Manual on
Principal Indicators for Business and Trade Statistics

White cover publication prior to official editing

United Nations
New York, December 2022

Department of Economic and Social Affairs

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Preface and acknowledgements

The first volume of the Manual on Principal Indicators for Business and Trade Statistics ("the Manual") was prepared by the United Nations Committee of Experts on Business and Trade Statistics (UNCEBTS) and in particular the task team on business dynamics, demography and entrepreneurship; the task team on globalization and digitalization; and the task team on well-being and sustainability. The Manual presents the Committee's strategic view on business and trade statistics and puts forth a list of principal indicators on business and trade statistics, which are designed to meet users' needs in terms of better quality and increased data granularity for current statistics on business and trade statistics.

The principal indicators are presented as a reference list that can guide the development of business and trade statistics programmes in countries for informing on the following priority areas and in support of the 2030 Agenda for Sustainable Development: business demography, business dynamics, and entrepreneurship; globalization and digitalization; and well-being and sustainability. The current manual focuses on business statistics and selected trade-related indicators. It will be complemented at a later stage with a second volume that focuses on trade indicators and elaborates on the integration of business and trade statistics.

This manual reflects the work undertaken by the task teams of the UNCEBTS since its establishment in 2018. The UNCEBTS was established in response to a request by the United Nations Statistical Commission at its forty-eighth session to create "a committee of experts with balanced geographical representation and with terms of reference to prepare the guidelines for statistical business registers and give guidance on issues of business and basic economic statistics, taking into account the use of administrative data, the choice of statistical units in the context of globalization, and issues related to a large informal sector."[1] In 2018, the UNCEBTS identified five work streams in business and trade statistics to enhance the relevance, accuracy and coverage of business statistics. These work streams include: Business Dynamics, Demography and Entrepreneurship; Globalization and Digitalization; Well-being and Sustainability; Exhaustive Business Registers and Capacity Building for statistical business registers (SBRs).[2] In 2021, the UNCEBTS proposed a work plan that included preparing a manual on the core set of principal business and trade indicators and a manual on the maturity model for statistical business registers, which was endorsed by the Statistical Commission in its 52nd session.[3] The UNCEBTS prepared and submitted the draft first volume of the Manual on the principal indicators on business and trade statistics to the Statistical Commission in March 2022. At its 53rd session, the Statistical

[1] United Nations (2017). United Nations Statistical Commission decision 48/114. Available from N1707488.pdf (un.org).

[2] At the fifth meeting of the UNCEBTS in 2022, it was proposed to merge the two task teams on exhaustive business registers and capacity building into one Task Team on SBR. The merged task team will have the same focus on exhaustive business registers and capacity building.

[3] United Nations (2021). United Nations Statistical Commission decision 52/107. Available from 2021-30-FinalReport-E.pdf (un.org).

Commission took note of the draft first volume of the Manual and encouraged the preparation of volume 2 of the Manual to further elaborate on the international trade indicators.[4]
A global consultation was conducted on this manual from January to April 2022 with national statistical offices and international and regional organizations to collect their feedback on the list of the indicators, the feasibility of compiling and disseminating the indicators in an internationally comparable and sustainable manner, the recommendations in this manual, and the methodological guidance for each principal indicator. The feedback from the global consultation was very positive and several suggestions were provided to improve the presentation of the material and address specific issues.
An editorial board was established from members of the UNCEBTS to review and address the comments received in the global consultation in this final version of the Manual.

The Manual on Principal Indicators for Business and Trade Statistics, Volume 1, was prepared by the United Nations Committee of Experts on Business and Trade Statistics with the support of, and in collaboration with, the Statistics Division of the Department of Economic and Social Affairs. The following experts contributed to the drafting of the Manual: Francisco Souza Marta (Brazil); Daniel Brandão Cavalcanti (Brazil); Thiego Gonçalves Ferreira (Brazil); Kembly Miranda (Costa Rica); Synthia Kariny Silva de Santana (Brazil); Daniela Ravindra (Canada, retired); Mark Uhrbach (Canada); Xie Min (Canada); Søren Schiønning Andersen; (Denmark); Ole Olsen (Denmark); Claus Werner Andersen (Denmark); Maciej Truszczynski (Denmark); Peter Bøegh Nielsen (Denmark); Olivier Aguer (France); Stefano Menghinello (Italy (Chair of UNCEBTS)); Chiara Orsini (Italy); Massimo Lori (Italy); Patrizia Cella (Italy); Bibi Rooksana Moraby (Mauritius); Gangamah Appadu (Mauritius); Arturo Blancas (Mexico); Gerardo Durand (Mexico); Ricardo Gutierrez (Mexico); Hugo Hernandez (Mexico); Lazaro Trujillo Hernandez (Mexico); Lizbet Corona Fuentes (Mexico); Michael Polder (Netherlands); Sagaren Pillay (South Africa); Amukelani Ngobeni (South Africa); Alison Pritchard (United Kingdom, retired); Andrew Allen (United Kingdom); David Talan (United States); William Davie (United States); Ken Robertson (United States); Axel Behrens (Eurostat); Carsten Olsson (Eurostat, retired); Petra Sneijers (Eurostat); Annabelle Mourougane (OECD); Tatiana Krylova (UNCTAD, retired); Elena Botvina (UNCTAD); Ivo Havinga (UNSD); Ilaria Di Matteo (UNSD); Nancy Snyder (UNSD); and Shirly Ang (UNSD).

The Statistics Division is grateful to the countries and organizations that provided valuable comments during the worldwide consultation. Also a special thanks to the members of the editorial board, which carefully reviewed all the comments received from the global consultation and provided guidance on the edits made to address them. The editorial board included the following experts: Manpreet Singh (Australia); Thiego Gonçalves Ferreira (Brazil); Mark Uhrbach (Canada); Peter Bøegh Nielsen (Denmark); Ole Olsen (Denmark); Ricardo Gutierrez (Mexico); and David Talan (United States).

The preparation of the Manual was facilitated by a team within United Nations Statistics Division, consisting of Ilaria Di Matteo, Nancy Snyder, Zhiyuan Qian, Pedro Farinas, Shirly Ang, Aida Diawara and Htu Aung.

[4] United Nations (2022). United Nations Statistical Commission decision 53/119. Available from 2022-41-FinalReport-E.pdf (un.org).

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Chapter 1 Introduction

A. Background

1. This manual presents a strategic view on business and trade statistics and puts forth a list of principal indicators on business and trade statistics, which are designed to meet users' needs in terms of better quality and increased data granularity for current business and trade statistics. These principal indicators were identified by the United Nations Committee on Business and Trade Statistics (UNCEBTS)[5] and are envisioned as a reference list that can guide the development of business and trade statistics programmes in countries in support of the 2030 Agenda for Sustainable Development and for informing on the following thematic areas: business demography, business dynamics, and entrepreneurship; globalization and digitalization; well-being and sustainability; and international trade. The current manual focuses on business statistics and selected trade-related indicators. It will be complemented at a later stage with a second volume focusing on trade indicators and elaborating on the integration of business and trade statistics as the work of the task team on international trade statistics progress.

B. Structure of this Manual

2. This manual is organized in four chapters. Chapter 2 presents the frameworks applied to the selection of the principal indicators, including the strategic view on business and trade statistics of the UNCEBTS and the analytical and policy framework. It also describes the main concepts for business and trade statistics, covering: the scope of business statistics, statistical units, and the importance of adding granularity to existing statistics by exploring breakdowns to address relevant policy questions. Chapter 3 presents the list of indicators and specific methodological considerations relevant for compiling the indicators. It also addresses the process of producing the indicators, including data availability and matters of consistency and international comparability, and the institutional coordination mechanisms and governance needed for the compilation of the indicators, given that often several institutions may be responsible for the compilation of these indicators. Chapter 4 outlines areas for future development as identified by the UNCEBTS and measures to improve upon, and extend the recommendations provided in this manual. Annex 1 includes the technical sheets for each of the principal indicators, organized by priority area, which present the methodological guidance, such as definitions, classifications, breakdowns, algorithms, source data and other metadata. A Glossary of terms and list of Reference are also included.

C. Process of preparing this Manual

3. This manual reflects the work undertaken by the task teams of the UNCEBTS since its establishment in 2018. The UNCEBTS was established in response to a request by the United Nations Statistical Commission at its forty-eighth session to create "a committee of experts with balanced geographical representation and with terms of reference to prepare the guidelines for statistical business registers and give guidance on issues of business and basic economic statistics,

[5] The UNCEBTS has prepared this manual in response to a request from the United Nations Statistical Commission in 2019 to provide coordination and guidance for the development of business and trade-related statistics.

taking into account the use of administrative data, the choice of statistical units in the context of globalization, and issues related to a large informal sector."[6] In 2018, the UNCEBTS identified five work streams in business and trade statistics to enhance the relevance, accuracy and coverage of business statistics. These work streams include: Business Dynamics, Demography and Entrepreneurship; Globalization and Digitalization; Well-being and Sustainability; Exhaustive Business Registers and Capacity Building for statistical business registers (SBRs).[7]

4. The task teams on Business Dynamics, Demography and Entrepreneurship; Globalization and Digitalization; and Well-being and Sustainability worked on the identification of a set of indicators that could serve as a reference list for countries on business and trade statistics informing on these priority areas. The task team on SBR focused on the development of a vision for exhaustive SBRs and methods to guide SBR development toward more mature and comprehensive attributes. Following the release on the UN Guidelines on Statistical Business Registers,[8] the task team on SBR prepared a Manual on the Maturity Model for Statistical Business Registers.[9]

D. Target audience

5. The main target audience of this manual are the statisticians that are responsible for the compilation of business and trade statistics in statistical offices. However, compilers from different statistical domains and institutions may also be involved in the collection and compilation of the data needed to produce these indicators and, therefore, they may also benefit from reading this manual. Further, data users outside the NSOs will also gain more information on the interpretation and use of the principal indicators presented, as well as the data sources and methods of calculation.

6. The principal indicators presented in this manual are intended to be a reference list of indicators that can inform on the role of businesses to globalization, digitalization, well-being and sustainability and business demography. Based on this list, the UNCEBTS will consider at a later stage the possibility of developing global databases of these indicators (or a selection of these indicators), building on existing initiatives and in cooperation with relevant international and regional organizations.

[6] United Nations (2017).
[7] At the fifth meeting of the UNCEBTS in 2022, it was proposed to merge the two task teams on exhaustive business registers and capacity building into one Task Team on SBR. The merged task team will have the same focus on exhaustive business registers and capacity building.
[8] United Nations (2020). https://unstats.un.org/unsd/business-stat/SBR/Documents/UN_Guidelines_on_SBR.pdf
[9] The *Manual on the Maturity Model for Statistical Business Registers* was also circulated for global consultation simultaneously with this manual.

Chapter 2 Strategic view and data production frameworks for the development of business statistics

A. Introduction

7. The strategic view and data production frameworks for the development of business statistics were designed and progressively implemented by the UNCEBTS to enhance the relevance, accuracy, coverage and coherence of business statistics, according to an internationally comparable, result-oriented, and sustainable approach. The strategic view aims to expand the traditional scope of official business statistics by including relevant environmental and social-related issues. It recognizes that NSOs may achieve relevant improvements by focusing their efforts on specific global goals consistent with their national ones and by engaging in knowledge sharing with other countries and international coordination. The strategic view also highlights the relevance of an enterprise-centered approach for a better understanding of emerging phenomena by official statisticians, and for priority setting in improving the quality of business statistics. The data production framework is dominated by the crucial role of the SBR as the backbone of any current and future improvements in the relevance and accuracy of business statistics.[10] All of these elements are described in this chapter.

8. Businesses today navigate a complex and fast-evolving economic and regulatory environment in which they continuously arrange and re-arrange their legal structures through principal and outsourced business functions facilitated by an ever-changing technological production environment. This business environment is increasingly dominated by international trade in goods and services and cross-border legal ownership relationships between businesses, where underlying transactions are often identifiable only in relation to the enterprise. Indeed, in today's global and digital economy, business operations of production, investment, ownership, and finance require an integrated approach at the enterprise level to optimize the domestic and international business operations.

9. Businesses not only play a crucial role in economic development, but they also impact individuals, the environment, and society through various channels. Namely, businesses have a direct impact on individuals through their role in job creation, hiring practices, and wages and benefits they provide. For employees, this also includes aspects of well-being like work-life balance, mental health, a sense of purpose and subjective well-being. Businesses can also affect various dimensions of the well-being of consumers. They impact the environment and society through their production activities, employment creation, energy use and emissions, research and development, investments in green technology, payment of taxes, and monitoring the sustainability of their activities.

10. Many users now seek statistics on business activity that are multi-dimensional in nature, such as measures of the social and environmental impacts of business activity. These new users' needs challenge the scope of business statistics and the characteristics of measures of business activity have broadened to include units from the non-profit and informal sectors and measures of

[10] https://unstats.un.org/UNSDWebsite/statcom/session_51/documents/BG-Item3e-Strategic-View-on-Busines-Statistics-E.pdf and also further elaborated in Menghinello S. et al. (2020).

the impact of new technology on entrepreneurial activities and self-employment. Coupled with this is a need for the business statistics community to better measure globalization and digitalization. These trends raise challenges related to, for example, the cross-border fragmentation of business activities, the adoption of new business models, and the way in which these businesses are defined, measured, and classified. These challenges are to be addressed while being mindful of budget constraints and response burden.

11. Traditionally, the production and dissemination of business statistics has been largely designed to focus on relevant industry-level business characteristics, such as employment, turnover, value added, labor costs, fixed investment and related productivity and profitability indicators in support to the compilation of the national accounts. Additional indicators, such as research and development (R&D) expenditure, technological innovation, and ICT usage, mainly focus on technology as a part of the enterprise or the industry's production function. Data quality and timely availability of short-term indicators also play a crucial role in the production of official business statistics.

12. In addition, business and trade statistics need to remain relevant in a new data environment with new and increasingly complex user demands, especially given the increased 'competition' from the emerging data ecosystem offering a wide variety of new data from both public and private entities. Compared to traditional data sources on business activity, these new public and private data sources often have higher granularity but are less often able to meet the quality standards adopted in official statistics. More granular and/or multi-dimensional measurement of business activity and adaptability to the measurement of emerging phenomena were not traditionally considered. With the increasing use of administrative sources and non-traditional data sources (including Big Data) and use of techniques, such as micro-data linking, there is an opportunity to investigate new ways to produce more granular statistics while ensuring the same high-quality standards.

13. For analytical purposes, for example, it is useful to cluster enterprises based on certain characteristics (such as enterprise size, trade characteristics, etc.) so that it becomes possible to understand if a specific phenomenon applies to all enterprises or only to a specific sub-group. For example, the dynamics of small, younger enterprises may be different from those of larger and well-established enterprises; exporting and importing enterprises and enterprises that are part of an enterprise group typically have a higher growth potential than other enterprises because their markets are bigger, or they have greater access to finance or knowledge. For policy purposes, the availability of such breakdowns will be useful to design targeted policy initiatives. More granular business and trade statistics, alternative aggregations and versatile data linking will allow for new and more targeted analysis of policies directed at specific sectors, business activities, geographical areas, or entrepreneurship.

14. In this Manual and for the principal indicators, the term "business"[11] refers to a type of enterprise undertaking market activities. For purposes of the principal indicators, the scope of the structural business statistics is market activities pertaining to ISIC Rev. 4 B-N, P-R, 95-96.[13] The

[11] "Business" is a term used to refer to a type of enterprise, namely a "commercial enterprise" or legal unit with commercial economic activity. United Nations (2020).
[13] Eurostat (2021).

use of enterprise-based approach for business statistics is so that the statistical unit is generally the enterprise. However, this does not explode the use of other statistical units are also relevant for specific purposes. Although the principal indicators have been prepared mainly for structural business and trade statistics, reference to short-term information is made in response to the need for higher frequency indicators. However, the scope, concepts and data sources may differ from those used for the structural indicators. There may also be, of course, a trade-off between timeliness and data coverage and quality.

15. The 2030 Agenda for Sustainable Development provided the overarching framework for the work of the UNCEBTS. The Sustainable Development Goals (SDGs) were adopted by the Member States of the United Nations in 2015 as part of the 2030 Agenda for Sustainable Development, in which the Member States resolved by 2030 "to end poverty and hunger everywhere; to combat inequalities within and among countries; to build peaceful, just and inclusive societies; to protect human rights and promote gender equality and the empowerment of women and girls; and to ensure the lasting protection of the planet and its natural resources," in addition to "creating conditions for sustainable, inclusive and sustained economic growth, shared prosperity and decent work for all, taking into account different levels of national development and capacities."[15]

16. Businesses play an important role to achieve many of the targets of the 2030 Agenda for Sustainable Development. The Task Teams, therefore, focused on the measurement of the contributions of businesses to the SDGs, taking into account the availability of information at the business level (in particular the non-financial reporting of businesses), and the consistency of the information with the existing macro-economic frameworks, such as the System of National Accounts (SNA) and the System of Environmental-Economic Accounting (SEEA), so that the information compiled can also feed into these frameworks.

B. The adoption of an enterprise-centered approach for official business statistics

17. The adoption of an enterprise-centered approach plays an essential role in the strategic view on business and trade statistics. The highly fragmented nature of business statistics, in particular, based upon large scale independent sample surveys and a relatively wide range of concepts, definitions, and classifications, calls for a unifying statistical unit before proceeding to define a feasible and common data production framework. The adoption of an enterprise-centered approach for official business statistics stems from the fact that the enterprise is considered the economic agent with the capacity to decide on all its business activities. The term "enterprise" is the view of an institutional unit as a producer of goods and services (2008 SNA para 5.1). An enterprise is a legal unit (or the smallest set of legal units) producing economic goods and services with autonomy in respect of financial and investment decision-making, as well as authority and responsibility for allocating resources for the production of goods and services. It may be engaged in one or more productive activities.[16] More specifically, typically, the enterprise is the organizational unit of a business that directs and controls the allocation of resources relating to its domestic operations. Within the structure of a business, strategic decision making is typically made

[15] United Nations (2015).
[16] See Glossary for full definition.

at the enterprise level and often the majority of information that is sought through business surveys will be held at this level. This is particularly true for an issue that reaches across all profit centers or establishments of the business. Some examples of this would be information related to exports and imports or e-commerce sales, which would not be allocated to any one particular establishment.

18. However, depending on the type of analysis, other statistical units may be considered. For example, "establishment" is particularly well suited when spatial considerations are important or when analysis on type of activity are carried out. More specifically, for example, data at the establishment level are generally needed in order to integrate business data with environmental data. Also, establishment-level labour force data may be needed to compile some of the principal indicators. It is important to note that the choice of the enterprise as the analytical unit does not mean that the observation unit is also necessarily the enterprise; however, it does require that the observation units and the collected data can be consolidated and aggregated to provide a view of the enterprise.

19. The enterprise has to navigate a complex and fast-evolving environment which is increasingly dominated by international trade in goods and services and cross-border legal ownership relationships between businesses, where underlying transactions are often identifiable only in relation to the enterprise. In today's global and digital economy, the business operations of production, investment, ownership, and finance require an integrated approach at the enterprise level to optimize the domestic and international business operations. Additionally, many areas of policy interest, such as R&D, adoption of new technologies, and orientation towards green investment, etc., can only be measured at the enterprise level where decisions for such strategic work takes place. Therefore, the enterprise has become the common statistical unit for data integration on business activities in today's global and digital economy. As such, the SBR should contain the appropriate characteristics of the enterprise as a statistical reference unit and delineate the relationships between the different statistical units to guide the choice of the observation and reporting units.

20. The enterprise-centered approach addresses the following methodological and conceptual aspects (see Menghinello et al. 2020):

> (a) data integration within the business sector: the enterprise serves as the statistical reference unit for data integration processes and for the assessment of data quality across different statistical domains related to production, employment, trade, investment, finance, and ownership. Sound data linking processes between two or more data sources is based on the enterprise as a reference unit using a core set of characteristics of the enterprise in the SBR. this core set of characteristics, linked to the concept of the "spine" of the SBR, is the minimum set of information required to link two sets of data, which will often be an identifier the enterprise is considered as the reference unit for data integration. In addition, the inconsistency between variables related to different data sources after data integration (e.g., the link between business characteristics, the export values and product details) is usually resolved when managed at the enterprise level.

(b) setting priorities: it allows for the identification of enterprises with the highest impact on national business-related statistics in order to prioritize their data collection and quality control. Even in developing countries, while the availability of a limited number of units in the SBR can result in partial coverage of the economy, the quality of the data collected can still be high for national business-related statistics if the quality and coverage of leading businesses resident in the country are assured by automatic or manual quality checks.

(c) linking relationships between units of the enterprise: it describes the link between statistical units of the enterprise and provides the key to scale up or scale down business-related information according to a well-defined set of statistical units, such as establishment, enterprise, enterprise group, and MNE. In particular, the inclusion in the SBR of other statistical units, such as local units (establishments) or enterprise groups will allow for both a horizontal (across variables) and vertical (across units) coherence from micro data up to aggregated figures. This coherence will guarantee the production of high-quality and fully consistent business statistics across statistical units.

(d) ensuring data quality, consistency, and coherence: it provides the possibility to more easily detect and correct major bias in the data by comparing different data sources on an enterprise's business operations related to production, trade, employment, finance, and ownership. It facilitates the integration of information that is normally collected at the enterprise level (such as R&D expenditure, ownership, innovation, and balance sheets) with production, income, and expenditure data, which are collected at the establishment level.

(e) facilitating data exchange and sharing arrangements: it provides a better opportunity for NSOs and international organizations to collect, share and analyze enterprise- level information to address asymmetries and thereby ensure global coherence of cross border transitions and positions.

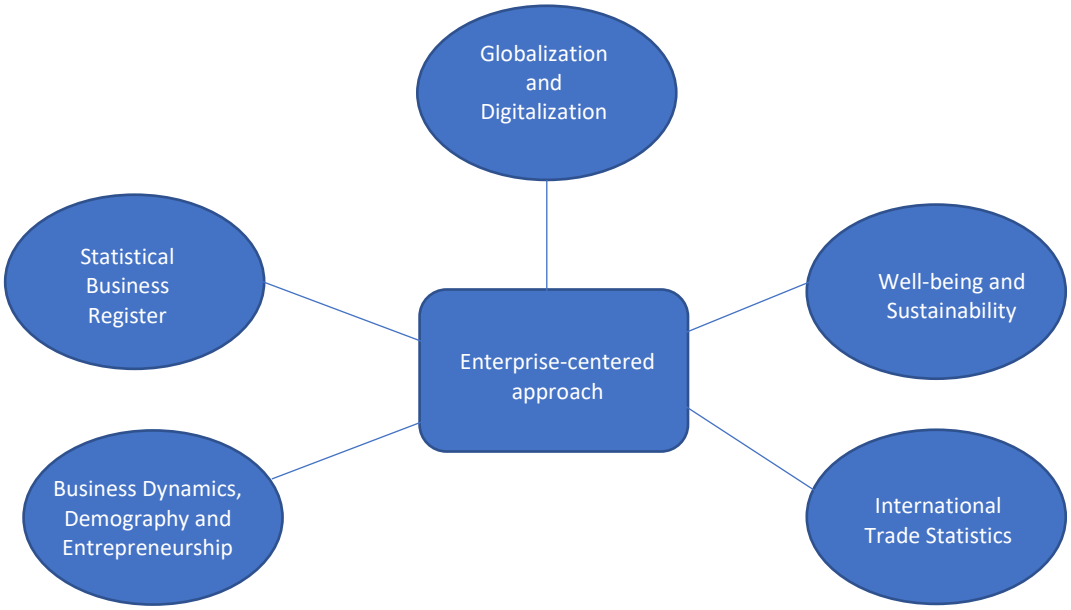
(f) monitoring of legal structures of enterprises: with the choice of the enterprise as statistical reference unit created from legal units in administrative registration records, it allows for a better monitoring of relatively rapidly changing legal structures of enterprises, as well as their evolution.

(g) linking micro and aggregated data; it provides a fully consistent data production framework to fully exploit the information content of micro-data in the SBR for the dissemination of new outputs through aggregation of micro data.

21. It should be emphasized that the proposed approach for official business and trade statistics does not aim to affect the standard definitions of statistical units or traditional classification schemes. The adoption of an enterprise-centered approach and the strong focus on a specific set of thematic areas for the enterprise as the statistical reference unit has broadened the description of the enterprise as a statistical analytical unit in business and trade statistics, as shown in Figure 1. Indeed, the traditional definition of an enterprise in official statistics as an economic agent exclusively oriented in making profit, dominated by domestic and local business operations, and

characterized by a high degree of homogeneity in the use of industry-specific inputs and technology, is to be revisited.

Figure 1 – Five thematic areas for the business and trade statistics program led by the United Nations Committee of Experts on Business and Trade Statistics (UNCEBTS)



22. By and large, the diverging patterns in both the organization and the economic performance of businesses included in the same industry warrant a review of the traditional assumption of the existence of a representative business activity classified by its production process. Additional characteristics of business activity must be identified for the measurement of the heterogeneity in business structure and performance by official statistics.

23. Moreover, the pervasive role of MNEs (led by a controlling unit) as dominant actors in the domestic and globalized economy warrants a reconsideration of the traditional role of the enterprise as the controlling unit of business behavior and the establishment (or local unit) as the place where the production-related decisions are made. For instance, the controlling unit of the enterprise group is defined in different ways in different contexts (e.g., ultimate controlling institutional unit; global decision center; and holding company, etc.) and it is the economic entity that takes most of the strategic decisions, while enterprises that are not responsible for operating the business lines of the enterprise group hold limited decision capabilities. In contrast, local industrial establishments may substantially differ from each other in terms of type of products produced, technology used and geographical market orientation, and may have a degree of operational autonomy.

24. In addition, there is increasing policy interest in the role played by start-ups in job creation and innovation, particularly among rapidly scaling-up enterprises. It is increasingly acknowledged that national policies and market conditions can have strong impacts on the formation and success

rate of start-ups and scale-up enterprises. The UNCEBTS acknowledges that more granular data on the relative growth and productivity and innovation among start-ups is of high policy relevance and this area, as well as entrepreneurship more broadly, is part of the future planned work program of the task team on Business Dynamics, Demography and Entrepreneurship.

C. The SBR as the core of the new data production framework for official business

25. The SBR plays a crucial role in official statistics. It provides the frame to identify the target population for business surveys, to select the sample of units under investigation, and to gross-up the sample of survey respondents. However, with a few limited exceptions, such as in the case of business demography indicators, NSOs have usually given little attention to the SBR as a direct source of information to produce business statistics. Indeed, the SBR contains some highly desirable characteristics for data dissemination, given its exhaustive nature and high level of coherence of information on business units. Because SBRs are not constrained to survey-specific sample designs, the information included therein can be disseminated with a high degree of granularity (such as breakdowns by industry, location, and enterprise size), reclassified ex-post according to non-standard classification schemes, and consistently integrated with other data sources. In addition, the establishment and maintenance of SBRs increasingly rely mainly upon administrative or fiscal data sources, which reduce the response burden and lowers the data collection costs as compared to survey collection.

26. As a result, the SBR can play a pivotal role in the process of data integration with different and multiple data sources by generating new information with the desirable characteristics described above. Appropriate micro-data linking methodologies based upon unique identifiers could be applied to produce consistent information scalable from micro to aggregated figures. The Linked Employer Employee Data (LEED) approach,[17] in which business micro data is being linked to jobs and other social statistics, is an example of data linking between statistical business and household units.

27. However, the ability of the SBR to easily generate consistent and extended data sets through data linking crucially relies upon successful matching of micro data sources that hold similar characteristics. An example is the linking of SBRs with census-like administrative data sources that have been harmonized for statistical definitions of the statistical units and variables. In addition, the SBR can be linked with other company lists or registers, such as the list of exporting and importing enterprises from customs records as demonstrated by the production of trade by enterprise characteristics statistics (TEC) in many countries.

28. Provided that there is sufficient investment and funding in an SBR, innovative approaches can be developed to fully exploit SBRs to enhance data integration, such as using a spine model consisting of the minimum set of information required to link two sets of data (which is usually an identifier). The integration of business registers at the global level, while taking into account confidentiality constraints of the information in the SBRs, will also be explored for the development of global registers, such as the Global Groups Register (GGR)[18] developed by

[17] See, for example, Eurostat (2021a).
[18] https://unstats.un.org/unsd/business-stat/GGR/

UNSD[19] and the Analytical Database on Individual Multinationals and Affiliates (ADIMA) developed by OECD,[20] which are registers of the world's largest MNEs built solely on publicly available sources (such as the Global Legal Entity Identifier Foundation,[21] companies' annual reports, corporate websites, etc.) and with no confidential data input from NSOs, containing the legal structure of the MNE, namely their affiliates and subsidiaries, together with their location, and the detailed types of relationship between the MNE head and its affiliates.[22] The concepts and methods for the profiling of the MNEs will continue to be improved under the guidance of the UNCEBTS. Moreover, the European Union's initiative on the EuroGroups Register[23] is an example of microdata exchange (including confidential data) between national SBRs (based on Regulation of the European Parliament and the Council 2019/2152). The concepts and methods for the profiling have been laid out in the European Business Profiling recommendations manual.[24]

29. In order to improve the quality and granularity of business and trade statistics, and to understand the increasingly complex role of businesses and MNEs in global production and employment, it is necessary to develop more efficient ways of producing statistics. Such strategies include microdata linking (MDL); profiling large and complex MNEs; and data sharing or data exchange. MDL, or the combining of micro-data on entities, such as enterprises, jobs, and persons, not only reduces respondent burden, but also supports analysis of both business and employee characteristics and can help in answering questions on job dynamics, income, and welfare.

30. Furthermore, to ensure meaningful and correct measurement of global production and trade, many NSOs are considering how to improve data specifically on large and complex MNEs. At the national level, Large Case Units (LCUs)[25] are increasingly being established in NSOs to improve the quality, consistency, and coherency of data on MNEs by coordinating data collection and compilation, ensuring data consistency across all data sources, and building client relationships with the respondent MNEs. For producing statistical data related to MNEs the use of new and innovative data sources for reducing statistical burden and cost to NSOs including direct data collection from MNEs, an improved legal framework and more intensive use of administrative data should be supported.

31. High quality business statistics depend on high quality SBR. The Committee recognizes the strategic role of SBRs for the production of business statistics and established dedicated task teams to advance the conceptual and practical development of SBRs since its inception. The task team on exhaustive business registers and the task team on capacity building on SBR (none left behind) developed a maturity model for SBRs[26] as a tool to assist countries to identify areas for improvements for their SBRs. The task teams have further developed an assessment of the

[19] The United Nations Statistical Commission at its 46th session in 2015 endorsed the creation of a global register of MNE groups to improve the understanding and the measurement of international trade and globalization statistics. United Nations (2015a).
[20] https://www.oecd.org/sdd/its/statistical-insights-the-adima-database-on-multinational-enterprises.htm
[21] https://www.gleif.org/en/.
[22] It is noted that public data on legal structures of MNEs that do not consolidate the legal entities may be insufficient for use in SBRs.
[23] https://ec.europa.eu/eurostat/web/statistical-business-registers/eurogroups-register
[24] Eurostat (2020).
[25] For more information LCUs, *see* United Nations Economic Commission for Europe (2015).
[26] United Nations (2021a).

implementation of SBRs in countries to identify gaps and support the development of training material to address these gaps. In 2023 the two task teams were merged into one task team on Statistical Business Registers.

Exchange of micro-data

32. Bilateral exchange of business micro-data between NSOs and possibly with other producers of official statistics would be another way forward in improving the understanding of business dynamics and the operations of MNEs at the global level. While data sharing of micro-data at the international level has proven to be limited due to strict privacy and confidentiality laws, there are ongoing initiatives to make progress in addressing data sharing issues across countries, such as the G-20 Data Gap Initiative (DGI) and *UNECE Guide to Sharing Economic Data*.[27] At the European Union level, the EuroGroups Register[28] is used to exchange microdata between national SBRs of EU countries according to the provisions of the European Regulation 2019/2152. Most business statistics-related projects to compile internationally comparable statistics to date have utilized "coordinated MDL" or "distributed microdata research", which requires central coordination of the database construction, analysis and publication, respecting subsidiarity and national legislation. In any event, shared data or central coordination of databases often requires resources to re-format the data into a usable format.

33. One possible way to address the legal obstacles associated with data exchange in the short term is to sign memorandums of understanding (MoUs)[29] to facilitate exchange of data. Longer-term, countries can draft legislations that amend the treatment of data confidentiality. For example, it would be useful to consider an exemption to data confidentiality to allow exchange of business-level data that are already made publicly available by the respondent itself, perhaps in published annual reports or filings with financial regulators, if the data meet the statistical definitions. These public data could then also be exchanged freely among NSOs and/or consolidated by international and regional agencies. Such data exchange would be a critical step towards assuring the overall quality of the macroeconomic aggregates and business statistics produced by a country at national and sub-national/regional level.

Data sources

34. The characteristics for business information can be depicted as a three-layered framework. The bottom layer consists of *micro data*, not least of which the Statistical Business Register as the backbone, and – depending on national circumstances – also central, geospatial-enabled registers on persons, buildings, and dwellings. This layer also contains *primary and secondary data*

[27] United Nations Economic Commission for Europe (2015a).

[28] https://ec.europa.eu/eurostat/web/statistical-business-registers/eurogroups-register

[29] Memorandum of understanding (MOU), a service level agreement (SLA), or similar arrangement can be used to formalize, in a less binding arrangement, to formalize the cooperation between institutions to access administrative data. These MOUs generally cover data flows, metadata, communications, protection of the confidentiality, and often a clause that ensure that the NSO will be informed in advance of any changes made to administrative process that will affect the resulting data.

obtained from statistical surveys and censuses, data from administrative records accessible for the NSOs, Big Data and other data sources, including companies' annual accounts – preferably in XBRL (eXtensible Business Reporting Language) format, the open international standard for digital business reporting.[30] With the use of unique identifiers for persons, business entities, and locations, respectively, micro data on social, economic, and environmental phenomena can be linked for the compilation of statistics on the inter-connected phenomena of sustainability and well-being. The middle layer consists of *statistics;* i.e., aggregate (or tabular) business statistics produced according to international standards to ensure integrity and international comparability. The upper layer consists of the macroeconomic accounting frameworks, which ensures overall coherence across sectors and from which key indicators like GDP are compiled.[31]

35. Obviously, this way of describing and organising an integrated information framework is non-prescriptive. The possibilities will vary considerably due to national traditions and circumstances, including the availability and access to records from public administration and Big Data from private data holders, and the level of integration in the global economy and the digitalization of society.

36. As mentioned above, business surveys and related administrative data are major data sources for the measurement of the corporate sector in national accounts. For ease of reporting by the businesses, the collection instruments should be aligned with the business accounting practices of the country of residence. Although the principles of the business accounting standards are aligned with the System of National Accounts via the International Accounting Standards (IAS), differences remain as the two standards serve their own purpose of measuring the performance of business operations and national economic activity. Data collected through statistical business surveys already facilitate the transformation of information from business accounts into national accounts because the business accounting reports on the income and expenditure statements and balance sheets may not be sufficiently detailed for the transformation into national accounts. For instance, the main elements in the transformation of business accounting information in the national accounts are:[32] a) the adjustment for the valuation in basic prices in national accounts by removing the (sales) taxes and subsidies on products in the business accounts; b) the adjustment for the treatment of expenditure items such as the intermediate consumption of insurance services in national accounts and the current expenditures on gross insurance premiums in business accounting; c) the adjustments for exhaustiveness in national accounts correcting for underreporting or non-reporting by businesses; and d) the adjustments for the treatment of holding gains in revaluation accounts in national accounts and the treatment in current account in business accounts due to the use of historical prices for the sale of assets or the use of raw materials from stocks.

