



Introduction

The development and deployment of artificial intelligence (AI) have accelerated in the last few years, and its applications hold the potential to revolutionize human society and economic activities. This chapter sets the context for the current AI landscape and discusses why it is timely and important to examine how trade can be a vehicle for the development and dissemination of AI, and how AI can help trade to continue to be a force for good by extending the benefits of trade to more economies, firms and individuals.

AI has ushered in a new era of growth potential, but it can also reshape the distribution of wealth and income both across and within economies. As discussed in the *World Trade Report 2024*, trade-led growth has lifted billions of people out of poverty over the past decades, but some individuals, regions and economies have not been able to benefit to the same extent from trade. At this juncture, critical questions arise: in the age of AI, will similar opportunities for income convergence persist, or even further improve – or will they diminish? And how can trade and trade policy be part of the solution to make trade and the global economy more inclusive?

The *World Trade Report 2025* explores how trade and AI could reinforce each other to promote inclusive growth in all economies. Expanding on a WTO study released in November 2024 (WTO, 2024a), this report will examine how AI could promote inclusive trade and growth, and how trade could contribute to the development and deployment of AI, even against a backdrop of increasing geopolitical tension and rising protectionist measures.

1. What is AI?

AI refers to systems that process data to perform tasks, often with various degrees of autonomy and adaptability. Although there is no universally accepted definition of AI, a common understanding is that AI systems generate outputs – such as recommendations, content or decisions – based on data inputs, with varying levels of human involvement. These systems are designed to learn, adapt and evolve over time, making them distinct from traditional programmed software (OECD, 2024).

AI has a long history, but recent breakthroughs have driven its widespread application.

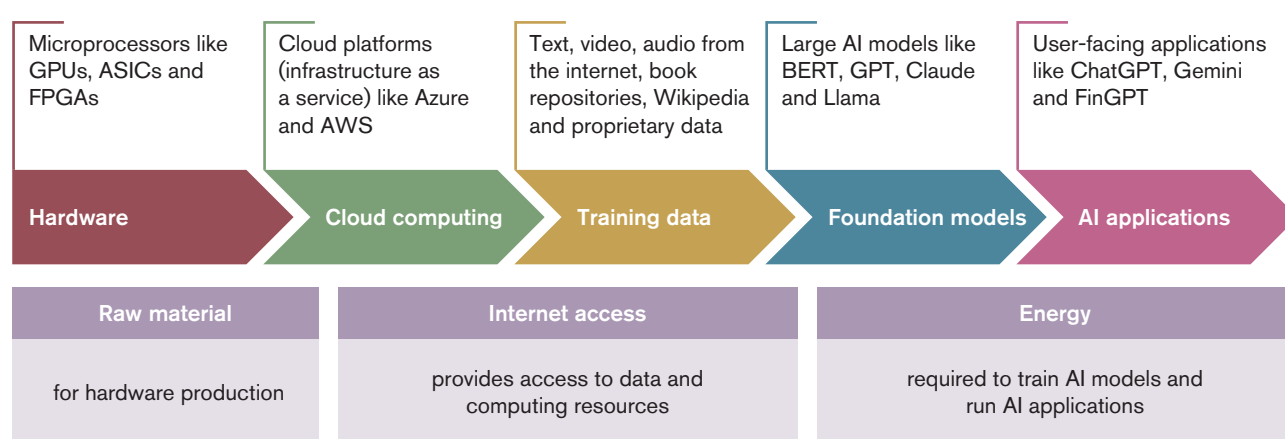
Although AI research began in the 1950s, early progress was slow and was followed by a period of stagnation (referred to as “AI winters”). Since the 2000s, however, innovations in machine learning and neural networks, combined with unprecedented advances in computational power and the generation of huge amounts of data, have significantly accelerated AI development. With the launch of ChatGPT in November 2022, AI, and in particular generative AI – capable of generating high-quality text, images and other content based on the data on which it is trained – entered public consciousness and has been experiencing rapid adoption ever since (see Annex B for a glossary of key AI-related terms).

