Foreword

The OECD Science, Technology and Industry Scoreboard 2017 *draws on the latest internationally comparable data to uncover the strengths of the OECD and other leading economies, and shows how the digital transformation is affecting science, innovation, the economy, and the way people work and live. It aims to help governments design more effective science, innovation and industry policies in the fast-changing digital era.*

It features indicators traditionally used to monitor developments in science, technology, innovation and industry, and complements them with new and experimental indicators that provide new insights into areas of policy interest.

The aim of the STI Scoreboard is not to "rank" countries or develop composite indicators. Instead, its objective is to provide policy makers and analysts with the means to compare economies with others of a similar size or with a similar structure and to monitor progress towards desired national or supranational policy goals. It draws on OECD efforts to build data infrastructure to link actors, outcomes and impacts, and highlights the potential and limits of certain metrics, as well as indicating directions for further work.

Indicators are pointers; they do not address causal relationships. Moreover, the validity of a set of indicators depends on its use. The selected indicators have been developed with the following criteria in mind:

- *Indicators should be based on high-quality statistics and robust analytical principles and be measurable internationally, over time and with prospects of improvement.*
- *Indicators should be relevant, particularly for decision makers.*
- *Experimental indicators that complement more established ones should bring new perspectives and advance the measurement agenda. They should help to stimulate policy debates and uncover new dynamics.*

The first chapter, ***Knowledge economies and the digital transformation****, provides a broad overview. Trends in science, innovation and growth are presented in the context of today's fast-changing digital technology landscape. Section 1, "Science, innovation and the digital revolution", presents the latest developments and the top players in artificial intelligence (AI) and other breakthrough ICT technologies, and examines the overall science landscape and the concentration of business R&D. Section 2, "Growth, jobs and the digital transformation", provides insights into countries' participation in global value chains, in particular ICT global production networks, explores the changing nature of jobs, and presents the knowledge-based assets at the heart of innovation and productivity. Section 3, "Innovation today: Taking action", offers evidence in support of actions to address digital divides and foster innovation and entrepreneurship.*

Five thematic chapters focus on key areas of policy interest:

- ***Knowledge, talent and skills*** *examines the knowledge assets that many firms and governments view as current and future sources of long-term sustainable growth. It provides metrics of knowledge-based capital, such as formal and on-the-job training and organisational assets, both*

in the market and non-market sector. Skills required for the new working environment shaped by ICTs, as well as returns to ICT skills, are analysed through a new set of indicators.

- ***Research excellence and collaboration*** *helps to inform the policy debate with a set of metrics on the variety and nature of mechanisms for knowledge diffusion in the age of digitalisation. It points to the research performance of countries that follow different paths of scientific specialisation, the international mobility of highly skilled individuals, innovation across borders and collaboration among firms in innovation processes.*
- ***Innovation in firms*** *explores the dynamism of the business sector and framework conditions crucial for innovation. It examines sectoral R&D patterns and intellectual property bundles with a focus on firms' joint use of ICT patents, trademarks and industrial designs to protect their innovations. Estimates of R&D tax incentives are combined with direct funding of R&D to provide a more complete picture of government efforts to promote business R&D, while innovation survey data allow an analysis of the participation of innovative firms in public procurement markets.*
- ***Leadership and competitiveness*** *investigates how countries seek to build their competitive strengths and the extent to which economies are successful in integrating and specialising along global value chains. It assesses indicators on R&D specialisation, technological advantages and relative strengths, and e-business uptake in firms and sectors together with start-up dynamics in ICT sectors vis-à-vis the rest of the economy. Indicators building on the OECD-WTO Trade in Value Added (TiVA) database shed light on economies' participation in global trade and value chains, and the implications for jobs and consumers everywhere.*
- ***Society and the digital transformation*** *uses metrics that focus on digital inclusiveness to help inform the policy debate. A set of key indicators is used to examine individuals' access to and use of technologies from an early age, the level of sophistication of users, and their role as e-consumers and e-citizens. Finally, a series of indicators on trust shed some light on firms and individuals' security and privacy concerns in an increasingly digitised world.*

The main audience of the STI Scoreboard is policy analysts with a good understanding of the use of indicators and those engaged in producing indicators for analytical or policy-making purposes. A few paragraphs introduce each indicator and offer some interpretation. Accompanying boxes entitled "Definitions", "Measurability" and "Did you know?" provide detail on the methodologies used, summarise measurement gaps, challenges and recent initiatives, and draw attention to interesting facts or figures based on the findings of the five thematic chapters.

All charts and underlying data can be downloaded via the StatLinks (hyperlink to a webpage). Additional data that expand the coverage of countries and time periods are available at the same links. Several thematic briefs and country notes, as well as online tools to visualise indicators and help users develop analyses based on their own interests, are available from the STI Scoreboard website (www.oecd.org/sti/scoreboard.htm).

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