37. Progressively, a high degree of consistency between business accounting reporting and official statistics should also be pursued with the emerging international accounting standards on

[30] XBRL is an XML standard, which is maintained by XBRL International, a non-profit consortium of approximately 600 member organizations, companies, and government agencies around the world. It is available free of license fees and is being used in more than 50 countries. https://www.xbrl.org/
[31] Olsen et al., (2020).
[32] United Nations (2000).

non-financial reporting for enterprises, i.e., on environmental, social, and governance (ESG) disclosures.

D. Work streams of the UNCEBTS

38. Given the very broad and highly diversified new demand for business statistics, high-priority areas for the global programme on official business statistics were identified to advance its methodological work on international standards based on current best practices. These high-priority areas reflect the new information needs across many initiatives, such as the 2030 Sustainable Development Agenda, and the new types of analyses conducted by users, who increasingly bypass official structural business statistics and either gain direct access to micro-data or seek access to private data sources.

39. When first established, the Committee identified the following work streams: Globalization and digitalization; Well-being and sustainability; Business dynamics, demography, and entrepreneurship; Exhaustive business registers; and Capacity building for statistical business registers, the latter two of which were subsequently merged into one work stream on SBR. In 2020, the Committee decided to also include International Trade Statistics, in recognition of the important interconnections between business and trade and the need to develop an integrated programme on business and trade statistics.

40. These areas aim to address a large share of new users' needs, both at global and national levels. For each thematic area, a task team established, consisting of members from a diverse set of countries (and international organizations) that have vested interests in developing new and responsive business and trade statistics, that defined a work programme. Each task team represents a country-led workstream based on agreed Terms of Reference.

41. In general, the criteria used for the selection of the indicators are: policy relevance, measurability (including possibilities for the collection of meaningful data – directly via surveys or indirectly via administrative registers and records), assurance of accuracy and quality, and international comparability.

42. An enterprise-oriented perspective is taken for the compilation of the indicators, but there was a conscious effort to ensure the coherence between macroeconomic statistics and business statistics obtained from business surveys and/or reporting and auditing. In both spheres, there is a rapid and rich development of emerging standards for capturing the dynamics of business developments in a broad sense – i.e., environmental impact and social responsibility, as well as financial results – and the information needed for public debate, policy-making and regulation to keep up with these developments. Ideally, the development and implementation of the new standards from the two spheres should cross-fertilize each other and go together with the utilisation of new digital data sources, including Big Data.

43. The Committee also took a forward-looking approach to selecting the principal indicators, with the dual purpose of identifying policy-relevant indicators and taking into consideration the data availability and capacities of both developed and developing countries, leaving no-one

behind. This approach applies to the scope of the indicators but also to the detail and breakdown by industry, size, and other characteristics.

i. Business Dynamics, Demography and Entrepreneurship

44. The thematic area of Business Dynamics, Demography and Entrepreneurship reviews the relevance of traditional breakdowns, which are based on industry, enterprise size and territorial location, in explaining differences across businesses in birth, death and high-growth rates. This priority area considers a set of indicators for better understanding entrepreneurship, business demography and business dynamics, in support of the analysis and monitoring of policies that encourage entrepreneurial activity and assess the impact of policy initiatives on economic activity and its impact on jobs.

45. Like the other priority areas, the area of Business Dynamics, Demography and Entrepreneurship emphasizes relevance (for economic analysis and policymaking), measurability, and international comparability for a proposed set of internationally agreed-on business statistics and indicators. With the emphasis on the evolution of individual businesses over time, granularity, and distributional information, this priority area aims to set the basis for introducing appropriate cross-sectional groupings of business units beyond the traditional groupings by size and economic activity. It builds on (and motivates greater up-take of) existing exercises, such as around measures of high-growth businesses, births, and deaths by extending these towards new business characteristics, for example foreign-owned start-ups, independent start-ups, born-global start-ups, innovative start-ups, etc. The approach recognizes the scope to identify, and mainstream, new characteristics in SBRs (which can also help generate better stratification variables for business surveys) and also the considerable scope to add these links (and indeed to generate data) through linking across statistical business registers and data sources.

46. The approach followed for the selection of the set of indicators in this priority area considers business demography as the center of the analysis for producing statistics on entrepreneurship and business dynamics; thus, the indicators are not separately presented by dynamics, demography, and entrepreneurship, but rather reflect one overarching priority area. The approach is mainly based on the UNECE's Guidelines on the Use of Statistical Business Registers for Business Demography and Entrepreneurship Statistics (2018) and the Eurostat-OECD Manual on Business Demography Statistics (2007). It is important to note that the principal indicators for this priority area do not cover the entrepreneurial activities related to innovation (see Oslo Manual[33]) and the use of ICT; however, some of these indicators are covered by other priority areas.

47. Additionally, the indicators in this priority area were heavily informed by the Eurostat-OECD entrepreneurship indicator programme (EIP)[34] and are in line with its concepts, definitions, and the methodological guidelines. The EIP aims to develop a list of indicators and standard definitions and concepts to facilitate the collection of statistics on entrepreneurship and to capture

[33] OECD-Eurostat (2018).

[34] Eurostat-OECD entrepreneurship indicator programme. https://ec.europa.eu/eurostat/web/structural-business-statistics/entrepreneurship and https://www.oecd.org/sdd/business-stats/theentrepreneurshipindicatorsprogrammeeipbackgroundinformation.htm.

the multifaceted phenomenon of entrepreneurship and its different aspects, such as entrepreneurial performance and its determinants and impacts.

48. The compilation of these indicators is very much based on the assumption that countries have established a comprehensive up-to-date SBR that can be used to track business demographic events. Sample surveys can also be used to trace many demographic events but, for example, the death of an enterprise is difficult to confirm through a randomized survey. The information should also be broken down by relevant characteristics of businesses, e.g., economic activity (i.e., ISIC), as well as by other characteristics, such as enterprise size and ownership structure and trading status, among others, to facilitate economic analysis and decision-making.

49. In terms of *business dynamics*, while the total number of enterprises within a business segment may remain stable, this business population can contain significant heterogeneity in the dynamic nature of the business environment. Indicators that measure the scale of demographic events (birth, death, etc.) may provide additional insight into the process of creative destruction and its impact on employment and productivity. In turn, the absence of demographic events may indicate that there are no external factors influencing that a particular business segment. The main variables related to business dynamics are entry and exit of enterprises; creation and destruction of jobs in incumbent enterprises and new enterprises, as well as reallocation of jobs in both cases.

50. *Business Demography* statistics refer to statistics on "events like births and other creations of units, deaths and other cessations of units, and their ratios to the business population." This includes following units over time, thus gaining information on their survival or discontinuity. It also covers development over time of certain characteristics, like size, thus gaining information on the growth of individual units, or a cohort of units, by type of activity" (Eurostat and OECD, 2007)."[35]

51. The demography of enterprises can be assessed by studying enterprise births and deaths, and by examining the change in the number of enterprises by the type of activity; i.e., examining the flows and stocks to have a complete picture of enterprise dynamism and the impact of businesses on employment and productivity.[36]

52. A *demographic event* is defined as an event that has an impact on the existence of a statistical unit, or on links between statistical units. A demographic event is based on changes in the existence of production factors, or in their distribution, within and among statistical units. It may involve the continuity (survival) of a unit over time or its discontinuity (death). It may also be accompanied by changes to the values of certain characteristics, such as size or type of economic activity.[37]

53. Important events are: a) birth of a statistical unit, which is an independent event affecting only one enterprise in the population of active enterprises involving the creation of a new combination of factors of production; b) death, is the independent event affecting only one enterprise, which involves the dissolution of the combination of factors of production; c) survival,

[35] UNECE. (2018). Eurostat – OECD (2007).
[36] UNECE (2018).
[37] UNECE (2015).

refers to when a unit is active and identifiable, both before and after a specific (business) demographic event. Mergers, acquisitions, spin-off events need specific treatment.

54. Business demography includes the main characteristics of the statistical unit such as economic activity, size, employment, turnover, location, and legal form; together with the characteristics of the enterprise, it provides useful information for statistical development.

55. In addition to the analysis on births, deaths and survivals, a further focus of business demography is the identification of enterprises that have relatively high growth and are therefore intensively contributing to the overall employment growth.[38]

56. It should be noted that R&D (knowledge and activities), innovation activities, and enhanced human capital (education, skills) normally contribute to economic growth. New technologies, including ICT, can improve products and business processes provided that (human) knowledge is available and that the enterprise decides to undertake the necessary innovation activities.

57. Business dynamics traditionally focus on the analysis of businesses demography and their impact on productivity and employment in a (sub-)sector. The principal indicators presented in this manual also take into account additional factors that affect demographic events of enterprises, such as globalization, digitalization, type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) and trading status according to the proposed breakdowns.

58. Finally, considering *entrepreneurship*, the task team follows the Schumpeterian approach according to UNECE's Guidelines,[39] which considers that entrepreneurship contributes to the generation of value, through the creation or expansion of the economic activity, identifying and exploiting new products, processes, or markets by employing the use of resources (access to capital, R&D, and technology) and opportunities (market conditions). A second mechanism known as *creative destruction* is also at work. This process is itself a driver of economic growth. New businesses entering the market displace obsolete businesses, and the business dynamics of entry and exit contribute to productivity dynamics and eventually to economic growth. The process of *creative destruction* can be measured through the demographic events (birth, survival, death) of enterprises. This is the object of study of business demography.

59. In this regard, this manual builds on the Eurostat and OECD definition of entrepreneurship below:[40]

> *Entrepreneurial activity* is enterprising human action in pursuit of the generation of value through the creation or expansion of economic activity by identifying and exploiting new products, processes, or markets.
>
> *Entrepreneurship* is the phenomena associated with entrepreneurial activity.

[38] UNECE. (2018).
[39] UNECE. (2018).
[40] Ahmad, N. and R. Seymour (2008).

60. Under ILO's perspective, *entrepreneurs* are persons who own and control an enterprise and seek to generate value through the creation of economic activity, by identifying and exploiting new products, processes, or markets. In doing so, they create employment for themselves and potentially for others. In this regard, entrepreneurs represent a subcategory of *independent workers*[41] and include both own-account workers and employers in both incorporated and unincorporated enterprises.

61. Entrepreneurship provides statistical information on the entrepreneurial activity and performance of the businesses. While entrepreneurs are particularly important for the success of small businesses, entrepreneurial activity of all businesses irrespective of size is important for its survival and long-term contribution to economic growth. R&D and innovation, human resources (education and skills), access to finance, infrastructure (transport, internet access, etc.) are all elements that that contribute to entrepreneurship.

ii. Globalization and Digitalization

62. The thematic area of Globalization and Digitalization explored an integrated approach to the measurement of globalization and digitalization based on newly emerging global and national business models enabled by digital technologies and facilitated by global digital standards and intermediaries and global ICT infrastructure and operators. Historically, technological innovation has been a key enabler of globalization, especially the development of new transportation technology, such as aircraft and containerisation, and innovations in communication technology, including telecommunications and micro processing. More recently, the rapid growth of the Internet and computing technologies (such as Big Data and new ways of using such data, Artificial Intelligence, smart phones, cloud computing and the Internet of Things) have further propelled the spread of globalization.

63. The phenomena of globalization and digitalization have become increasingly inter-dependent. MNEs not only increasingly account for the lion's share of international trade, but also play a crucial role in the internationalization of technology as they are among its largest investors and consumers. Digitalization also enables small and medium enterprises to be more competitive, have access to global markets and create jobs. Additionally, in a globalized and digitalized world, where the production process is fragmented internationally and businesses can operate digitally from anywhere, traditional notions of industries and physical locations of businesses are becoming less relevant. Business statisticians are increasingly asked to produce business statistics that allow for a deeper understanding of the interlinkages between digitalization and globalization as policymakers are increasingly challenged with measuring the impact of digitalization and globalization on business activities and, in turn, their impact on society and the environment. In fact, using traditional aggregations of enterprises by standard industrial classifications has in some ways fueled the debate around mismeasurement of these phenomena.

[41] The International Classification of Status in Employment (ICSE-18) introduces the category of independent workers, who are those employed persons who own and control an economic unit for which they work, whether it is incorporated or not.

64. The priority area on Globalization and Digitalization acknowledges a converging pattern to define a common and integrated measurement framework in which the role of the multi-national enterprise (MNE) is recognized. Traditionally, globalization and digitalization are investigated by analysts and official statisticians as independent themes, whereas this priority area explores a more integrated approach of the measurement of globalization and digitalization based on the emerging dominance of global and national business models. These new business models reflect the integration of global and national business activity facilitated by global digital standards and intermediaries and global ICT infrastructure and operators.

65. Globalization and digitalization can be viewed as two sides of the same coin, meaning that advances in digital technologies have certainly allowed the connection between distant places. Similarly, the need to increase the reach of businesses fosters the use and adoption of digital technologies. While they have often been looked at separately, it is useful to see how globalization and digitalization together impact businesses and, ultimately, society and the environment. For example, does digitalization have a different impact on the competitiveness of global businesses relative to domestic businesses? How has digitalization enabled a globalized financial sector and global trade in goods and services? How has digitalization affected cross-border production arrangements? And how has globalization contributed to the increase in capital and technology intensity at the expense of labor intensity?

66. While the UNCEBTS acknowledges that this is still an evolving area, several statistical frameworks have already been proposed by NSOs and international and regional organizations to measure policy-relevant aspects of digitalization and globalization. For instance, most recently, the G20 Digital Economy Task Force developed a "Roadmap toward a common framework of measuring the digital economy,"[42] which proposes a common agreed definition of the Digital Economy and a set of existing indicators for measuring the Jobs, Skills, and Growth in the Digital Economy and proposes a clear step forward for Digital Economy measurement. Other measurement initiatives include the OECD-WTO-IMF Handbook on Measuring Digital Trade[43] and UNCTAD's Manual for the Production of Statistics on the Digital Economy.[44] Moreover, the framework of Digital Supply and use tables[45] focuses attention on new sub-categories of industry and product types within the National Accounts Supply-Use framework to make the Digital Economy more visible in macro-economic statistics. Similarly, a framework for GVC Satellite Accounts[46] was elaborated to provide a national approach to the compilation of GVC-specific supply and use tables and related institutional sector accounts. Also, the OECD and WTO Trade in Value-Added database was developed on the basis of a global Inter-country Input-Output table (ICIO) to measure the impact of globalization.

67. The task team has incorporated the policy dimensions related to digitalization that are reflected in the OECD "Going Digital Toolkit,"[47] which include: access to communications infrastructures, services, and data; use of digital technologies and data; innovation; jobs; society;

[42] OECD (2020).
[43] OECD-WTO-IMF (2020).
[44] UNCTAD (2020).
[45] UN (2019).
[46] UN (2019a).
[47] https://goingdigital.oecd.org/en/

trust; and market openness.

68. This priority area addresses the main question of how business and trade statistics can better reflect these complex and evolving phenomena which change how and where businesses operate, how people live and work and how government, businesses, and people interact, in order to better inform policymakers on their effects and ultimately to support inclusive economic growth and sustainable development.

69. In identifying the principal list of indicators, the task team took into consideration existing measurement frameworks and guidance on globalization and digitalization, such as the set of indicators proposed by the G20 Digital Economy Task Force,[48] the core indicators developed by the Partnership on Measuring ICT for Development, the statistics program of the International Telecommunications Union (ITU),[49] the UNCTAD Manual for the Production of Statistics on the Digital Economy 2020,[50] digital supply-use tables, and indicators on globalization, such as trade in value-added and GVC satellite account frameworks. These indicators cover both the enablers and impacts, as described below.

a) The "Enablers" of globalization and digitalization

70. Enablers include elements that foster and enable the digitalization and globalization of business activity. They include the infrastructure underlying globalization and digitalization, such as: technological innovation (especially in digital technologies); investment in R&D; access to and use of communications infrastructures, services, and data; security of digital infrastructure; and market openness, etc. The enablers also include the regulatory frameworks which can either enable or impede progress in these two areas. Liberalizing trade rules and deregulating markets (to reduce or eliminate barriers to trade in goods and services, labour, and capital) can have an immense impact on international trade and investment flows. In addition, participation in the digital and globalized economy is facilitated by the availability of a domestic workforce which has the relevant skills (i.e., not only technical skills, but also soft skills, such as managerial skills, foreign-language skills, etc.). And likewise, digitalization facilitates the participation of businesses in global value chains (GVCs) and access to foreign direct investment (FDI).

71. There are various enablers behind the digital transformation and, in order to provide a set of comprehensive measurements for informing decisions, it is important to measure the availability, evolution, access to and take-up for these enabling elements. For the purpose of developing comparable indicators, it is important to focus on a few key pieces of infrastructure, such as broadband and internet and a set of indicators which are already compiled by many NSOs[51] and for which developing countries could also provide estimates. Furthermore, as in the case of the identification of the digital economy, these could be considered principal indicators, with others being added as extensions. The principal indicators would provide a common benchmark for all countries.

[48] OECD (2020).
[49] United Nations (2020a).
[50] UNCTAD (2020).
[51] OECD (2018).

72. Innovation is the driver behind the digital transformation and enables many businesses to have a global reach. Business expenditure on R&D, the extent of government support for research and innovation, and the number of patents are all indicators of the extent to which innovation is valued and monetized by businesses

73. Security and trust are challenges that have been brought about by the creation of large amounts of sensitive information as well as by the phenomenal number of digital transactions. Businesses are having to identify, mitigate and manage these risks and many have strategies and dedicated resources to this effect.

b) The Impacts of globalization and digitalization

74. The impacts refer to the elements that characterize the effects of globalization and digitalization on businesses, society, and the environment. They include the impact of digitalization on jobs and growth of the businesses, business demography and entrepreneurship, business dynamics and businesses' environmental impact. The fundamental question is how businesses which have access to, and make use of digital technology, perform in terms of their competitiveness, productivity, profitability, market share, international orientation, participation in GVCs, employment, wages, job force training and recruiting. In addition, by looking at the globalization of businesses (in terms of, for example, domestically-owned, foreign-owned, dependence on GVCs or FDI, etc.), one can assess whether digitalization affects businesses that are linked to global markets differently than those that are domestically-oriented.

75. From a policy perspective, digital technologies have become the drivers of modern economies, and advanced and developing countries alike are increasingly seeking to leverage their core competencies and competitive advantages, while filling important gaps to maximize the benefits of the digital economy and prevent or reduce the digital divide (or the gap between those who benefit from digitalization and those who do not, such as those without access to the Internet and other ICTs). Digitalization can also contribute to achievements towards the SDG targets. For example, digitalization can broaden financial inclusion to the poorer population without access to traditional financial services and contribute to the alleviation of poverty by combining mobile devices with Internet access, mobile payments, and new financial instruments in the digital environment. In addition, the use of mobile terminals with access to medical databases and electronic records can provide e-health options for remote or poorly-served communities. And the Internet of Things can provide enhanced monitoring and remote diagnosis, thereby contributing to the goal of "Good health and well-being".

76. Moreover, one of the major questions surrounding globalization and digitalization is their impact on labor markets in both developed and developing economies, not only in terms of overall employment, but also in terms of wages, skills, gender disparities, and job training. In particular, automation of jobs is likely to have a large, long-run effect on the overall number and types of jobs across economies at all stages of development and will require workers to acquire new skills and be more adaptable. Technological access, sophistication and diffusion among all demographic groups and enterprise types also increasingly drive the ability to compete globally and participate in GVCs and can have huge implications for economic development and distributional effects within a region or country.

77. In addition, the regulatory environments in countries will also need to adapt to address new opportunities and risks associated with an ever-increasingly globalized and digitalized world, especially in terms of treatment of cross-border and intangible digital assets and ensuring market openness and competitiveness. And finally, macroeconomic policies, trade policies, financial market regulation and investment policies will increasingly be shaped by the interconnectedness of economies and financial systems, particularly in terms of accounting for increasing shares of imported inputs into domestically-produced goods, economies' participation in and reliance upon GVCs, the increasing importance of foreign direct investment, and contagion risks across cross-border financial markets.

78. The digitization of transactions, the relative ease and low costs of access to the internet, and the availability of digital intermediation platforms, have created a completely new business environment. The line between business and household has been blurred and the opportunities for scaling up quickly and with little capital are expanding. Therefore, indicators of productivity and value added are also key to understanding the impact of digitalization on the ability of businesses to work in a more efficient way.

79. Connectivity, and the globalized markets that it has engendered, have led to radical changes to the type of employment available to job seekers. The mix of skills required and the pace of change in the skills required create new challenges for employers, employees, and policy makers. Further, the ability of economies to meet foreign final demand increasingly determines the evolution of job markets. New business indicators that include breakdowns for firm characteristics such as levels and product mix of exports and imports, type of ownership (domestic or foreign-owned), degree of foreign direct investment, and the activities of foreign affiliates can begin to shed light on these phenomena.

iii. Well-being and Sustainability

80. The thematic area of Well-being and Sustainability focuses on the identification of indicators for the measurement of business contributions to well-being and sustainability. This work is therefore closely tied to the policy needs identified by the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDG) indicator framework. It looks at the link between business activity and corporate social responsibility. It recognizes that businesses play a fundamental role with respect to well-being and sustainability. They have a direct role in ensuring the well-being of its own labour force and an enterprise may extend this upwards along the value chain by selecting suppliers that share the same set of values or principles or downwards by assuming a responsibility for proper treatment of its products after it has been used. It further recognizes that businesses also play an important role in reducing their impact the environment, either directly due to their production processes and their products, or indirectly because they are part of a value chain where other enterprises contribute locally or globally to degrading the environment or depleting it of natural resources. In addition, through research and development and innovation businesses have a unique position to provide innovative solutions for local and global problems.

81. Business statistics on well-being and sustainability is an emerging area and the Committee has developed indicators to provide information to society and to decision makers at country and

business level. Overall, the indicators fall into three groups. The first group include indicators on social issues and are developed in light of the SDG-agenda on "leaving no one behind", urging for policies, including business policies, to ensure equality and an inclusive society for all. The second group includes indicators about the environment, in light of the climate change crisis and the need to monitor sustainable and efficient use of energy and water resources. Finally, a group of indicators address issues on sustainable innovation and productivity which are needed in the business sector, for the SDG goal on sustainable growth to be achieved.

82. Regarding the social issues, the SDGs aim for an inclusive, diverse and non-discriminatory society, including in the business sector. To this end, the Committee has identified indicators on social inclusion in employment; e.g., women's share in managerial positions; salaries disaggregated by men and women within different types of business, and an indicator on unemployment, broken down by sex, age and disability.

83. The indicators on the environment focus on emission of greenhouse gasses from different types of industries, as there is a need for better efficiency and lower-polluting production methods. Further, indicators on energy efficiency and on shares of renewables in energy consumption by type of business are proposed – as most emission is caused by use of energy. Also included are indicators on the sustainability of use of water in the business sector, as water is often a limited resource. Finally an indicator on green investment is included, to reflect businesses' activity in this evolving area.

84. In the economic area, to monitor sustainable growth, an indicator on expenditures and staff in research and developments is included, as innovation is essential for sustainable change. Further, indicators on productivity and growth by groups of industries are included, as efficient business activity is essential for sustainable development. Further, the list also includes indicators on taxes paid to the government by types of business, as mobilization of resources for the society is identified in SDG 17, partnership for development.

85. Importantly, this work built upon a number of initiatives aimed at harmonizing the non-financial reporting of businesses to information on well-being and sustainability - most notably the initiatives of the UN Conference on Trade and Development (UNCTAD), UN Global Compact and the Global Reporting Initiative (GRI). UNCTAD's Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting (ISAR) assists developing countries and economies in transition in the implementation of best practices for accounting and corporate governance with the aim of advancing a minimum set of sustainability indicators for non-financial reporting linked to the SDG indicators.[52] UNCTAD identified a limited number of indicators for company reporting that are linked to SDG indicators, such as on the use of energy and water, carbon dioxide emissions, waste generation and recycling, and human resource management, gender equality and community development, among others. Where relevant, and whenever possible, the indicators on well-being and sustainability (as presented in Annex 1) have largely been based on the corresponding core SDG indicators identified by UNCTAD.

86. Corporate sustainability reporting has been facilitated by the standardization of corporate sustainability disclosures as issued by GRI and others and more data based on results of non-

[52] United Nations Conference on Trade and Development (2020a).

financial issues that will arise in near future. The GRI Sustainability Reporting Standards (GRI Standards) cover topics ranging from anti-corruption to water, biodiversity to occupational health and safety, from tax to emissions from business activities.[53] The GRI Standards are developed following a transparent and multi-stakeholder process and are aligned with widely recognized international instruments for responsible business behavior. In addition, the UN Global Compact calls businesses to commit to align their strategies to universal sustainability goals, through its Ten Principles under four main headings (Human Rights, Labor, Environment, and Anti-Corruption) that highlight different aspects which enterprises should take into account in their operations, which are derived from the UN Guiding Principles on Business and Human Rights,[54] the Universal Declaration of Human Rights,[55] the International Labour Organization's Declaration on Fundamental Principles and Rights at Work,[56] the Rio Declaration on Environment and Development,[57] and the United Nations Convention Against Corruption.[58] In 2017, GRI and UN Global Compact jointly developed an inventory of possible business disclosures per SDG, at the level of 169 targets, which serves as a first step towards a uniform mechanism for business to report on their contribution to and impact on the SDGs in an effective and comparable way.[59] With such standardization in corporate sustainability reporting, company disclosures can increasingly be linked more directly to the SDGs and to non-financial reporting at the business level and the business statistics indicators. Information available at the business level on well-being and sustainability that is consistent with the concepts, methods and quality of the information required for monitoring the SDGs and with the macro-economic accounts is particularly important, as it facilitates the collection of information for national statistical offices (NSO) and reduces the response burden on businesses, especially small and medium size enterprises (SMEs).

87. The principal indicators for Well-being and Sustainability are intended to inform on the contributions of businesses to well-being and sustainability starting from the framework provided by the SDGs and identifying relevant business statistics that can be also linked with the basic information available at business level, in particular non-financial reporting, and that are consistent to the extent possible with the macro-economic frameworks such as the SNA and the System of Environmental-Economic Accounting (SEEA). These indicators therefore contain information that can be collected from businesses (either through direct surveys, but also from secondary sources) and about businesses. The coherence of the information from micro and macro level is key for an integrated and consistent information system.

88. The principal indicators generally follow the economic, social, and environmental dimensions of the SDGs from a business perspective by taking as point of departure the identification of the main indicators in the SDGs where business activity makes a significant contribution or have an important impact. Based on this initial selection, a further selection was made based on an assessment whether the required information can be more easily available at

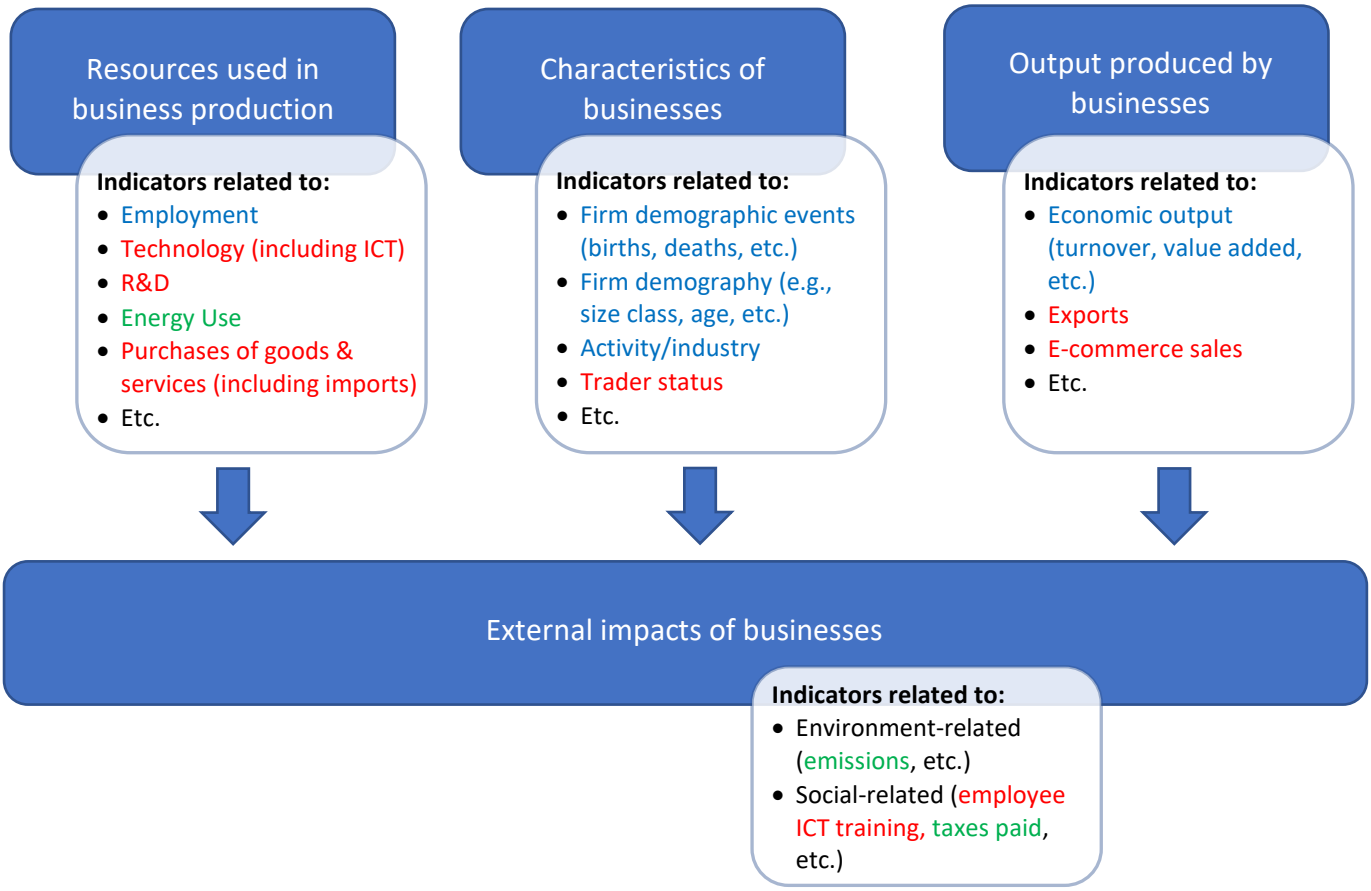
[53] Global Reporting Initiative. https://www.globalreporting.org/
[54] https://www.ohchr.org/documents/publications/guidingprinciplesbusinesshr_en.pdf
[55] https://www.un.org/en/about-us/universal-declaration-of-human-rights
[56] https://www.ilo.org/declaration/lang--en/index.htm
[57] https://sustainabledevelopment.un.org/rio20/futurewewant
[58] https://www.unodc.org/unodc/en/treaties/CAC/index.html
[59] GRI and UN Global Compact (2017). "Business Reporting on the SDGs: An Analysis of the Goals and Targets". https://www.globalreporting.org/media/v5milwee/gri_ungc_business-reporting-on-sdgs_analysis-of-goals-and-targets.pdf.

business level. The indicators broadly address issues of well-being, environmental impact related to energy and water use, and social impact.

89. Figure 2 below presents a schematic of how the indicators identified by each thematic area of the UNCEBTS align with different perspectives of businesses; namely, resources used in business production; characteristics of businesses; output produced by businesses and external impact of businesses.

Figure 2 – Relationship of workstreams to indicators

Blue = indicators related to business demography, dynamics and entrepreneurship
Red = indicators related to globalization and digitalization
Green = indicators related to well-being and sustainability



Chapter 3 The principal indicators

90. This chapter presents the principal indicators for business and trade statistics. It is worth noting again that the current manual focuses on business statistics and selected trade-related indicators. It will be complemented at a later stage with a second volume that will focus on trade indicators and elaborate on the integration of business and trade statistics . Section A elaborates on the delineation and selection of these indicators and Section B presents the list of indicators and includes specific considerations for the compilation of the indicators. In addition, as it is recognized that the compilation of these indicators may require data collection and compilation from different institutions in the country, considerations on the institutional arrangements is presented in Section C. Annex 1 of this manual includes the detail technical sheets for the indicators.

A. Thematic areas and selection of the principal set of principal business and trade indicators

91. The principal indicators for business and trade statistics have been selected to cover the following thematic areas: business dynamics, demography and entrepreneurship; globalization digitalization, and well-being and sustainability. They cover key aspects needed for analysis, research and policy-making in these areas. This set of principal indicators can guide the development of business statistics programmes to address these thematic areas in an internationally comparable manner (using the metadata and methodology from the technical sheets in Annex 1). UNCEBTS has also identified breakdowns for each indicator that may be useful for policy and analytical purposes. These breakdowns are also intended to improve the international comparability of the compilation and presentation of the statistics. The breakdowns are identified in the technical sheets for the indicators (included in Annex 1) and are generally listed in order of relevance or importance.

92. Countries can prioritize compilation of the indicators and breakdowns according to national policy needs, statistical capacity and relevant international and regional reporting requirements. In this regard, it is also recognized that some countries lacking detailed administrative records or SBRs that identify certain types of firms (such as MNEs) will need time, resources and capacity-building activities to develop some of the underlying basic statistics needed to compile these indicators, particularly those on new themes, such as digitization and sustainability.

93. In general, the criteria for selecting the indicators included:

- Policy relevance and addressing existing data gaps
- Measurability and feasibility of compilation (i.e., availability of underlying data sources)
- Assuring accuracy and reliability
- International comparability
- Availability of the indicator at regional or global level

94. More broadly, the selected indicators are aligned with internationally-agreed statistical standards and definitions, to the extent possible.

B. List of principal Indicators for business and trade statistics

95. The list of principal indicators for business and trade statistics is organized according to the priority areas of business dynamics, demography, and entrepreneurship; globalization and digitalization; and well-being and sustainability. For each set of indicators, specific considerations for the compilation of the indicators are presented.

96. The methodological and compilation guidance for the indicators is presented in the technical sheets in Annex 1. The technical sheets include guidance on the following: coverage, classifications, breakdowns, unit of measure, frequency, data sources, and reference material. As indicated previously, the indicators are, to the extent possible, built on existing indicators and therefore their concepts and methods are aligned with those of the existing indicator frameworks and noted accordingly in the technical sheets.

97. In particular, the technical sheets present detailed useful breakdowns for the indicators, generally listed in order of importance and relevance. The list of useful breakdowns is not exhaustive; for national purposes, additional breakdowns may be desirable. For example, breakdowns by gender for relevant indicators would be highly desirable for national policy purposes and for monitoring progress towards the SDGs but is not explicitly included in the technical sheets. Careful considerations about ensuring confidentiality must also be taken into account when applying multiple breakdowns.

98. In addition, these indicators are focused on the business perspective whenever possible; namely, they are based on business surveys or other sources of business data. In practice, this means that when calculating indicators involving value added, for example, the concepts refer to gross value added at factor cost, which is an indicator in the domain of structural business statistics, *and not* the value added as used in national accounts. Or, more specifically, the gross value added at factor cost is the gross income from operating activities after adjusting for operating subsidies and indirect taxes. It can be calculated as the total sum of items to be added (+) or subtracted (-):

- turnover (+);
- capitalized production (+);
- other operating income (+);
- increases (+) or decreases (-) of stocks;
- purchases of goods and services (-);
- other taxes on products which are linked to turnover but not deductible (-);
- duties and taxes linked to production (-).