Today, AI is increasingly used in daily life and across industries, particularly in advanced and emerging economies. A recent development is

the emergence of agentic AI – systems capable of autonomously pursuing goals, making decisions and taking actions in complex environments – which is raising new questions about control, accountability and the distribution of economic gains. As argued in the WTO report *Trading with Intelligence: How AI shapes and is shaped by international trade* (WTO, 2024a), contemporary advances in AI render it distinct from other technologies in several key ways: it is a general-purpose technology, i.e., it has multiple applications across a range of different industries; it is dependent on large datasets to improve its performance and accuracy; its functions and efficiency can evolve rapidly; and it is inherently complex and opaque. Moreover, AI development and adoption are increasingly structured along a value chain (see Figure A.1).

AI is increasingly recognized as a general-purpose technology with far-reaching applications and implications. Generative AI, in particular, exhibits the defining characteristics of general-purpose technologies: i) pervasiveness, ii) continuous improvement over time and iii) innovation-spawning (Calvino, Haerle and Liu, 2025). Notable for its flexibility, AI can be used across virtually all sectors and tasks (Suleyman and Bhaskar, 2023). It powers applications in language processing, image recognition and multimodal systems. However, this broad utility also raises concerns, as the same technologies can be used, for example, for surveillance, misinformation or military purposes, highlighting the need for ethical oversight and strong regulatory frameworks.

Figure A.1: The AI value chain comprises interconnected segments



Source: Adapted from Gambacorta and Shreeti (2025).

Note: GPU: graphics processing unit; ASIC: application-specific integrated circuit; FPGA: field-programmable gate array.

Data fuel AI, and data governance is crucial for the trustworthy development and deployment of AI.¹

AI systems rely on large volumes of data not only for their creation and deployment, but also to sustain their constant learning and improvement. As important as data quantity are data quality and diversity, which are also essential for determining how well an AI model performs. Data sources can be open or proprietary, and access to high-quality data is often uneven across firms and economies. As data usage grows, regulations are increasingly important to ensure privacy, protect intellectual property (IP) and enable safe data flows within and across borders.

AI evolves quickly, requiring constant adaptation by policymakers and institutions, in particular as the capabilities of AI systems advance.

AI's capabilities improve rapidly due to advancements in algorithms, data availability and computing power, and the resources needed to train AI models are growing exponentially. As some systems increasingly become autonomous (including in the form of agentic AI systems that are now being deployed in various domains), they raise new questions about the appropriate levels of human oversight depending on their specific use. Regulatory approaches need to be flexible and forward-looking rather than relying solely on past models.

The complexity and opacity of AI systems pose significant challenges for transparency and accountability.

Many AI models – particularly deep learning models – and the systems that incorporate them operate as “black boxes”, meaning that it is difficult to understand how they reach decisions. This lack of transparency raises ethical concerns, and can amplify risks of misinformation and systemic bias. It also complicates efforts to assign liability and seek redress should harm be caused by AI-enabled products. Addressing these challenges requires the development of explainable AI (i.e., AI systems whose decision-making processes are transparent and understandable to humans), improved data practices, continuous evaluation and verification, and enhanced digital literacy.

The AI value chain comprises a series of interconnected segments that underpin the development, production and adoption of AI technologies.

As shown in Figure A.1, the main components of this supply chain include: (i) computing hardware; (ii) cloud computing infrastructure; (iii) training data; (iv) foundation models; and (v) user-facing AI applications. Supporting this value chain

are critical raw materials used in AI hardware, reliable internet access to enable data storage, access and transmission, as well as the substantial energy required to power various stages of AI training and deployment. These foundational inputs are essential to the functioning and scalability of the entire AI ecosystem.

Throughout this report, a clear distinction has been drawn between AI development and AI adoption.

