will rise to an estimated USD 655 billion by 2029. By enabling the efficient aggregation of large amounts of data, the cloud is poised to become a critical enabling technology, with its market value projected to hit USD 690 billion in 2024.

USD 690 Bl — Cloud *2024*

oltre USD 655 Bl — Big Data *by 2030*

Source: Statista[21] [22]

The growth of the AI market draws attention to an increasingly interconnected value chain which is creating a complex ecosystem involving both institutions and private players. The magnitude of this revolution means that there is a need to foster innovation, by promoting the deployment of key skills and infrastructure which support the process of data availability and management, as well as the adoption of ethical principles.

Comparison of AI endowments in the G7, the EU, China and India

The common commitment to which the G7 countries are called to is taking the lead in technological innovation and AI adoption, as quickly and decisively as possible, by channeling targeted resources and actions and limiting bureaucratic constraints and inefficiencies.

In 2023, the AI applications most widely adopted by companies were robotic process automation (39%), computer vision (34%), natural language models (33%) and virtual agents (33%)[23]. In this context, 43% and 48% of US and Canadian companies respectively started implement R&D initiatives in AI as early as 2022[24], while China led global adoption (58%), followed by India (57%)[25]. It is estimated that the AI market in 2030 will reach USD 202.5 billion in Europe (capable of inducing GDP growth by 8.8%), USD 237 billion in the US, USD 105 billion in China, and USD 15 billion in India[26]. Supply chain management and the manufacturing activities are the two sectors most affected by AI adoption (approximately 40 % of cases in 2022[27]. Whilst 6% of enterprises implemented AI solutions in marketing and sales, after-sales services and product development[28].

The implications of introducing new technologies: compliance regulation

Within the G7, regulations on data management, antitrust and AI are only partially aligned. The challenge is to converge these fragmented approaches in order to create the maximum positive impact on industrial productivity, while avoiding the risk of competitive imbalances that could hinder economic growth.

DATA
The Data Free Flow and Trust roadmap (DFFT) aims to guide coordination on regulation of relevant topics such as data localization and sharing, particularly on issues of privacy, data protection, intellectual property rights, and security [29].

ANTITRUST
Despite adopting different antitrust criteria, G7 jurisdictions share the priority of protecting competition and consumer rights[30].

AI
G7 leaders launched the Hiroshima Process[a], which identifies risks and opportunities to promote the adoption of safe and reliable AI systems. This is achieved through transparency, collaboration, data protection and enhancement, management of bias, and compliance with relevant legal frameworks, as well as through risk assessment and mitigation throughout the entire AI lifecycle[31].

[a] *International Guiding Principles for Organizations Developing Advanced AI Systems*

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Source: [20] Deloitte based on Statista, Link | [21] Statista, Link | [22] Statista, Link | [23] Maslej et al., 2023. "The AI Index 2023 Annual Report. Stanford" | [24] Statista, Link | [25] Statista, Link | [26] Statista, Link | [27] Statista, Link | [28] Statista, Link | [29] World Economic Forum, Link | [30] OECD, Link| [31] EU, Link