Alternatively, it can be calculated from the gross operating surplus by adding personnel costs.[60]

99. In the absence of data on gross value added at factor cost, gross value added used in national accounts may be used to compile the indicators.

100. In general, the useful breakdowns identified are by economic activity according to the International Standard Industrial Classification of All Economic Activities (ISIC Rev. 4) at the 2-

[60] Eurostat. *Statistics Explained, Glossary.*

digit ISIC division. Other relevant breakdowns based on the characteristics of the businesses include: a breakdown by legal form (as recorded in the SBR); by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade by enterprise (TEC) and services trade by enterprise characteristics (STEC) statistics); and by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)), if data are available to do so. It is acknowledged that such breakdowns are not always available, either due to data limitations or for reasons of confidentiality.

101. Specific considerations in the concepts and methods for the indicators in each priority area are discussed below.

i. Business Dynamics, Demography and Entrepreneurship

102. The indicators on business Dynamics, Demography and Entrepreneurship are very much based on the Eurostat-OECD programme of business demography statistics[61] and the compilation methods are in line with this programme as well. Therefore, the population of enterprises, unless otherwise noted in the indicators, include employers and non-employers, and active enterprises consists of all enterprises that had either turnover, employment, or investment at any time during the reference period.

Principal Indicators on Business Dynamics, Demography and Entrepreneurship

1. Number of active enterprises
2. Number of enterprise births[62]
3. Employment created by enterprise births
4. Number of enterprise deaths[63]
5. Loss of employment due to enterprise deaths
6. Number of X-year-old employer enterprises
7. Number of persons employed in X-year-old employer enterprises
8. Employment in the population of active enterprises
9. Employment share of enterprise births
10. Enterprise survival rate
11. Number of high-growth enterprises
12. Employment in high-growth enterprises
13. Number of young (up to 5-year-old) high-growth enterprises (gazelles)
14. Employment in young (up to 5-year-old) high-growth enterprises (gazelles)

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[61] Eurostat-OECD (2007).

[62] Birth of an enterprise is characterized by the creation of a combination of production factors with the restriction that no other enterprises are involved in the event. Births do not include creation of entries into the population due to mergers, break-ups, split-off or restructuring of a set of enterprises. It does not include entries into a sub-population resulting only from a change of activity. A birth means the enterprise starts from scratch and actually starts activity. An enterprise creation can be considered as an enterprise birth if new production factors, in particular new jobs, are created. If a dormant unit is reactivated within two years, this event is not considered a birth. Eurostat (2010).

[63] A death of an enterprise refers to the dissolution of a combination of production factors with the restriction that no other enterprises are involved in the event. Deaths do not include exits from the population due to mergers, take-overs, break-ups or restructuring of a set of enterprises. It does not include exits from a sub-population resulting only from a change of activity. Commission Regulation No 2700/98 concerning definitions of characteristics for structural business statistics; see Eurostat-OECD (2007).

15. Labor compensation paid by active enterprises
16. Gross Value Added produced by active enterprises

103. For this set of indicators, it is often useful to include a breakdown by enterprise size, whereby the enterprise size is defined as follows: Micro: 0-9 employees; Small: 10-49 employees; Medium: 50-249 employees; Large: 250+ employees. For the purpose of business demography, a further breakdown of the micro enterprises (i.e., 0, 1-4, 5-9) and small enterprises (10-19, 20-49) would be desirable. It is common for business demography statistics to break down micro and small enterprises and less so medium and large enterprises, as demographic changes more likely occur among smaller firms; but a full breakdown by size class is useful if the data are available.

104. The size classes for the indicators on business dynamics, demography and entrepreneurship are based on the concept of "number of employees". Thus, an enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees, such as the self-employed who work on their own account and do not employ other persons.

ii. Globalization and Digitalization

105. The indicators on Globalization and Digitalization cover a number of indicators covering the enablers (e.g., access to and use of ICT infrastructure; capital investment on ICT; R&D and innovation in ICT as evidenced by patents and trademarks, and ICT-related training, etc.) and the impacts (e.g., on jobs, labour productivity and growth of the businesses, globalization of businesses, and e-commerce sales, etc.).

Principal Indicators on Globalization and Digitalization

17. Total exports of businesses as a percentage of businesses' gross value added
18. Number of trading businesses by number of partner countries
19. Export intensity of businesses
20. Value of trade by foreign affiliates
21. Employment abroad in foreign affiliates controlled by resident enterprises as share of enterprises' total employment
22. Entry and exit rates for the digital economy sector
23. Average post-entry employment growth for the digital economy sector
24. Percentage of businesses with internet connection
25. Capital investment of businesses on ICT as a percentage of total business capital investment
26. Capital investment of businesses on ICT as a percentage of total gross value added
27. Percentage of businesses using cloud computing services
28. ICT-related patents (registered)
29. ICT-related trademarks (as a percentage of total trademarks)
30. Patents in AI technologies
31. Percentage of businesses engaged in sales via e-commerce
32. Value of e-commerce sales by businesses
33. Labor productivity growth in the ICT sector
34. Contribution of ICT sector to labor productivity growth
35. Gross value-added of ICT-related businesses as percentage of total gross value added

36. Employment of ICT specialists as a percentage of total employment
37. Percentage of businesses providing ICT-related training
38. Percentage of enterprises reporting hard-to-fill vacancies for ICT specialists

106. International trade data on goods and services are a vital component of the indicators on globalization. In general, for international reporting it is recommended that the indicators on trade in goods and services data are disaggregated according to the Central Product Classification (CPC) Ver. 2.1.[64] CPC is a part of the international family of economic and social classifications that constitutes a complete product classification covering goods and services. It is intended to serve as an international standard for assembling and tabulating all kinds of data requiring product detail, including industrial production, national accounts, service industries, domestic and foreign commodity trade, international trade in services, balance of payments, consumption, and price statistics. Other basic aims are to provide a framework for international comparison and promote harmonization of various types of statistics dealing with goods and services. Other classifications used for indicators on trade in goods are the Harmonized System (HS) 2017/HS 2022 and the extended balance of payment classification (EBOPS) 2010 for indicators on trade in services.

107. With regard to the indicators on digitalization, a discussion took place on the definition of digital economy for the compilation of the indicators. In this work, the task team followed the definition of the "digital economy" as defined in OECD 2020[65], as follows:

> *The Digital Economy incorporates all economic activity reliant on, or significantly enhanced by the use of digital inputs, including digital technologies, digital infrastructure, digital services, and data. It refers to all producers and consumers, including government, that are utilizing these digital inputs in their economic activities***.**

108. Underpinning this definition are the following tiers, incorporating complementary and mutually dependent elements or perspectives of digitalization in the economy, which would allow countries to scale up and down the extensiveness of the Digital Economy depending on the policy or measurement need.

- The *Core measure* of the Digital Economy only includes economic activity from producers of digital content, ICT goods and services.
- The *Narrow measure* includes the core sector as well as economic activity derived from firms that are reliant on digital inputs.
- The *Broad measure* includes the first two measures as well as economic activity from firms that are significantly enhanced using digital inputs.
- The final measure of *Digital society* extends further than the Digital Economy and incorporates digitalized interactions and activities not included in the GDP production boundary, such as the use of free digital platforms (including free public digital platforms). While these interactions are not explicitly considered part of the Digital economy per se, this activity is important for effective digital policy by government.

[64] United Nations (2015b).
[65] OECD (2020).

- An alternative measure covers all *economic activity that is digitally ordered and/or digitally delivered*. It [can] be considered as an alternative perspective of the Digital Economy, delineating economic activity based on the nature of transactions rather than the firms' output or production methods as this measure focuses on ordering or delivery methods, regardless of the final product or how it is produced.

109. For purposes of the indicators proposed here, to facilitate their broader compilation and international comparability, the core measure of the digital economy is used, which includes only activity from producers of digital content, and ICT goods and services.

110. The Information and communication technologies (ICT) sector, defined in ISIC rev. 4 as output produced by firms that are "intended to fulfil or enable the function of information processing and communication by electronic means, including transmission and display" (ISIC rev. 4). While the production or distribution of ICT products can be found everywhere in the economy, the identification of sectors within the ISIC rev. 4. classification that produce or distribute ICT products as a main activity constitutes a first-order approximation of the ICT sector. Moreover, the activities, or industries, in the ICT sector can be grouped into ICT manufacturing industries, ICT trade industries and ICT services industries.

111. In the definition of the core measure of the digital economy, information industries supplement the ICT sector to also include the content and media sector. This is defined as the group of economic activities that are primarily *"engaged in the production, publishing and/or the distribution of content (information, cultural and entertainment products), where content corresponds to an organised message intended for human beings"* (ISIC Rev. 4). The following classification of content and media activities from ISIC Rev. 4. was established by the OECD and included in the 2011 version of the *OECD Guide to Measuring the information society*. These can be associated to the *core measure* of the Digital Economy:

- ISIC 581 Publishing of books, periodicals and other publishing activities
- ISIC 591 Motion picture, video and television program activities
- ISIC 592 Sound recording and music publishing activities
- ISIC 60 Broadcasting and programming activities
- ISIC 639 Other information service activities

For practical purposes, due to limited data availability, and following the approach in OECD (2020) *A Roadmap Toward a Common Framework for Measuring the Digital Economy*, the core measure of the digital economy can be approximated by the following ISIC Rev.4 (two-digit) Divisions: "Computer, electronic and optical products" (Division 26), "Publishing, audiovisual, and broadcasting activities" (58 to 60), "Telecommunications" (61), and "IT and other information services" (62 to 63).[66]

112. In addition, to the extent possible, the principal indicators for digitalization are in line with those identified in the OECD work in measuring the digital economy, namely *Measuring the Digital Transformation: A Roadmap for the Future*[67] and *A Roadmap Toward a Common*

[66] OECD (2020).
[67] OECD (2019).

Framework for Measuring the Digital Economy: Report for the G20 Digital Economy Task Force,[68] the indicators developed by the Partnership on Measuring ICT for Development, and the UNCTAD *Manual for the Production of Statistics on the Digital Economy 2020*.[69]

iii. Well-being and Sustainability

113. The indicators on well-being and sustainability aim to measure the contributions of businesses to well-being and their impacts on the environment and society.

Principal Indicators on Well-being and Sustainability

39. Proportion of women in managerial positions
40. Annual growth rate of real total gross value added per employed person
41. Average hourly earnings for employees in businesses by sex
42. Unemployment rate, by sex, age, and persons with disabilities
43. Gross value added of businesses per employed person
44. Sector employment as a proportion of total employment
45. Water-use efficiency in businesses
46. Level of water stress attributable to businesses
47. Share of renewable energy consumption in businesses
48. Energy efficiency in businesses
49. Green investment by businesses
50. Greenhouse gas emissions generated by businesses per unit of value added
51. Research and development expenditure as a proportion of gross value added
52. Researchers (in full-time equivalent) per million inhabitants
53. Number of companies publishing sustainability reports
54. Job Openings (Vacancies) in businesses
55. Taxes and other payments of businesses to the Government
56. Total taxes paid by businesses as a proportion of total government tax revenues

114. The starting point for the identification of these indicators was the list of SDG indicators and the identification within this framework of the relevant indicators from a business perspective. In addition, these indicators were mapped to UNCTAD's GCI indicators, the standards published by GRI for non-financial reporting and the indicators of the UN Global Compact.[70] The availability of information from non-financial from businesses provides great opportunity to be used as a source of data for the compilation of the indicators.

115. Generally, indicators for well-being and sustainability are multi-dimensional in nature and require a combination of data from different domains, wherein business statistics are used together with results from, for example, labour market statistics or environmental statistics. Analyses and additional work with some statistical data sources may be needed to ensure a high level of consistency regarding coverage and other elements in the definitions. For the environmental

[68] OECD (2020).
[69] UNCTAD (2020).
[70] GRI (Global Reporting Initiative) is the independent, international organization that provides the world's most widely used standards for sustainability reporting – the GRI Standards. https://www.globalreporting.org/about-gri/

indicators, efforts were made to ensure the consistency with the System of Environment Economic Accounts (SEEA) in order to ensure to the extent possible, the integration between business statistics and the national accounts. Similar efforts were taken to ensure consistency with indicators on the labour force.

116. In addition, some indicators on well-being and sustainability combine monetary and physical information. In this context, monetary information should be in constant prices (e.g., in constant 2010 prices in the first round). If monetary values in gross value added at factor cost in businesses do not exist in the business statistics in constant prices, the use of gross value added in constant prices used for National Accounts compilation is desirable.

117. Indicators on green investment are particularly important to monitor the efforts to reduce pollution and other forms of degradation to the environment and are particularly relevant for measuring progress towards the SDGs. The task team on well-being and sustainability discussed how to define "green investment".

118. The definition of green investment used in the technical sheet is based on the SEEA Central Framework's definition of environmental protection expenditure and refers to physical investments that can be considered positive for the environment in a direct or indirect manner through resource saving or environmental protection or all the expenditures for those investments whose purpose is the prevention, reduction and elimination of pollution and other forms of degradation to the environment. The SEEA Central Framework[71] refines the definition of environmental protection expenditure by looking at capital formation in the environmental goods and services sector (EGSS) which include environmental specific services, environmental sole-purpose products, adapted goods and environmental technologies.[72]

C. Institutional coordination and governance

119. As new user demands for broader and multi-dimensional measures of business and trade statistics emerge, the need for better coordination of the system of economic statistics becomes increasingly more demanding. Indeed, the compilation of the principal set of indicators requires coordination among producers of official statistics covering the domains of classifications, business, trade, environment, energy, social, demographic, and prices, among others. Enhanced institutional governance does not only pertain within the national statistical system, but also among

[71] United Nations (2014).

[72] More specifically, the SEEA definition includes: 1) activities whose main purpose is: (a) Preventing or minimizing pollution, degradation or natural resources depletion (including the production of energy from renewable sources); (b) Treating and managing pollution, degradation and natural resource depletion; (c) Repairing damage to air, soil, water, biodiversity and landscapes; and (d) Carrying out other activities such as measurement and monitoring, control, research and development, education, training, information and communication related to environmental protection or resource management; 2) environmental sole-purpose products which are goods (durable or non-durable) or services whose use directly serves an environmental protection or resource management purpose and that have no use except for environmental protection or resource management; 3) adapted goods which are goods that have been specifically modified to be more "environmentally friendly" or "cleaner" and whose use is therefore beneficial for environmental protection or resource management; and 4) environmental technologies are technical processes, installations and equipment (goods), and methods or knowledge (services), whose technical nature or purpose is environmental protection or resource management. *Ibid*.

different government agencies that may be involved in the collection of relevant data needed to compile these principal indicators.

120. This enhanced coordination needs to be supported and facilitated by appropriate institutional governance mechanisms to share access to micro data; microdata linking using exhaustive business registers; integrated surveys and survey frames; common access to administrative data; communication about common elements, such as classifications and definitions; shared IT resources and data processing instruments; and learning the methodological frameworks of related statistical domains. The Friends of the Chair on Economic Statistics have characterized such coordination a 'whole-of-systems approach' for the system of economic statistics, in which "IOs and NSOs may adopt a thematic approach as compared to a domain-specific approach to address a policy issue. This integrated view brings together a dashboard of a coherent set of statistics and indicators from the various domains of the system of economic statistics."[73] Regional and international statistical organizations also have a role to play in the 'whole-of-systems approach', whereby they "support collaboration of the national statistical partnerships to deliver globally and at scale; promote co-investments in statistical infrastructure through shared technology cloud-based platforms; trusted data sharing and exchange arrangements;[74] shared central global repository of Big Data from global agreements with private sector owners; shared libraries of methods and algorithms; and a global register of MNEs (already underway in the GGR[75])."[76]

[73] United Nations (2020b).
[74] European Union (2019).
[75] The United Nations Statistical Commission at its 46th session in 2015 endorsed the creation of a global register of MNE groups to improve the understanding and the measurement of international trade and globalization statistics. United Nations (2015a).
[76] United Nations (2020b).

Chapter 4 Future agenda

121. The list of principal indicators presented in this manual focuses on business statistics and business-related trade statistics. It is envisaged that this Manual will be complemented with a set of elaborated indicators for trade statistics, which will be developed by the task team on international trade statistics (TT-ITS). The objective of identifying the principal indicators is to provide countries with a reference list for indicators that are relevant at the global level and that can guide the development of a business and trade statistics programme to inform selected priority areas. In the future, the UNCEBTS will consider the development of a global database on some of these indicators building on existing initiatives in collaboration with relevant international and regional organizations.

122. With the new demands for business and trade statistics, especially after the pandemic of COVID-19, it is clear that future efforts should focus on investigating new approaches to business and trade statistics to provide more granular information with a higher frequency. New sources of data can be explored for the compilation of official statistics and the SBR will continue to be the backbone for economic statistics and serve as the integrating tool for data from different sources.

123. Efforts to improve the horizontal and vertical integration of business and trade statistics will be a key aspect of the future work of the UNCEBTS. The horizontal integration will be across statistical domains and in particular between business and trade statistics. The vertical integration refers to the integration between the primary data, statistics, and accounts. For trade statistics, for example, this integration means fostering consistency of primary data (such as customs data) with trade statistics and with the macro accounting frameworks of the System of National accounts (SNA) and the Balance of Payments Manual (BPM). The TT-ITS will revise the manuals on statistics on international trade in goods and services and it is expected that there will be monitoring tools for the advancement of the discussion that is integrated with that of the revision of the SNA and BPM. It will coordinate the work with the other task teams of the UNCEBTS to better integrate and harmonize business and trade statistics.

Annex 1: Technical Sheets for the global core set of principal business and trade indicators on digitalization

Section A. Indicators on Business Dynamics, Demography and Entrepreneurship

1. Number of active enterprises[77]

Field	Metadata
Name of indicator	Number of active enterprises (population of active enterprises in reference period)
Definition of the indicator	A count of enterprises that had either turnover, employment, or investment at any time during the reference period.
Objective of the indicator	The number of active enterprises is the starting point for the derivation of business demography events. It provides the denominator for a wide range of indicators and thus ensures a degree of comparability between countries with economies of different sizes and allows for the analysis of general trends in the patterns and relative contributions of different sectors of the economy over time. [1]
Contribution and usefulness of the indicator	The population of active enterprises is intrinsically linked to the definitions of births and deaths. [1] The business dynamics of entry and exit contribute to productivity dynamics and eventually to economic growth. [2] As well as providing the denominator for a range of indicators, the population of active enterprises can also be used to produce various useful indicators, particularly relating to the evolution of the enterprise population over time. Such indicators allow the trends in the enterprise population to be analyzed, e.g., the extent and speed of the move to a service-based economy or the rate of growth of information and communication technology (ICT) activities. [1]
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)s	• by 2-digit ISIC division at a minimum • by enterprise size – the enterprise size classes are defined as follows: 0-9 employees; 10-49 employees; 50-249 employees; 250+ employees.[78] For the purpose of business demography, a further breakdown of the smallest thresholds (i.e., 0[79], 1-4, 5-9, 10-19, 20-49) would be desirable. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by Legal Form (typical SBR breakdown) [3][4][5]
Algorithm	Population of active enterprises (N) in year *t* comprises all enterprises that were active at any time during the reference period. Being active is defined as producing goods and services (for the market) and thus having employment or turnover. Units without actual turnover but with investment activities should also be considered as being active. [2]

[77] An enterprise is the view of an institutional unit as a producer of goods and services (SNA 2008). The term "business" is used as a type of enterprise undertaking market activity. These indicators concern units engaged in economic activity and are referred to as "businesses" to reflect the fact that although the types of statistical units observed are mainly enterprises, they may also be establishments or local units, depending on the coverage of the SBR and data sources used to maintain the SBR.
[78] It is common for business demography statistics to break down the smallest thresholds of enterprises, as demographic changes more likely occur among smaller firms; but a full breakdown by size class is useful if the data are available
[79] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees, such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Description of the calculation of the indicator	The population of active enterprises, including all employers and non-employers (N), consists of all enterprises that had either turnover, employment, or investment at any time during the reference period. If there is insufficient information on turnover, employment, or investment to determine whether or not an enterprise is active, then national methods leading to this aim will be accepted. [1]
Unit of measure	Number (absolute figures)
Statistical unit	Enterprises (and in case of lack thereof, establishments or legal units)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Recommended: Quarterly; Annual at a minimum.
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases.
Timeliness	For quarterly data, the recommendation is to publish the data within 3 months after the end of the reference period. [6] For annual data, provisional data should be published within one year and final data should be published within 2 calendar years of the end of the reference year. [7]
Source data type	The national SBR is the main source of business demography data.
Reference documents	[1] Eurostat-OECD. (2007). [2] United Nations (2020). [3] Eurostat (2020a). [4] Eurostat (Metadata). [5] Eurostat (2017). [6] UN (2008). [7] Eurostat (Metadata(a)).

2. Number of enterprise births

Field	Metadata
Name of the indicator	Number of enterprise births
Definition of the indicator	A count of the number of births of enterprises registered to the population of enterprises in the SBR, corrected for errors. A birth amounts to the creation of a combination of production factors, with the restriction that no other enterprises are involved in the event. Births do not include entries into the population due to mergers, break-ups, split-off, or restructuring of a set of enterprises. Births do not include entries into a sub-population resulting only from a change of activity. [1]
Objective of the indicator	To measure the creation of new enterprises that have started from scratch and that have actually started activity during the reference period. [2]
Contribution and usefulness of the indicator	This indicator is an important contributor to analyzing business dynamics.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum • by enterprise size – the enterprise size classes are defined as follows: 0-9 employees; 10-49 employees; 50-249 employees; 250+ employees.[80] For the purpose of business demography, a further breakdown of the smallest thresholds (i.e., 0[81], 1-4, 5-9, 10-19, 20-49) would be desirable. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by Legal Form (typical SBR breakdown) [3][4][5]
Algorithm	The following steps are necessary for the identification of enterprise births. Step 1: Identification of the population of active enterprises (N) in reference year *t*, N(*t*), N(*t*-1) and N(*t*-2). Step 2: Identification of the new enterprises in year *t*. The new enterprises in year *t* are a subset of the population of active enterprises in year *t*, which have taken up economic activity between 1 January and 31 December. They can be identified by comparing the population of active enterprises in year *t* with the population of active enterprises in year *t*-1. New enterprises are identified as enterprises that are only present in year *t*. Step 3: Elimination of reactivations. The most straightforward way to identify reactivations is to compare the new enterprises in year *t* with the population of active enterprises in year *t*-2. If a new enterprise in year *t* was active in year *t*-2 then the enterprise is considered reactivated, and not a genuine new enterprise. Step 4: Elimination of creations of enterprises due to events other than births from the population of new enterprises; that is, due to break-ups, split-offs, mergers, and one-to-one take-overs. Step 5: Correction of errors by manual investigation. [1] and [2]
Description of the calculation of the indicator	Enterprise births: Births of all enterprises, regardless of whether they are employers or not. No general threshold is applied to the size of the enterprise in terms of employment or any other characteristics. Related concepts are *employer enterprise births* and *economic enterprise births*, which focus on the births of enterprises with at least 1 and 2 employees, respectively. Employer enterprise births: Births of enterprises with at least one employee, if: (a) it was an enterprise birth in year *t*, and had at least one employee in the year of birth, or (b) it existed before year *t*, was not an employer for the two previous years and had at least one employee in year *t*

[80] It is common for business demography statistics to break down the smallest thresholds of enterprises, as demographic changes more likely occur among smaller firms; but a full breakdown by size class is useful if the data are available.

[81] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees, such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	(entry by growth). The growth should not be due to the take-over of another enterprise with employees. Economic enterprise births: Births of enterprises with at least two employees, if: (a) it was an enterprise birth in year *t*, and had at least two employees in the year of birth or (b) it existed before year *t*, had less than two employees in the previous two years and had at least two employees in year *t* (entry by growth). The growth should not be due to the take-over of another enterprise. [1]
Unit of measure	Number (absolute figure)
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Recommended: Quarterly; Annual at a minimum.
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases.
Timeliness	For quarterly data, the recommendation is to publish the data within 3 months after the end of the reference period. [6] For annual data, provisional data should be published within one year and final data should be published within 2 calendar years of the end of the reference year. [7]
Source data type	The national SBRs are the main source of business demography data.
Reference documents	[1] Eurostat-OECD. (2007). [2] United Nations (2020). [3] Eurostat (2020a). [4] Eurostat (Metadata). [5] Eurostat (2017). [6] UN (2008). [7] Eurostat (Metadata(a)).

3. Employment created by enterprise births

Field	Metadata
Name of the indicator	Employment created by enterprise births
Definition of the indicator	The employment generated by enterprise births. [1]
Objective of the indicator	To measure how newly born enterprises contribute to the creation of jobs, as well as the actual volume of work created.
Contribution and usefulness of the indicator	Employment created by enterprise births provides an indication of how enterprise births contribute to overall employment in the economy. This indicator can also be used to derive the employment of enterprise births in year *t* as a share of employment in all active enterprises in year *t*. [1]
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum • by enterprise size – the enterprise size classes are defined as follows: 0-9 employees; 10-49 employees; 50-249 employees; 250+ employees.[82] For the purpose of business demography, a further breakdown of the smallest thresholds (i.e., 0[83], 1-4, 5-9, 10-19, 20-49) would be desirable. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by Legal Form (typical SBR breakdown) [2][3][4]
Algorithm	The number of employees, in the reference period *t* in enterprises born in *t.*
Description of the calculation of the indicator	It is recommended to compile this indicator based on the concept of "employment" (*see Glossary).* Data should ideally be provided both as head counts and as full-time equivalents. Using solely the head count will overestimate the volume of work produced if the enterprise starts later than 1st January of year *t* or if it has only part-time employment. However, as information on full-time equivalents is not available in all countries, it is proposed that, as a first priority, employment indicators should be measured in terms of head counts. The head count of persons employed, or the number of employees should be calculated as an annual average over the operating period of the enterprise. [1]
Unit of measure	Employment indicators should be measured in terms of average headcount. If information is available on full-time equivalents, they should be used to complement the information and be indicated in the metadata. [1]
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Recommended: Annual at a minimum.
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, provisional data should be published within one year and final data should be published within 2 calendar years of the end of the reference year.
Source data type	The national SBRs are the main source of business demography data.
Reference documents	[1] Eurostat-OECD. (2007). [2] Eurostat (2020a). [3] Eurostat (Metadata). [4] Eurostat (2017).

[82] It is common for business demography statistics to break down the smallest thresholds of enterprises, as demographic changes more likely occur among smaller firms; but a full breakdown by size class is useful if the data are available.

[83] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees, such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

4. Number of enterprise deaths

Field	Metadata
Name of the indicator	Number of enterprise deaths
Definition of the indicator	An enterprise death amounts to the dissolution of a combination of production factors with the restriction that no other enterprises are involved in the event. Deaths do not include exits from the population due to mergers, take-overs, break-ups, or restructuring of a set of enterprises. It does not include exits from a sub-population resulting only from a change of activity. An enterprise is included in the count of deaths only if it is not reactivated within two years. Equally, a reactivation within two years is not counted as a birth. [1]
Objective of the indicator	To measure the number of enterprises that have ceased their economic activity in the reference period.
Contribution and usefulness of the indicator	This indicator is an important contributor to business dynamism due to its impact on employment and effect on the labour market; i.e., the amount of employment lost or the effect on the economy in financial terms; i.e., the amount of turnover lost.[1]
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum • by enterprise size – the enterprise size classes are defined as follows: 0-9 employees; 10-49 employees; 50-249 employees; 250+ employees.[84] For the purpose of business demography, a further breakdown of the smallest thresholds (i.e., 0[85], 1-4, 5-9, 10-19, 20-49) would be desirable. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by Legal Form (typical SBR breakdown) [2][3][4]
Algorithm	The following steps are necessary for the identification of enterprise deaths. Step 1) Population of active enterprises at time *t*, N(*t*) should be identified, as well as N(*t*+1) and N(*t*+2). Step 2) Cessations in year *t*: A subset of the population of active enterprises in year *t*, which have ceased their economic activity between 01 January and 31 December. They can be identified by comparing the population of active enterprises in year *t* with the population of active enterprises in year *t*+1. Cessations are identified as enterprises that are only present in year *t*. Step 3) Elimination of reactivations: Cessations should be checked for reactivation in the following two calendar years, because enterprises dormant for less than two years are considered reactivations and therefore not deaths followed by a birth. An enterprise death occurs only if the unit has been inactive for at least two years. Step 4) Elimination of other cessations: Find the events that were not real enterprise deaths, but rather cessations due to events like break-ups, mergers or take-overs, a matching of criteria (as for enterprise births). [1]
Description of the calculation of the indicator	*Enterprise deaths* cover the death of all enterprises, regardless of whether they are employers or not. No general threshold is applied to the size of the enterprise in terms of employment or any other characteristics. Related concepts are *employer enterprise deaths* and *economic enterprises deaths*, which focus on the deaths of enterprises with at least 1 and 2 employees, respectively.

[84] It is common for business demography statistics to break down the smallest thresholds of enterprises, as demographic changes more likely occur among smaller firms; but a full breakdown by size class is useful if the data are available.
[85] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees, such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	Employer enterprise deaths refer to deaths of enterprises with at least one employee. This population consists of enterprise deaths that had at least one employee in the year of death, and of enterprises that move below the threshold of one employee for at least two years. *Economic enterprise deaths* refer to deaths of enterprises with at least two employees. This population consists of enterprise deaths that had at least two employees in the year of death, and of enterprises that move below the threshold of two employees for at least two years. The enterprise deaths except for the units below the respective employee thresholds cover largely the population of employer and economic enterprise deaths. However, there are also enterprises that move below the threshold of one or two employees, but that continue activity below this threshold. These should be considered employer enterprise deaths or economic enterprise deaths, respectively. Employer enterprise deaths occur either (a) as an enterprise death with the enterprise having at least one employee in the year of death, or (b) as an exit by decline, the enterprise moving below the threshold of one employee. Economic business demography: Economic enterprise deaths occur either as (a) an enterprise death with the enterprise having at least two employees in the year of death or (b) as an exit by decline, the enterprise moving below the threshold of two employees.
Unit of measure	Number (absolute figure)
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Recommended: Quarterly; Annual at a minimum. Quarterly data should reflect short-term trends and may be based on alternative sources. For quarterly frequency, declarations of bankruptcies may be used as an early approximation of the number of enterprise deaths. Annual data should reflect the economic reality in terms of enterprise deaths during the reference period.
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For quarterly data, the recommendation is to publish the data within 3 months after the end of the reference period. [2] For annual data, provisional data should be published within one year and final data should be published within 2 calendar years of the end of the reference year. In the case of indicators on enterprise deaths, a two-year lag is foreseen in the methodology in order to confirm whether a presumed death is, in fact, reactivated. For this reason, information on deaths may need to be revised more often or is generally available later than the stock of enterprises and enterprise births.
Source data type	The national SBRs are the main source of business demography data. In countries with sample surveys, signs of death may include, for example, the cessation of tax compliance or the inability to contact the unit after repeated efforts.
Reference documents	[1] Eurostat-OECD (2007). [2] UN. (2008). [3] Eurostat (2020a). [4] Eurostat (Metadata).

5. Loss of employment due to enterprise deaths[86]

Field	Metadata
Name of the indicator	Loss of employment due to enterprise deaths
Definition of the indicator	This indicator provides information on the loss of employment due to enterprise death or, in other words, the reduction in employment due to enterprises that die in the reference year (see indicator 4 on enterprise deaths for definition of enterprise death).
Objective of the indicator	To measure the impact of enterprise deaths on the labour market; i.e., the amount of employment lost. [1]
Contribution and usefulness of the indicator	Employment is the most important variable in business demography, as well as one of the main criteria for determining the size class of an enterprise. [2] Data on births and deaths of enterprises, their survival rates, and the role they play in economic growth and productivity, as well as data for tackling socio-demographic issues, are increasingly requested both by policy makers and analysts. [2]
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum • by enterprise size – the enterprise size classes are defined as follows: 0-9 employees; 10-49 employees; 50-249 employees; 250+ employees.[87] For the purpose of business demography, a further breakdown of the smallest thresholds (i.e., 0[88], 1-4, 5-9, 10-19, 20-49) would be desirable. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by Legal Form (typical SBR breakdown) [4][5][6]
Algorithm	After the population of enterprise deaths is established, the total number of persons employed can be calculated as the sum of the number of persons employed of each enterprise in the population. Employment, is an annual average headcount calculated over the operating period. Since an enterprise death occurs only if the unit has been inactive for at least two years, data on enterprise deaths will lag behind in one year compared with the data on the population of active enterprises and enterprise births. Handling a death in the SBR means giving the enterprise an activity status of dead, also described as deathing or ceasing the unit. Although this does not actually involve erasing the unit from the database, this is also sometimes referred to as deleting the unit. Deaths are typically detected through survey activities and through the disappearance of units from an administrative source. [2]
Description of the calculation of the indicator	It is recommended to compile this indicator based on the concept of "employment" (*see Glossary*).
Unit of measure	Number (absolute figures)
Statistical unit	Enterprises (and in case of lack thereof, establishments or legal units)
Reference period	The basic reference period is the calendar year for annual data. Since deaths are not confirmed until after two years to exclude the possibility of a unit reactivating, data on deaths and related variables are reported one year later than the other data. [1]
Frequency (periodicity) of data collection and dissemination	Recommended: Quarterly; Annual at a minimum.

[86] This indicator is the same as the concept of "employment destroyed by enterprise deaths" and OECD's Structural and Demographic Business Statistics (SDBS) indicator "Number of persons employed in employer enterprise deaths".
[87] It is common for business demography statistics to break down the smallest thresholds of enterprises, as demographic changes more likely occur among smaller firms; but a full breakdown by size class is useful if the data are available.
[88] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees, such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	Quarterly data should reflect short-term trends and may be based on alternative sources. For quarterly frequency, declarations of bankruptcies may be used as an early approximation of the number of enterprise deaths. Annual data should reflect the economic reality in terms of enterprise deaths during the reference period.
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For quarterly data, the recommendation is to publish the data within 3 months after the end of the reference period. [6] For annual data, provisional data should be published within one year and final data should be published within 2 calendar years of the end of the reference year. In the case of indicators on enterprise deaths, a two-year lag is foreseen in the methodology in order to confirm whether a presumed death is, in fact, reactivated. For this reason, information on deaths may need to be revised more often or is generally available later than the stock of enterprises and enterprise births.
Source data type	Depending on the source and quality of the information, employment data directly from the SBR may be used in compiling employment statistics. They are especially useful for small area statistics, where the SBR may be the only comprehensive source. In some countries, all these data can be obtained directly from administrative sources while in other countries administrative sources may provide only number of paid employees. In the latter case, the number of persons employed can be estimated according to legal form and activity. The national SBRs are the main source of business demography data. In countries with sample surveys, signs of death may include, for example, the cessation of tax compliance or the inability to contact the unit after repeated efforts.
Reference documents	[1] Eurostat − OECD (2007). [2] United Nations (2020). [3] Eurostat (2020a). [4] Eurostat (Metadata). [5] Eurostat (2017). [6] UN (2008).