This distinction is important because AI activities occur along a spectrum. At one end is AI development, which involves creating and training new foundation models – a process that demands massive computational power, vast datasets and substantial capital investment. In the middle of the spectrum is adaptation, which entails refining algorithms and customizing existing or foundation models – such as by fine-tuning open-source or pre-trained models – to meet the needs of specific tasks, domains or local contexts. At the other end is adoption, which involves the integration of AI tools and applications into existing processes, products and services across industries and economic sectors. For developing economies, the greatest immediate opportunities lie in these latter stages: leveraging pre-trained models and open-source tools to build AI solutions tailored to their economic, linguistic and social contexts, enabling them to adopt AI to improve people's well-being and productivity without having to make the substantial investments required for foundation model development.

In this context, the report distinguishes between the terms “AI-enabling” and “AI-enabled”.

AI-enabling goods and services encompass the raw materials, intermediate inputs, products and services that support the development and production of AI technologies (see Annex A.1 for an illustrative list of AI-enabling goods). In contrast, AI-enabled sectors have adopted and are applying AI in their operations. The adoption of AI is likely to be more concentrated and intensive in certain sectors, such as in media, telecommunications or IT services, than in others (see Annex A.2 for a list of the AI-intensity of different economic sectors), even though AI, as a general-purpose technology, is expected to have wide-ranging applications across the economy generally.

2. AI and the future of trade-led growth

Inclusive growth refers to strong and sustainable economic growth that benefits a broad range of economies and that is widely

shared within economies. It encompasses two key dimensions: reducing disparities between economies, and ensuring that the gains from growth are shared broadly within societies. Inclusive growth therefore involves expanding market opportunities and enabling greater participation in global trade, particularly for lower-income economies and smaller firms. At the same time, it requires addressing adjustment challenges and protecting workers who may be displaced or disadvantaged by structural change.

Over the past three decades, average income levels in low-income and middle-income economies have converged significantly with those of high-income economies. As argued in the *World Trade Report 2024* (WTO, 2024b), international trade has played a central role in fostering income convergence over the last 30 years, lifting billions of people out of poverty and reshaping the global economic landscape. Trade in goods and services and the exchange of ideas facilitated by trade-related IP rights have allowed economies to specialize, scale up production and integrate into global value chains. Yet, some individuals, regions and economies have been left behind by not being able to benefit to the same extent from trade. While the *World Trade Report 2024* analysed how trade and trade policy can be part of the solution to make trade and the global economy more inclusive, this report explores how trade and AI together could reinforce one another to promote inclusive growth across all economies.

AI has the potential to boost international trade and global economic growth significantly, particularly in services. By enhancing productivity across sectors, streamlining supply chains and reducing the costs of cross-border transactions, AI could lower traditional barriers to trade. For example, language translation tools and automated logistics management could reduce obstacles in global commerce. Moreover, AI may create entirely new services or make services more tradable via the internet (e.g., remote AI diagnostic services in healthcare), thereby enabling firms in both developed and developing economies to participate more efficiently in international markets (WTO, 2024a).

However, without deliberate efforts by policymakers to broaden access and opportunity, the gains from AI may still be unevenly distributed. A key concern is whether AI-enhanced trade will deliver broadly shared

economic benefits or mainly benefit a small number of technologically advanced economies and large firms. As with previous waves of technological change, early adopters of AI with access to data, computing power and skilled labour may capture a disproportionate share of the value created. This could entrench existing disparities between economies and deepen inequalities within economies, particularly where small firms or certain workers are unable to adapt or compete. The complexity and uncertainty of AI's impact on economies, jobs and wages underscore the importance of policies that support adaptation and inclusive participation.