6. Number of X-year-old employer enterprises

Field	Metadata
Name of the indicator	Number of X-year-old employer enterprises
Definition of the indicator	-Number of enterprises newly born in *t*-1 having survived to *t* -Number of enterprises newly born in *t*-2 having survived to *t* -Number of enterprises newly born in *t*-3 having survived to *t* -Number of enterprises newly born in *t*-4 having survived to *t* -Number of enterprises newly born in *t*-5 having survived to *t* Number of enterprises that are active in terms of employment and/or turnover and/or investment in the year of birth and the following year(s). Number of businesses born in *t* that are still active in *t*+1, *t*+2, *t*+3, etc. This type of analysis is based on data for a cohort of enterprise births in year *t*, which enables follow-up of the development of the newly born enterprises over the years; i.e., how many have survived and what is their economic development in terms of employment and/or turnover. The time horizon for this type of analysis is usually up to five years but could also be much longer. The number of enterprises born in year *t*-n and remained active in year *t*, for n=1, 2,5.
Objective of the indicator	Business demography events like births, deaths, and survivals can be linked to characteristics of the entrepreneur to analyse determinants of business success. Observing the post-entry performance of firms is as important as analysing their birth rate. Very high failure rates can act as a disincentive to both budding entrepreneurs, as well as potential creditors, which could hinder long-term growth and innovation.
Contribution and usefulness of the indicator	The information generated can be used to inform business policies, for economic planning, and for analytical and research purposes.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum • by enterprise size – the enterprise size classes are defined as follows: 0-9 employees; 10-49 employees; 50-249 employees; 250+ employees.[89] For the purpose of business demography, a further breakdown of the smallest thresholds (i.e., 0[90], 1-4, 5-9, 10-19, 20-49) would be desirable. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by Legal Form (typical SBR breakdown) [1][2][3]
Algorithm	The survival of an enterprise is an event that should always be observed between two consecutive years. For instance, an enterprise that was born in year *t* should be considered as having survived to *t*+2 only if it was active also in year *t*+1, and so forth. The survivals from a survival year to the following year should therefore be identified in the same way as the survivals from a birth year to the following one. The production of statistics on survival can be based on three populations, which are all part of the production of the statistics on births: - Births in year *t*, or enterprises having survived to *t* from a previous year. - Active enterprises in year *t*+1 - Enterprises that have commenced activity in year *t*+1 with the purpose of taking over the factors of production of an enterprise that commenced activity before *t*+1. As it is necessary to identify the

[89] It is common for business demography statistics to break down the smallest thresholds of enterprises, as demographic changes more likely occur among smaller firms; but a full breakdown by size class is useful if the data are available.

[90] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees, such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	link between enterprises, the data set should consist of two variables, namely the identity number of the enterprises that cease to exist and the identity number of the enterprises that takes them over. Using these three populations, it is possible to identify surviving enterprises, enterprises that cease to exist and enterprises that are taken over, by matching the populations using enterprise identity number as the key. [4]
Description of the calculation of the indicator	The survival of an enterprise is defined in the following way: • An enterprise born in year *t* or having survived to year *t* from a previous year is considered to have survived in year *t*+1 if it is active in terms of turnover and/or employment and/or investment in any part of year *t*+1 (= survival without changes). • An enterprise is also considered to have survived if the linked legal unit(s) have ceased to be active, but their activity has been taken over by a new legal unit set up specifically to take over the factors of production of that enterprise (= survival by take-over). For the populations of employer enterprise births and economic enterprise births, the employee thresholds of one, or two employees respectively, apply to the employment criterion. This definition is therefore in accordance with that used for the population of active enterprises and birth. [4]
Unit of measure	Number (absolute figure)
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Recommended: Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year. [5]
Source data type	The national SBRs are the main source of business demography data.
Reference documents	[1] Eurostat (2020a). [2] Eurostat (Metadata). [3] Eurostat (2017). [4] Eurostat-OECD (2007). [5] Eurostat (Metadata(a)).

7. Number of persons employed in X-year-old employer enterprises

Field	Metadata
Name of the indicator	Number of persons employed in X-year-old employer enterprises
Definition of the indicator	Total number of persons who work in businesses born in *t* that are still active in *t*+1, *t*+2, *t*+3, *t*+4 and *t*+5, etc. The time horizon for this type of analysis is usually up to five years but could also be much longer.
Objective of the indicator	This indicator provides the denominator for a wide range of indicators and thus ensures a degree of comparability between countries with economies of different sizes. It also serves to appreciate general trends in the patterns and relative contributions of different sectors of the economy over time. [1]
Contribution and usefulness of the indicator	This indicator contributes to the understanding of the role that different firms play in overall employment changes in the economy.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum • by enterprise size – the enterprise size classes are defined as follows: 0-9 employees; 10-49 employees; 50-249 employees; 250+ employees.[91] For the purpose of business demography, a further breakdown of the smallest thresholds (i.e., 0[92], 1-4, 5-9, 10-19, 20-49) would be desirable. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by Legal Form (typical SBR breakdown) [2][3][4]
Algorithm	Calculation is based on the employment in the population of enterprises identified in the indicator "Number of X-year-old employer enterprises". [1]
Description of the calculation of the indicator	Employment data based on an enterprise that is active in terms of employment and/or turnover and/or investment in the year of birth and the following year(s). [1] and [5] It is recommended to compile this indicator based on the concept of "employment" (*see Glossary*).
Unit of measure	Number (absolute figures)
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Recommended: Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data be published within one calendar year of the end of the reference year. [6]
Source data type	The national SBRs are the main source of business demography data.
Reference documents	[1] The Eurostat-OECD Manual on Business Demography Statistics outlines the methodology to be used for the production of the data in the national statistical institutes. Eurostat-OECD (2007). [2] Eurostat (2020a). (pages 26, 60, 68). [3] Eurostat (Metadata). [4] Eurostat (2017). [5] United Nations (2020). [6] Eurostat (Metadata(a)).

[91] It is common for business demography statistics to break down the smallest thresholds of enterprises, as demographic changes more likely occur among smaller firms; but a full breakdown by size class is useful if the data are available.

[92] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees, such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

8. Employment in the population of active enterprises

Field	Metadata
Name of the indicator	Employment, in the population of active enterprises
Definition of the indicator	The indicator measures employment in the active enterprises (covering all employer and non-employer enterprises) in period (*t*), measured as headcounts and full-time equivalents. Given that information on full-time equivalents is not widely available in all countries, employment should be measured in terms of the head counts as a first priority. [1]
Objective of the indicator	The objective of the indicator is to measure the impact of active businesses on employment.
Contribution and usefulness of the indicator	It contributes to understanding the role that different firms have in overall employment changes in the economy; it also serves as a denominator for other indicators.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum • by enterprise size – the enterprise size classes are defined as follows: 0-9 employees; 10-49 employees; 50-249 employees; 250+ employees.[93] For the purpose of business demography, a further breakdown of the smallest thresholds (i.e., 0[94], 1-4, 5-9, 10-19, 20-49) would be desirable. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by Legal Form (typical SBR breakdown) [2][3][4]
Algorithm	It is recommended to compile this indicator based on "employment" (*see Glossary*). The headcount of persons employed, or the number of employees should be calculated as an annual average over the operating period of the enterprise. The average should be rounded to the nearest whole number. Depending on the frequency of data updates, the annual average is the arithmetic mean of the intra-annual observations or the only annual figure that is available, if this is the case. Using an annual average over the operating period accommodates for seasonal activities, which would not be the case if the employment at a certain reference point were used. When considering employer enterprises, the operating period should be the one during which they are active as employers. For instance, an enterprise that was active without any paid employees during three quarters and which had one employee in the fourth quarter should be considered active as an employer only for the fourth quarter. If only the fourth quarter is considered as the operating period, the average number of employees would still be reported correctly as 1. [1]
Description of the calculation of the indicator	Point-in-time estimates of employment will affect these estimates. In these cases, countries should use payroll information, if available, as a source to estimate the number of employees, following the averaging principles outlined above. Examples of employment measurements: 1) If an enterprise has activity during 3 months in the summer only with two persons employed, the annual average head count will be two. 2) If the enterprise is created during the last quarter of the year, the observation for employment in this quarter should be used as the annual average.
Unit of measure	Number (absolute figure)
Statistical unit	Enterprises (and in case of lack thereof, establishments or legal units)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Recommended: Quarterly; Annual at minimum

[93] It is common for business demography statistics to break down the smallest thresholds of enterprises, as demographic changes more likely occur among smaller firms; but a full breakdown by size class is useful if the data are available.

[94] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees, such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For quarterly data, the recommendation is to publish the data within 3 months after the end of the reference period. [5] For annual data, provisional data should be published within one year and final data should be published within 2 calendar years of the end of the reference year.
Source data type	The national SBRs are the main source of business demography data.
Reference documents	[1] Eurostat-OECD (2007). [2] Eurostat (2020a). [3] Eurostat (Metadata). [4] Eurostat (2017). [5] UN (2008).

9. Employment share of enterprise births

Field	Metadata
Name of the indicator	Employment share of enterprise births
Definition of the indicator	The indicator is calculated as a ratio of the employment in newly born enterprises and the employment in the active enterprises. [1]
Objective of the indicator	To measure the impact of enterprise births in terms of the effect on the labour market.
Contribution and usefulness of the indicator	This indicator provides a measure of the impact of newly born enterprises on the number of jobs. There is particular interest in the number of jobs created by new enterprises, as well as the actual volume of work created.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum • by enterprise size – the enterprise size classes are defined as follows: 0-9 employees; 10-49 employees; 50-249 employees; 250+ employees.[95] For the purpose of business demography, a further breakdown of the smallest thresholds (i.e., 0[96], 1-4, 5-9, 10-19, 20-49) would be desirable. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by Legal Form (typical SBR breakdown) [2][3][4]
Algorithm	"Employment created by births" in reference period (*t*) / "Employment in the population of active enterprises" in reference period (*t*)
Description of the calculation of the indicator	It is recommended to compile this indicator based on “employment” (*see Glossary*). See the indicators on “Employment created by births” and “Employment in the population of active enterprises” for full descriptions of these concepts.
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Recommended: Quarterly; Annual at minimum
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For quarterly data, the recommendation is to publish the data within 3 months after the end of the reference period. [5] For annual data, provisional data should be published within one year and final data should be published within 2 calendar years of the end of the reference year.
Source data type	This is a derived indicator. For the data sources of the primary indicators, please see the relevant technical sheets.
Reference documents	[1] Eurostat-OECD (2007). [2] Eurostat (2020a). [3] Eurostat (Metadata). [4] Eurostat (2017). [5] UN (2008).

[95] It is common for business demography statistics to break down the smallest thresholds of enterprises, as demographic changes more likely occur among smaller firms; but a full breakdown by size class is useful if the data are available.

[96] Enterprise size class of zero (“0”) refers to non-employer enterprises; i.e., enterprises with no employees, such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

10. Enterprise survival rate

Field	Metadata
Name of the indicator	Enterprise survival rate
Definition of the indicator	The 1-year enterprise survival rate is defined as the ratio between the number of enterprises that were born in the year *t* and have survived in the year *t*+1 and the number of enterprises born in the year *t*. Similar definitions for the 2-year, 3-year, 4-year, and 5-year, etc. survival rate. [1]
Objective of the indicator	Business demography events like births, deaths, and survivals, can be linked to characteristics of the entrepreneur to analyse determinants of business success. Observing the post-entry performance of firms is as important as analysing their birth rate. Very high failure rates can act as a disincentive to both budding entrepreneurs, as well as potential creditors, which could hinder long-term growth and innovation. [2]
Contribution and usefulness of the indicator	These indicators offer insight into the development of the business population over time and the performance of the businesses being created. The information generated can be used to inform business policies, for economic planning, and for analytical and research purposes. [2]
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum • by enterprise size – the enterprise size classes are defined as follows: 0-9 employees; 10-49 employees; 50-249 employees; 250+ employees.[97] For the purpose of business demography, a further breakdown of the smallest thresholds (i.e., 0[98], 1-4, 5-9, 10-19, 20-49) would be desirable. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by Legal Form (typical SBR breakdown) [3][4][5]
Algorithm	The ratio between the number of enterprises that were born in year *t* and have survived in the year *t*+1 and the number of enterprises born in year *t*. Similar definitions for the 2-year, 3-year, 4-year, and 5-year, etc. survival rate.
Description of the calculation of the indicator	In the Business Demography context, survival occurs if an enterprise is active in terms of employment and/or turnover and/or investment in the year of birth and the following year(s). Two types of survival can be distinguished: 1. An enterprise born in year *t* is considered to have survived in year *t*+1 if it is active in terms of turnover and/or employment and/or investment in any part of year *t*+1 (= survival without changes). 2. An enterprise is also considered to have survived if the linked legal unit(s) have ceased to be active, but their activity has been taken over by a new legal unit set up specifically to take over the factors of production of that enterprise (= survival by take-over). [1] See the indicator on "Number of births" for full definition of the number of births in year *t*.
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year.
Frequency (periodicity) of data collection and dissemination	Recommended: Quarterly; Annual at minimum
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases

[97] It is common for business demography statistics to break down the smallest thresholds of enterprises, as demographic changes more likely occur among smaller firms; but a full breakdown by size class is useful if the data are available.
[98] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees, such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Timeliness	For quarterly data, the recommendation is to publish the data within 3 months after the end of the reference period. [6] For annual data, provisional data should be published within one year and final data should be published within 2 calendar years of the end of the reference year.
Source data type	The national SBRs are the main source of business demography data.
Reference documents	[1] Eurostat-OECD (2007). [2] United Nations (2020). [3] Eurostat (2020a). [4] Eurostat (Metadata). [5] Eurostat (2017). [6] UN (2008).

11. Number of high-growth enterprises

Field	Metadata
Name of the indicator	Number of high-growth enterprises
Definition of the indicator	A count of all enterprises (having above a meaningful threshold of employees in the beginning of the high-growth period)[99] with average annualised growth greater than 10% per annum, over a three-year period. Growth can be measured by the number of employees or by turnover. However, in practice, because of the lack of international comparability of data in different currencies and purchasing powers, growth is usually measured by the number of employees. If growth in the number of employees or turnover was due to mergers or take-overs, the enterprise in question should not be considered a high-growth enterprise. [1] and [2]
Objective of the indicator	The identification of enterprises that have relatively high growth and are therefore intensively contributing to the growth of overall employment. [2]
Contribution and usefulness of the indicator	High-growth firms are important contributors to job and wealth creation. A small set of high-growth enterprises drives a disproportionately large amount of employment creation. High-growth enterprises are firms that, by their extraordinary growth, make the largest contribution to net job creation, despite typically representing a small proportion of the business population. With their presence in the economy considered promising for the creation of more jobs and innovation, interest in high-growth firms is high among policy makers.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. For this indicator, the activity code of the final period should be used for stratifying high-growth enterprises. • by enterprise size – the enterprise size classes are defined as follows: 0-9 employees; 10-49 employees; 50-249 employees; 250+ employees.[100] For the purpose of business demography, a further breakdown of the smallest thresholds (i.e., 0[101], 1-4, 5-9, 10-19, 20-49) would be desirable. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by Legal Form (typical SBR breakdown) [3][4][5]
Algorithm	Growth can be measured by employment or by turnover. As *average annualized growth* must be measured, the formula describing high-growth enterprises is: Measured by employment: $\sqrt[3]{\frac{employees(t)}{employees(t-3)}} - 1 > 0.1$ Measured by turnover: $\sqrt[3]{\frac{turnover(t)}{turnover(t-3)}} - 1 > 0.1$ [1]
Description of the calculation of the indicator	All enterprises reaching the employee threshold with average annualised growth greater than 10% per annum, over a three-year period should be considered as high-growth enterprises. If growth in

[99] A provisional threshold of at least 10 employees is suggested but should be determined after tests have been performed using different thresholds.

[100] It is common for business demography statistics to break down the smallest thresholds of enterprises, as demographic changes more likely occur among smaller firms; but a full breakdown by size class is useful if the data are available

[101] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees, such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	employment or turnover was due to mergers or take-overs, the enterprise in question should not be considered a high-growth enterprise). It follows from the definition that enterprises born in year *t* should not be included in the group of high growth enterprises before *t+4*. [2] When trying to identify high-growth enterprises, it is not necessary to check the change in employment or turnover from one year to the next over a three-year period. It is sufficient to consider only the population of active enterprises reaching the employee threshold in year *t*-3 and to measure the number of employees in year *t*. [1]
Unit of measure	Number (absolute figures)
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Recommended: Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year. [6]
Source data type	The national SBRs are the main source of business demography data.
Reference documents	[1] Eurostat-OECD (2007). [2] United Nations (2020). [3] Eurostat (2020a). [4] Eurostat (Metadata). [5] Eurostat (2017). [6] Eurostat (Metadata(a)).

12. Employment in high-growth enterprises

Field	Metadata
Name of the indicator	Employment in high-growth enterprises
Definition of the indicator	Number of persons employed in high-growth enterprises (having above a meaningful threshold of employees in the beginning of the high-growth period)[102] with average annualised growth greater than 10% per annum, over a three-year period. Growth can be measured by the number of employees or by turnover. However, in practice, because of the lack of international comparability of data in different currencies and purchasing powers, growth is usually measured by the number of employees. If growth in the number of employees or turnover was due to mergers or take-overs, the enterprise in question should not be considered a high-growth enterprise. [1] and [2]
Objective of the indicator	To measure the number of persons employed in high-growth enterprises. [2]
Contribution and usefulness of the indicator	In the context of the analysis of business dynamics and entrepreneurial performance, the role of high growth enterprises as drivers of job and wealth creation has attracted the interest of analysts and policy makers. [2]
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. For this indicator, the activity code of the final period should be used for stratifying high-growth enterprises. • by enterprise size – the enterprise size classes are defined as follows: 0-9 employees; 10-49 employees; 50-249 employees; 250+ employees.[103] For the purpose of business demography, a further breakdown of the smallest thresholds (i.e., 0[104], 1-4, 5-9, 10-19, 20-49) would be desirable. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by Legal Form (typical SBR breakdown) [3][4][5]
Algorithm	Number of persons employed in high-growth enterprises (having above a meaningful threshold of employees in the beginning of the high-growth period) with average annualised growth greater than 10% per annum, over a three-year period. Growth can be measured by employment or by turnover. See the indicator on "High-growth Enterprises" for the full description of the algorithm for measuring high-growth enterprises.
Description of the calculation of the indicator	All enterprises reaching the employee threshold with average annualised growth greater than 10% per annum, over a three-year period should be considered as high-growth enterprises. If growth in employment or turnover was due to mergers or take-overs, the enterprise in question should not be considered a high-growth enterprise). See the indicator on "High-growth Enterprises" for the full description for measuring high-growth enterprises. It is recommended to compile this indicator based on "employment" (*See Glossary*).
Unit of measure	Number (absolute figure)
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.

[102] A provisional threshold of at least 10 employees is suggested but should be determined after tests have been performed using different thresholds.
[103] It is common for business demography statistics to break down the smallest thresholds of enterprises, as demographic changes more likely occur among smaller firms; but a full breakdown by size class is useful if the data are available.
[104] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees, such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Frequency (periodicity) of data collection and dissemination	Recommended: Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year. [6]
Source data type	The national SBRs are the main source of business demography data.
Reference documents	[1] Eurostat-OECD. (2007). [2] United Nations (2020). [3] Eurostat (2020a). [4] Eurostat (Metadata). [5] Eurostat (2017). [6] Eurostat (Metadata(a)).

13. Number of young (up to 5-year-old) high-growth enterprises (gazelles)

Field	Metadata
Name of the indicator	Number of young (up to 5-year-old) high-growth enterprises (gazelles)
Definition of the indicator	A count of all young (up to five-year old) enterprises (having above a meaningful threshold of employees in the beginning of the high-growth period)[105] with average annualised growth greater than 10% per annum, over a three-year period. Growth can be measured by the number of employees or by turnover statistics. However, in practice, because of the lack of international comparability of data in different currencies and purchasing powers, growth is usually measured by the number of employees. If growth in employment or turnover was due to mergers or take-overs, the enterprise in question should not be considered a high-growth enterprise. Gazelles are the subset of high-growth enterprises which are up to five years old. (See the methodology sheet for the indicator on high-growth enterprises for a full definition of high-growth enterprise.) [1] and [2]
Objective of the indicator	The identification of young enterprises that have relatively high growth and are, therefore, intensively contributing to the growth of overall employment. [2]
Contribution and usefulness of the indicator	High-growth firms are important contributors to job and wealth creation. A small set of high-growth enterprises drives a disproportionately large amount of employment creation. High-growth enterprises are firms that, by their extraordinary growth, make the largest contribution to net job creation, despite typically representing a small proportion of the business population. With their presence in the economy considered promising for the creation of more jobs and innovation, interest in high-growth firms is high among policy makers.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. For this indicator, the activity code of the final period should be used for stratifying high-growth enterprises. • by enterprise size – the enterprise size classes are defined as follows: 0-9 employees; 10-49 employees; 50-249 employees; 250+ employees.[106] For the purpose of business demography, a further breakdown of the smallest thresholds (i.e., 0[107], 1-4, 5-9, 10-19, 20-49) would be desirable. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by Legal Form (typical SBR breakdown) [3][4][5]
Algorithm	A count of all young (up to five-years-old) enterprises that employ above a meaningfully-determined threshold of employees at the beginning of the three-year observation period (a provisional threshold of at least 10 employees has been suggested but should be determined after tests have been performed using different thresholds) with average annualised growth greater than 10% per annum, over a three-year period. Growth can be measured by employment or by turnover. As *average annualized growth* must be measured, the formula describing high-growth enterprises is: Measured by employment:

[105] A provisional threshold of at least 10 employees is suggested but should be determined after tests have been performed using different thresholds.

[106] It is common for business demography statistics to break down the smallest thresholds of enterprises, as demographic changes more likely occur among smaller firms; but a full breakdown by size class is useful if the data are available.

[107] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees, such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	$\sqrt[3]{\frac{employees(t)}{employees(t-3)}}$ -1 > 0.1 Measured by turnover: $\sqrt[3]{\frac{turnover(t)}{turnover(t-3)}}$ -1 > 0.1 [1]
Description of the calculation of the indicator	When trying to identify high-growth enterprises, it is not necessary to check the change in employment or turnover from one year to the next over a three-year period. It is sufficient to consider only the population of active young (up to five-year old) enterprises reaching the employee threshold in year *t*-3 and to measure the number of employees in year *t*. [1] [2] In principle, the high-growth period of 3 years, referring to a population of newly born enterprises, N, can occur at different stages in the five-year monitoring and survival period. In a given reference year *t*, gazelles may be in the different cohorts of newly born enterprises N *t*-3, N*t*-4, or N*t*-5; i.e., enterprises in their third, fourth or fifth year of survival (remembering that the birth year itself of an enterprise is considered as year zero). To be consistent with the exclusions suggested for high-growth enterprises in general, survivals from population N*t*-4 and N*t*-5 should be considered, but not from population N*t*-3. To summarise, potential high growth enterprises in reference year *t* must have been in population N*t*-3. Gazelles as a subset must fulfil the additional condition that they were in population N*t*-4 or N*t*-5. The identification of high-growth enterprises on an annual basis may lead to the inclusion of an enterprise in the population of high-growth enterprises in several years. The question arises whether a high-growth enterprise, and thus also a gazelle, should be counted in more than one reference year if it fulfils the given definition. The recommendation is to do so. For instance, a gazelle born in year *t* could be counted as such either once or twice, if it shows high growth over a three-year period from the first to the fourth survival year and/or from the second to the fifth survival year. As the data on high-growth enterprises are collected on an annual basis, the question whether an enterprise was identified as a high-growth enterprise in any previous year is not relevant. [1] and [2] If growth in the employment or turnover was due to mergers or take-overs, the enterprise in question should not be considered a high-growth enterprise).
Unit of measure	Number (absolute figures)
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Recommended: Annual
Dissemination format	Publications: Key figures/pocketbooks; statistical books; statistics in focus; new releases; Online Database
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year. [6]
Source data type	The national SBRs are the main source of business demography data.
Reference documents	[1] Eurostat-OECD. (2007). [2] United Nations (2020). [3] Eurostat (2020a). [4] Eurostat (Metadata). [5] Eurostat (2017). [6] Eurostat (Metadata(a)).

14. Employment in young (up to 5-year-old) high-growth enterprises (gazelles)

Field	Metadata
Name of the indicator	Employment in young (up to 5-year-old) high-growth enterprises (gazelles)
Definition of the indicator	Number of persons employed by "Gazelles," i.e., high-growth enterprises that are up to 5 years old (having above a meaningful threshold of employees in the beginning of the high- growth period)[108] with average annualised growth greater than 10% per annum, over a three-year period. Gazelles are the subset of high-growth enterprises which are up to five years old. (See the methodology sheet for the indicator on high-growth enterprises for a full definition of high-growth enterprise.) [1] and [2]
Objective of the indicator	To measure the number of persons employed by young, high-growth enterprises.
Contribution and usefulness of the indicator	It is of special political interest to provide data on the number of jobs that have been created by newly born businesses, especially young enterprises that are growing very fast and thus creating considerable numbers of new jobs and intensively contributing to the growth of overall employment.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. For this indicator, the activity code of the final period should be used for stratifying high-growth enterprises. • by enterprise size – the enterprise size classes are defined as follows: 0-9 employees; 10-49 employees; 50-249 employees; 250+ employees.[109] For the purpose of business demography, a further breakdown of the smallest thresholds (i.e., 0[110], 1-4, 5-9, 10-19, 20-49) would be desirable. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by Legal Form (typical SBR breakdown) [3][4][5]
Algorithm	Number of persons employed by young (up to five-year old) high-growth enterprises that employ above a meaningfully-determined threshold of employees at the beginning of the three-year observation period (a provisional threshold of at least 10 employees has been suggested but should be determined after tests have been performed using different thresholds) with average annualised growth greater than 10% per annum, over a three-year period. See the indicator on "Number of Young (up to five-year old) High-growth Enterprises ("Gazelles")" for the full description of the algorithm for measuring young high-growth enterprises.
Description of the calculation of the indicator	It is recommended to compile this indicator based on "employment" (*See Glossary*). See the indicator on "Number of Young (up to five-year old) High-growth Enterprises ("Gazelles")" for the full description for measuring young high-growth enterprises.
Unit of measure	Number (absolute figures)
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Recommended: Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases

[108] A provisional threshold of at least 10 employees is suggested but should be determined after tests have been performed using different thresholds.
[109] It is common for business demography statistics to break down the smallest thresholds of enterprises, as demographic changes more likely occur among smaller firms; but a full breakdown by size class is useful if the data are available.
[110] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees, such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Timeliness	For annual data, data should be published within one calendar year of the end of the reference year. [6]
Source data type	The national SBRs are the main source of business demography data.
Reference documents	[1] Eurostat-OECD (2007). [2] United Nations (2020). [3] Eurostat (2020a). [4] Eurostat (Metadata). [5] Eurostat (2017). [6] Eurostat (Metadata(a)).

15. Labour compensation paid by active enterprises

Field	Metadata
Name of the indicator	Labour compensation paid by active enterprises
Definition of the indicator	Compensation (at current prices) of employees is defined as the total remuneration, in cash or in kind, payable by an employer to an employee in return for work done by the latter during the accounting period. Compensation of employees consists of wages and salaries, and of employers' social contributions.
Objective of the indicator	To measure total labour compensation over the past calendar year of active enterprises.
Contribution and usefulness of the indicator	The indicator is used for the calculation of the unit labour cost index, which is used as an early warning system in the context of the macroeconomic surveillance.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum • by enterprise size – the enterprise size classes are defined as follows: 0-9 employees; 10-49 employees; 50-249 employees; 250+ employees.[111] For the purpose of business demography, a further breakdown of the smallest thresholds (i.e., 0[112], 1-4, 5-9, 10-19, 20-49) would be desirable. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by Legal Form (typical SBR breakdown) [1][2][3]
Algorithm	The total remuneration, in cash or in kind, payable by an employer to an employee in return for work done by the latter during the accounting period. Compensation of employees consists of wages and salaries, and of employers' social contributions.
Description of the calculation of the indicator	Compensation of employees has two main components: (a) Wages and salaries payable in cash or in kind; (b) Social insurance contributions payable by employers, which include contributions to social security schemes, actual social contributions to other employment-related social insurance schemes, and imputed social contributions to other employment-related social insurance schemes.
Unit of measure	National currency.
Statistical unit	Enterprises (and in case of lack thereof establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Recommended: Quarterly; Annual as a minimum.
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For quarterly data, the recommendation is to publish the data within 3 months after the end of the reference period. [4] For annual data, provisional data should be published within one year and final data should be published within 2 calendar years of the end of the reference year.
Source data type	National accounts data. Countries use many sources to compile their national accounts, among them administrative data from government, population censuses, business surveys, and household surveys. Sources vary from country to country and may cover a large set of economic, social, financial, and environmental items, which need not always be strictly related to national accounts.

[111] It is common for business demography statistics to break down the smallest thresholds of enterprises, as demographic changes more likely occur among smaller firms; but a full breakdown by size class is useful if the data are available.
[112] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees, such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Reference documents	[1] Eurostat (2020a). [2] Eurostat (Metadata). [3] Eurostat (2017). [4] UN (2008).

16. Gross Value Added produced by active enterprises

Field	Metadata
Name of the indicator	Gross Value Added produced by active enterprises in reference period
Definition of the indicator	Gross value added at factor cost is as compiled for structural business statistics, *not* value added as used in national accounts (*see Glossary)*.
Objective of the indicator	To measure the addition of value to intermediate consumption by a firm, by virtue of its productive activities.
Contribution and usefulness of the indicator	To determine the value contributed by an enterprise to the current flow of goods and services.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. • By enterprise size – the enterprise size classes are defined as follows: 0[113]-9 employees; 10-49 employees; 50-249 employees; 250+ employees • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with TEC and STEC statistics) • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by legal form (typical SBR breakdown) [1][2][3]
Algorithm	Gross value added at factor cost for the in-scope enterprises according to the recommended breakdowns.
Description of the calculation of the indicator	Value added at factor cost can be calculated as the total sum of items to be added (+) or subtracted (-): • turnover (+); • capitalized production (+); • other operating income (+); • increases (+) or decreases (-) of stocks; • purchases of goods and services (-); • other taxes on products which are linked to turnover but not deductible (-); • duties and taxes linked to production (-). Alternatively, it can be calculated from the gross operating surplus by adding personnel costs. [6]
Unit of measure	National currency
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Recommended: Quarterly; Annual at a minimum
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For quarterly data, the recommendation is to publish the data within 3 months after the end of the reference period. [4] For annual data, provisional data should be published within one year and final data should be published within 2 calendar years of the end of the reference year.
Source data type	The data are collected through statistical surveys, SBRs, or administrative sources.
Reference documents	[1] Eurostat (2020a).

[113] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	[2] Eurostat (Metadata). [3] Eurostat (2017). [4] UN. (2008).

Section B. Indicators on Globalization and Digitalization

17. Total exports of businesses as a percentage of businesses' gross value added

Field	Metadata
Name of the variable or the indicator	Total exports of businesses as percentage of businesses' gross value added
Definition of the variable or the indicator	The value of total exports of goods and services of businesses by enterprise characteristics as a percentage of businesses' gross value added at factor cost. Gross value added at factor is as compiled for structural business statistics, *not* value added as used in national accounts *(see Glossary)*.
Objective of the variable or the indicator	To measure how much of businesses' gross value added at factor cost is composed of export sales.
Contribution and usefulness of the variable or the indicator	To serve as an indicator of the degree to which businesses exports, or their degree of export orientation.
Classification System	ISIC Rev. 4 for enterprises; CPC 2.1 for trade in goods and trade in services (in absence of CPC 2.1, trade in goods may be reported in HS 2017/HS 2022 and trade in services in EBOPS 2010).
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. • by enterprise size – the enterprise size classes are defined as follows: 0[114]-9 employees; 10-49 employees; 50-249 employees; 250+ employees • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with TEC and STEC statistics) • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) by legal form (typical SBR breakdown) • by trade in goods and by trade services in 2-digit CPC2.1 (in absence of CPC2.1, trade in goods may be reported in 2-digit HS 2017/HS 2022 and trade in services in main categories of EBOPS 2010). • by country and/or by region of destination of exports [1][2][3]
Algorithm	Divide the total exports of businesses by businesses' gross value added at factor cost, and then multiply this ratio by 100. When calculating the breakdowns, the numerator will be the total exports of all businesses in, for example, a specific ISIC 2-digit sector XX and the denominator will be the total gross value added at factor cost of businesses within the same ISIC 2-digit sector XX.
Description of the calculation of the indicator	The value of traded goods is calculated at the national frontier, on an FOB basis (free on board) for exports according to IMTS 2010. Data compiled following the IMTS 2010 recommendations have in general to be adjusted prior to use in balance of payments and national accounts. [4] The value of services exports by enterprises is the value of the total services supplied by resident to non-residents at market prices. [5]
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.

[114] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Frequency (periodicity) of data collection and dissemination	Recommended: Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	International Merchandise trade statistics, which are typically compiled from customs data. [4] Balance of payments data for trade in services, for which data are typically collected via enterprise surveys; household services; and/or an International Transactions Reporting System (ITRS). [5] [6] (S)TEC statistics can be compiled by linking the SBR to the trade register to international trade in services data at the enterprise level using a common identifier. [1] [3]
Reference documents	[1] Eurostat (2020a). [2] Eurostat (Metadata). [3] Eurostat-OECD (2017). [4] United Nations (2011). [5] United Nations (2011a). [6] International Monetary Fund (2009).

18. Percentage of trading businesses by number of partner countries

Field	Metadata
Name of the variable or the indicator	Percentage of trading businesses by number of partner countries
Definition of the variable or the indicator	The percentage of exporting and importing enterprises by the number of countries with which they trade as a share of total active enterprises.
Objective of the variable or the indicator	To measure the extent of enterprises that are trading internationally relative to all enterprises.
Contribution and usefulness of the variable or the indicator	Combined with other indicators, such as the proportion of exports/imports as % of GDP, employment in export-oriented enterprises, etc., this variable would help paint a portrait of the level of global interdependency, as well as the ability of local enterprises to connect and play a role in the global economy. Generally, it is assumed that enterprises that trade internationally are more competitive and therefore have higher productivity and revenues.
Classification System	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by number of partner countries. The following ranges are suggested: 0 countries 1-5 countries 6-9 countries 10-19 countries 20+ countries • by 2-digit ISIC division. • by enterprise size – the enterprise size classes are defined as follows: 0[115]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by enterprises that trade in goods and by enterprises that trade in services. • by trading status (i.e., exporter only, importer only, or importer and exporter (two-way trader), in line with trade (and services trade) • by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by legal form (as available in SBR). [1] [2] [3]
Algorithm	Eeg/EeT*100 where Eeg is # of enterprises exporting and importing with partner countries in each of the ranges below and EeT is the total number of enterprises. Number of partner countries: 0 countries 1-5 countries 6-9 countries 10-19 countries 20+ countries When calculating the breakdowns, the numerator will be the number of enterprises exporting and importing with a certain number of partner countries in, for example a specific ISIC 2-digit sector XX and the denominator will be the total number of enterprises within the same ISIC 2-digit sector XX.

[115] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Description of the calculation of the indicator	Number of enterprises exporting and importing with number of partner countries in each of the ranges suggested, divided by the total number of enterprises multiplied by 100.
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual.
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	The national SBRs are the main source of business demography data. International merchandise trade statistics by partner country, which are typically compiled from customs data. [4] Balance of payments data for trade in services by partner country, for which data are typically collected via enterprise surveys; household services; and/or an International Transactions Reporting System (ITRS). [5] [6] (S)TEC statistics can be compiled by linking the SBR to the trade register to international trade in services data at the enterprise level using a common identifier.
Reference documents	[1] Eurostat (2020a). [2] Eurostat (Metadata). [3] Eurostat (2017). [4] United Nations (2011). [5] United Nations (2011a). [6] International Monetary Fund (2009).

19. Export intensity of businesses

Field	Metadata
Name of the variable or the indicator	Export intensity of businesses
Definition of the variable or the indicator	The value of businesses' exports as a proportion of total business turnover.
Objective of the variable or the indicator	This indicator provides information on the relative contribution of exports to total enterprise revenue.
Contribution and usefulness of the variable or the indicator	This is a measure of the importance of global activities of domestic businesses in creating wealth. It is also an important indication of the ability of enterprises to connect with global customers and, therefore, a proxy indicator of firm competitiveness.
Classification System	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by share of export intensity. The following ranges are suggested: 0-24%; 25%-49%; 50%-74%; 75%+ by 2-digit ISIC division. • by enterprise size – the enterprise size classes are defined as follows: 0[116]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by enterprises that trade in goods and by enterprises that trade in services. • by trading status (i.e., exporter only, importer only, or importer and exporter (two-way trader), in line with trade (and services trade) • by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) • by legal form (as available in SBR) • by goods and services in CPC2.1 and by county/region of export. In absence of data in CPC2.1, exports of goods can be compiled in 2-digit HS2017/HS2022 and exports of services in main categories of EBOPS2010. [1][2][3]
Algorithm	Value of businesses' exports / value of businesses' total turnover *100 When calculating the breakdowns, the numerator will be the total value of exports of all businesses in, for example, a specific ISIC 2-digit sector XX and the denominator will be the total turnover of businesses within the same ISIC 2-digit sector XX.
Description of the calculation of the indicator	The value of traded goods is calculated at the national frontier, on an FOB basis (free on board) for exports according to IMTS 2010. Data compiled following the IMTS 2010 recommendations have in general to be adjusted prior to use in balance of payments and national accounts. [4] The value of services exports by enterprises is the value of the total services supplied by resident to non-residents at market prices. [5] To calculate export intensity for each enterprise, divide total value of exports by total value of turnover. Then tabulate the proportion of enterprises with export intensities falling within the ranges below: 0-24%; 25%-49%;

[116] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	50%-74%; 75%+
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data. The population of active enterprises refers to any enterprises that were active at any time in the reference period, even for a limited time.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	The national SBRs are the main source of business demography data. International merchandise trade statistics by partner country, which are typically compiled from customs data. [4] Balance of payments data for trade in services by partner country, for which data are typically collected via enterprise surveys; household services; and/or an International Transactions Reporting System (ITRS). [5] [6] (S)TEC statistics can be compiled by linking the SBR to the trade register to international trade in services data at the enterprise level using a common identifier. [1] [3] [4]
Reference documents	[1] Eurostat (2020a). [2] Eurostat (Metadata). [3] Eurostat (2017). [4] United Nations (2011). [5] United Nations (2011a). [6] International Monetary Fund (2009).

20. Value of trade by foreign affiliates

Field	Metadata
Name of the variable or the indicator	Value of trade by foreign affiliates
Definition of the variable or the indicator	The value of foreign affiliates' exports and imports as a share of total exports and imports. [1]
Objective of the variable or the indicator	Provides the degree to which international trade is attributable to foreign affiliates controlled by foreign countries.
Contribution and usefulness of the variable or the indicator	This indicator provides information on the export and import activity of foreign affiliates.
Classification System	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by trade flow (i.e., exports and imports). [2] • by 2-digit ISIC division at a minimum. • by enterprise size – the enterprise size classes are defined as follows: 0[117]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by enterprises that trade in goods and by enterprises that trade in services. • by trading status (i.e., exporter only, importer only, or importer and exporter (two-way trader), in line with trade (and services trade) • by enterprise characteristics (TEC and STEC) statistics • by legal form (as available in SBR) • by goods and services in CPC2.1 and by county/region of export. In absence of data in CPC2.1, exports of goods can be compiled in 2-digit HS2017/HS2022 and exports of services in main categories of EBOPS2010 [3][4][5]
Algorithm	The indicator is calculated separately by trade flow - exports and imports. (VEf/VEa)*100, where VEf is the value of exports by foreign controlled enterprises and VEa is the value of exports by all enterprises in the business sector and (VIf/VIa)*100, where VIf is the value of imports by foreign controlled enterprises and VIa is the value of imports by all enterprises in the business sector
Description of the calculation of the indicator	The value of traded goods is calculated at the national frontier, on an FOB basis (free on board) for exports according to IMTS 2010. Data compiled following the IMTS 2010 recommendations have in general to be adjusted prior to use in balance of payments and national accounts. [6] The value of services exports by enterprises is the value of the total services supplied by resident to non-residents at market prices. [7] Divide the value of exports by foreign controlled enterprises by total value of exports by all enterprises in the business sector, and then multiply this ratio by 100. Divide the value of imports by foreign controlled enterprises by total value of imports by all enterprises in the business sector, and then multiply this ratio by 100.
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.

[117] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Frequency (periodicity) of data collection and dissemination	Recommended: Annual.
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	The national SBRs are the main source of business demography data. International merchandise trade statistics, which are typically compiled from customs data. [6] Balance of payments data for trade in services, for which data are typically collected via enterprise surveys; household services; and/or an International Transactions Reporting System (ITRS). [7] [8] (S)TEC statistics can be compiled by linking the SBR to the trade register to international trade in services data at the enterprise level using a common identifier. [2][5]
Reference documents	[1] Eurostat (2012). [2] Eurostat (2021). [3] Eurostat (2020a). [4] Eurostat (Metadata). [5] Eurostat (2017). [6] United Nations (2011). [7] United Nations (2011a). [8] International Monetary Fund (2009).

21. Employment abroad in foreign affiliates controlled by resident enterprises as share of enterprises' total employment

Field	Metadata
Name of the variable or the indicator	Employment abroad in foreign affiliates controlled by resident enterprises as share of enterprises' total employment worldwide.
Definition of the variable or the indicator	Employment abroad in foreign affiliates controlled by enterprises resident in the compiling country as a share of total employment by businesses.
Objective of the variable or the indicator	To measure resident enterprises' employment abroad in foreign affiliates under their control as a share of enterprises' total employment.
Contribution and usefulness of the variable or the indicator	The indicator reflects aspects of the role of multinationals in the economy of the compiling country by showing the employment in foreign affiliates of multinationals domestically controlled as share of the total employment by businesses in the compiling country.
Classification System	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. • by enterprise size – the enterprise size classes are defined as follows: 0[118]-9 employees, 10-49 employees, 50-249 employees, 250+ employees.
Algorithm	Divide the number of persons employed abroad in foreign affiliates controlled by resident enterprises by the total number of persons employed by businesses, and then multiply this ratio by 100.
Description of the calculation of the indicator	(Empfa/Empe)*100, where Empfa is the number of persons employed in foreign affiliates of enterprises controlled by the compiling country, and Empe is the total number of persons employed by businesses. It is recommended to compile this indicator based on "employment" (*see Glossary*).
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	Outward FATS statistics surveys [1] and Structural Business Statistics.
Reference documents	[1] Eurostat (2012).

[118] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

22. Entry and exit rates for the digital economy[119]

Field	Metadata
Name of the variable or the indicator	Entry and exit rates for the digital economy [2]
Definition of the variable or the indicator	Entry rates are the number of entering units (births) divided by the number of entering and incumbent units. Exit rates are the number of exiting units (deaths) over the number of exiting and incumbent units.[120] The definition of the digital economy used here is as defined as the "core" measure of the digital economy [3], which includes economic activity from producers of Digital content, ICT goods and services.
Objective of the variable or the indicator	Entry rates and exit rates are indicators that provide enterprises' birth rate (new enterprises that have started from scratch and that have actually started activity) and death rate within the digital economy and during a period of time.
Contribution and usefulness of the variable or the indicator	In general, digital-intensive sectors are characterized by higher business dynamism. The entry and exit rates provide information regarding the turnover of a sector in terms of number of enterprises. Comparing the two rates reveals how the number of enterprises is changing (more births vs. more deaths). Since these rates are unweighted (i.e., by count and size does not matter), it is easy to make comparisons among countries with different size of economy. Within a country, comparing birth and death rates for the digital economy with those for all sectors can indicate if a sector is outgrowing the whole economy.
Classification System	ISIC Rev. 4
Industrial Coverage	The scope of the digital economy depends on the definition of the "digital economy" (see OECD 2020 for a tiered definition of the Digital Economy). Here to facilitate the wide compilation of the indicator and its comparability, it is suggested to use the definition of the core measure of the digital economy, which includes economic activity from producers of Digital content, ICT goods and services. [3]. The Information and communication technologies (ICT) sector, defined in ISIC rev. 4 as output produced by firms that are "intended to fulfil or enable the function of information processing and communication by electronic means, including transmission and display" (ISIC rev. 4). While the production or distribution of ICT products can be found everywhere in the economy, the identification of sectors within the ISIC rev. 4. classification that produce or distribute ICT products as a main activity constitutes a first-order approximation of the ICT sector. Information industries supplement the ICT sector to also include the content and media sector. This is defined as the group of economic activities that are primarily *"engaged in the production, publishing and/or the distribution of content (information, cultural and entertainment products), where content corresponds to an organised message intended for human beings"* (ISIC rev. 4). The following classification of content and media activities from ISIC Rev. 4. was established by the OECD and included in the 2011 version of the *OECD Guide to Measuring the information society*. These can be associated to the *core measure* of the Digital Economy: • – ISIC 581 Publishing of books, periodicals and other publishing activities • – ISIC 591 Motion picture, video and television program activities • – ISIC 592 Sound recording and music publishing activities • – ISIC 60 Broadcasting and programming activities • – ISIC 639 Other information service activities For practical purposes, due to limited data availability, the core measure of the digital economy can be approximated by the following ISIC Rev.4 (two-digit) Divisions: "Computer, electronic and optical products" (Division 26), "Publishing, audiovisual, and broadcasting activities" (58 to 60), "Telecommunications" (61), and "IT and other information services" (62 to 63). [3]
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum • by enterprise size –

[119] This indicator is related to an indicator in OECD *2019* (page 150). [1]

[120] These indicators relate to the concepts of births and deaths used in business demography but focusing on those events of enterprises engaged in the activities of the digital economy.

	the enterprise size classes are defined as follows: 0[121]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with TEC and STEC statistics) • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)). [4][5][6]
	Entry rate: divide the number of births of enterprises in the digital economy by the number of active enterprises in the digital economy in the reference period *t* (usually a year). Exit rate: divide the number of deaths of enterprises in the digital economy by the number of active enterprises in the digital economy in the reference period *t* (usually a year). [3]
Description of the calculation of the indicator	n/a
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, provisional data should be published within one year and final data should be published within 2 calendar years of the end of the reference year. [3] In the case of indicators on enterprise deaths, a two-year lag is foreseen in the methodology in order to confirm whether a presumed death is in fact reactivated. For this reason, information on deaths is generally available later than the stock of enterprises and enterprise births.
Source data type	The national SBRs are the main source of business demography data.
Reference documents	[1] OECD (2019). [2] Eurostat – OECD (2007). [3] OECD (2020). [4] Eurostat (2020a). [5] Eurostat (Metadata). [6] Eurostat (2017).

[121] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

23. Average post-entry employment growth for the digital economy[122]

Field	Metadata
Name of the variable or the indicator	Average post-entry employment growth for the digital economy[1]
Definition of the variable or the indicator	Post-entry employment growth is the ratio between total employment of businesses in the digital economy at time *t*+5 over total employment at time *t* of surviving entrants.[123] [1] The definition of the digital economy used here is as defined as the "core" measure of the digital economy [2], which includes economic activity from producers of Digital content, ICT goods and services.
Objective of the variable or the indicator	To measure the five-year employment growth of all entrants that were established in a sector within a year and survived for 5 years of the digital economy.
Contribution and usefulness of the variable or the indicator	For the digital economy, there is usually a higher level of dynamism. Focusing on the five-year employment growth of surviving firms helps us to understand the ability of this sector in terms of creating jobs sustainably. When it is compared with the growth rate with that of other sectors, we can draw come conclusions on how the digital economy contributes to the nation's employment, hence there are significant policy implications.
Classification System	ISIC Rev. 4
Industrial Coverage	The scope of the digital economy depends on the definition of the "digital economy" (see OECD 2020 for a tiered definition of the Digital Economy). Here to facilitate the wide compilation of the indicator and its comparability, it is suggested to use the definition of the core measure of the digital economy, which includes economic activity from producers of Digital content, ICT goods and services. [2]. The Information and communication technologies (ICT) sector, defined in ISIC rev. 4 as output produced by firms that are "intended to fulfil or enable the function of information processing and communication by electronic means, including transmission and display" (ISIC rev. 4). While the production or distribution of ICT products can be found everywhere in the economy, the identification of sectors within the ISIC rev. 4. classification that produce or distribute ICT products as a main activity constitutes a first-order approximation of the ICT sector. Information industries supplement the ICT sector to also include the content and media sector. This is defined as the group of economic activities that are primarily *"engaged in the production, publishing and/or the distribution of content (information, cultural and entertainment products), where content corresponds to an organised message intended for human beings"* (ISIC rev. 4). The following classification of content and media activities from ISIC Rev. 4. was established by the OECD and included in the 2011 version of the *OECD Guide to Measuring the information society*. These can be associated to the *core measure* of the Digital Economy: • – ISIC 581 Publishing of books, periodicals and other publishing activities • – ISIC 591 Motion picture, video and television program activities • – ISIC 592 Sound recording and music publishing activities • – ISIC 60 Broadcasting and programming activities • – ISIC 639 Other information service activities For practical purposes, due to limited data availability, the core measure of the digital economy can be approximated by the following ISIC Rev.4 (two-digit) Divisions: "Computer, electronic and optical products" (Division 26), "Publishing, audiovisual, and broadcasting activities" (58 to 60), "Telecommunications" (61), and "IT and other information services" (62 to 63). [2]
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division. • by enterprise size –

[122] This indicator is identified in the set of Indicators on Jobs, Skills, and Growth in the Digital Economy from the G20 Digital Economy Task Force (OECD 2020) (page 72) and in OECD 2019 (page 150). [1]

[123] These indicators relate to the concepts of survival used in business demography but focusing on those events of enterprises engaged in the activities of the digital economy.

	The enterprise size classes are defined as follows: 0[124]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with TEC and STEC statistics) • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)). [3][4][5]
Algorithm	Total employment of businesses in the digital economy at time *t*+5 divided by the total employment at time *t* of surviving entrants in *t*+5.
Description of the calculation of the indicator	In year *t*, the total number of entry units in the digital economy is calculated and are included in the calculation if they survived in year *t*+5. Then the total employment of these surviving units is calculated in year *t*+5 and in year t to obtain the employment growth rate. [6]
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments).
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	The national SBRs are the main source of business demography data.
Reference documents	[1] OECD (2019). [2] OECD (2020). [3] Eurostat (2020a). [4] Eurostat (Metadata). [5] Eurostat (2017). [6] Eurostat – OECD (2007).

[124] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

24. Percentage of businesses with internet connection[125]

Field	Metadata
Name of the variable or the indicator	Percentage of businesses with internet connection
Definition of the variable or the indicator	The percentage of enterprises among all enterprises, by enterprise characteristics, that have an internet connection, including narrowband (download speed of less than 256Kbits/s, in one or both directions) and broadband (download speed equal to or greater than 256Kbits/s, in one or both directions), including fixed and mobile, connections. *See Glossary for full definitions.* [1] [2] [3][4] [5]
Objective of the variable or the indicator	To measure the percentage of enterprises in a country that have broadband internet access.
Contribution and usefulness of the variable or the indicator	Internet access is very important to businesses as it helps to improve productivity. This indicator provides information on access to an internet connection in businesses and a comparison of how advanced IT infrastructure is in different countries.
Classification System	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by narrowband and broadband. • by enterprises with very high-speed (at least 50 Mbps)[126] fixed broadband and enterprises with lower speed fixed broadband. [1] • of broadband by fixed broadband and mobile broadband, depending on data availability. • by 2-digit ISIC division at a minimum. [5] • by enterprise size – The enterprise size classes are defined as follows: 0[127]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with TEC and STEC statistics) • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)). [6][7][8]
Algorithm	Resulting percentage from: ENT_b/ENT_a Where ENTb is number of enterprises with broadband connection, and ENTa is number of total enterprises.
Description of the calculation of the indicator	The percentage resulting from the number of enterprises with broadband connection divided by the number of all enterprises. Broadband connections refer to fixed line broadband services (i.e., of 256 Kbps advertised speed or more) subscriptions purchased by businesses. Fixed broadband comprises DSL, cable, fibre-to-the-home (FTTH), fibre-to-the-building (FTTB), satellite, terrestrial fixed wireless, and other fixed-wired technologies. [1]
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.

[125] This indicator is identified in OECD 2019 (page 106). [1] This indicator is also closely related to "PI25 Business use of broadband subscriptions "of the thematic list of ICT indicators for monitoring progress towards the implementation of the 2030 Agenda for Sustainable Development of the Global Partnership on Measuring Information and Communication Technology for Development (see E/CN.3/2020/37 and E/CN.3/2020/23). In particular, "PI25 Business use of broadband subscriptions," collected by the United Nations Conference on Trade and Development. https://unstats.un.org/unsd/statcom/51st-session/documents/2020-37-FinalReport-E.pdf and https://undocs.org/en/E/CN.3/2020/23 [2]

[126] ITU, Financing for ICT Infrastructure, 2016. https://www.un.org/esa/ffd/wp-content/uploads/2016/01/Financing-for-ICT-Infrastructure_ITU_IATF-Issue-Brief.pdf [3]

[127] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	Data on business (and household) broadband connections are gathered through surveys on ICT usage.[128] These allow for the collection of useful contextual details in comparison to subscriptions data from regulators, though surveys are less suited to collecting specific technical details. [5] [9] [10] The national SBRs are the main source of business demography data.
Reference documents	[1] OECD (2019). [2] United Nations (2020a). [3] ITU (2016). [4] ITU (Standards.) [5] UNCTAD (2020). [6] Eurostat (2020a). [7] Eurostat (Metadata). [8] Eurostat (2017). [9] Eurostat (2021b). [10] OECD (2015).

[128] Examples include Stat Canada's "Survey of Digital Technology and Internet Use".

25. Capital investment of businesses on ICT as a percentage of total business capital investment

Field	Metadata
Name of the variable or the indicator	Capital investment of businesses on ICT as a percentage of total business capital investment. [1] [2] [3]
Definition of the variable or the indicator	The capital investment (or gross fixed capital formation) by businesses on Information and communications technology (ICT), measured as a percentage of businesses' total capital investment (or gross fixed capital formation).
Objective of the variable or the indicator	To measure business expenditure on ICT-related capital investment as a percentage of their total capital investment.
Contribution and usefulness of the variable or the indicator	This indicator provides information on relative importance of capital expenditure on ICT by businesses within a country. By comparing this indicator across countries, it helps to know how different counties allocate their capital investment to promote technological advancement.
Classification System	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. • by enterprise size – the enterprise size classes are defined as follows: 0[129]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with TEC and STEC statistics) • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)). [4][5][6]
Algorithm	Gross fixed capital formation by businesses on ICT expenditures divided by the total gross fixed capital formation by all businesses, multiplied by 100. When calculating the breakdowns, the numerator will be the gross fixed capital formation on ICT of businesses in, for example a specific ISIC 2-digit sector XX and the denominator will be the total gross fixed capital formation on ICT of businesses within the same ISIC 2-digit sector XX.
Description of the calculation of the indicator	*See Glossary* for definition of ICT expenditures.
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	Data are generally collected by national statistical offices through surveys.

[129] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Reference documents	[1] OECD (2018). [2] OECD (2019). [3] OECD (2020). [4] Eurostat (2020a). [5] Eurostat Metadata. [6] Eurostat (2017).

26. Capital investment of businesses on ICT as a percentage of total gross value added[130]

Field	Metadata
Name of the variable or the indicator	Capital investment of businesses on ICT as a percentage of total gross value added [1] [2] [3]
Definition of the variable or the indicator	The capital investment (or gross fixed capital formation) by businesses on Information and communications technology (ICT), measured as a percentage of businesses' total gross value added at factor cost.
Objective of the variable or the indicator	To measure business expenditure on ICT-related capital investment as a percentage of their total gross value added at factor cost.
Contribution and usefulness of the variable or the indicator	This indicator provides information on relative importance of capital expenditure on ICT by businesses within a country. By comparing this indicator across countries, it helps to know how different counties allocate their capital investment to promote technological advancement.
Classification System	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. • by enterprise size – the enterprise size classes are defined as follows: 0[131]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with TEC and STEC statistics) • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)). [4][5][6]
Algorithm	Gross fixed capital formation by businesses on ICT expenditures divided by the total gross value added at factor cost of all businesses, multiplied by 100. When calculating the breakdowns, the numerator will be the gross fixed capital formation on ICT of businesses in, for example, a specific ISIC 2-digit sector XX and the denominator will be the total gross value added at factor cost of businesses within the same ISIC 2-digit sector XX.
Description of the calculation of the indicator	*See Glossary* for definition of ICT expenditures.
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	Data are generally collected by national statistical offices through surveys.

[130] The G20 "Toolkit for Measuring the Digital Economy" (2018) (page 59] [1] and OECD (2019) (page 74) [2] include indicators on ICT investment as a percentage of GDP.

[131] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Reference documents	[1] OECD (2018). [2] OECD (2019). [3] OECD (2020). [4] Eurostat (2020a). [5] Eurostat (Metadata). [6] Eurostat (2017).

27. Percentage of businesses using cloud computing services[132]

Field	Metadata
Name of the variable or the indicator	Percentage of businesses using cloud computing services [1][2][3]
Definition of the variable or the indicator	The businesses using paid cloud computing services, as a share of all businesses. Cloud computing refers to ICT services provided over the Internet such as access to servers, storage, network components, and software applications, where the services have all of the following characteristics: a) are delivered from servers of service providers; b) can be easily scaled up or down (e.g., number of users or storage capacity); c) can be used on-demand by the user, at least after the initial set up (without human interaction with the service provider); d) is paid for per user or by capacity used, or is pre-paid.[4]
Objective of the variable or the indicator	To measure the number of businesses that use cloud computing services, within a period of time, as a share of all businesses.
Contribution and usefulness of the variable or the indicator	Cloud computing services enable enterprises to use a network of remote servers hosted on the Internet to store, manage, and process data, rather than a local server or a personal computer. This will significantly enhance the enterprises' IT capacity without significant investment in hardware, software, and personnel. This indicator provides information how businesses in a country are using these sophisticated IT services, which implies higher productivity.
Classification System	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. • by enterprise size – the enterprise size classes are defined as follows: 0[133]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with TEC and STEC statistics) • by type of ownership (that is foreign or domestically controlled enterprise (with or without own affiliates abroad)). [5][6][7]
Algorithm	$BCS_s = \frac{BCloud_s}{B_s} x100$ $BCS_m = \frac{BCloud_m}{B_m} x100$ $BCS_l = \frac{BCloud_l}{B_l} x100$ Where BCS is percentage of businesses using paid cloud computing services, BCloud is number of businesses using paid cloud computing services and B is total number of businesses. Subscript s indicates the smallest thresholds, m medium thresholds and l the largest thresholds. When calculating the breakdowns, the numerator will be the number of businesses using paid cloud computing services in, for example, a specific ISIC 2-digit sector XX and the denominator will be the total number of businesses within the same ISIC 2-digit sector XX.
Description of the calculation of the indicator	The proportion of businesses using paid cloud computing services is calculated by dividing the number of businesses using paid cloud computing services during the 12-month reference period by the total number of in-scope enterprises, multiplied by 100.
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)

[132] This indicator is identified in the G20 "Toolkit for Measuring the Digital Economy" (2018) (see page 48). [1]

[133] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	These data are generally collected through direct surveys of ICT usage by businesses. [2] [4] [8] [9]
Reference documents	[1] OECD (2018). [2] OECD (2019). [3] OECD (2020). [4] OECD (2015). [5] Eurostat (2020a). [6] Eurostat (Metadata). [7] Eurostat (2017). [8] Eurostat (2021b). [9] UNCTAD (2020).

28. ICT-related patents (registered)[134]

Field	Metadata
Name of the variable or the indicator	ICT-related patents (registered)
Definition of the variable or the indicator	The number of registered ICT-related patents (*see* Glossary) by businesses for a country, within a year.
Objective of the variable or the indicator	To measure how many ICT-related patents a country can develop and register within the reference period of one year.
Contribution and usefulness of the variable or the indicator	This indicator measures the strength of a country in terms of ICT innovations.
Classification System	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. • by enterprise size – the enterprise size classes are defined as follows: 0[135]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with TEC and STEC statistics) • by type of ownership (that is foreign or domestically controlled enterprise (with or without own affiliates abroad)). [2][3][4]
Algorithm	Count of ICT-related patents (registered).
Description of the calculation of the indicator	N/A
Unit of measure	Absolute figures
Statistical unit	Patent (individual)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	Depends on the data source.
Source data type	Patent offices, the World Wide Patent Database, or business surveys. [5][6][7][8]
Reference documents	[1] OECD (2019). [2] Eurostat (2020a). [3] Eurostat (Metadata). [4] Eurostat (2017). [5] OECD (2009). [6] OECD Patent counts by technology. https://stats.oecd.org/Index.aspx?DataSetCode=PATS_IPC [7] WIPO. https://patentscope.wipo.int/search/en/search.jsf [8] Five IP offices (IP5) is a forum of the five largest intellectual property offices in the world that was set up to improve the efficiency of the examination process for patents worldwide. https://www.fiveipoffices.org/about

[134] This indicator (as a percentage) is identified in OECD (2019) (see page 45). [1]

[135] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

29. ICT-related trademarks (as a percentage of total trademarks)[136]

Field	Metadata
Name of the variable or the indicator	ICT-related trademarks (as a percentage of total trademarks) [1]
Definition of the variable or the indicator	The number of registered ICT-related trademarks (*see* Glossary) by businesses for a country, within a year. Trademarks are distinctive signs; e.g., words and symbols, used to identify the goods or services of a firm from those of its competitors.
Objective of the variable or the indicator	To measure the percentage of ICT-related trademarks that businesses in a country have registered with IP offices within the reference period of one year.
Contribution and usefulness of the variable or the indicator	This indicator provides a measurement for a country's growth strength of business and innovation in the information and technology sector.
Classification System	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. • by enterprise size – the enterprise size classes are defined as follows: 0[137]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with TEC and STEC statistics) by type of ownership (that is foreign or domestically controlled enterprise (with or without own affiliates abroad)). [2][3][4]
Algorithm	$ITS = \frac{IT}{T} x100$ Where ITS is the share of ICT-related trademarks by businesses of all trademarks registered by businesses, IT is the count of ICT-related trademarks, T is the total count trademarks registered by businesses, all within the reference period of a year. When calculating the breakdowns, the numerator will be the number of ICT-related trademarks registered by businesses in, for example, a specific ISIC 2-digit sector XX and the denominator will be the total number of trademarks registered by businesses within the same ISIC 2-digit sector XX.
Description of the calculation of the indicator	Proportion is calculated by dividing the number of ICT-related trademarks by the total number of trademarks registered, multiplied by 100.
Unit of measure	Percentage
Statistical unit	Trademarks (individual)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual (or depending on data availability)
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	Depends on the data source
Source data type	Patent and trademark offices or business surveys. [5][6][7][8]
Reference documents	[1] OECD (2019). [2] Eurostat (2020a). [3] Eurostat (Metadata). [4] Eurostat (2017). [5] OECD (2009). [6] OECD Patent counts by technology. https://stats.oecd.org/Index.aspx?DataSetCode=PATS_IPC [7] WIPO. https://patentscope.wipo.int/search/en/search.jsf

[136] This indicator is identified in OECD 2019 (see page 45). [1]

[137] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	[8] FiveIPoffices, Statistical data resources. https://www.fiveipoffices.org/statistics/statisticaldata/statisticaldata_index

30. Patents in AI technologies[138]

Field	Metadata
Name of the variable or the indicator	Patents in AI technologies [1] [2]
Definition of the variable or the indicator	The number of patents registered by businesses related to artificial intelligence (AI), within a year. *See* Glossary. An AI System is a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments. [1] [2]
Objective of the variable or the indicator	To measure how many patents in AI that businesses register in a country within a year.
Contribution and usefulness of the variable or the indicator	This indicator measures the strength of a country in terms of AI innovations.
Classification System	ISIC Rev. 4
Industrial Coverage	All sectors
Useful Breakdowns	N/A
Algorithm	N/A
Description of the calculation of the indicator	N/A
Unit of measure	Absolute figures
Statistical unit	Patent (individual)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	Depends on the data source
Source data type	Patent and trademark offices or business surveys. [3]
Reference documents	[1] OECD (2019). [2] OECD (2018). [3] OECD Intellectual Property statistics and analysis. http://www.oecd.org/sti/intellectual-property-statistics-and-analysis.htm

[138] This indicator (as a percentage) is identified in OECD 2019 (page 39). [1]

31. Percentage of businesses engaged in sales via e-commerce[139]

Field	Metadata
Name of the variable or the indicator	Percentage of businesses engaged in sales via e-commerce [1] [2] [3]
Definition of the variable or the indicator	The number of businesses engaged in sales via e-commerce as a share of all businesses. This refers to the number of in-scope businesses receiving orders over the Internet as a proportion of the total number of in-scope businesses. It includes orders received via the Internet whether or not payment was made online: via websites, specialized Internet marketplaces, extranets, EDI over the Internet, Internet-enabled mobile phones and email. It includes orders received on behalf of other organizations. It excludes orders that were cancelled or not completed. *See Glossary* for definition of e-commerce.
Objective of the variable or the indicator	To measure the percentage of businesses that have e-commerce sales among all businesses in scope, within a period of time.
Contribution and usefulness of the variable or the indicator	This indicator provides information on how digitalized industries are in a country. Furthermore, e-commerce is not limited to a certain geographical area that a business can service and it can reduce cost significantly, thereby making businesses more competitive.
Classification System	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. • by enterprise size – the enterprise size classes are defined as follows: 0[140]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with TEC and STEC statistics) • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)). [4][5][6]
Algorithm	$BES_s = \frac{BE_s}{B_s} x100$ $BES_m = \frac{BE_m}{B_m} x100$ $BES_l = \frac{BE_l}{B_l} x100$ Where BES is the percentage of businesses that have e-commerce sales, BE is the number of businesses that have e-commerce sales and B is total number of businesses in scope. Subscript s indicates the smallest thresholds, m medium size thresholds and l the largest thresholds. When calculating the breakdowns, the numerator will be the total number of businesses that have e-commerce sales in, for example, a specific ISIC 2-digit sector XX and the denominator will be the total number of businesses within the same ISIC 2-digit sector XX.
Description of the calculation of the indicator	Proportion is calculated by dividing the number of businesses engaged in e-commerce sales by the total number of in-scope businesses, multiplied by 100.
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.

[139] This indicator is identified in OECD (2020), "A roadmap toward a common framework for measuring the Digital Economy" (page 28) http://www.oecd.org/sti/roadmap-toward-a-common-framework-for-measuring-the-digital-economy.pdf [1]. It is also identified in the Thematic list of information and communications technology indicators for the Sustainable Development Goals of the Partnership on Measuring ICT Indicators for Development (2020) https://unstats.un.org/unsd/statcom/51st-session/documents/2020-23-ICT-E.pdf [2].

[140] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Frequency (periodicity) of data collection and dissemination	Annual.
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.[2]
Source data type	Data are generally collected by national statistical offices through surveys on ICT usage.[141] [7] [8] [9]
Reference documents	[1] OECD (2020). [2] United Nations (2020a). [3] OECD (2018). [4] Eurostat (2020a). [5] Eurostat (Metadata). [6] Eurostat (2017). [7] Eurostat (2021b). [8] OECD (2015). [9] UNCTAD (2020),

[141] In Canada, for example, data is available from Survey of Digital Technology and Internet Use (SDTIU). https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4225

32. Value of e-commerce sales by businesses

Field	Metadata
Name of the variable or the indicator	Value of e-commerce sales by businesses
Definition of the variable or the indicator	The value of e-commerce sales by businesses over the reference period. *See Glossary* for definition of e-commerce.
Objective of the variable or the indicator	To measure the value of total e-commerce sales by businesses.
Contribution and usefulness of the variable or the indicator	This indicator provides information on how digitalized industries are in a country. Furthermore, e-commerce is not limited to a certain geographical area that a business can service and it can reduce cost significantly, thereby making businesses more competitive.
Classification System	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. • by enterprise size – the enterprise size classes are defined as follows: 0[142]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) • by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)). [1][2][3]
Algorithm	N/A
Description of the calculation of the indicator	Sum of absolute values of e-commerce sales for all active businesses.
Unit of measure	Absolute figures
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	Data are collected by national statistical institutions through surveys.[143]
Reference documents	[1] Eurostat (2020a [2] Eurostat (Metadata). [3] Eurostat (2017).

[142] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

[143] In Canada, for example, data are available from Survey of Digital Technology and Internet Use (SDTIU).https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4225

33. Labour productivity growth in the ICT sector[144]

Field	Metadata
Name of the variable or the indicator	Labour productivity growth in the ICT sector [1]
Definition of the variable or the indicator	The annual growth rate of labour productivity in the ICT sector. Here, labour productivity is based on the concepts of industrial statistics and is related to the value added of labour at factor cost; in contrast, Total Factor Productivity is a concept under the National Accounts framework, which reflects the overall efficiency with which labour and capital inputs are used together in the production process.
Objective of the variable or the indicator	To measure the annual growth rate of labour productivity in the ICT sector.
Contribution and usefulness of the variable or the indicator	Labor productivity is directly linked to improved standards of living in the form of higher consumption. As an economy's labour productivity grows, it produces more goods and services for the same amount of relative work. Comparing the labour productivity growth in ICT to that of other industries has significant policy implications.
Classification System	ISIC Rev. 4
Industrial Coverage	Market enterprises operating in the ICT sector (*see Glossary* for the definition of the ICT sector). The Information and communication technologies (ICT) sector, defined in ISIC rev. 4 as output produced by firms that are "intended to fulfil or enable the function of information processing and communication by electronic means, including transmission and display" (ISIC rev. 4). While the production or distribution of ICT products can be found everywhere in the economy, the identification of sectors within the ISIC rev. 4. classification that produce or distribute ICT products as a main activity constitutes a first-order approximation of the ICT sector. *See* Glossary for full definition of the ICT sector. [1] [2][3]
Useful Breakdowns (listed in order of relevance or importance)	• by enterprise size – the enterprise size classes are defined as follows: 0[145]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) • by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)). [4][5][6]
Algorithm	$PG_s = \frac{Prod_s}{Prod_{s-1}} x100$ Where PGs is the annual labour productivity growth of the ICT sector in year *s*, calculated as the ratio of productivity in year *s* to the productivity in year *s*-1, in the ICT sector.
Description of the calculation of the indicator	Labour productivity is measured as the ratio of the gross value added at factor cost (in national currency) to the number of persons employed, multiplied by 100.
Unit of measure	Percentage
Statistical unit	Enterprise (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual

[144] This indicator is included in the OECD report for G20 DEFT (2020) as "Labour productivity in Information Industries" (page 73). [1]

[145] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.[2]
Source data type	Labour Force Survey - LFS (for labour input) Business statistics for gross value added at factor cost.
Reference documents	[1] OECD (2020). [2] OECD (2018). [4] Eurostat (2020a). [5] Eurostat (Metadata). [6] Eurostat (2017).