Throughout history, technological change has brought economic restructuring and periods of rising inequality. Since the Industrial Revolution some 200 years ago, economic development has progressively widened, deepened and accelerated, in part due to the interplay of technological innovation and global integration (WTO, 2017b). Yet the Industrial Revolution also posed significant challenges for workers. In early 19th-century England, for example, output per worker increased due to the introduction of new technologies, but real wages remained stagnant. While automation lowered the cost of consumer goods and eventually spurred the emergence of new industries, these long-term benefits offered little immediate relief to those displaced by technological change. It was only in the latter half of the century that wages began to rise in line with productivity, among other reasons because an expanding capital stock enabled productivity gains to translate into real income growth (Allen, 2009; Kurzweil, 2024).

The implications of AI for the future of trade-led growth have yet to be fully understood. While AI could open new paths for exports in digitally delivered services or allow firms to leapfrog traditional infrastructure bottlenecks, it could also displace labour-intensive production or reduce incentives to offshore certain tasks. These trends raise critical questions: will AI reduce or reinforce the advantages of scale and agglomeration? Will it create new entry points for developing economies or fortify the dominance of current market leaders? How can policies ensure that gains from AI-driven trade are more widely distributed? These questions are crucial, yet remain underexplored in current research and policy debates.

This report aims to contribute to a better understanding of the mechanisms by which

the benefits of trade and AI can be broadly disseminated both across and within economies. It examines the types of domestic, regional and multilateral policies needed to foster inclusive development, enable the diffusion of AI, and support trade-led inclusive growth, while addressing the challenges that AI presents. However, in a context of rising geopolitical tensions and a fragmented global trading system, the gains both from trade and from AI risk being reduced, and any remaining gains risk being accessible to fewer economies, firms and individuals.

The future of AI is marked by profound uncertainty, both in how the technology itself will develop and how governments and policymakers around the world will respond. Some experts predict the advent of artificial general intelligence (AGI) – a type of AI system that possesses a broad range of capabilities that matches or outmatches those of humans (see Annex B for key AI terms) – within a few years, leading to a significant reduction in the demand for workers. Others, however, anticipate a more incremental path in which AI continues to assist with specific, narrowly defined functions. This uncertainty is mirrored in the fragmented policy landscape. Some governments are actively promoting AI adoption as a driver of national competitiveness and economic growth, investing in research, infrastructure and public-private partnerships. Others are taking a more cautious stance, prioritizing regulation to manage the risks associated with AI. Meanwhile, most low-income countries have yet to implement any AI-specific policies. Compounding these challenges is the increasingly fraught geopolitical environment in which AI is developing.

3. The structure of this report

This report pursues four main objectives. First, it examines the conditions under which AI could broaden the benefits of trade – both across and

within economies – by lowering trade costs and enhancing productivity. Second, it assesses the potential of trade to expand access to productivity-enhancing AI technologies and essential services, while also identifying the associated risks. Third, it analyses how trade and complementary policies may enhance the inclusiveness of AI development and deployment and ensure that its benefits are widely shared. Finally, it explores pathways for international cooperation and the role of the WTO in supporting inclusive and trustworthy AI development, while addressing emerging risks. The report discusses various dimensions of inclusiveness within economies, including the labour market effects of AI and the opportunities and challenges that AI raises for small businesses. Gender issues are addressed indirectly through the discussion on small businesses, as women are more likely to lead small firms or newly founded businesses than large, well-established firms.

Chapter B explores the economic characteristics of AI and the conditions under which it might generate trade-led growth opportunities that could be more widely shared. It presents simulation results illustrating the potential impact of AI on trade and global growth, and highlights the role of trade in improving access to AI technologies and services. **Chapter C** provides an overview of the evolving policy landscape, focusing on both trade policies and complementary trade-related policies that influence the inclusiveness of AI adoption. **Chapter D** turns to international cooperation, examining opportunities for collective action and the role of the multilateral trading system in fostering a more open and trustworthy AI-enabled global economy.

Endnote

- 1 Trustworthy AI is understood as AI that is lawful, ethical, robust, transparent, fair, respectful of privacy, and accountable across its entire lifecycle (High-Level Expert Group on AI, 2019; US National Institute of Standards and Technology, 2022).