34. Contribution of ICT sector to labour productivity growth[146]

Field	Metadata
Name of the variable or the indicator	Contribution of ICT sector to labour productivity growth
Definition of the variable or the indicator	This indicator is defined as the productivity growth of the ICT sector as a share of the overall labour productivity growth of all market enterprises in an economy. Here, labour productivity is based on the concepts of industrial statistics and is related to the value added of labour at factor cost; in contrast, Total Factor Productivity is a concept under the National Accounts framework, which reflects the overall efficiency with which labour and capital inputs are used together in the production process.
Objective of the variable or the indicator	To measure the contribution of the ICT sector to all-sector labour productivity growth.
Contribution and usefulness of the variable or the indicator	Productivity growth is the ultimate driver of economic growth and social welfare. Productivity growth of the industries in the ICT sector is usually much higher than the average and contributes significantly to the overall productivity growth in most countries. This indicator provides information on how much a country's productivity growth relies on the ICT sector. This reliance can also be compared across countries.
Classification System	ISIC Rev. 4
Industrial Coverage	Market enterprises in all sectors (including market enterprises operating in the ICT sector (*see Glossary* for the definition of the ICT sector)). The Information and communication technologies (ICT) sector, defined in ISIC rev. 4 as output produced by firms that are "intended to fulfil or enable the function of information processing and communication by electronic means, including transmission and display" (ISIC rev. 4). While the production or distribution of ICT products can be found everywhere in the economy, the identification of sectors within the ISIC rev. 4. classification that produce or distribute ICT products as a main activity constitutes a first-order approximation of the ICT sector. *See* Glossary for full definition of the ICT sector. [1] [2][3]
Useful Breakdowns (listed in order of relevance or importance)	• by enterprise size – the enterprise size classes are defined as follows: 0[147]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) • by enterprise characteristics (TEC and STEC) statistics and by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)). [4][5][6]
Algorithm	Labour productivity growth is measured as the rate of productivity growth in gross value added at factor cost of market enterprises in the ICT sector per person employed in the ICT sector as a ratio of overall productivity growth of market enterprises in the economy.
Description of the calculation of the indicator	Productivity is measured as the ratio of the gross value added at factor cost (in national currency) to the number of persons employed, multiplied by 100.
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual

[146] This indicator is identified in the G20 "Toolkit for Measuring the Digital Economy" (2018) (see page 60). [1]

[147] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	Labour Force Survey - LFS (for labour input) Business statistics for gross value added at factor cost.
Reference documents	[1] OECD (2018). [2] OECD (2020). [3] Eurostat (Metadata(b)). ICT Sector. https://ec.europa.eu/eurostat/cache/metadata/en/isoc_se_esms.htm [4] Eurostat (2020a). [5] Eurostat (Metadata). [6] Eurostat (2017).

35. Gross value-added of businesses in the ICT sector as percentage of total gross value added[148]

Field	Metadata
Name of the variable or the indicator	Gross value added of businesses in the ICT sector as percentage of total gross value added.
Definition of the variable or the indicator	The gross value added at factor cost generated by industries in the ICT sector as a share of total gross value added at factor cost of all businesses in the economy. Value added at factor is as compiled for structural business statistics, *not* value added as used in national accounts. *See Glossary.*
Objective of the variable or the indicator	To measure the direct share of gross value-added at factor cost by ICT-related businesses in the whole economy.
Contribution and usefulness of the variable or the indicator	This indicator shows the relative size of the industries in the ICT sector to the whole economy in a country in terms of generating value-added.
Classification System	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96. The Information and communication technologies (ICT) sector, defined in ISIC rev. 4 as output produced by firms that are "intended to fulfil or enable the function of information processing and communication by electronic means, including transmission and display" (ISIC rev. 4). While the production or distribution of ICT products can be found everywhere in the economy, the identification of sectors within the ISIC rev. 4. classification that produce or distribute ICT products as a main activity constitutes a first-order approximation of the ICT sector. *See* Glossary for full definition of the ICT sector. [1][2][3]
Useful Breakdowns (listed in order of relevance or importance)	• by the 3 main aggregates: 1) Total ICT sector; 2) ICT manufacturing and 3) ICT services. [4] • by enterprise size – the enterprise size classes are defined as follows: 0[149]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) • by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)). [5][6][7]
Algorithm	$$VAS_{ict} = \frac{VA_{ict}}{VA} x100$$ Where VASict is the percentage share of gross value-added at factor cost by industries in the ICT sector with regard to gross value added at factor cost of all businesses, VAict is the value added generated by the industries in the ICT sector and VA is the gross value added at factor cost of the whole economy. When calculating the breakdowns, the numerator will be the gross value added at factor cost generated by the industries in the ICT sector in, for example, a specific enterprise size class and the denominator will be the total gross value added at factor cost of all the businesses in that same enterprise size class.
Description of the calculation of the indicator	The denominator is always the gross value added at factor cost of all in-scope businesses.
Unit of measure	Percentage

[148] The authors note that this indicator is related to, but very different from, the indicator "ICT-related domestic value added, as a percentage of GDP" as identified in OECD 2018 report for the G20 DETF (see page 58). The latter indicator measures the value added in the whole economy which is "ICT-related", whereas the indicator presented here is intended to only measure the value-added of businesses in the ICT sector (relative to the economy as a whole).
https://www.oecd.org/g20/summits/buenos-aires/G20-Toolkit-for-measuring-digital-economy.pdf [1]

[149] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.[2]
Source data type	Data are generally collected by national statistical offices through surveys. Business statistics for gross value added at factor cost.
Reference documents	[1] OECD (2018). [2] OECD (2020). [3] Eurostat (Metadata(b)). [4] OECD (2011). [5] Eurostat (2020a). [6] Eurostat (Metadata). [7] Eurostat (2017).

36. Employment of ICT specialists as a percentage of total employment[150]

Field	Metadata
Name of the variable or the indicator	Employment of ICT specialists as a percentage of total employment.
Definition of the variable or the indica	The share of ICT specialists and other ICT task-intensive occupations of total employment in the economy.
Objective of the variable or the indicator	To measure the increasing importance of ICT and digitalization for employment.
Contribution and usefulness of the variable or the indicator	With the growing digitalization and thus importance of ICT in the economy, it is necessary to split the occupations into ICT task-intensive occupations and others in order to understand the employment dynamics. [1][2]
Classification System	**ICT specialist occupations** are defined by three-digit groups of the 2008 revision of the International Standard Classification of Occupations (ISCO-08)[151]: Information and communications technology service managers (133), Electrotechnology engineers (215), Software and applications developers and analysts (251), Database and network professionals (252), Information and communications technology operations and user support (351), Telecommunications and broadcasting technicians (352) and Electronics and telecommunications installers and repairers (742). **Other ICT task-intensive occupations** include the following three-digit ISCO-08 groups: Business services and administration managers (121); Sales, marketing and development managers (122); Professional services managers (134); Physical and earth science professionals (211); Architects, planners, surveyors and designers (216); University and higher education teachers (231); Finance professionals (241); Administration professionals (242) and Sales, marketing and public relations professionals (243). [1] [3]
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. • by enterprise size – the enterprise size classes are defined as follows: 0[152]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) • by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)) [4][5][6] • For national purposes, additional breakdowns may be desirable.
Algorithm	Total ICT specialists and employees in ICT-intensive occupations / total employment in business sector X 100 When calculating the breakdowns, the numerator will be the total ICT specialists and employees in ICT-intensive occupations within, for example, a specific enterprise size class and the denominator will be the total employment in all the businesses in that same enterprise size class.
Description of the calculation of the indicator	It is recommended to compile this indicator based on the concept of "employment" (*see Glossary*).
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)

[150] This indicator is also identified in the G20 DETF – Measurement of the Digital Economy (see page 52). [1]

[151] International Labour Organization. International Standard Classification of Occupations Structure, Volume 1: group definitions and correspondence tables, 2012. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_172572.pdf [3]

[152] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	National labour force surveys and other national sources.
Reference documents	[1] OECD (2018). [2] OECD (2020). [3] ILO. ISCO-08. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_172572.pdf [4] Eurostat (2020a). [5] Eurostat (Metadata). [6] Eurostat (2017).

37. Percentage of businesses providing ICT-related training[153]

Field	Metadata
Name of the variable or the indicator	Percentage of businesses providing ICT-related training [1]
Definition of the variable or the indicator	Percentage of businesses providing ICT-related training in different industries. Training related to the following categories, as identified by the International Standard Classification of Education (ISCED) 2013 classification:[154] 05 Natural sciences, mathematics, and statistics; 06 Information and Communication Technologies; and 07 Engineering, manufacturing, and construction.
Objective of the variable or the indicator	Training is an important means of complementing and building upon academic and other qualifications. ICT-related training contributes highly to the productivity growth and this indicator can provide information on the growth potential of a country.
Contribution and usefulness of the variable or the indicator	Firm-based training endows workers with the skills needed to perform in their job and to transition between jobs – which becomes especially important in an era of fast technological change that is changing the nature of jobs.
Classification System	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. • by ICT-related training provided to ICT specialists and by ICT-related training provided to all other occupations. • by enterprise size – the enterprise size classes are defined as follows: 0[155]-9 employees; 10-49 employees; 50-249 employees; 250+ employees. For the purpose of business demography, a further breakdown of the smallest thresholds (i.e., 0[156], 1-4, 5-9, 10-19, 20-49) would be desirable. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) • by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)). [2][3][4]
Algorithm	Businesses in sector X providing ICT-related training / total businesses in sector X 100 When calculating the breakdowns, the numerator will be the number of businesses providing ICT-related training within, for example, a specific enterprise size class and the denominator will be the total number of businesses in that same enterprise size class.
Description of the calculation of the indicator	It is recommended to compile this indicator based on the enterprise.
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual

[153] This indicator is related to, but different from, the indicator "Workers receiving firm-based training, highly digital-intensive and other sectors, as a percentage of workers in each sector group" in OECD 2019 (see page 172). [1]
[154] UNESCO. http://uis.unesco.org/en/topic/international-standard-classification-education-isced
[155] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons.
[156] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	Business surveys.
Reference documents	[1] OECD (2019). [2] Eurostat (2020a). [3] Eurostat (Metadata). [4] Eurostat (2017).

38. Percentage of enterprises reporting hard-to-fill vacancies for ICT specialists[157]

Field	Metadata
Name of the variable or the indicator	Percentage of enterprises reporting hard-to-fill vacancies for ICT specialists [1] [2] [3]
Definition of the variable or the indicator	Enterprises that reported hard-to-fill vacancies for ICT specialists as a percentage of all enterprises looking for an ICT specialist. **ICT specialist occupations** are defined by three-digit groups of the 2008 revision of the International Standard Classification of Occupations (ISCO-08)[158]: Information and communications technology service managers (133), Electrotechnology engineers (215), Software and applications developers and analysts (251), Database and network professionals (252), Information and communications technology operations and user support (351), Telecommunications and broadcasting technicians (352) and Electronics and telecommunications installers and repairers (742). [4] A hard-to-fill vacancy is an open job vacancy during the reference period, that an employer has had difficulty in filling (subjective opinion) at the salary offered. For example, despite active measures there have been no applicants or the applicants have not been sufficiently qualified or suitable for the job in question. Despite the difficulties an employee may have been found to fill the vacancy, or the vacancy may have remained unfilled.
Objective of the variable or the indicator	To measure the difficulty of filling vacancies for ICT specialists for different industries in a country.
Contribution and usefulness of the variable or the indicator	This indicator reveals how difficult it is to find ICT specialist for companies that are in need of them. If there is a high percentage of enterprises that reported hard-to-fill vacancies for ICT specialists among all enterprises looking for an ICT specialist, there must be a shortage for such skilled workers. And the policy implication may be to promote training of ICT specialists or to attract foreign ICT specialists to come work in this country.
Classification System	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. • by enterprise size – the enterprise size classes are defined as follows: 0[159]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by trading status (i.e., importer only, exporter only, or importer and exporter (two-way trader), in line with trade (and services trade) • by enterprise characteristics (TEC and STEC) statistics • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)). [5][6][7]
Algorithm	$$ICTENS = \frac{ICTEN}{ICTE} x100$$ Where ICTENS is the share of enterprises reporting hard-to-fill vacancies for ICT specialists, ICTEN is number of enterprises reported hard-to-fill vacancies for ICT specialists, and ICTE is total number of enterprises looking for an ICT specialist. When calculating the breakdowns, the numerator will be the number of enterprises reporting hard-to-fill vacancies for ICT specialists within, for example, a specific enterprise size class and the denominator will be the total number of enterprises looking for an IT specialist in that same enterprise size class.

[157] This indicator is identified in the G20 DEFT (OECD 2020) (see page 72). OECD (2020) A Roadmap Toward a Common Framework for Measuring the Digital Economy. Report for the G20 Digital Economy Task Force. http://www.oecd.org/sti/roadmap-toward-a-common-framework-for-measuring-the-digital-economy.pdf [1]

[158] International Labour Organization. International Standard Classification of Occupations Structure, Volume 1: group definitions and correspondence tables, 2012. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_172572.pdf [4]

[159] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Description of the calculation of the indicator	N/A
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	Enterprise surveys.[160]
Reference documents	[1] OECD (2020). [2] OECD (2019). [3] OECD (2018). [4] ILO. ISCO-08. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_172572.pdf [5] Eurostat (2020a). [6] Eurostat (Metadata). [7] Eurostat (2017).

[160] For example, see the Survey of Digital Technology and Internet Use in Canada (SDTIU) at https://www.statcan.gc.ca/eng/survey/business/4225. https://doi.org/10.1787/888933930611.

Section C. Indicators on Well-being and Sustainability

39. Proportion of women in managerial positions[161,162]

Field	Metadata
Name of indicator	Proportion of women in managerial positions
Definition of the indicator	This indicator refers to the proportion of women in the total number of persons employed in managerial positions.
Objective of the indicator	The indicator provides information on the proportion of women who are employed in decision-making and management roles in government and market enterprises, thus providing insight into women's role in decision-making positions and, in the economy (relative to the proportion of men employed in those positions). It is recommended to use two different measures jointly for this indicator: the share of women in (total (i.e., junior, middle, and senior)) management and the share of women in senior and middle management (thus excluding junior management). The joint calculation of these two measures provides information on whether women are more represented in junior management than in senior and middle management, thus pointing to an eventual ceiling for women to access higher-level management positions.
Contribution and usefulness of the indicator	Women's full and effective workforce participation and equal opportunity for leadership is an economic and social imperative. It is essential to building the workforce required to support economic growth and future prosperity, as well as for social progress.
Classification	International Standard Classification of Occupations (ISCO-08). ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• Employment statistics by both sex and occupation are needed to calculate this indicator. • by 2-digit ISIC division at a minimum. • by enterprise size – the enterprise size classes are defined as follows: 0[163]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)). [3][4][5]
Algorithm	Proportion of women in senior and middle management = (Women employed in ISCO 08 categories 11 + 12 + 13)/ (Persons employed in ISCO 08 categories 11 + 12 + 13) × 100 Proportion of women in (total) management = (Women employed in ISCO 08 category 1)/ (Persons employed in ISCO 08 category 1) × 100
Description of the calculation of the indicator	1. The share of women in senior and middle management (thus excluding junior management), and

[161] This indicator contributes to the Sustainable Development Goal (SDG) Indicator 5.5.2 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [1] UN SDG metadata. https://unstats.un.org/sdgs/metadata [2]

[162] This indicator is related to the Global Reporting Initiative (GRI) standard 405: Diversity and Equal Opportunity, 2016, Disclosure 405-1-b-i: Percentage of employees per employee category by gender. It breaks down employees by level (such as senior management, middle management) and function (such as technical, administrative, production). This information is derived from the organization's own human resources system. https://www.globalreporting.org/standards/media/1020/gri-405-diversity-and-equal-opportunity-2016.pdf

[163] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	2. The share of women in (total) management. It is recommended to compile this indicator based on "employment" (*see Glossary*).
Unit of measure	Percentage
Statistical unit	Household or person (if based on Labour Force Survey) or Establishment (if based on establishment surveys)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Flagship publication, Online databases, press releases, statistical books, policy briefs, sustainability report/integrated report
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	The recommended source for this indicator is the Labour Force Survey. Additionally, Household-based surveys or Establishment-based surveys can be used.
Reference documents	[1] Sustainable Development Goal (SDG) Indicator 5.5.2 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global Indicator Framework after 2020 review_Eng.pdf [2] UN SDG metadata. https://unstats.un.org/sdgs/metadata [3] Eurostat (2020a). [4] Eurostat (Metadata). [5] Eurostat (2017).

40. Annual growth rate of real total gross value added per employed person[164]

Field	Metadata
Name of indicator	Annual growth rate of real total gross value added per employed person
Definition of the indicator	This indicator refers to the annual growth rate of real gross value added at factor cost per employed person. Value added at factor is as compiled for structural business statistics, *not* value added as used in national accounts. *See Glossary.*
Objective of the indicator	Real gross value added at factor cost per employed person being a measure of labour productivity, this indicator represents a measure of labour productivity growth, thus providing information on the evolution, efficiency, and quality of human capital in the production process.
Contribution and usefulness of the indicator	Labour productivity can be used to assess the likelihood of a country's economic environment to create and sustain decent employment opportunities with fair and equitable remuneration. While increases in productivity do not guarantee progress toward full and productive employment and decent work for all, improvements in conditions of work and employment opportunities are less likely to occur without productivity improvements.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• For the purpose of this indicator, no disaggregation is required. • by 2-digit ISIC division • by enterprise size, depending on data availability • the enterprise size classes are defined as follows: 0[165]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. [3][4][5]
Algorithm	Real total gross value added at factor cost per employed person = (total gross value added at factor cost at constant prices / Total number of employed persons) where the numerator and denominator refer to the same reference period, for example, the same calendar year. If the real total gross value added at factor cost per employed person is "LabProd", then the annual growth rate of real total gross value added at factor cost per employed person is calculated as ((LabProd in year n – LabProd in year n-1) / LabProd in year n-1) * 100.
Description of the calculation of the indicator	In absence of real total gross value added at factor cost, this indicator can be computed using real gross value added for national accounts (or GDP) divided by total employment. It is recommended to compile this indicator based on the concept of "employment" (*see Glossary*).
Unit of measure	Percent change
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the year
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Flagship publication, Online databases, press releases, statistical books, policy briefs
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	The national SBRs are the main source of business demography data. GDP figures, if used, are based on National Accounts and employment figures on Household surveys. GDP measures are obtained from national accounts and represent, as much as possible, GDP at market prices for the aggregate economy. Employment data are obtained from population censuses, labour force or other household surveys, establishment surveys, administrative records and official estimates based on results from several of

[164] This indicator contributes to the Sustainable Development Goal (SDG) Indicator 8.2.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [1]
UN SDG metadata. https://unstats.un.org/sdgs/metadata [2]

[165] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	these sources. Labour force surveys can be designed to cover virtually the entire population of a country, all branches of economic activity, all sectors of the economy, and all categories of workers, including own-account workers, unpaid family workers and persons engaged in casual work or marginal economic activity. For this reason, household-based labour force surveys offer a unique advantage for obtaining information on the labour market of a country and its structure.
Reference documents	[1] Sustainable Development Goal (SDG) Indicator 8.2.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [2] UN SDG metadata. https://unstats.un.org/sdgs/metadata [3] Eurostat (2020a). [4] Eurostat (Metadata). [5] Eurostat (2017).

41. Average hourly earnings for employees in businesses by sex[166,167]

Field	Metadata
Name of indicator	Average hourly earnings for employees in businesses by sex .
Definition of the indicator	Average hourly wages and other benefits paid (or allocated via pension schemes) to employees by sex during a reference year.
Objective of the indicator	The indicator is about equal pay for equal work. More precisely the indicator shall indicate the eventually gender pay gap as well as pay in different business sectors. Break downs will improve the value of the information
Contribution and usefulness of the indicator	Equality between women and men (and in relation to in example minority groups) is a global human right and part of the SDGs. Reliable information on the development in hourly earnings will be a tool for several stakeholders, including trade unions, government, and business organisation. It should be noted that statistics on the matter hardly can catch all aspects on equal pay.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by sex • by 2-digit ISIC division at a minimum • by managerial/non-managerial positions • by classification of jobs • by major size groups can be considered, depending on data availability • by age or salary-components • by enterprise size, depending on data availability the enterprise size classes are defined as follows: 0[168]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. [3][4][5]
Algorithm	Salary payouts divided by the corresponding hours worked.
Description of the calculation of the indicator	The calculation of the hourly earnings in the respective breakdowns shall include all type of salaries, overtime-payments, bonuses, and other benefits paid during the reference year. This amount of money must be divided by the corresponding working hours, taking part-time and over–time employment into consideration. [6]
Unit of measure	Monetary value (earnings per hour in absolute figures, national currency). Can be supplemented by a calculation showing the eventual pay gap for women and by the number of men and women in the respective groups.
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the year.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as, key figures/pocketbooks; statistical books; statistics in focus; new releases and Online Dataset
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	Data are likely to be collected from the enterprises on a sample survey, balancing the desired granularity, quality, and the burden on the enterprises, as well as on the statistical institutions.

[166] This indicator contributes to the Sustainable Development Goal (SDG) Indicator 8.5.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [1]

UN SDG metadata. https://unstats.un.org/sdgs/metadata [2]

[167] This indicator is related to GRI standard 201, which measures employees' wages and benefits as a proportion of revenues. https://www.globalreporting.org/standards/media/1039/gri-201-economic-performance-2016.pdf

[168] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	The SBRs are the expected main source for sampling and the later grossing up.
Reference documents	[1] Sustainable Development Goal (SDG) Indicator 8.5.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [2] UN SDG metadata for indicator 8.5.1. https://unstats.un.org/sdgs/metadata [3] Eurostat (2020a). [4] Eurostat (Metadata). [5] Eurostat (2017). [6] ILO. Concepts and definitions. https://ilostat.ilo.org/resources/concepts-and-definitions/

42. Unemployment rate, by sex, age, and persons with disabilities[169]

Field	Metadata
Name of indicator	Unemployment rate, by sex, age, and persons with disabilities
Definition of the indicator	The unemployment rate is calculated by expressing the number of unemployed persons as a percentage of the total number of persons in the labour force. The labour force (formerly known as the economically active population) is the sum of the number of persons employed and the number of persons unemployed.
Objective of the indicator	The unemployment rate is a useful measure of the underutilization of the labour supply. It reflects the inability of an economy to generate employment for those persons who want to work but are not doing so, even though they are available for employment and actively seeking work.[3]
Contribution and usefulness of the indicator	It is thus seen as an indicator of the efficiency and effectiveness of an economy to absorb its labour force and of the performance of the labour market.
Classification	N/A
Industrial Coverage	N/A
Useful Breakdowns (listed in order of relevance or importance)	• by sex • by age • by persons with disabilities
Algorithm	Computation Method: Persons unemployed divided by the labour force∗100
Description of the calculation of the indicator	The unemployment rate is calculated by expressing the number of unemployed persons as a percentage of the total number of persons in the labour force. The labour force (formerly known as the economically active population) is the sum of the number of persons employed and the number of persons unemployed. Thus, the measurement of the unemployment rate requires the measurement of both employment and unemployment. The unemployed comprise all persons of working age who were: a) without work during the reference period, i.e., were not in paid employment or self-employment; b) currently available for work, i.e., were available for paid employment or self-employment during the reference period; and c) seeking work, i.e., had taken specific steps in a specified recent period to seek paid employment or self-employment. Future starters, that is, persons who did not look for work but have a future labour market stake (made arrangements for a future job start) are also counted as unemployed, as are participants in skills training or retraining schemes within employment promotion programmes, who on that basis, were “not in employment”, not “currently available” and did not “seek employment” because they had a job offer to start within a short subsequent period generally not greater than three months. The unemployed also include persons “not in employment” who carried out activities to migrate abroad in order to work for pay or profit but who were still waiting for the opportunity to leave. [3][4]
Unit of measure	Percentage
Statistical unit	Person
Reference period	Monthly, quarterly, once or twice a year, depending on data availability.
Frequency (periodicity) of data collection and dissemination	Depends on data availability.
Dissemination format	Online databases, press releases, statistical books
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.

[169] This indicator contributes to the Sustainable Development Goal (SDG) Indicator 8.5.2 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [1]
UN SDG metadata. https://unstats.un.org/sdgs/metadata [2]

	For quarterly and monthly data, the recommendation is to publish the data within 3 months and 45 days respectively after the end of the reference period.
Source data type	Labour force/Household surveys The preferred official national data source for this indicator is a household-based labour force survey. In the absence of a labour force survey, a population census and/or other type of household survey with an appropriate employment module may also be used to obtain the required data. Where no household survey exists, establishment surveys or some types of administrative records may be used to derive the required data, keeping into account the limitations of these sources in their coverage. Specifically, these sources may exclude some types of establishments, establishments of certain sizes, some economic activities, or some geographical areas. Note that there is value in having consistent data sources, and consistent definitions, where possible, when measuring unemployment, employment, and earnings. Where the data sources differ, (for example between household and business surveys), an effort should be made to ensure consistent definitions where applicable (e.g., consistent reference periods, consistent applications of industry and occupational classification, etc.).
Reference documents	[1] Sustainable Development Goal (SDG) Indicator 8.5.2 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global Indicator Framework after 2020 review_Eng.pdf [2] UN SDG metadata. https://unstats.un.org/sdgs/metadata [3] ILO. International Conference of Labour Statisticians. https://ilostat.ilo.org/about/standards/icls/icls-documents/ - icls19 [4] ILO. Concepts and Definitions. https://ilostat.ilo.org/resources/concepts-and-definitions/description-unemployment-rate/

43. Gross value added of businesses per employed person[170,171]

Field	Metadata
Name of indicator	Gross value added (VA) of businesses per employed person
Definition of the indicator	Total gross value added (VA) at factor cost (derived directly from business statistics) divided by the employed persons in the sector measured at enterprise level. Gross value added at factor cost is as compiled for structural business statistics, *not* value added as used in national accounts. *See Glossary.* [3][4]
Objective of the indicator	Serves as an indicator of a country's level of production in different industries, adjusted to the size of the workforce of the sector.
Contribution and usefulness of the indicator	To assess the productivity of each industry in the economy and a country's national development in general.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. • by enterprise size – the enterprise size classes are defined as follows: 0[172]-9 employees, 10-49 employees, 50-249 employees, 250+ employees.
Algorithm	Gross VA at factor cost of sector/Total Employment of the Sector When calculating the breakdowns, the numerator will be the gross value added at factor cost of businesses in, for example, a specific ISIC 2-digit sector XX and the denominator will be the total employment of businesses within the same ISIC 2-digit sector XX.
Description of the calculation of the indicator	It is recommended to compile this indicator based on "employment" (*see Glossary*).
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one year from the end of the reference year.
Source data type	Business surveys
Reference documents	[1] Sustainable Development Goal (SDG) Indicator 9.2.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global Indicator Framework after 2020 review_Eng.pdf [2] UN SDG metadata. https://unstats.un.org/sdgs/metadata [3] Eurostat (2021).

[170] This indicator contributes to the Sustainable Development Goal (SDG) Indicator 9.2.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2).
https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [1]
UN SDG metadata. https://unstats.un.org/sdgs/metadata [2]

[171] This indicator relates to GRI standard 102: General Disclosures 2016, Disclosure 102-8-a: Total number of employees and GRI standard 201: Economic Performance, Disclosure 201-1: Economic value generated. https://www.globalreporting.org/standards/media/1037/gri-102-general-disclosures-2016.pdf and https://www.globalreporting.org/standards/media/1039/gri-201-economic-performance-2016.pdf

[172] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	[4] United Nations (2008).

44. Sector employment as a proportion of total employment[173,174]

Field	Metadata
Name of indicator	Sector employment as a proportion of total employment
Definition of the indicator	This indicator conveys the share of a sector's employment. Sector refers here to ISIC sections. Employment refers to all persons of working age who, during a specified brief period, were in paid employment (whether at work or with a job but not at work) or in self-employment (whether at work or with an enterprise but not at work). [3][4][5]
Objective of the indicator	This indicator conveys the contribution of each sector's employment to total employment. It measures the ability of a sector to absorb surplus labour from other sectors.
Contribution and usefulness of the indicator	This indictor is important to policy makers since it measures the growth or decline in a sector's employment and can help identify trends over time.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum. • by enterprise size – the enterprise size classes are defined as follows: 0[175]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad)). [6][7][8]
Algorithm	Total employment in a sector divided by Total employment in all economic activities in the business sector ∗100
Description of the calculation of the indicator	It is recommended to compile this indicator based on the concept of "employment" (*see Glossary*).
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the year
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Online databases, press releases, statistical books
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	Household surveys, establishment surveys, or administrative registers, or linking different data sources via the statistical business register. The preferred official national data source for this indicator is a household-based labour force survey. In the absence of a labour force survey, a population census and/or other type of household survey with an appropriate employment module may also be used to obtain the required data. Where no household survey exists, establishment surveys or some types of administrative records may be used to derive the required data, keeping into account the limitations of these sources in their coverage.

[173] This indicator contributes to the Sustainable Development Goal (SDG) Indicator 9.2.2 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [1]
UN SDG metadata. https://unstats.un.org/sdgs/metadata [2]

[174] This indicator relates to GRI standard 102: General Disclosures 2016, Disclosure 102-2: Activities, brands, products, and services and Disclosure 102-8-a: Total number of employees. https://www.globalreporting.org/standards/media/1037/gri-102-general-disclosures-2016.pdf.

[175] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	Specifically, these sources may exclude some types of establishments, establishments of certain sizes, some economic activities, or some geographical areas.
Reference documents	[1] Sustainable Development Goal (SDG) Indicator 9.2.2 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [2] UN SDG metadata. https://unstats.un.org/sdgs/metadata [3] ILO (2013). [4] ILO (2013a). Resolution concerning statistics of work, employment and labour underutilization, adopted by the 19th ICLS in 2013: http://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/resolutions-adoptedby-international-conferences-of-labour-statisticians/WCMS_230304/lang--en/index.htm [5] ILO. Concepts and Definitions. https://ilostat.ilo.org/resources/concepts-and-definitions/ [6] Eurostat (2020a). [7] Eurostat (2017). [8] Eurostat. *Statistics Explained*. Services trade by enterprise size. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Services_trade_by_enterprise_characteristics_-_STEC

45. Water-use efficiency in businesses[176,177]

Field	Metadata
Name of indicator	Water-use efficiency in businesses
Definition of the indicator	Gross value added at factor cost per unit of water used in production. Gross value added at factor is as compiled for structural business statistics, *not* value added as used in national accounts. *See Glossary.*
Objective of the indicator	Water is a limited resource; therefore, it is relevant to focus on the water use in the business sector, as well the amount of water used compared to the economic activity and the total use by type of business sector.
Contribution and usefulness of the indicator	Compilation of the indicator will be of benefit for decision-makers in society, as well as in the business sector, particularly for some types of industries. The development over time will be valuable information for progress and for future planning.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96. It is important to include the agricultural sector as a major user of water.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division, at least for ISIC 01-33 • by enterprise size, depending on data availability – the enterprise size classes are defined as follows: 0[178]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • Additional breakdowns, such as a regional breakdown, may be desirable depending on localisation of water resources.
Algorithm	Gross value added at factor cost (in constant prices) divided by amount of total freshwater water used (in thousands of cubic meters). When calculating the breakdowns, the numerator will be the gross value added at factor cost of businesses in, for example, a specific ISIC 2-digit sector XX and the denominator will be the water used within the same ISIC 2-digit sector XX.
Description of the calculation of the indicator	GVA at factor cost in constant prices in National currency over the amount of water used (in thousands of cubic meters). The amount of water includes deliveries by other industries, directly abstracted water and stored rainwater. Immediate use of rainwater, reuse of (waste) water, and water loss during transport is considered neutral in the compilation. It is recommended to use "Gross Value Added at factor cost", as compiled in Business Statistics, as calculations can then be made by any relevant breakdown. It must be calculated in constant prices. If the coverage corresponds to the National Accounts, the Gross Value Added from National accounts or GDP may be used. To the extent possible, the compilation of the indicator should follow the same methodology as that of the System of Environmental Economic Accounting (SEEA). [3][4][5]
Unit of measure	National currency; Amount of water in thousands of cubic meters

[176] This indicator contributes to the Sustainable Development Goal (SDG) Indicator 6.4.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [1]
UN SDG metadata. https://unstats.un.org/sdgs/metadata [2]

[177] This indicator relates to GRI standard 303: Water and Effluents 2018, Disclosure 303-3-a: Total Water withdrawal and Economic data: Disclosure 201-1-a-i: Direct economic value generated and distributed. https://www.globalreporting.org/standards/media/1909/gri-303-water-and-effluents-2018.pdf.
https://www.globalreporting.org/standards/media/1039/gri-201-economic-performance-2016.pdf.

[178] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data. Issues of seasonality should be footnoted or explained.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as, key figures/pocketbooks; statistical books; statistics in focus; new releases and Online Dataset
Timeliness	Data should be published within one to two years of the end of the reference year.
Source data type	In the choice of sources, the most important is to find water data and economic data with the same coverage.
Reference documents	[1] Sustainable Development Goal (SDG) Indicators 2.4.1 and 6.4.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [2] UN SDG metadata. https://unstats.un.org/sdgs/metadata [3] UN SEEA Water at System of Environmental Economic Accounting. https://seea.un.org/sites/seea.un.org/files/seeawaterwebversion_final_en.pdf [4] UNSD/UNEP Questionnaire on Environment Statistics: https://unstats.un.org/unsd/envstats/questionnaire [5] UNSD Environmental Indicators: https://unstats.un.org/unsd/envstats/qindicators [6] United Nations (2017a).

46. Level of water stress attributable to businesses[179,180]

Field	Metadata
Name of indicator	Level of water stress attributable to businesses
Definition of the indicator	Amount of water used by businesses by main sources as compared to the volume of available water resources.
Objective of the indicator	Water is a limited resource; therefore, it is relevant to focus on the business sectors' use of water related to overall annual water resources.
Contribution and usefulness of the indicator	Compilation of the indicator will be of benefit for decision makers in society, as well as in the business sector, particularly for some types of industries. The development over time will be valuable information for future planning.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96. It is very important to include the agricultural sector as a major user of water.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division, at least for ISIC 01-33 • by enterprise size, depending on data availability – the enterprise size classes are defined as follows: 0[181]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • additional breakdowns, such as a regional/local breakdown, may also be desirable depending on localisation of water resources.
Algorithm	Amount of total freshwater water used by businesses, in totals and as share of available annual renewable freshwater resources minus the environmental flow requirements (EFR).
Description of the calculation of the indicator	The amount of water used is the water delivered by other industries: directly abstracted water and stored rainwater. The amount must be broken down by source (groundwater, surface water, stored rainwater, wastewater re-use). Further it is necessary to know the overall annual renewable freshwater resources. To the extent possible, the compilation of the indicator should follow the same methodology as that of the System of Environmental Economic Accounting (SEEA). [3][4][5]
Unit of measure	Amount of total freshwater used (in thousands of cubic meters) per source – expressed as percentage of annual renewable freshwater resources.
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the year. Issues of seasonality should be footnoted or explained.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as, key figures/pocketbooks; statistical books; statistics in focus; new releases and Online Dataset
Timeliness	For annual data, data should be published within one to two calendar years of the end of the reference year.
Source data type	Surveys on water use in business by a survey or from other registers.

[179] This indicator contributes to the Sustainable Development Goal (SDG) Indicator 6.4.2 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [1] UN SDG metadata. https://unstats.un.org/sdgs/metadata [2]

[180] This indicator relates to GRI Standard 303: Water and Effluents 2018, Disclosure 303-3-b: Water withdrawal from areas with water stress. https://www.globalreporting.org/standards/media/1909/gri-303-water-and-effluents-2018.pdf

[181] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	Estimates on the overall annual water resources in the country, also by region, are presumably compiled by relevant authorities.
Reference documents	[1] Sustainable Development Goal (SDG) Indicator 6.4.2 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [2] UN SDG metadata. https://unstats.un.org/sdgs/metadata [3] UN. SEEA Water at System of Environmental Economic Accounting. https://seea.un.org/sites/seea.un.org/files/seeawaterwebversion_final_en.pdf [4] UNSD/UNEP Questionnaire on Environment Statistics: https://unstats.un.org/unsd/envstats/questionnaire [5] UNSD Environmental Indicators: https://unstats.un.org/unsd/envstats/qindicators [6] United Nations (2017a).

47. Share of renewable energy consumption in businesses[182,183]

Field	Metadata
Name of indicator	Share of renewable energy consumption in businesses
Definition of the indicator	Share of energy use attributable to renewable energy sources.
Objective of the indicator	Use of fossil energy sources are the main contributor to emission of greenhouse gases. Therefore, it is relevant to follow the desired shift to renewable sources in the business sector, as the enterprises' demand for different sources may have a significant impact.
Contribution and usefulness of the indicator	Compilation of the indicator will be of benefit for decision-makers on overall energy policies. Further, for the business sector sustainable production methods may be of high importance for future business opportunities. Enterprises can use the indicators and changes over time for benchmarking.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division, at least for ISIC 01-33 and for ISIC 49-53. A more detailed breakdown may be relevant in very energy-intensive industries; e.g., cement production, metallurgic processes, production of artificial fertilizers etc. • breakdown by energy types • by enterprise size, depending on data availability – the enterprise size classes are defined as follows: 0[184]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • additional breakdowns, such as a regional/local breakdown, may also be desirable depending on localisation of water resources.
Algorithm	Energy use from renewable sources divided by total energy use. When calculating the breakdowns, the numerator will be the energy use of businesses in, for example, a specific ISIC 2-digit sector XX, and the denominator will be the total energy use of businesses within the same ISIC 2-digit sector XX.
Description of the calculation of the indicator	The final use of energy by type of industry, compiled into gigajoules (GJ), broken down by energy types, is to be collected/compiled. The use of *primary* energy types (used directly at the location) must be broken down into at least: - Energy from fossil sources (coal, oil, natural gas etc.) - Energy from renewable biomass sources (wood, biofuels, waste etc.) - Possibly from other non-fuel sources (e.g., windmills, solar panels, hydropower) The use of *converted* energy (electricity and district heating delivered by energy supplier) must be split into the renewable and non-renewable[185] sources for the production (using information from the supplier/supply sector) into: - Energy from fossil sources - Energy from renewable biomass sources

[182] This indicator contributes to the Sustainable Development Goal (SDG) Indicator 7.2.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [1]
UN SDG metadata. https://unstats.un.org/sdgs/metadata [2]

[183] This indicator is related to GRI Standard 302: Energy 2016, Disclosure 302-1-b: Energy consumption within the organization from renewable sources and Disclosure 302-1-e: Total energy consumption within the organization. https://www.globalreporting.org/standards/media/1009/gri-302-energy-2016.pdf

[184] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

[185] Information on converted energy (electricity and heat) from non-renewable nuclear sources, will be required to determine the split between renewable and non-renewable sources.

	- Energy from non-fuel sources (windmills, solar panels, hydropower) The use must follow the net consumption approach. With this information, the percentage of energy from renewable sources by type of industry may be easily calculated. To the extent possible, the compilation of the indicator should follow the same methodology as that of the System of Environmental Economic Accounting (SEEA) and the International Energy Agency (IEA) Energy Balances and Statistics and the International Recommendations for Energy Statistics (IRES). [3][4][5]
Unit of measure	Percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the year
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as, key figures/pocketbooks; statistical books; statistics in focus; new releases and Online Dataset
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	A sample survey on energy use covering a substantial part of the business sector. The survey must ensure the collection of the use of all relevant energy types purchased by business sector. Data from the energy supply sector (basic energy statistics on the use of sources for production of the converted types of energy) is needed as well.
Reference documents	[1] Sustainable Development Goal (SDG) Indicator 7.2.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global Indicator Framework after 2020 review_Eng.pdf [2] UN SDG metadata. https://unstats.un.org/sdgs/metadata [3] UN (2019). SEEA Energy at System of Environmental Economic Accounting. https://seea.un.org/sites/seea.un.org/files/documents/seea-energy_final_web.pdf [4] IEA Energy Balances and Statistics. http://www.iea.org/statistics/ [5] United Nations (2016).

48. Energy efficiency in businesses[186,187]

Field	Metadata
Name of indicator	Energy efficiency in businesses
Definition of the indicator	Gross value added at factor cost per unit of energy consumed by businesses. Gross value added at factor is as compiled for structural business statistics, *not* value added as used in national accounts. *See Glossary.*
Objective of the indicator	Improved energy efficiency is of high importance in lowering the use of fossil energy and emission of greenhouse gases. Therefore, it is also relevant to measure the development in energy efficiency in the business sector.
Contribution and usefulness of the indicator	Compiling the indicator will be of benefit for decisions on policies aimed at business and environmental sustainability. Further, for the business sector, more energy-efficient production is also about cost-efficiency. Enterprises can use the indicator and changes over time for benchmarking.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division, at least for ISIC 01-33 and for ISIC 49-53. A more detailed breakdown may be relevant in very energy-intensive industries, e.g., cement production, metallurgic processes, production of artificial fertilizers, etc. • by enterprise size, depending on data availability – the enterprise size classes are defined as follows: 0[188]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • additional breakdowns, such as a regional/local breakdown, may be desirable depending on localisation of energy resources
Algorithm	Gross Value Added at factor cost in constant prices divided by Energy use (in gigajoules(GJ)). When calculating the breakdowns, the numerator will be businesses' gross value added at factor cost in, for example, a specific ISIC 2-digit sector XX and the denominator will be the energy use of businesses within the same ISIC 2-digit sector XX.
Description of the calculation of the indicator	The final consumption of energy by type of industry, compiled into gigajoules (GJ), must be compiled using the net consumption approach. It is important to use the same coverage of the energy consumption and the GVA in the calculation. For example, it is important to ensure whether energy consumption and GVA from international transportation is included or not. It is recommended to use "Gross Value Added at factor cost", compiled in the Business Statistics, as calculations can then be made for any relevant breakdown. It must be compiled in constant prices (using 2010 as the base year). If the coverage corresponds to the National Accounts, the Gross Value Added from National accounts or GDP may be used.

[186] This indicator contributes to the Sustainable Development Goal (SDG) Indicator 7.3.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [1]
UN SDG metadata. https://unstats.un.org/sdgs/metadata [2]

[187] This indicator is related to GRI 302: Energy 2016, Disclosure 302-1: Energy consumption within the organization and Disclosure 302-1-b: Energy consumption within the organization from renewable sources and Disclosure 302-1-e: Total energy consumption within the organization and Disclosure 201-1-a-i: Direct economic value generated and distributed. https://www.globalreporting.org/standards/media/1009/gri-302-energy-2016.pdf. https://www.globalreporting.org/standards/media/1039/gri-201-economic-performance-2016.pdf

[188] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	Energy use can also be broken down by energy type. See indicator on share of renewable energy consumption for types of energy breakdowns. To the extent possible, the compilation of the indicator should follow the same methodology as that of the System of Environmental Economic Accounting (SEEA) and the International Energy Agency (IEA) Energy Balances and Statistics and the International Recommendations for Energy Statistics (IRES). [3][4][5]
Unit of measure	National currency; Amount of energy in gigajoules
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the year.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as, key figures/pocketbooks; statistical books; statistics in focus; new releases and Online Datasets
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	A sample survey on energy use covering a substantial part of the business sector. Data from the energy providers or energy supply sector can also be used in the calculations.
Reference documents	[1] Sustainable Development Goal (SDG) Indicator 7.3.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [2] UN SDG metadata. https://unstats.un.org/sdgs/metadata [3] UN (2019b). [4] IEA Energy Balances and Statistics http://www.iea.org/statistics/ [5] UN (2016).

49. Green investment by businesses[189]

Field	Metadata
Name of indicator	Green investment by businesses
Definition of the indicator	The definition of green investment is not final but here refers to physical investment that can be considered positive for the environment in a direct or indirect manner through resource saving or environmental protection. In other words, this indicator includes all the expenditures for those investments whose purpose is the prevention, reduction and elimination of pollution and other forms of degradation to the environment.
Objective of the indicator	To measure and monitor investments by businesses that are beneficial to the environment.
Contribution and usefulness of the indicator	Helps to promote business investment to facilitate and enhance environment protection, reduce emissions, and reduce climate change related implications. Authorities and companies may use the information in their future planning.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division. • by enterprise size, depending on data availability – the enterprise size classes are defined as follows: 0[190]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by Legal Form (typical SBR breakdown), depending on data availability • additional breakdowns, such as a regional/local breakdown, may be desirable depending on localisation of water resources
Algorithm	Green investment (environmental, ecological, eco-friendly) by industry, in absolute amount and as a percentage of total gross fixed capital formation by businesses. When calculating the breakdowns, the numerator will be the amount of green investment by businesses in, for example, a specific ISIC 2-digit sector XX and the denominator will be the total gross fixed capital formation by within the same ISIC 2-digit sector XX. [3][4][5]
Description of the calculation of the indicator	Total amount of expenditures for those investments whose primary purpose is the prevention, reduction and elimination of pollution and other forms of degradation to the environment, in absolute amount and in percentage terms. Typically, green investments might comprise low carbon power generation and vehicles, smart grids, energy efficiency, pollution controls, recycling, waste management and waste of energy, and other technologies that contribute to solving particular environmental problems. In order to understand which types of underlying technologies are related to green investments and as a starting point to decide which investments can be incorporated in the calculation of this indicator, it is also suggested to use the following check-list: • General environmental management (including waste management, air and water pollution abatement, soil remediation); • Renewable energy (including biofuels); • Combustion technologies for improved efficiency; • Climate change mitigation (e.g., capture, storage, sequestration, disposal of GHG); • Indirect contribution (e.g., energy storage);

[189] This indicator contributes to the Sustainable Development Goal (SDG) Indicator 7.a.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [1] UN SDG metadata. https://unstats.un.org/sdgs/metadata [2]

[190] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	• Transportation (emissions abatement, efficiency); • Buildings (energy efficiency). To the extent possible, the compilation of the indicator should follow the same methodology as that of Environment Protection Expenditure defined in the System of Environmental Economic Accounting (SEEA). [6]
Unit of measure	Monetary value (national currency) and percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the year.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as, key figures/pocketbooks; statistical books; statistics in focus; new releases and Online Dataset
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	Company reports; other specific data collection. Statistics on green investments (or on production of Environmental Goods and services) may exist in some countries.[191]
Reference documents	[1] Sustainable Development Goal (SDG) Indicator 7.a.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [2] UN SDG metadata. https://unstats.un.org/sdgs/metadata [3] UNCTAD (2019). [4] OECD (2012). [5] EU Commission. Sustainability taxonomy, p. 18. https://ec.europa.eu/info/sites/info/files/180131-sustainable-finance-final-report_en.pdf [6] United Nations (2014).

[191] For example, in the United States, disclosure of material capital expenditures for pollution abatement and control is mandated by the Securities and Exchange Commission, and such expenditures are defined as 'environmental capital spending' or 'environmental capital expenditures'.

50. Greenhouse gas emissions generated by businesses per unit of value added[192,193]

Field	Metadata
Name of indicator	Greenhouse gas emissions generated by businesses per unit of value added
Definition of the indicator	Greenhouse gas emissions related to gross value added at factor cost. *See Glossary* for full definition of greenhouse gas emissions.
Objective of the indicator	Emissions of greenhouse gasses is a major reason for climate changes and are internationally agreed to be reduced. As a substantial part of emissions is from business activities, measuring emissions of businesses is of high relevance.
Contribution and usefulness of the indicator	Compiling of the indicator will be of benefit for decisions on policies aimed at businesses and environmental sustainability, in particular in combination with information on value added. Further, enterprises can use the indicators and changes over time for benchmarking.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96. It is important that the coverage is corresponding to the coverage in National Accounts, meaning that, for example, international transport is included.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division, at least for ISIC 01-33 and for ISIC 49-53. A more detailed breakdown can be relevant in very energy-intensive industries; e.g., in cement production, metallurgic processes, and production of artificial fertilizers, etc.
Algorithm	Emissions in CO2 equivalents (CO2e) divided by Gross Value Added at factor cost. When calculating the breakdowns, the numerator will be the amount of emissions by businesses in, for example, a specific ISIC 2-digit sector XX and the denominator will be the total gross value added at factor cost of businesses within the same ISIC 2-digit sector XX.
Description of the calculation of the indicator	The emissions of greenhouse gasses must include all gases (CO2 plus nitrous oxide (N20), Methane (CH4) and fluorinated gasses (SF6, PFC and HFC) – compiled in CO2-equivalents. The emissions must be on scope 2, meaning that emissions from purchased electricity and heating must be re-allocated from the energy supply sector to the final users in the different types of industry. The emissions from burning of renewable sources (mainly biomass) shall not be included in the compiled figures (can be reported separately) The corresponding GVA at factor cost in constant prices must be compiled or picked out of existing statistics. It is important to use the same coverage of the emissions and the GVA at factor cost in the calculation. In example it is important to ensure if emissions and GVA from international transportation is included or not. If GVA at factor cost is not available, gross value added for national accounts or GDP can be used. *See Glossary*. To the extent possible, the compilation of the indicator should follow the same methodology as that of the System of Environmental Economic Accounting (SEEA). [3]
Unit of measure	Tonnes CO2e per million NAC (National currency)

[192] This indicator contributes to the Sustainable Development Goal (SDG) Indicator 9.4.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2).
https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [1]
UN SDG metadata. https://unstats.un.org/sdgs/metadata [2]

[193] This indicator is related to GRI Standard 305: Emissions 2016, Disclosure 305-1: Direct (Scope 1) GHG emissions. https://www.globalreporting.org/standards/media/1012/gri-305-emissions-2016.pdf

	It can be considered also to show the amount of CO2e (in tonnes) by type of industry.
Statistical unit	Enterprises (and in case of lack thereof, establishments). If not all activity can be covered, it is of high importance, that the two components in the indicator have the same coverage.
Reference period	The basic reference period is the year
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as, key figures/pocketbooks; statistical books; statistics in focus; new releases and Online Dataset
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	An emissions account or inventory, which is most probably already compiled, but maybe not fully allocated to detailed ISIC classification. Further development may be needed. It is recommended to use the "Gross Value Added at factor cost", compiled in Business Statistics, as calculations can then be made for any relevant breakdown. It must be compiled in constant prices (using 2010 as base year). If the coverage corresponds to the National Accounts, the Gross Value Added from National accounts or GDP may be used. *See Glossary*.
Reference documents	[1] Sustainable Development Goal (SDG) Indicator 9.4.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [2] UN SDG metadata. https://unstats.un.org/sdgs/metadata [3] United Nations (2014).

51. Research and development expenditure as a proportion of gross value added[194]

Field	Metadata
Name of indicator	Research and development expenditure as a proportion of gross value added
Definition of the indicator	The amount of money spent by enterprises on research and experimental development (R&D expenditure) divided by the gross value added (GVA) at factor cost in the reference period. Gross value added at factor is as compiled for structural business statistics, *not* value added as used in national accounts. *See Glossary*.
Objective of the indicator	Businesses' expenditure on R&D as a proportion of gross value added at factor cost is intended to measure research and experimental development potential as significant contribution to economic growth and prosperity, by ensuring coherence and comparability among Countries over time. [1] Moreover, it is relevant for the 2008 SNA which recognizes expenditures on R&D as a capital formation activity, i.e., investment or produced asset in an economy (SNA 6.230, 10.98). [2]
Contribution and usefulness of the indicator	Recognising the significant role of R&D in contributing to economic growth and prosperity, business statistics on R&D expenditure are used to measure to what extent business enterprises fund R&D, where it takes place and in which economic activity. Measuring expenditure of business enterprises on R&D over GDP is crucial to understand how R&D contributes to economic growth and societal well-being. [1] Moreover, the value of expenditures on creative work undertaken on a systematic basis to increase knowledge of society carried out by enterprises facilitates better understanding on how R&D influences the economic performance of various industries and Countries. [2]
Classification	ISIC Rev. 4
Industrial Coverage	All businesses in the private sector. No industry among such businesses should be excluded from the reporting of R&D activities.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at minimum • by enterprise size – the enterprise size classes are defined as follows: 0[195]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad); or social enterprise) [2][3]
Algorithm	Businesses' expenditure on R&D in year *t over* GVA at factor cost in year *t*: it comprises expenditures on intramural R&D in the whole year t over in year *t*. Intramural R&D consisting of all current expenditures plus gross fixed capital expenditures for R&D performed within a business during a specific reference period. [3] When calculating the breakdowns, the numerator will be the R&D expenditures of businesses in, for example, a specific ISIC 2-digit sector XX and the denominator will be the total gross value added at factor cost of businesses within the same ISIC 2-digit sector XX.
Description of the calculation of the indicator	Businesses' expenditure on R&D (BERD) is measured as expenditures on intramural R&D consisting of all current expenditures plus gross fixed capital expenditures for R&D performed within a business during a specific reference period. Current expenditures are composed of labour costs of R&D personnel and other current costs used in R&D. Services and items (including equipment) used and consumed within one year are current expenditures. [3]
Unit of measure	Number (percentage)

[194] This contributes to in the Sustainable Development Goal (SDG) Indicator 9.5.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2).
https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [1]
UN SDG metadata. https://unstats.un.org/sdgs/metadata [2]

[195] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Statistical unit	Enterprise
Reference period	The basic reference period is the year.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as, key figures/pocketbooks; statistical books; statistics in focus; new releases and Online Dataset
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	R&D information need to be gathered by the purposive survey. It is recommended that an ad-hoc business register (or directory) of firms that perform R&D should be developed, creating a base list or inventory of business that are highly likely to be R&D performers.[3] Alternatively, if the concepts, definition, and coverage used by administrative data providers are coherent to the theoretical approach of the Frascati manual, then the administrative data may be used as a primary source of information. [3] [4] The national SBRs are the main source of business demography data. GDP figures, if used, are based on National Accounts and employment figures on Household surveys. GDP measures are obtained from national accounts and represent, as much as possible, GDP at market prices for the aggregate economy.
Reference documents	[1] Sustainable Development Goal (SDG) Indicator 9.5.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [2] UN SDG metadata. https://unstats.un.org/sdgs/metadata [3] OECD (2015a). [4] United Nations (2018).

52. Researchers (in full-time equivalent) per million inhabitants[196]

Field	Metadata
Name of indicator	Researchers (in full-time equivalent) per million inhabitants
Definition of the indicator	A measure of the number of research and development workers per 1 million people
Objective of the indicator	The indicator is a direct measure of the number of research and development workers per 1 million people referred to resident population. The knowledge resulting from R&D activities can be used to meet national needs and global challenges and to improve overall societal well-being and sustainable development.
Contribution and usefulness of the indicator	Researchers (in full-time equivalent) per million inhabitants is an indicator that measures human capital, since it focuses on human capacities and skills of labor forces.
Classification	ISIC Rev. 4
Industrial Coverage	All businesses in the private sector. No industry among such businesses should be excluded
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at minimum. • by enterprise size – the enterprise size classes are defined as follows: 0[197]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by type of ownership (that is, foreign- or domestically-controlled enterprise (with or without own affiliates abroad); or social enterprise)
Algorithm	Researchers in year *t*: they are professionals engaged in the conception or creation of new knowledge (develop concepts, theories, models, techniques instrumentation, software or operational methods) in the whole year t or in a part of the year *t*, whether employed by the statistical unit or external contributors fully integrated into the statistical unit's R&D activities. R&D personnel is classified as researcher referring to the actual R&D function (in terms of tasks) and not considering job position or level of education. [3]
Description of the calculation of the indicator	The numerator of the indicator is the full-time equivalent (FTE) of researchers defined as the ratio of working hours actually spent on R&D during year t divided by the total number of hours conventionally worked in the same period by an individual or by a group. The denominator of the indicator is the arithmetic mean of the population on 1st January of *t* and *t*+1 year.
Unit of measure	Number (absolute figures)
Statistical unit	Enterprises (and in case of lack thereof, establishments) In the R&D case, institutional unit definition has weaker requirements than those used to define an institutional unit in the National Accounts. In the R&D case, institutional units must be capable of decision-making in respect of the conduct of R&D, from the allocation of financial resources for internal or external use to the management of R&D projects. [3]
Reference period	The basic reference period is the year
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as, key figures/pocketbooks; statistical books; statistics in focus; new releases and Online Dataset
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	Purposive National R&D surveys, either by the national statistical office or a line ministry (such as the Ministry for Science and Technology).

[196] This indicator contributes to the Sustainable Development Goal (SDG) Indicator 9.5.2 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [1]
UN SDG metadata. https://unstats.un.org/sdgs/metadata [2]

[197] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	Alternatively, if the concepts, definition, and coverage used by administrative data providers are coherent to the theoretical approach of the Frascati manual, then the administrative data may be used as a primary source of information. [3][4].
Reference documents	[1] Sustainable Development Goal (SDG) Indicator 9.5.2 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [2] UN SDG metadata. https://unstats.un.org/sdgs/metadata [3] OECD (2015a). [4] United Nations (2018).

53. Number of companies publishing sustainability reports[198]

Field	Metadata
Name of indicator	Number of companies publishing sustainability reports
Definition of the indicator	A company has to be counted if it publishes 'Sustainability Reports' complying with the 'minimum requirement' as defined in the definition for the SDG indicator 12.6.1. [1][2] Companies are to be counted if it has branches in the respective country independent if the reporting is done separately or comprehensive for the whole group by the parent company, also for transnationals.
Objective of the indicator	While the private sector has a critical role to play in the attainment of the SDGs, the indicator monitors the development of sustainability practices of private sector entities.
Contribution and usefulness of the indicator	There is a high interest on company behavior in the areas of environmental and social sustainability, in the society and also among investors. The indicator will show the number of committed companies and the sustainability reports will make the business activities more transparent From this information, authorities can adjust legislation or take other initiatives to encourage more companies to report – and also benefit of the reporting when assessing social and environmental policies.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division. • by enterprise size, depending on data availability – the enterprise size classes are defined as follows: 0[199]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by minimum requirement reporting or by the advanced reporting can be considered
Algorithm	Number of companies publishing sustainability reports plus (recommended) share of jobs covered by these companies (by industry). [3]
Description of the calculation of the indicator	The number of companies (using the units covered in the general business statistics) applying to the criteria in the metadata for SDG 12.6.1 must be identified. The list of criteria to be met is separated in a minimum list (including 20 items) and an extended (advanced) list, covering business, environmental, social and governance aspects. The criteria are fulfilled if the company has reported on all criteria relevant for the entity. [2] Having identified the units fulfilling the criteria to large extent other information (on business code and on employment can be added – and related to the overall population by industry. Jobs refers to number of employees. [3]
Unit of measure	Number of companies plus (recommended) share (percent) of jobs by breakdown
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The reporting on this indicator will be annual, given that most companies publish sustainability information on an annual basis.
Frequency (periodicity) of data collection and dissemination	Annual
Dissemination format	Publications, such as, key figures/pocketbooks; statistical books; statistics in focus; new releases and Online Dataset
Timeliness	First reporting cycle: 2020

[198] This indicator contributes to the Sustainable Development Goal (SDG) Indicator 12.6.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). [1]
UN SDG metadata. https://unstats.un.org/sdgs/metadata [2]

[199] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

	Results will be available at latest a year after the reference year.
Source data type	There may be different ways to collect the needed information, depending om administrative and statistical systems Possible sources are: 1. Individual companies reports analyzed for the purpose 2. Existing global and national repositories of sustainability reports 3. Data provided by national governments 4. Surveys on (or including) information on the business reporting A database may be established covered the relevant sources in the countries Further, data on employment is needed for compiling share of employees in companies disclosing sustainability reports. [3][4]
Reference documents	[1] Sustainable Development Goal (SDG) Indicator 12.6.1 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [2] UN SDG metadata. https://unstats.un.org/sdgs/metadata [3] UNCTAD. (UNCTAD has prepared Guidance on Core indicators for entity reporting on the contribution towards the attainment of the Sustainable Development Goals (GCI) to support entities in the provision of information under indicator 12.6.1 and governments in assessing the private sector contribution to the SDGs. The GCI is endorsed by the ISAR group(Intergovernmental Working Group of experts on International Standards of Accounting and Reporting), subsidiary body of ECOSOC hosted by UNCTAD.) - Guidance on core indicators for entity reporting on contribution towards implementation of the Sustainable Development Goals. https://unctad.org/webflyer/guidance-core-indicators-entity-reporting-contribution-towards-implementation-sustainable - Guia sobre indicadores básicos para entidades que informan sobre su contribución hacia la implementación de los objetivos de desarrollo sostenible. https://isar.unctad.org/wp-content/uploads/2020/03/GCI-Spanish-technical-material-2.pdf - Core SDG Indicators for Entity Reporting Training Manual. https://unctad.org/webflyer/core-sdg-indicators-entity-reporting-training-manual [4] GRI Standards. https://www.globalreporting.org/standards/download-the-standards/.

54. Job Openings (Vacancies) in businesses

Field	Metadata
Name of indicator	Job Openings (Vacancies) in businesses
Definition of the indicator	Number of Job Openings (or Vacancies) in the business sector
Objective of the indicator	The purpose of this indictor is to measure the unmet demand for labour in an economy.
Contribution and usefulness of the indicator	Compiling this indicator will benefit decision makers (policy makers, businesses, and workers) to better understand the unmet demand for labour in sectors, occupations, or regions of the economy. The number of job openings is an economic indicator that can provide information about the potential strength or weakness of a labour market. Job Openings are a key indicator used for an assessment of the business cycle and for a structural analysis of the economy.
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum • A regional or local break down can be of high relevance depending on the localization of employment in accordance with NUTS (Nomenclature of territorial units for statistics) • by enterprise size, depending on data availability – the enterprise size classes are defined as follows: 0[200]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • by occupation, in accordance with ISCO (International Standard Classification of Occupations)[201] • by educational training or requirements may also be considered
Algorithm	Number of job openings. A job opening (or vacancy) is defined as a position that is newly created, unoccupied, or about to become vacant for which the employer is taking active steps and is prepared to take further steps to find a suitable candidate from outside the enterprise concerned; and which the employer intends to fill either immediately or within a specific period of time. It is also recommended to publish the job opening (vacancy) rate. The job opening (vacancy) rate, abbreviated as JVR, is calculated as follows: JVR = number of job vacancies / (number of occupied posts + number of job vacancies) * 100 [2][3][4]
Description of the calculation of the indicator	The total number of unfilled job positions (or vacancies) at the end of the reference period. The position can be full-time or part-time; and it can be permanent, short-term, or seasonal. [2]
Unit of measure	Number
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	Monthly, quarterly, or annual.
Frequency (periodicity) of data collection and dissemination	Can differ depending on the number of observations/data availability − monthly, quarterly, once or twice a year, and so on.
Dissemination format	Publications, such as, key figures/pocketbooks; statistical books; statistics in focus; new releases and Online Dataset
Timeliness	For quarterly and monthly data, the recommendation is to publish the data within 3 months and 45 days respectively after the end of the reference period. For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	Business surveys.

[200] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

[201] International Labour Organization. International Standard Classification of Occupations Structure, Volume 1: group definitions and correspondence tables, 2012. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_172572.pdf [1]

Reference documents	[1] International Labour Organization. International Standard Classification of Occupations Structure, Volume 1: group definitions and correspondence tables, 2012. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_172572.pdf [2] Eurostat. Metadata.https://ec.europa.eu/eurostat/cache/metadata/en/jvs_esms.htm [3] Eurostat. *Statistics Explained*. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Job_vacancy_statistics [4] Eurostat. Job Vacancies statistics. https://ec.europa.eu/eurostat/web/labour-market/job-vacancies

55. Taxes and other payments of businesses to the Government[202,203]

Field	Metadata
Name of indicator	Taxes and other payments of businesses to the Government
Definition of the indicator	The amount of taxes (encompassing not only income taxes, but also other levies and taxes, such as property taxes or value added taxes) plus related penalties paid, plus all royalties, license fees, and other payments to Government for a given period) paid by businesses. [1]
Objective of the indicator	To measure the domestic Government revenues collected from businesses.
Contribution and usefulness of the indicator	To assess a country's level of domestic resource mobilization and capacity for tax revenue collection from the business sector. [4]
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum • by enterprise size – the enterprise size classes are defined as follows: 0[204]-9 employees, 10-49 employees, 50-249 employees, 250+ employees. • for national purposes, additional breakdowns may be desirable
Algorithm	Value of taxes paid by businesses [3][4]
Description of the calculation of the indicator	N/A
Unit of measure	Millions of local currency
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data. The population of active enterprises refers to any enterprises that were active at any time in the reference period, even for a limited time.
Frequency (periodicity) of data collection and dissemination	Annual.
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	Government Finance Statistics and Business Statistics
Reference documents	[1] Sustainable Development Goal (SDG) Indicator 17.1.2 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf [2] UN SDG metadata. https://unstats.un.org/sdgs/metadata [3] UNCTAD (2019). [4] Eurostat (2021).

[202] This indicator contributes to the Sustainable Development Goal (SDG) Indicator 17.1.2 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). [1]
UN SDG metadata. https://unstats.un.org/sdgs/metadata [2]

[203] This indicator is related to GRI Standard 207: Tax: 207-1: Approach to tax, 207-2: Tax governance, control, and risk management, 207-4: Country-by-country reporting. https://www.ifac.org/system/files/meetings/files/Agenda-Item-4B-2019-GRI-207.pdf.

[204] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

56. Total taxes paid by businesses as a proportion of total government tax revenues[205,206]

Field	Metadata
Name of indicator	Taxes and other payments paid by businesses to the Government as a proportion of total government tax revenues
Definition of the indicator	The amount of taxes (encompassing not only income taxes, but also other levies and taxes, such as property taxes or value added taxes) plus related penalties paid, plus all royalties, license fees, and other payments to Government for a given period) paid by businesses, as a share of the total domestic government tax revenues.
Objective of the indicator	To measure domestic Government tax revenues collected from businesses relative to other sources of revenues.
Contribution and usefulness of the indicator	To assess a country's level of domestic resource mobilization and capacity for tax revenue collection from the business sector. [3]
Classification	ISIC Rev. 4
Industrial Coverage	At a minimum, it is recommended to cover ISIC Rev. 4 B-N, P-R, 95-96.
Useful Breakdowns (listed in order of relevance or importance)	• by 2-digit ISIC division at a minimum • by enterprise size – the enterprise size classes are defined as follows: 0[207]-9 employees, 10-49 employees, 50-249 employees, 250+ employees
Algorithm	Taxes paid by businesses/Total Government Tax Revenues [3]
Description of the calculation of the indicator	N/A
Unit of measure	A percentage
Statistical unit	Enterprises (and in case of lack thereof, establishments)
Reference period	The basic reference period is the calendar year for annual data.
Frequency (periodicity) of data collection and dissemination	Annual.
Dissemination format	Publications, such as key figures/pocketbooks; statistical books; statistics in focus; new releases and online databases
Timeliness	For annual data, data should be published within one calendar year of the end of the reference year.
Source data type	Government Finance Statistics and Business Statistics
Reference documents	[1] Sustainable Development Goal (SDG) Indicator 17.1.2 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). https://unstats.un.org/sdgs/indicators/Global Indicator Framework after 2020 review_Eng.pdf [2] UN SDG metadata. https://unstats.un.org/sdgs/metadata [3] Eurostat (2021).

[205] This indicator contributes to the Sustainable Development Goal (SDG) Indicator 17.1.2 (UN Global indicator framework adopted by the General Assembly (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), and 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2). [1]
UN SDG metadata. https://unstats.un.org/sdgs/metadata [2]

[206] This is related to GRI Standard 207: Tax, Disclosure 207-4, Country-by-country reporting. https://www.ifac.org/system/files/meetings/files/Agenda-Item-4B-2019-GRI-207.pdf.

[207] Enterprise size class of zero ("0") refers to non-employer enterprises; i.e., enterprises with no employees such as the self-employed who work on their own account and do not employ other persons. Likewise, the enterprise size class of zero could be the case in which an enterprise is still active but it does not currently have any employees.

Glossary[208]

Active enterprise
A statistical unit (an enterprise) is considered to have been active during the reference period, if in said period it either realised positive net turnover, or produced outputs, or had employees, or performed investments.
Source: Eurostat (2021) Manual on Business statistics 2021
https://ec.europa.eu/eurostat/documents/3859598/12453409/KS-GQ-21-001-EN-N.pdf

Affiliates
Entities in an immediate or indirect direct investment relationship with each other, or that have the same immediate or indirect direct investor. Affiliates of an enterprise consist of: (a) its direct investor(s), both immediate and indirect; (b) its direct investment enterprises, whether subsidiaries (including branches and other quasi-corporations), associates, and subsidiaries of associates, both immediate and indirect; and (c) fellow enterprises, that is, those enterprises that are under the control or influence of the same immediate or indirect investor, but neither fellow enterprise controls or influences the other fellow enterprise. Often the direct investor and fellow enterprises are all in different economies, but sometimes the direct investor is in the same economy as one of the fellow enterprises (in which case, it is not a direct investor in that fellow enterprise). This situation is more likely to arise in economies that do not use a local enterprise group as the statistical unit for direct investment purposes.
Source: BPM6, para. 6.17 and box A6a.1.

AI-related patents
Patents that are categorized as relating to AI techniques by the World Intellectual Property Organization as published on its website (*see* below).
Source: World Intellectual Property Organization.
https://www.wipo.int/tech_trends/en/artificial_intelligence/patentscope.html

Birth (of enterprise)
A birth is characterized by the creation of a combination of production factors with the restriction that no other enterprises are involved in the event. Births do not include creation of entries into the population due to mergers, break-ups, split-off or restructuring of a set of enterprises. It does not include entries into a sub-population resulting only from a change of activity. A birth means the enterprise starts from scratch and actually starts activity. An enterprise creation can be considered as an enterprise birth if new production factors, in particular new jobs, are created. If a dormant unit is reactivated within two years, this event is not considered a birth.
Source: European Commission, Eurostat, "Business Registers Recommendations Manual", Methodologies and Working papers, Publication Office of the European Union, Luxembourg, 2010.
http://ec.europa.eu/eurostat/ramon/statmanuals/files/KS-32-10-216-EN-C-EN.pdf

Broadband
See "Internet connections"

Company
See "Corporation"

Compensation
Compensation of employees is a concept defined in the United Nations System of National Accounts 2008 as the total remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done by the latter during the accounting period. The compensation of employees has two main components: a) wages and salaries

[208] All the links included in the sources were consulted in April 2021.

payable in cash or in kind and b) social insurance contributions payable by employers, which include contributions to social security schemes; actual social contributions to other employment-related social insurance schemes and imputed social contributions to other employment-related social insurance schemes.
Source: ILO Glossary. https://www.ilo.org/ilostat-files/Documents/Statistical%20Glossary.pdf

Corporation
In the legal sense, corporations may be described by different names: corporations, incorporated enterprises, public limited companies, public corporations, private companies, joint-stock companies, limited liability companies, limited liability partnerships, and so on. In the SNA, the term corporation covers legally constituted corporations and also cooperatives, limited liability partnerships, notional resident units and quasi-corporations. The term corporation is used more broadly than in just the legal sense. In general, all entities that are: capable of generating a profit or other financial gain for their owners, recognized at law as separate legal entities from their owners who enjoy limited liability, set up for purposes of engaging in market production.
Source: United Nations (2009). System of National Accounts, 2008.
http://ec.europa.eu/eurostat/ramon/statmanuals/files/SNA2008.pdf

Death (of enterprise)
The death of an enterprise refers to the dissolution of a combination of production factors with the restriction that no other enterprises are involved in the event. Deaths do not include exits from the population due to mergers, take-overs, break-ups or restructuring of a set of enterprises. It does not include exits from a sub-population resulting only from a change of activity.
Source: Eurostat-OECD (2007). "Eurostat – OECD Manual on Business Demography Statistics", edition 2007.
http://ec.europa.eu/eurostat/ramon/statmanuals/files/KS-RA-07-010-EN.pdf

Digital Economy
The Digital Economy incorporates all economic activity reliant on, or significantly enhanced by the use of digital inputs, including digital technologies, digital infrastructure, digital services and data. It refers to all producers and consumers, including government, that are utilizing these digital inputs in their economic activities. The definition of the digital economy used here is as defined as the "core" measure of the digital economy [2], which includes economic activity from producers of Digital content, ICT goods and services.

The Information and communication technologies (ICT) sector, defined in ISIC rev. 4 as output produced by firms that are "intended to fulfil or enable the function of information processing and communication by electronic means, including transmission and display" (ISIC rev. 4). While the production or distribution of ICT products can be found everywhere in the economy, the identification of sectors within the ISIC rev. 4. classification that produce or distribute ICT products as a main activity constitutes a first-order approximation of the ICT sector.

Information industries supplement the ICT sector to also include the content and media sector. This is defined as the group of economic activities that are primarily *"engaged in the production, publishing and/or the distribution of content (information, cultural and entertainment products), where content corresponds to an organised message intended for human beings"* (ISIC rev. 4).

The following classification of content and media activities from ISIC Rev. 4. was established by the OECD and included in the 2011 version of the *OECD Guide to Measuring the information society*. These can be associated to the *core measure* of the Digital Economy:
- – ISIC 581 Publishing of books, periodicals and other publishing activities
- – ISIC 591 Motion picture, video and television program activities
- – ISIC 592 Sound recording and music publishing activities
- – ISIC 60 Broadcasting and programming activities
- – ISIC 639 Other information service activities

For practical purposes, due to limited data availability, the core measure of the digital economy can be approximated by the following ISIC Rev.4 (two-digit) Divisions: "Computer, electronic and optical products" (Division 26),

"Publishing, audiovisual, and broadcasting activities" (58 to 60), "Telecommunications" (61), and "IT and other information services" (62 to 63).
Source: OECD (2020). *Roadmap Toward a Common Framework for Measuring the Digital Economy*, pp. 5, 48, 76. https://www.oecd.org/sti/roadmap-toward-a-common-framework-for-measuring-the-digital-economy.pdf

E-Commerce
Electronic commerce (e-commerce) refers to all sales or purchases of a business's goods or services, conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders. The goods or services are ordered by those methods, but the payment and ultimate delivery of the goods or services do not have to be conducted online. An e-commerce transaction can be between enterprises, households, individuals, governments, and other public or private organizations. This includes orders made in web pages, extranet or Electronic Data Interchange (EDI). Excluded are orders made by telephone calls, facsimile, or manually typed e-mail. The Internet is a worldwide public computer network. It provides access to a number of communication services including the World Wide Web and carries e-mail, news, entertainment, and data files, irrespective of the device used (not assumed to be only via a computer − it may also be by mobile telephone, tablet, PDA, games machine, digital TV etc.). Access can be via a fixed or mobile network.
Source: 2009 definition from *OECD Guide to Measuring Information Society 2011*. https://read.oecd-ilibrary.org/science-and-technology/oecd-guide-to-measuring-the-information-society-2011_9789264113541-en#page74

Employment
Persons in employment are defined as all those of working age who, during a short reference period, were engaged in any activity to produce goods or provide services for pay or profit. They comprise employed persons "at work", i.e., who worked in a job for at least one hour; and employed persons "not at work" due to temporary absence from a job, or to working-time arrangements (such as shift work, flextime, and compensatory leave for overtime).
Source: ILO Glossary. https://www.ilo.org/ilostat-files/Documents/Statistical%20Glossary.pdf

Employees
Employees are workers employed for pay, on a formal or informal basis, who do not hold controlling ownership of the economic unit in which they are employed. They are remunerated in cash or in kind in return for time worked or, in some cases, for each task or piece of work done or for services provided including sales (by the piece or commission). Payment for time worked is the typical mode of remuneration. Payment in kind is generally received in the form of goods. Where payment is received in the form of services, this is generally complementary to payment in cash.
Source: ILO. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/meetingdocument/wcms_648693.pdf

Enterprise
An enterprise is a legal unit (or the smallest set of legal units) producing economic goods and services with autonomy in respect of financial and investment decision-making, as well as authority and responsibility for allocating resources for the production of goods and services. It may be engaged in one or more productive activities. An enterprise may be a corporation (or quasi-corporation), a non-profit institution or an unincorporated enterprise. Corporate enterprises and non-profit institutions are complete institutional units. On the other hand, the term "unincorporated enterprise" refers to a household or government unit in its capacity as a producer of goods and services. The enterprise is the level of statistical unit at which information relating to its transactions, including financial and balance-sheet accounts, are maintained, and from which international transactions, an international investment position (when applicable), consolidated financial position and net worth can be derived.
Source: United Nations, Statistics Division, "International Standard Industrial Classification of all Economic Activities (ISIC)", Statistical Papers Series M No. 4, Rev. 4, New York, 2008.
https://unstats.un.org/unsd/classifications/Econ/Download/In%20Text/ISIC_Rev_4_publication_English.pdf

Establishment
An establishment is an enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added.
Source: United Nations (2009). System of National Accounts 2008.
https://unstats.un.org/unsd/nationalaccount/docs/sna2008.pdf

Fixed broadband
See "Internet connections"

Full-time equivalent (FTE)
A full-time equivalent, sometimes abbreviated as FTE, is a unit to measure employed persons in a way that makes them comparable although they may work a different number of hours per week. The unit is obtained by comparing an employee's average number of hours worked to the average number of hours of a full-time worker. A full-time worker is therefore counted as one FTE, while a part-time worker gets a score in proportion to the hours he or she works.
Source: ILO Glossary. https://www.ilo.org/ilostat-files/Documents/Statistical%20Glossary.pdf

Foreign direct investment (FDI) statistics
FDI statistics embody four distinct statistical accounts: Investment positions, financial transactions, associated income flows between enterprises that are related through a direct investment relationship, and other changes in the value of assets, especially revaluation terms. Direct investment is a category of cross-border investment associated with a resident in one economy (the direct investor) having control or a significant degree of influence on the management of an enterprise (the direct investment enterprise) that is resident in another economy.
Source: OECD (2008). Organization for Economic Cooperation and Development (OECD), "OECD Benchmark Definition of Foreign Direct Investment", fourth edition, 2008.
https://www.oecd.org/daf/inv/investmentstatisticsandanalysis/40193734.pdf

Greenhouse gas emissions
Greenhouse gases (GHG) are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself, and by clouds. This property causes the greenhouse effect. Water vapour (H_2O), *carbon dioxide (CO_2)*, *nitrous oxide (N_2O)*, *methane (CH_4)* and *ozone (O_3)* are the primary GHGs in the Earth's atmosphere. Moreover, there are a number of entirely human-made GHGs in the atmosphere, such as the *halocarbons* and other chlorine- and bromine-containing substances, dealt with under the Montreal Protocol. Beside CO_2, N_2O and CH_4, the *Kyoto Protocol* deals with the GHGs sulphur hexafluoride (SF_6), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) Emissions are the release of GHGs and/or their precursors into the atmosphere over a specified area and period of time.
Source: Intergovernmental Panel on Climate Change (IPCC) (2018). Annex I: Glossary, p. 550 [Matthews, J.B.R. (ed.)]. In: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. https://www.ipcc.ch/sr15/chapter/glossary/

Gross fixed capital formation
Gross fixed capital formation is measured by the total value of a producer's acquisitions, less disposals, of fixed assets during the accounting period plus certain specified expenditure on services that adds to the value of non-produced assets.

Source: United Nations (2009). System of National Accounts 2008.
https://unstats.un.org/unsd/nationalaccount/docs/sna2008.pdf

Gross value-added
Gross value added is the value of output less the value of intermediate consumption.
Source: United Nations (2009). System of National Accounts 2008.
https://unstats.un.org/unsd/nationalaccount/docs/sna2008.pdf

Gross value added at factor cost
The gross income from operating activities after adjusting for operating subsidies and indirect taxes. It is an indicator in the domain of structural business statistics.
It can be calculated as the total sum of items to be added (+) or subtracted (-):

- turnover (+);
- capitalized production (+);
- other operating income (+);
- increases (+) or decreases (-) of stocks;
- purchases of goods and services (-);
- other taxes on products which are linked to turnover but not deductible (-);
- duties and taxes linked to production (-).

Alternatively, it can be calculated from the gross operating surplus by adding personnel costs.
Source: Eurostat. *Statistics Explained, Glossary*. https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Value_added_at_factor_cost#:~:text=Value%20added%20at%20factor%20cost%20is%20the%20gross%20income%20from,domain%20of%20structural%20business%20statistics.

Gross operating surplus
Gross operating surplus or profits is defined, in the context of structural business statistics, as value added minus personnel costs. It is the surplus generated by operating activities after the labour factor input has been recompensed. It is the balance available to a unit which allows it to recompense the providers of own funds and debt, to pay taxes and to finance all or a part of its investment. Income and expenditure classified as financial or extraordinary in company accounts is excluded from gross operating surplus.
Source: Eurostat. *Statistics Explained, Glossary*. https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Value_added_at_factor_cost#:~:text=Value%20added%20at%20factor%20cost%20is%20the%20gross%20income%20from,domain%20of%20structural%20business%20statistics.

ICT expenditures
ICT expenditures include computer hardware (computers, storage devices, printers, and other peripherals); computer software (operating systems, programming tools, utilities, applications, and internal software development); computer services (information technology consulting, computer and network systems integration, Web hosting, data processing services, and other services); and communications services (voice and data communications services) and wired and wireless communications equipment, etc.
Source: World Bank Metadata Glossary. https://databank.worldbank.org/metadataglossary/africa-development-indicators/series/IE.ICT.TOTL.CD

ICT infrastructure
The basic ICT physical and organizational structures and facilities, such as broadband speed, type of broadband connections, networking facilities, usage of software and applications, etc.
Source: Based on UNCTAD Manual for the Production of Statistics on the Digital Economy 202, (UNCTAD/DTL/STICT/2021/2), 2021. https://unctad.org/system/files/official-document/dtlstict2021d2_en.pdf

ICT-related patents
Patents classified in ITC-related sections of the International Patent Classification maintained by the World Intellectual Property Organization, including sections:

G06	COMPUTING; CALCULATING OR COUNTING
G16	INFORMATION AND COMMUNICATION TECHNOLOGY [ICT] SPECIALLY ADAPTED FOR SPECIFIC APPLICATION FIELDS
G16C	COMPUTATIONAL CHEMISTRY; CHEMOINFORMATICS; COMPUTATIONAL MATERIALS SCIENCE
G16H	HEALTHCARE INFORMATICS, i.e. INFORMATION AND COMMUNICATION TECHNOLOGY [ICT] SPECIALLY ADAPTED FOR THE HANDLING OR PROCESSING OF MEDICAL OR HEALTHCARE DATA
G16Y	INFORMATION AND COMMUNICATION TECHNOLOGY SPECIALLY ADAPTED FOR THE INTERNET OF THINGS [IoT]
G16Z	INFORMATION AND COMMUNICATION TECHNOLOGY [ICT] SPECIALLY ADAPTED FOR SPECIFIC APPLICATION FIELDS, NOT OTHERWISE PROVIDED FOR

Source: World Intellectual Property Organization.
https://ipcpub.wipo.int/?notion=scheme&version=20220101&symbol=none&menulang=en&lang=en&viewmode=f&fipcpc=no&showdeleted=yes&indexes=no&headings=yes&notes=yes&direction=o2n&initial=A&cwid=none&tree=no&searchmode=smart

ICT-related trademarks
Trademarks classified in ITC-related classes of the Nice Classification of trademarks maintained by the World Intellectual Property Organization, including codes from classes 9, 38 and 42.
***Source*:** WIPO.
https://www.wipo.int/classifications/nice/nclpub/en/fr/?basic_numbers=show&explanatory_notes=show&lang=en&menulang=en&mode=flat&notion=&pagination=no&version=20220101

ICT sector
The Information and communication technologies (ICT) sector, defined in ISIC rev. 4 as output produced by firms that are "intended to fulfil or enable the function of information processing and communication by electronic means, including transmission and display". While the production or distribution of ICT products can be found everywhere in the economy, the identification of sectors within the ISIC rev. 4. classification that produce or distribute ICT products as a main activity constitutes a first-order approximation of the ICT sector.

Not that in the definition of the "digital economy", Information industries supplement the ICT sector to also include the content and media sector. This is defined as the group of economic activities that are primarily *"engaged in the production, publishing and/or the distribution of content (information, cultural and entertainment products), where content corresponds to an organised message intended for human beings"* (ISIC rev. 4).
Sources: OECD (2020). *Roadmap Toward a Common Framework for Measuring the Digital Economy*, pp. 5, 48, 76. https://www.oecd.org/sti/roadmap-toward-a-common-framework-for-measuring-the-digital-economy.pdf

United Nations, Statistics Division, "International Standard Industrial Classification of all Economic Activities (ISIC)", Statistical Papers Series M No. 4, Rev. 4, New York, 2008.
https://unstats.un.org/unsd/publication/seriesm/seriesm_4rev4e.pdf

ICT specialist occupations
ICT specialist occupations are defined by three-digit groups of the 2008 revision of the International Standard Classification of Occupations (ISCO-08): Information and communications technology service managers (133), Electrotechnology engineers (215), Software and applications developers and analysts (251), Database and network professionals (252), Information and communications technology operations and user support (351), Telecommunications and broadcasting technicians (352) and Electronics and telecommunications installers and repairers (742).

Sources: OECD (2020) A Roadmap Toward a Common Framework for Measuring the Digital Economy. Report for the G20 Digital Economy Task Force (p. 78).
http://www.oecd.org/sti/roadmap-toward-a-common-framework-for-measuring-the-digital-economy.pdf.
International Labour Organization. International Standard Classification of Occupations Structure, Volume 1: group definitions and correspondence tables, 2012.

https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_172572.pdf

Internet connections

Narrowband (download speed of less than 256 Kbit/s, in one or both directions): Analog modem (dial-up via standard phone line). The modem converts a digital signal into analog for transmission by traditional (copper) telephone lines. It also converts analogue transmissions back to digital. Other narrowband includes mobile phone and other forms of access. Narrowband mobile phone access services include CDMA 1x (Release 0), GPRS, WAP and i-mode.

Broadband (download speed equal to or greater than 256 Kbit/s, in one or both directions):

Fixed broadband, which can be segmented as fixed wired broadband and fixed wireless broadband:
Fixed (wired) broadband Internet connections refer to connections to high- speed access to the public Internet (a TCP/IP connection), at downstream speeds equal to, or greater than, 256 kbit/s. This can include for example cable modem, DSL, fibre-to-the-home/building and other fixed (wired) broadband subscriptions, as well as technologies such as powerline communications, etc. It excludes those users of temporary broadband access (e.g., roaming between PWLAN hotspots), and those with Internet access via mobile cellular networks. WiMax should be excluded.
It excludes technologies listed under wireless broadband category.
Fixed wireless broadband includes satellite, terrestrial fixed wireless, and terrestrial mobile wireless subscriptions.

Mobile broadband:
Mobile broadband access services include Wideband CDMA (W-CDMA), known as Universal Mobile Telecommunications System (UMTS) in Europe; High-speed Downlink Packet Access (HSDPA), complemented by High- Speed Uplink Packet Access (HSUPA); CDMA2000 1xEV-DO and CDMA 2000 1xEV-DV. Access can be via any device (mobile cellular phone, laptop, PDA, etc.).
Includes mobile connections with data speeds of 256 kbit/s or greater and which have been used to make an Internet data connection via IP in the previous three months. The connection must allow access to the greater Internet via HTTP. Standard SMS and MMS messaging do not count as an active Internet data connection even if they are delivered via IP.

Source: UNCTAD (2020. "Manual for the Production of Statistics on the Digital Economy 2020 Revised Edition", table 5, based on ITU standards.
https://unctad.org/system/files/information-document/210319_UNCTAD_StatisticsManual_WEB.pdf
https://www.itu.int/en/ITU-D/Statistics/Documents/publications/handbook/2010/TelecomICT_Indicators_Definition_March2010_for_web_E.doc

Job
A job or work activity is defined as a set of tasks and duties performed, or meant to be performed, by one person for a single economic unit. The term job is used in reference to employment. Persons may have one or several jobs. Those in self-employment will have as many jobs as the economic units they own or co-own, irrespective of the number of clients served. In cases of multiple job-holding, the main job is that with the most hours usually worked,

as defined in the international statistical standards on working time.
Source: ILO Glossary. https://www.ilo.org/ilostat-files/Documents/Statistical%20Glossary.pdf

Labour force survey
A labour force survey (LFS) is a household-based sample survey focused on the labour force status of the working age population and related statistics. Survey respondents are members of sampled households. The LFS seeks to provide reliable, coherent information from a socioeconomic perspective about the total working age population and its components, in particular the labour force. Such surveys often allow disaggregation of the labour force by personal characteristics such as sex, age, educational attainment, and in some cases, by migrant status and ethnicity as well as information about the jobs held by employed persons (e.g., occupation and type of contract). The LFS, which is most often conducted at least once a year (in many cases on a quarterly, monthly, or even continual basis), constitutes the main data collection instrument for statistics on employment and unemployment worldwide. The concept of employment in household surveys refers to employed persons, including self-employed workers, rather than to jobs, since a person may have several jobs and work in different establishments. Some labour force surveys allow breakdowns of employed persons according to multiple jobholding characteristics. Labour force surveys are the main source of statistics for monitoring labour markets, labour underutilization including unemployment, and the quality of jobs and working conditions of persons in employment and in unpaid trainee work.
Source: ILO Glossary. https://www.ilo.org/ilostat-files/Documents/Statistical%20Glossary.pdf

Mobile broadband
See "Internet connections"

Narrowband
See "Internet connections"

Non-employer enterprises
Non-employer enterprises are enterprises with no employees such as the self-employed who work on their own account and do not employ other persons
Source: OCED. https://www.oecd-ilibrary.org/docserver/entrepreneur_aag-2017-en.pdf?expires=1617311393&id=id&accname=guest&checksum=23A6EECA896E301450DEC77583B0F8B1

Patent
A patent is an intellectual property right issued by authorised bodies which gives its owner the legal right to prevent others from using, manufacturing, selling, importing, etc., in the country or countries concerned, for up to 20 years from the filing date. Patents are granted to firms, individuals or other entities as long as the invention satisfies the conditions for patentability: novelty, nonobviousness and industrial applicability. A patent is known as a utility patent in the United States.
Source: OECD (2009). *OECD Patent Statistics Manual*, Glossary. https://www.oecd-ilibrary.org/docserver/9789264056442-en.pdf?expires=1671486801&id=id&accname=guest&checksum=6CDCC95A45A6CAEA523B613FCF8835E4

Personnel costs
Within the context of structural business statistics (SBS), personnel costs are defined as the total remuneration, in cash or in kind, payable by an employer to an employee (regular and temporary employees, as well as home-workers) in return for work done by the latter during the reference period.
Personnel costs are made up of wages, salaries and employers' social security costs. They include taxes and employees' social security contributions retained by the employer, as well as the employer's compulsory and voluntary social contributions. Average personnel costs (or unit labour costs) equal personnel costs divided by the number of employees (persons who are paid and have an employment contract).
Source: Eurostat. *Statistics Explained, Glossary*. https://ec.europa.eu/eurostat/statistics-

explained/index.php/Glossary:Value_added_at_factor_cost#:~:text=Value%20added%20at%20factor%20cost%20is%20the%20gross%20income%20from,domain%20of%20structural%20business%20statistics.

Persons employed

The number of persons employed is defined as the total number of persons who work in the observation unit (inclusive of working proprietors, partners working regularly in the unit and unpaid family workers), as well as persons who work outside the unit who belong to it and are paid by it (e.g., sales representatives, delivery personnel, repair, and maintenance teams).

Source: Eurostat-OECD (2007). Manual on Business Demography Statistics. from Eurostat Methodologies and working papers. Publishing. https://ec.europa.eu/eurostat/ramon/statmanuals/files/KS-RA-07-010-EN.pdf

Statistical Business Register (SBR)

The business register for statistical purposes is a fully and comprehensive, regularly updated and structured list of business units engaged in the production of goods and services, which is maintained by national statistical authorities for statistical purposes to assist the compilation of statistical data and particularly as a (backbone) tool for the preparation and coordination of surveys, as a source for information for statistical analysis of the business population and its demography, for the use of administrative data, and for the identification and construction of statistical units.

Sources: Eurostat (2021c). *European business statistics methodological manual for statistical business registers 2021 edition*. https://ec.europa.eu/eurostat/documents/3859598/12433023/KS-GQ-20-006-EN-N.pdf/0c31c77a-5d20-9954-9223-2b856fdb93c9?t=1613481618625

UNECE (2015). *UNECE Guidelines on Statistical Business Registers*. https://unece.org/DAM/stats/publications/2015/ECE_CES_39_WEB.pdf

References

Ahmad, N. and R. Seymour (2008). *Defining Entrepreneurial Activity: Definitions Supporting Frameworks for Data Collection*. OECD Statistics Working Paper.

European Union (2019). European Business Statistics Regulation (EU) 2019/2152 defining SBR microdata exchange in EU https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R2152&from=EN

Eurostat (2010). Business Registers Recommendations Manual", Methodologies and Working papers, Publication Office of the European Union, Luxembourg, 2010. http://ec.europa.eu/eurostat/ramon/statmanuals/files/KS-32-10-216-EN-C-EN.pdf

Eurostat (2012). Foreign AffiliaTes Statistics (FATS) Recommendations Manual. https://ec.europa.eu/eurostat/documents/3859598/5922981/KS-RA-12-016-EN.PDF.pdf/c93cdf48-5efa-459f-b218-731a9a5476e9?t=1566897898000

Eurostat (2017). Compilers Guide for statistics on Services by Enterprise Characteristics (STEC). https://ec.europa.eu/eurostat/documents/3859598/8466641/KS-GQ-16-007-EN-N.pdf/f24fbd9e-4aeb-465d-af03-4dd169600ebd?t=1511172711000

Eurostat (2020). European business profiling: Recommendations Manual. https://ec.europa.eu/eurostat/documents/3859598/10479728/KS-GQ-20-002-EN-N.pdf/e13f0907-5e5a-7521-604a-287004d07043?t=1582627153000

Eurostat (2020a). Compilers guide on European statistics on international trade in goods by enterprise characteristics (TEC). https://ec.europa.eu/eurostat/documents/3859598/10673142/KS-GQ-20-003-EN-N.pdf/7adda2d6-8a33-aed0-d8d7-cff08dd4d8a9?t=1586164895000

Eurostat (2021). European Business Statistics Manual 2021 edition. https://ec.europa.eu/eurostat/documents/3859598/12453409/KS-GQ-21-001-EN-N.pdf/f67631e8-c728-e650-d777-de0d9079bf18?t=1614247963543

Eurostat (2021a). EU's InGRID's report *Integrated Database Linking International Employer and Employee Surveys on Work Organisation, Job Quality and Performance,* EU (2021). https://www.inclusivegrowth.eu/files/Output/D11.7_EIND.pdf

Eurostat (2021b). *Methodological Manual for the surveys on ICT usage in enterprises and households*. https://ec.europa.eu/eurostat/web/digital-economy-and-society/methodology
Eurostat (Metadata). International trade in goods - trade by enterprise characteristics (TEC). https://ec.europa.eu/eurostat/cache/metadata/en/ext_tec_sims.htm

Eurostat (2021c). *European business statistics methodological manual for statistical business registers 2021 edition*. https://ec.europa.eu/eurostat/documents/3859598/12433023/KS-GQ-20-006-EN-N.pdf/0c31c77a-5d20-9954-9223-2b856fdb93c9?t=1613481618625

Eurostat. *Statistics Explained, Glossary*. https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Value_added_at_factor_cost#:~:text=Value%20added%20at%20factor%20cost%20is%20the%20gross%20income%20from,domain%20of%20structural%20business%20statistics

Eurostat (Metadata(a)). Business demography statistics. https://ec.europa.eu/eurostat/cache/metadata/en/bd_esms.htm

Eurostat (Metadata(b)). ICT Sector. https://ec.europa.eu/eurostat/cache/metadata/en/isoc_se_esms.htm

Eurostat – OECD (2007). *Eurostat-OECD Manual on Business Demography Statistics.* https://www.oecd.org/sdd/business-stats/eurostat-oecdmanualonbusinessdemographystatistics.htm

International Labor Organization (2013). *Decent Work Indicators Manual*. http://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_223121.pdf

International Labor Organization (2013a). *Resolution concerning statistics of work, employment and labour underutilization, adopted by the 19th ICLS in 2013*. http://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/resolutions-adoptedby-international-conferences-of-labour-statisticians/WCMS_230304/lang--en/index.htm

International Monetary Fund (2009). *Balance of Payments and International Investment Position Manual*. Sixth Edition. Available from https://www.imf.org/external/pubs/ft/bop/2007/pdf/bpm6.pdf

Intergovernmental Panel on Climate Change (IPCC) (2018): Annex I: Glossary, p. 550 [Matthews, J.B.R. (ed.)]. In: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. https://www.ipcc.ch/sr15/chapter/glossary/

International Telecommunications Union (2016). Financing for ICT Infrastructure. https://www.un.org/esa/ffd/wp-content/uploads/2016/01/Financing-for-ICT-Infrastructure_ITU_IATF-Issue-Brief.pdf

International Telecommunications Union (Standards). https://www.itu.int/en/ITU-D/Statistics/Documents/publications/handbook/2010/TelecomICT_Indicators_Definition_March2010_for_web_E.doc

Menghinello S. et al. (2020). *A strategic and data production frameworks for the development of business statistics*. Statistical Journal of the IAOS 36 (2020) 701–713 701 DOI 10.3233/SJI-200687. IOS Press Available at: https://content.iospress.com/download/statistical-journal-of-the-iaos/sji200687?id=statistical-journal-of-the-iaos%2Fsji200687

OECD (2008). "OECD Benchmark Definition of Foreign Direct Investment", fourth edition, 2008. https://www.oecd.org/daf/inv/investmentstatisticsandanalysis/40193734.pdf

OECD (2009). *OECD Patent Statistics Manual*. https://www.oecd-ilibrary.org/oecd-patent-statistics-manual_5kz9j94r3g23.pdf?itemId=%2Fcontent%2Fpublication%2F9789264056442-en&mimeType=pdf

OECD (2011). *Guide to Measuring the Information Society*, OECD Publishing, Paris, https://doi.org/10.1787/9789264113541-en

OECD (2012). *Defining and Measuring Green Investments: Implications for Institutional Investors' Asset Allocations*, OECD Working Papers on Finance, Insurance and Private Pensions, No.24, OECD Publishing. https://www.oecd.org/environment/WP_24_Defining_and_Measuring_Green_Investments.pdf

OECD (2015). The OECD Model Survey on ICT Usage by Businesses: 2nd revision. https://www.oecd.org/sti/ieconomy/ICT-Model-Survey-Usage-Businesses.pdf

OECD (2015a). *Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development, The Measurement of Scientific, Technological and Innovation Activities*, OECD Publishing, Paris. https://read.oecd.org/10.1787/9789264239012-en?format=pdf

OECD (2018). *G20 Toolkit for Measuring the Digital Economy*, November 2018. https://www.oecd.org/g20/summits/buenos-aires/G20-Toolkit-for-measuring-digital-economy.pdf

OECD (2019). *Measuring the Digital Transformation: A Roadmap for the Future*, OECD Publishing, Paris. https://doi.org/10.1787/9789264311992-en

OECD (2020). *A roadmap toward a common* E/CN.3/2020/23 *framework for measuring the Digital Economy: Report for the G20 Digital Economy Task Force*. http://www.oecd.org/sti/roadmap-toward-a-common-framework-for-measuring-the-digital-economy.pdf

OECD-Eurostat (2018). *Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation*. https://www.oecd-ilibrary.org/docserver/9789264304604-en.pdf?expires=1623186743&id=id&accname=guest&checksum=A088A19BEA0AB72ADBD44AC70C5EFAC7

OECD-WTO-IMF (2020). *Handbook on Measuring Digital Trade*. https://www.oecd.org/sdd/its/Handbook-on-Measuring-Digital-Trade-Version-1.pdf

Olsen et al., (2020). "New measures on contribution of corporations towards sustainability", Statistical Journal of the IAOS 36 (2020) 715–726 715, DOI 10.3233/SJI-200659, IOS Press. https://content.iospress.com/download/statistical-journal-of-the-iaos/sji200659?id=statistical-journal-of-the-iaos%2Fsji200659

United Nations (2000), Links between business accounting and national accounting, Handbook of National Accounting, Series F 76, https://unstats.un.org/unsd/economic_stat/China/SeriesF_76E.pdf

United Nations (2008). International Recommendations for Industrial Statistics 2008. https://unstats.un.org/unsd/industry/Docs/IRIS_2008_En.pdf

United Nations (2009). System of National Accounts 2008. https://unstats.un.org/unsd/nationalaccount/docs/sna2008.pdf

United Nations (2011). *International Merchandise Trade Statistics: Concepts and Definitions 2010*. Available from http://unstats.un.org/unsd/trade/EG-IMTS /IMTS2010-final-22March2011.pdf

United Nations (2011a). *Manual on Statistics on International Trade in Services 2010*. https://unstats.un.org/unsd/tradeserv/TFSITS/msits2010/docs/MSITS%202010%20M86%20(E)%20web.pdf

United Nations (2014). *System of Environmental-Economic Accounting 2012 Central Framework*, https://unstats.un.org/unsd/envaccounting/seearev/seea_cf_final_en.pdf

United Nations (2015). United Nations General Assembly, *Transforming our world: The 2030 Agenda for Sustainable Development*, 21 October 2015, A/RES/70/1, available at https://sdgs.un.org/2030agenda.

United Nations (2015a). United Nations Statistical Commission decision 46/107. https://unstats.un.org/unsd/statcom/46th-session/documents/statcom-2015-46th-report-E.pdf

United Nations (2015b). *Central Product Classification (CPC) Version 2.1.* https://unstats.un.org/unsd/classifications/unsdclassifications/cpcv21.pdf

United Nations (2016). International Recommendations on Energy Statistics. https://seea.un.org/sites/seea.un.org/files/ires_edited2.pdf

United Nations (2017). United Nations Statistical Commission decision 48/114. https://unstats.un.org/unsd/statcom/decisions-ref/?code=48/114

United Nations (2017a). *Manual on the Basic Set of Environment Statistics of the FDES 2013 – Water Resources Statistics*. https://unstats.un.org/unsd/environment/FDES/MS 2.6 Water Resources.pdf

United Nations (2018). *Satellite Account on Non-profit and Related Institutions and Volunteer Work*. https://unstats.un.org/unsd/nationalaccount/docs/UN_TSE_HB_FNL_web.pdf

United Nations (2019). *13th Meeting of the Advisory Expert Group on National Accounts: Progress on the Digital Supply-Use Tables Framework*, SNA/M1.19/2.3.2. SNA/M1.19/2.3.2 - Progress on the Digital Supply-Use Tables Framework (un.org)

United Nations (2019a). *UN Handbook on Accounting for Global Value Chains: GVS Satellite Accounts and Integrated Business Statistics*. https://unstats.un.org/unsd/business-stat/Assets/Documents/GVC/Accounting%20for%20Global%20Value%20Chains%20-%20White%20Cover%20Version.pdf

United Nations (2019b). SEEA Energy at System of Environmental Economic Accounting. https://seea.un.org/sites/seea.un.org/files/documents/seea-energy_final_web.pdf

United Nations (2020). *United Nations Guidelines on Statistical Business Registers*. https://unstats.un.org/unsd/business-stat/SBR/Documents/UN_Guidelines_on_SBR.pdf

United Nations (2020a). United Nations Statistical Commission, *Report of the Partnership on Measuring Information and Communication Technology for Development*, E/CN.3/2020/23. https://unstats.un.org/unsd/statcom/51st-session/documents/2020-23-ICT-E.pdf

United Nations (2020b). *A Draft Framework of Better Outcomes and Recommendations for Action for the System of Economic Statistics*, Friends of the Chair on Economic Statistics, November 2020. https://unstats.un.org/unsd/statcom/groups/focg_econ/meetings/5th/FOCG_5th_Meeting_Draft_Recommendations_v1.pdf

United Nations (2021). United Nations Statistical Commission decision 52/107. Available from 2021-30-FinalReport-E.pdf (un.org)

United Nations (2021a). *UN draft manual on the Statistical Business Register Maturity Model for Statistical Business Registers*. https://unstats.un.org/unsd/statcom/53rd-session/documents/BG-3p-SBR-Maturity-Model-E.pdf

United Nations (2022). United Nations Statistical Commission decision 53/119. Available from 2022-41-FinalReport-E.pdf (un.org).

United Nations Conference on Trade and Development (2019). *Guidance on core indicators for entity reporting on contribution towards implementation of the Sustainable Development Goals*. https://unctad.org/webflyer/guidance-core-indicators-entity-reporting-contribution-towards-implementation-sustainable

United Nations Conference on Trade and Development (2020). *Manual for the Production of Statistics on the Digital Economy.* https://unctad.org/system/files/official-document/dtlstict2021d2_en.pdf

United Nations Conference on Trade and Development (2020a). *Guidance on Core Indicators for Entity Reporting on Contribution towards Implementation of the Sustainable Development Goals*. https://unctad.org/system/files/official-document/diae2019d1_en.pdf

United Nations Economic Commission for Europe (2015). *Guide to Measuring Global Production*. Available from Guide_to_Measuring_Global_Production__2015_.pdf (unece.org)

United Nations Economic Commission for Europe (2015a). *Guide to Sharing Economic Data in Official Statistics*. https://unece.org/sites/default/files/2021-02/Data%20sharing%20guide%20on%20web_1.pdf

UN SDG metadata. https://unstats.un.org/sdgs/metadata

World Bank Metadata Glossary. https://databank.worldbank.org/metadataglossary/africa-development-indicators/series/IE.ICT.TOTL.CD